Post Disaster Recovery of Formal and Informal Businesses:

Case Study of Kathmandu Valley after 2015 Nepal Earthquake

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Acknowledgements

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List of Abbreviations and Acronyms

BID- Balaju Industrial District

FGD- Focus Group Discussion

GAR- Global Assessment Report

ID -Industrial District

IDM- Industrial Districts Management Limited.

ILO- International Labour Organization

INGO- International Non-governmental organization

MSME- Micro, Small & Medium Enterprises

NGO- Non-governmental organization

NPR- Nepalese Rupee

NRA- National Reconstruction Authority

PDNA- Post Disaster Need Assessment

PDRF- Post Disaster Recovery Framework

PIE- Patan Industrial Estate

SFDRR- Sendai Framework for Disaster Risk Reduction

SME- Small & Medium Enterprises

UNHabitat- United Nations Human Settlements Programme

UNDP- United Nations Development Programme

UNISDR- United Nations International Strategy for Disaster Reduction

USD- American Dollar

VDC- Village Development Council/Committee

Abstract

The Micro, Small and Medium Scale businesses generate most of the employment in Asia and support the local and national economy. But at the same time, these businesses are at higher risk of being impacted by a disaster due to their precarious locations, limited resources and less involvement in disaster risk reduction activities. As a result, in case of a disaster along with the physical harm to people and built environment, there are long-term impacts on national and local economies and income and non-income generating livelihoods. Recently there have been various initiatives at the global, national and local level to integrate the private businesses as a major stakeholder for disaster risk reduction and resilience building. In 2015, the Sendai Framework for Disaster Risk Reduction proposed guidelines on roles and responsibility of the private businesses in various phases of the disaster cycle.

The first major disaster after the Sendai conference was the 2015 Nepal Earthquake leading to a loss of more than 8,700 lives and economic damage worth more than 7 billion US dollars of which most are borne by the private sector. 14 of the 75 districts were severely affected which includes the three districts of Kathmandu valley. The Kathmandu valley is the economic hub of Nepal which have both formal and informal private businesses which had severe disruption after the earthquake. Immediately after the earthquake, the Government of Nepal carried out a Post Disaster Need Assessment (PDNA) of the affected districts. The PDNA shared that the productive sectors (industry, commerce and agriculture) was the second most damaged sector after housing but did not include the damage and loss of the informal businesses. Considering that 96% of the employment in Nepal are informal in nature, this is a big gap in the needs assessment. Further, as the needs assessment formed the base for designing of the Post Disaster Recovery Framework (PDRF), the informal sector remained not represented. The PDRF suggests a recovery period of 5 years for Nepal and various activities were designed for economic and livelihood recovery to implement in various time periods.

The industrial clusters located within the municipal areas of Kathmandu and Lalitpur are mostly falling in Micro, Small and Medium Scale and both the areas were severely damaged in the earthquake. These formal businesses had access to insurance and various other services, but did not receive any aid from the government or humanitarian agencies after the earthquake. Further, after the initial relief and response phase, the focus of recovery shifted from the urban centers to the rural areas of Nepal to support housing reconstruction in which public-private

partnership was envisioned. To get into such supportive role, these formal businesses must first recover themselves from the impact of the earthquake. From this, it can be said that the 2015 Nepal earthquake serves as an excellent case to study to understand how a uniform recovery approach in addressing the recovery needs of both the formal and informal businesses.

Considering the existing gaps in disaster recovery scholarships, this study attempts to understand how the formal and informal private businesses recover from a disaster based on ground evidence. The following four specific research questions are formulated to achieve this; how does the impact of the earthquake differ for the formal and informal businesses; How does the formal and informal sector's restarting and recovery time differ and why; What strategies are followed by the formal and informal sector to recover; How did the recovery framework support the formal and informal sector recovery. A qualitative case study is conducted across three locations in Kathmandu valley. Industrial clusters in Balaju and Patan are considered for the formal businesses while Bungamati, a traditional Newari settlement, represents the informal businesses. A questionnaire survey, semi-structured interviews, key informant interviews, and photo documentation were conducted within two years of the earthquake. Narrative analysis is done to generate themes and subsequently, inductive analysis is applied.

The results show that disaster created new business opportunities for both the formal and the informal businesses. But at the same time, these two types of businesses differ widely in terms of their disaster impact, restarting time, recovery time, and strategies for recovery. The direct impact of the earthquake has little implication of the disruption and recovery process of the businesses. While the indirect and wider impacts due to the labour shortage, services and loss of local market are the ones which influence the recovery process of both types of businesses. Most of the formal businesses studied restarted within first two months of the earthquake while the informal businesses took up to 18 months to restart. Similarly, in case of the probable recovery time, the majority of the formal businesses, expects to recover between 2 to 4 years of the earthquake while the majority of the informal businesses expects that recovery would extend beyond 5 years after the earthquake. The various activities envisioned for economic and livelihood recovery in the recovery policy do not have uniform implications for the formal and informal businesses raising questions about its effectiveness. It is seen in this study that for the formal businesses the recovery process limits itself to the use of organizational assets to recovery while in the informal businesses the organizational and household assets are both used for recovery. This study also points to the limited influence of risk transfer mechanisms like

risk insurance and social capital in the business recovery. The findings of the study suggest five issues the disaster governance in Nepal as a limiting factor for the business recovery such as the monocentric nature of the decision-making process, lack of coordination, limited rules and regulations, depending on external agencies and limited access to various resources. Based on the findings following recommendations are suggested; 1. Separate recovery policy for formal and informal businesses; 2. Periodic assessment of recovery framework to evaluate its efficacy and make necessary amends; 3. Prioritising local market recovery along with individual business recovery.

Key words: *2015 Nepal Earthquake, Formal and Informal Business, Business Recovery, Qualitative Case Study*

Chapter 1

Introduction

This chapter introduces natural disasters, disaster recovery followed by an overview of the disaster impact on private businesses. Further, the chapter discusses the disaster impact on Micro, Small and Medium Scale businesses of both formal and informal types. In addition, the chapter includes a review of various literature on disaster recovery and private sector recovery. The next section introduces the 2015 Nepal earthquake, and it's the various impacts. This leads to the research questions for the thesis. Later the chapter provides an overview of the case study areas.

1.1 Background

A disaster is defined as a "serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources" (UNISDR, 2009). Disasters have been classified broadly into two generic groups; natural and human-made. In recent times, argument on human role being central in transforming a hazard of natural origin into a disaster have found wider acceptance among scholars (Blaikie et al., 1994, Pelling, 2003, Wisner et al., 2004, Bosher, 2014). The term "natural disasters" is used in this study as defined by (Bosher and Chumutina, 2017) "disaster that has been caused by hazards of natural origin such as extreme weather, geophysical phenomenon or epidemics". The positioning of this study is to understand the effect of the natural disaster on human developed system and capacity of this system to recover from the disaster impact.

Natural disasters are increasing in frequency and intensity over the last few decades globally. In the last decade, Asia alone has experienced 1,617 natural disasters that resulted in a loss of approximately USD 767 billion, which is 47 percent of all natural disasters in the world and almost 58 percent of the total disaster losses (Guha-Sapir et al., 2017). A disaster not only causes immediate physical harm to people and built environment, but has long term impacts on national and local economies and livelihoods. Mohne (2003) discusses the various impacts of disasters on livelihoods such as the disruption of income and production; disruption of social cohesion and social order; loss of social amenities and infrastructure; disruption of marketing, distribution and communication systems; and the resurgence of primary diseases. These impacts are more likely to be experienced in a developing or in a least developed nation in

comparison to a developed nation. Among the developing and least developed nations, it is the latter which suffers the most due to greater vulnerability and risk levels, which often overwhelms their existing capacities to respond and recover from a disaster (Bosher, 2008, UNISDR, 2015).

1.2 Micro, Small and Medium Scale Enterprises (MSMES) in disaster management

In the past disasters, the private sector has suffered more loss than the public sector (Chatterjee and Shaw, 2015). In Asia, more than 90 percent of the private enterprises belong to Micro, Small and Medium Scale Enterprises ADRC (2012). It is important to mention here that the criteria for categorization of MSMEs varies from country to country and hence needs to be defined in the local context. UNDP (2013) highlight the importance of MSMEs as a provider of employment, goods and services, but at the same time are at higher risk of being impacted by a disaster in comparison to the large enterprises due to limited financial resources, capacities and expertise. Zhang et al., (2004) adds that the higher risk of MSMEs is due to proximity to vulnerable locations and extent of market operations. Taking into consideration that MSMEs shoulder the local economy and provide the highest number of employment, their contribution in the post disaster recovery cannot be neglected. While this is reinforced by the study on Canterbury earthquake recovery by Battisti and Deakins (2012) in which they urge to focus on recovery of MSMEs for overall economic recovery. ProVention Consortium, (2009) extends the role of MESEs further by suggesting resilience of livelihoods is highly dependent on the capacity of the MSMEs to support the local economy.

1.2.1 Role of formal and informal businesses in disaster management

The most notable difference in a private business is its "formal" and "informal" nature of doing business. Biggs et al. (2012) share the characteristic of the formal businesses, as licensee, registered for taxation, has an official number and are mostly eligible for government subsidies. On the other hand, an informal business would be mostly a small-scale, self-employed enterprise with low investment, labour intensive and indigenous labour dependent (Mead and Morrisson, 1996; Aguilar & Campuzano, 2009; Macias and Cazzavillan, 2009). Further, Biggs et al., (2012) observes that formal and informal businesses have significant differences in their response to a disaster.

In Asia, more than 60% of the employment is generated in the informal sector, more so in the developing and least developed countries. Looking back at the past disasters in Asia, it is seen

that there has been a biased approach for the formal and informal businesses but such cases are hardly documented. In backdrop of the 2004 Indian Ocean Tsunami, Robinson and Jarvey (2008) shared that the formal MSMEs affected by the Tsunami in Sri Lanka were supported by the government and their capacity building was done. On the contrary, in case of the informal businesses, the national government did not recognize them as lawful businesses. This led to loss of livelihood, demolition of reconstructed buildings and other assets among the informal businesses. A contributing factor for this may be that in comparison to the formal businesses (national or multinational corporations) the informal businesses, mainly operating as MSMEs have a lesser individual economic loss, but these businesses have the highest probability of loss due to a disaster (Figure 1.1).
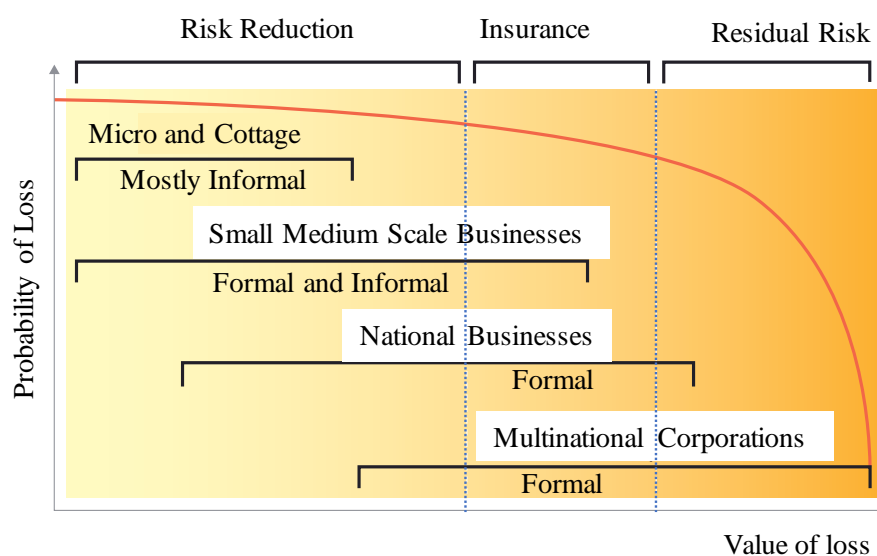
Figure 1.1. Probability of loss in formal and informal businesses
(Source: Adopted from GAR 13 modified by Author)

1.3   Sendai Framework for Disaster Risk Reduction (SFDRR) and private businesses

Three world conferences (Yokohama 1994, Hyogo 2005, and Sendai 2015) in the last three decades have influenced the paradigm shift in disaster management from a reactive to a proactive approach. The overall vision of these conferences has been to safeguard human life, reduce economic loss, and pave a way for society's sustainable development. The first two world conference in Yokohama and Hyogo had no major involvement of the private sector. The third world conference in Sendai included private sector as a major group in Disaster Risk Reduction (DRR) activities. This comes as an acknowledgment of the fact that in Asia, the private sector had faced more economic losses in comparison to the public sector in the last

3

decade (Chatterjee and Shaw, 2015) and there is a need for increasing private sector participation in DRR as suggested in the GAR 13 report (2013) to reduce economic losses. Out of the four priorities of action of SFDRR, private sector's roles were clearly delineated for the first three, but for the priority area 4 dealing in preparedness, response, and to "Build Back Better" in recovery, the private sector has no clear role and responsibilities. Further, Chatterjee et al. (2015) highlight that in Sendai conference, there was limited participation of the Micro, Small and Medium Enterprises (MSMEs) and practical commitments for risk reduction were missing from the private sector representatives present in the conference. While Shaw (2015) critiques that the anticipated outcomes of the Sendai Framework for Disaster Risk Reduction (SFDRR) is to reduce loss of livelihood but there were no guidelines for employment and livelihood issues in the SFDRR policy document.

1.4 Literature review leading to the problem statement

Disaster recovery is a social process of rebuilding lives and livelihood (Niggs, 1995; Olshansky, 2005) but its outcome is contested by many authors. The outcome of a recovery process is not definite and has been contested by earlier researchers like Quarantelli, (1999) considers disaster recovery as attaining pre-disaster status; while Mannakkara and Wilkinson, (2012) relate it to Build Back Better (BBB); Bates and Peacock (1989) opine recovery as a never-ending dynamic process varying across time, space and perception; Chang and Rose, (2012) suggest that this process leads to a new stable state distinct from the pre-disaster state. Hence it is important that the disaster recovery process is studied to understand the outcome.

Every disaster poses a new challenge to the society and hence the process of recovery should be unique based on the context and needs. This unique nature of the solutions creates an opportunity to learn from the past mistakes and apply the learnings in the future to tackle such situations.

Anderson and Woodrow (1989) have pointed out that most recovery revolves around short-term engagement with limited long-term impacts. Specifically, for the MSMEs, UNDP (2013) opine that actions and measures taken within a short span of time after a disaster are crucial for paving a way for an efficient post-disaster recovery. In contrast, a disconnected housing and livelihood recovery programs can have negative outcomes as was documented by Rubin and Jarvey (2008) in 2004 Tsunami recovery in Sri Lanka. Hence it can be said that the MSMEs holds the key to an effective economic recovery process. UNDP (2013) observes that in developing and least developed countries, both formal and informal businesses depend on their own savings and financial capital to recover from a disaster. Among the informal businesses,

there is limited penetration of the insurance sector and non-availability of formal government safety nets making the informal sector to fend for themselves. The report further highlights the lack of academic researches involving the informal businesses.

Mechler et al., (2006) links recovery to resilience and suggest the ability of a government to finance the recovery and reconstruction through a broad array of public and private mechanisms reflects on its resilience. In this respect, Mechler et al., (2013) points out Nepal as a typical case where the fiscal gap would be greater than 4 billion US dollars for an earthquake or flood event of 100 years return period. In such cases, the recovery of the private businesses will have immense implication on the outcome of the overall recovery process and reduce the implicit burden of the government. A considerable amount of literature focuses on pre-disaster conditions rather than developing understanding post-disaster recovery process (Alesch et al., 2001).

Prior studies on private sector recovery either focused on identifying indicators for business recovery or at creating models to simulate future losses. In relation to the existing literature on business resilience and recovery, Rose and Krausmann (2013) critique that many of the existing indicators are insignificant and there is a lack of ground evidence to support preparation of a business recovery framework. This warrants for an evidence-based study to understand private sector recovery specially for the MSMEs.

1.5 Nepal earthquake 2015

The first major disaster immediately following the Sendai declaration was the 2015 Nepal earthquake. On 25th April, an earthquake of magnitude 7.8 on the Richter scale caused extensive loss of life, damage to properties and loss amount to billions of US Dollars in 31 districts of Nepal. Of these 31 districts, 14 districts, including the 3 districts in Kathmandu valley were very severely affected (NPC, 2015). This was followed by 300 or more aftershocks for more than a year with some of them measuring as high as 7.2 on the Richter scale.

Immediately following the 2015 earthquake, a Post Disaster Need Assessment (PDNA) was undertaken by the Government of Nepal to identify the loss and plan for the relief work and long term recovery. The productive sector which includes, industries, agriculture and commerce was the second most affected sector after housing sector in this earth. Interestingly, the PDNA highlighted non-availability of the data as a major reason for not accounting for the informal sector damage and losses (NPC, 2015; NRA, 2016). Considering that 96% of the employment generated by the informal sector, it can be said that the estimated damage and loss in PDNA was underestimated by a big margin. The PDNA served as the base document for

preparation of Post Disaster Recovery Framework (PDRF). The PDRF laid out a plan for overall recovery of all affected sectors and highlighted livelihood recovery as a significant factor for economic recovery and devised various strategies to achieve it. But as informal business data was excluded from PDNA, the inclusiveness and effectiveness of the recovery framework is questionable. Secondly, the implementation of the PDRF has been prioritised for the rural districts in Nepal and hence the recovery process of the formal and informal businesses in urban clusters are not known. Considering, Biggs et al., (2012) observation that formal and informal sector have significant differences in their response to a disaster. This necessitates a need to study the impact and recovery process of the formal and informal businesses in the urban areas of Nepal.

1.6 Research aim

To fill the above-mentioned gaps in the existing disaster recovery scholarships, this study attempts to understand *how the formal and informal private businesses recover from the 2015 Nepal earthquake based on ground evidences*? It is envisioned that the outcome of this study will lead to the development of an effective recovery framework and supporting policies which will not only make recovery faster but at the same time strengthen the future resilience building.

1.6.1 Research question

To achieve the above-mentioned research aim, four research questions are formulated which are as given below;

RQ1. *What was the impact of the 2015 Nepal earthquake of the formal and informal private businesses?*

RQ2. *How does the formal and informal sector's restarting and recovery time differ? What factors influence the restarting and recovery time?*

RQ3. *What strategies are followed by the formal and informal sector to recover?*

RQ4. *How did the recovery policy and humanitarian aid support the formal and informal business recovery?*

1.7 Case study selection

As discussed in the preceding section, the least developed nations are at higher risk of being impacted by a disaster and the MSME sector is the backbone of such economies. Nepal is one of the low-income economies of the world and is at high risk of being impacted by hazards of

natural origin like earthquake, floods, landslide, avalanche among others (UN report, 2017; Tuladhar et al., 2015). In Nepal, an earthquake has a return period of approximately 80 years and each of these big earthquakes in the past have caused severe damage to the physical, social and economic development. The 2015 Nepal earthquake was preceded by the 1934 earthquake, both these earthquakes caused tremendous loss of life and property unmatched by the other natural disasters to strike Nepal in recent times.

Nepal government had been a signatory to the Hyogo framework of Action and to Sendai Framework of Action. The 2015 Nepal earthquake was the first major natural disaster closely following the Sendai declaration. As a result, the earthquake provided a platform to showcase Nepal's resolve to implement priorities of SFDRR and the onus was not only on the Nepal government side, but also for the global community to set an example of precedence.

An earthquake of 7.8 M struck Nepal on the 25th of April 2015, this was closely followed by another earthquake of 7.2 M on 12th May 2015. The combined death toll from both the earthquake was more than 8,790 people and the loss of more than 7 billion US dollars across 31 districts of which 14 were severely affected ((Figure 1.2 a). The direct and indirect impacts of the Nepal earthquake and aftershocks are 25% and 50% of the GDP, respectively (CEDIM Report, 2015). The productive sector was the second most affected sector after the social housing sector. Further, among the productive sectors, the private sector loss was 3.3 times that of public sector (NPC, 2015).

Among the 14 highly affected districts in Nepal, 3 districts (Kathmandu, Bhaktapur and Lalitpur) in Kathmandu valley faced extensive physical, social and economic due to their higher concentration of people and economic activities (Figure 1.2 b, c). Further, the total number of registered MSMEs was the highest in these three districts before the earthquake. Kathmandu valley has been the capital of Nepal from 6th century and is inhabited by the close-knit Newari communities in small pockets and they are known for their traditional occupations and handicrafts. In Kathmandu valley, there are 3 formal Industrial Districts (IDs), one each in Kathmandu, Patan and Bhaktapur set up by the government with foreign direct investment. Balaju Industrial District (BID) in Kathmandu and Patan Industrial Estate (PIE) in Lalitpur was badly damaged in the 2015 earthquake.

A round of expert consultation was done in January 2016 during as a part of a conference which gave a list of probable areas for the study. Subsequently field visits were made in the month of January 2016 to the Balaju and Patan Industrial areas and three traditional settlements in Kathmandu valley; Bungamati, Khokana and Sankhu. A common criteria was all of them suffered extensive damage in the 2015 earthquake, but based on initial discussions with the

local people and site observations, Balaju, Patan and Bungamati was considered for the detailed study.
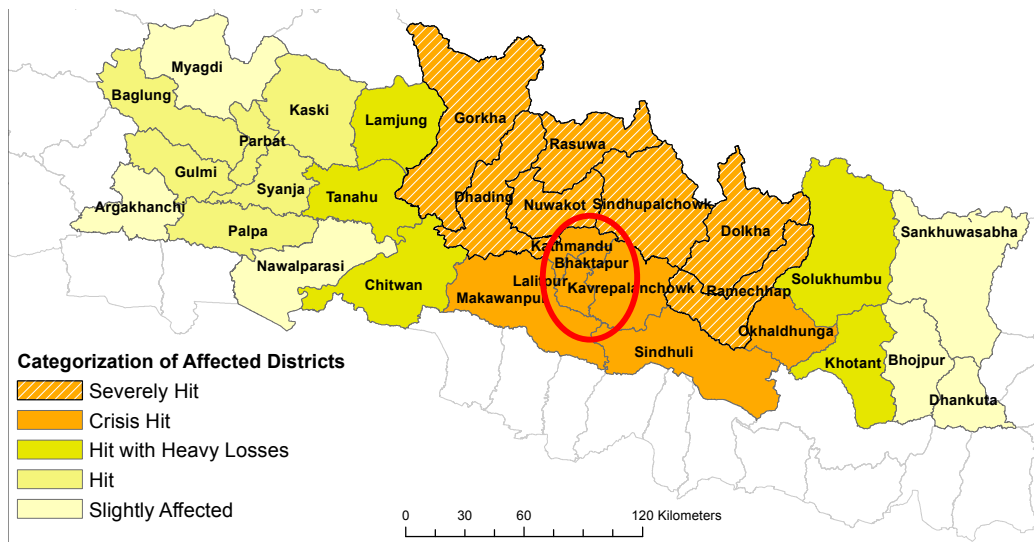
Figure 1.2 a. Impact of 2015 Nepal earthquake on various districts of Nepal

(Source: NPC, 2015)
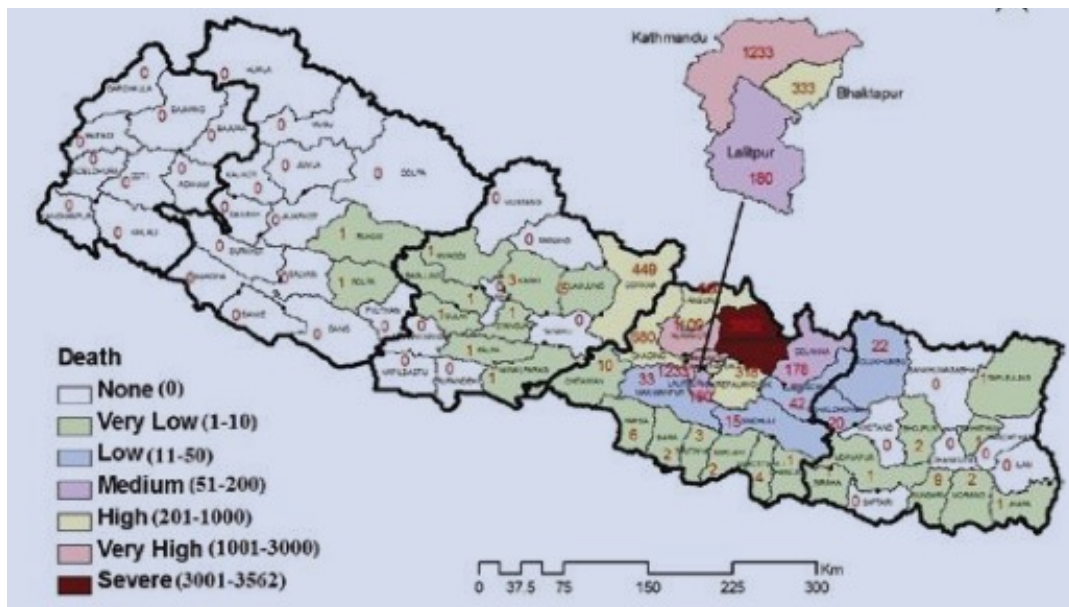
Figure 1.2 b. Number of death in 2015 Nepal earthquake

(Source: GoN disaster report, 2015)
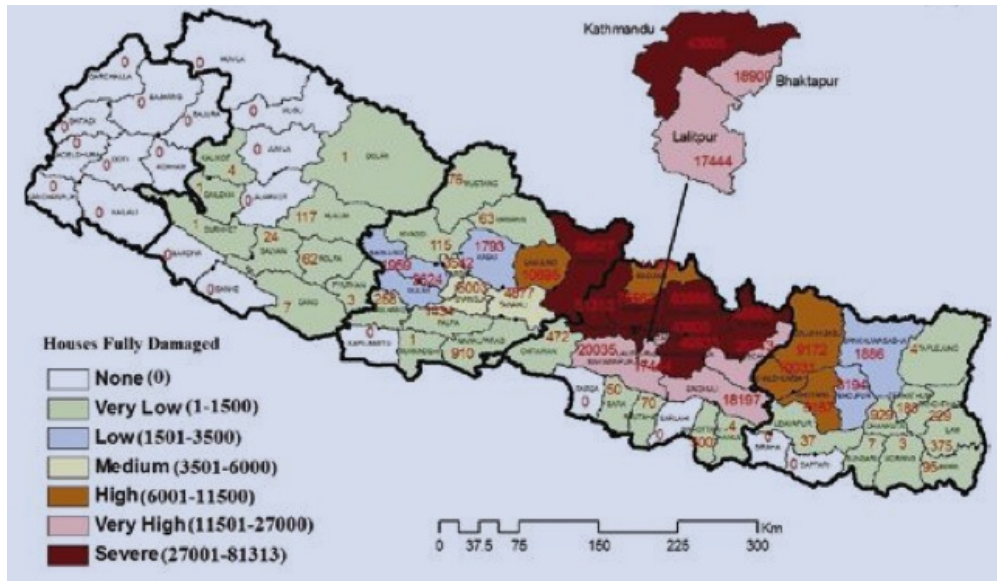
Figure 1.2 c. Distribution of fully damaged private houses in 2015 Nepal earthquake

(Source: GoN disaster report, 2015)

Especially for Bungamati the other selection criteria were its strong community bonds, wood and metal carving industry, built heritage and its transformation into an important market place in the recent times. Also, due consideration was given to the fact that in 1934 earthquake almost 99 percent of buildings collapsed in Bungamati and the recovery was mostly community driven without any external support (Rana, 1934).

It was assumed that these cases would provide important clue into how formal and informal private sector recovers after a disaster. In the selection of the cases it was kept in mind that all of them are similar in scale and had faced similar magnitude of the earthquake. The three cases study locations are shown in the key map in Figure-1.3 (a) while figure 1.4 (a, b, c, d, e, f) shows photographs of the case studies sites as observed during the study.

1.8 Methodology

A qualitative researcher begins with a research question and little else. Theory develops during the data collection process. This more inductive method means that theory is built from data or grounded in the data. Moreover, conceptualization and operationalization occur simultaneously with data collection and preliminary data analysis. Qualitative researchers remain open to the unexpected, are willing to change the direction or focus of a research project, and may abandon their original research question in the middle of a project (Neuman, 2000).

The study design is mainly qualitative in nature and uses primary and secondary data to achieve the above listed objectives (Figure1.5). The data collected through various data collection tools are analysed both qualitatively and quantitatively to arrive at the results for the study following Creswell and Creswell (2002). In context of Nepal, Upreti et al. (2012) suggest that Nepalese livelihood scenario is complex and applying various models may lead to different outcomes, as they do not relate to local conditions and community behavior. Hence it was important to understand the local context and in the beginning open ended interviews were conducted with the business owners.
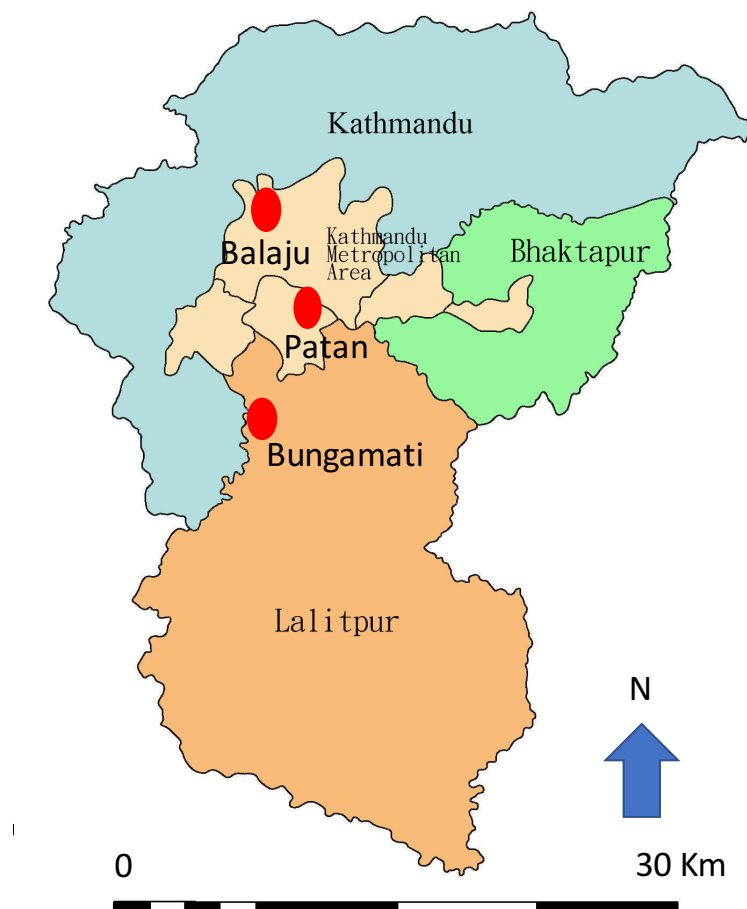
Figure1.3 Case study locations in Kathmandu Valley, Nepal

The choice of using qualitative interviewing and observation has a specific relevance to the study as it helps to understand and explain complex phenomena more comprehensively and provides an opportunity to the interviewees to bring up their own ideas and thoughts. Further, as there are no pre-existing studies and data set existing in the case study areas, qualitative research was used to maximize the understanding of the local context and relate it to the research objectives. In addition, based on earlier experience of private sector in Mumbai, a

degree of flexibility in the research design was necessary to assimilate evidence based approach in the research design.

Figure1.4 a. View of Balaju Industrial District

Figure 1.4 b. Typical industry in Balaju

Figure 1.4 c. View of Patan Industrial Estate

Figure 1.4 d. Typical industry in Patan

Figure 1.4 e. View of Bungamati Bus Park

Figure 1.4 f. Woodcarving shop in Bungamati

A case study approach is taken up in this study. Case studies are the preferred strategy to answer, research questions and is used to understand a ***process*** over which the investigator has little or no control and do not relate to frequency and incidences (Yin, 2012). Further a case study approach is found suitable for investigating an ongoing phenomenon within its real-life context where various factors are intertwined (Ibid). Lupo et al., (1971) suggest that "***how***" question is generally answered by explanatory case study researches. The unit of analysis taken in this case is shops and factory units. Multiple case studies are selected for this study to compare the findings and see if the overall recovery policy has different effects on either of the cases. While Balaju Industrial District and Patan Industrial Estate represent the formal businesses. The case study of Bungamati represents the informal businesses. Various data obtained from the individual case studies are analyzed to see if they follow any common pattern or differ widely with each other.

The first field work was conducted in January 2016 where surveys were conducted in the Balaju industrial area and followed by open ended discussion with the Balaju Industrial Board members. In February 2016, field survey was conducted in Mumbai to understand the impact of the 2005, Mumbai floods on the private sector and document the recovery process. Two important lessons were learned in the Mumbai case study. First, as it was already more than 10 years from the date of flooding it was very difficult to trace the affected industries. There were no available of data with government's industrial department as it was decided by the government not to compensate the Private sector for their losses as a part of the recovery framework. Secondly, the few industrial owners who could be traced had blurry memories of the event. This supports Talamini and Gorree, (2012) theory that individual memory is subject to qualitative decay over time. This necessitated the present study to focus on the first two years of the Nepal earthquake and assimilate crucial information which might get lost with time. The case of Mumbai was not taken up for further study due to above mentioned shortcomings.

The second, third and fourth field surveys are conducted in Nepal using semi-structured interviews, focus group discussion, photo documentation and field observations were employed for collecting primary data. The literature review is done to develop an understanding of the Newari society and to identify the assets and strategies adopted for the recovery by the community. As part of the study a total inventory of the shops was created based on door to door survey done in Bungamati as there was no available data for the number of shops operating in Bungamati.

Phase -1 Understanding context, Site selection and Networking

| Conceptual development Secondary Literature, Field work | → | Consultation with experts in GGS conference, Nepal (Jan2016) | → | Site Visit Open ended Interview (Jan 2016) |

Phase -2 Data Collection

| Field 1 (Jan- Feb 2016) | → | Field 2 (May 2016) | → | Field 3 (Jan-Feb 2017) | → | Field 4 (Mar 2017) |

Field 1
Balaju Questionnaire Survey (28)

Semi Structured Interview

Key informant interview

Photo documentation

Interview Nomenclature
A1..A10- NRA, NGOs, Industrial officers (Key informant)
H1..H29- Bungamati
O1…O9- Survivors of 1934
B1…B10- Balaju, P1…P10- Patan

Field 2
Bungamati Questionnaire Survey (30)

Open ended Interviews

Photo documentation

Field 3
Patan Questionnaire Survey (30) Semi Structured Interview

Inventory of all shops (108) Semi Structured interview FGDs and Participatory mapping

In-depth Interviews with NGOs

Photo documentation

Key informant interviews

Field 4
Semi Structured interview in Bungamati

Photo documentation

Key informant Interviews with NRA

1968 survey Raw data from Taragaon Museum

| Analysis |

| Results and Recommendations |

Figure 1.5 Flow diagram of the research methodology

1.9 Thesis outline

This section gives an overview of the chapters (Figure1.6) included in the thesis. The thesis is divided into main three parts where part 1 has chapter 1,2 and 3 that introduces the topic, literature review and methodology of the research. Part 2 has chapter 4, 5, and 6 that gives an overview of the disaster management in Nepal and shares finding from the case studies. Part 3 comprises of chapter 7 and 8 which shares a comparative analysis of the case studies and conclusion the study. Each of the chapter outline are detailed in the following paragraphs.

Part-1

Chapter 1 Introduction

This chapter introduces the topic of the research, shares the research aim and research questions, the case study selection process and a brief methodology for the study.

Chapter 2 Literature Review

The second chapter does a desktop study of various literature available online and in hard copies to develop understanding of the recovery process in relation to the private sector, what are the different frameworks available for such studies and in the end, develops a conceptual model for the study.

Chapter 3 Methodology

This chapter details out the methods followed in the study and how various field data is analysed and validation of the data collected.

Part-2

Chapter 4 Disaster Management in Nepal

This chapter gives an overview of the disaster management setup in Nepal. In addition, it reviews various private sector policies, 2015 Post Disaster Needs Assessment and recovery framework in relation to the formal and informal private sector in Nepal.

Chapter 5 Formal Businesses in Balaju Industrial District and Patan Industrial Estate

This chapter presents the case of Balaju and Patan Industrial areas in Kathmandu and Lalitpur respectively as a formal sector.

Chapter 6 Informal Businesses in Bungamati

This chapter presents the case of Bungamati, a traditional Newari village engaged in wood carving, metal carving and other household businesses as an informal sector.

Part-3

Chapter 7 Comparative and Combined Analysis of Case Studies

The findings from the formal and informal businesses case studies are discussed in detail and parallels are drawn to other disaster recovery cases.

Chapter 8 Conclusions and Recommendations

This chapter concludes the study and based on the discussion in the previous chapter, this chapter makes recommendation for formal and informal private business recovery.
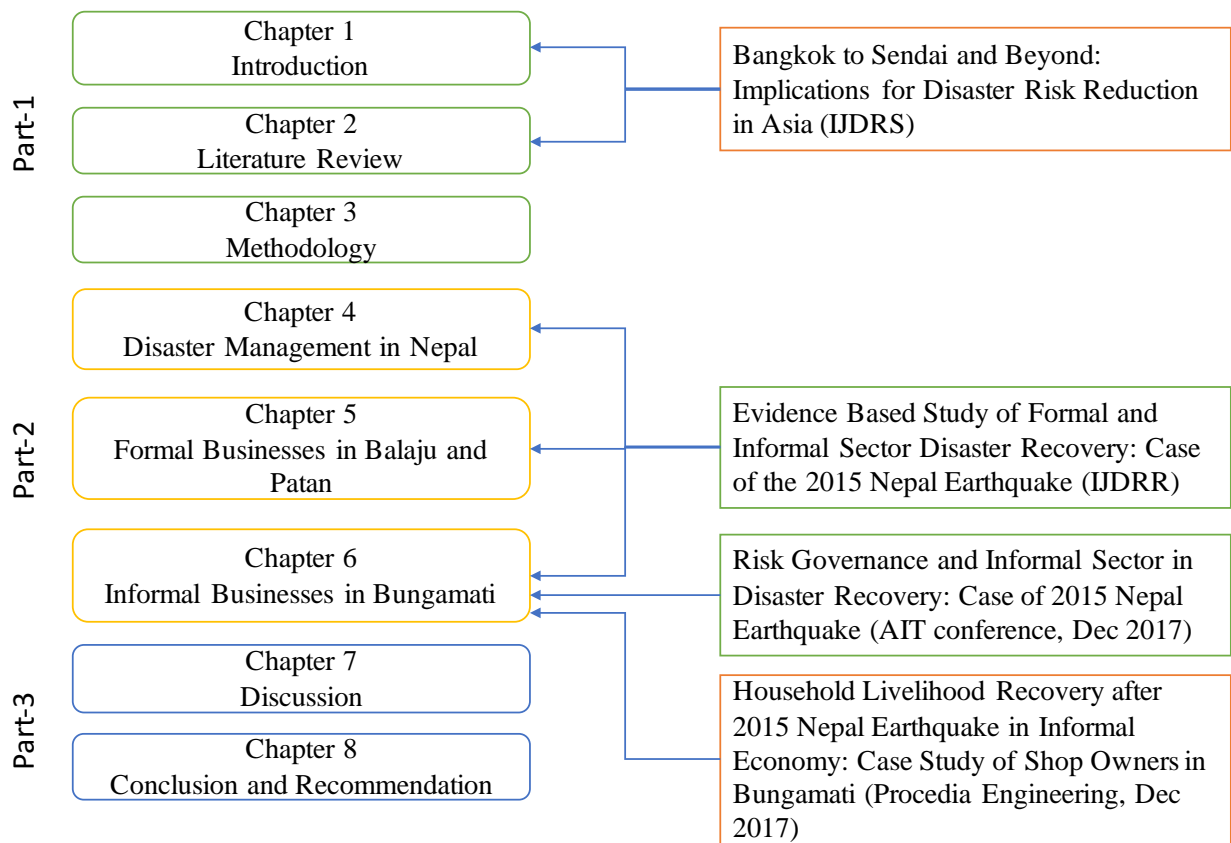
Figure-1.6 Chapter outline of the Thesis

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Chapter 2

Literature Review

This chapter reviews the available literature on disaster impact on businesses, disaster recovery, and business recovery. The literature on disaster recovery are broadly categorized under two heads; 1. Theoretical; 2. Learning from case studies. The theoretical section tries to develop theoretical understanding based on conceptual models and theories. The later section develops understanding of issues with formal and informal business recovery from various disaster case studies. An analysis of both types of literature leads to the creation of a conceptual understanding of this study.

2.1 Theoretical understanding

This section reviews various literature on disaster recovery, private sector, formal and informal sector to develop conceptual understanding.

2.1.1 Terminologies

This section defines four terminologies used extensively in the thesis. This is done to develop a common understanding of the terminologies used henceforth.

Private sector

The OECD definition of the private sector, includes "private corporations, households and non-profit institutions serving households (OECD, 2001).

Business

Business or enterprise is a term in the commercial world used to describe a project or venture undertaken for gain or with a profit motive (OECD, 2001).

Formal sector

The formal sector as described in Pena (2013) are the ones who abide by the labour market regulations, have higher wages and higher worker productivity. The workers are more educated, have access to social protection and higher job stability.

Informal sector

The International Labour Organization (ILO) in the early 1970s (XVth Convention) defined informal sector comprising of units in the household sector, and are unincorporated enterprises or do not hold a complete set of accounts, including; Units - registered or not - without permanent employees. Or units with permanent employees and which are alternatively simultaneously unregistered units, units which do not register their permanent employees, units

which employ on a permanent basis less than a given number of persons. Further, it has two main divisions, family enterprises and micro enterprises (ILO, 2004).

2.1.2 Disaster recovery

Disaster recovery is an opportunity to build capacities and alter physical development (Rubin, 1985) and past recovery experiences across societies and culture demonstrate varying effectiveness and rationality (Quarantelli, 1984). Campaenella (2006) finds recovery is not only about rebuilding, but also connecting families, social networks of those who survived the event. The Recovery process has three main drivers; 1. Rapid return to normalcy; 2. Increase safety; 3. Improve community (Mileti, 1999). Hegenbarth et al. (1985) in their report share that there is a strong drive for the business to return to pre-disaster state. While Comerio (2005); Chang and Rose, (2012) suggest that recovery process may lead to a new stable state distinct from the pre-disaster state. Adding to these, Olshansky (2006) share that disaster recovery has no definite state and depends on the decision-making process.

Hass et al. (1977) established that disaster recovery is ordered, knowable and predictable. The recovery activities can be categorized under four heads, namely, emergency response, restoration of public services, replacement or reconstruction of capital and initiation of development. Contrary to this, recovery has been portrayed as an uncertain, nonlinear, conflicting process where outcomes are influenced by social disparities, decision making, and institutional capacities (Berke et al., 1993; Bolin, 1993; Bolin and Bolton, 1986; Mileti, 1999; Rubin and Popkin, 1990, Quarantelli, 1989; Schwab, 1998; Rubin et al.1985; Stuphen, 1983). Berke and Beatley (1997) studied the recovery from Hurricane Gilbert and Hugo in Caribbean island and share that the stages described by Hass et al (1977) in real time situation overlap with each other and a top down approach do not address the real need of the community. Fujieda et al. (2004) suggest the presence of strong community organizations and social capital leads to faster recovery. There is no established and ready-to-utilise integrated policy framework or readily available tools to improve disaster recovery outcomes (Berke et al., 1993; Mileti, 1999).

2.1.3 Direct and indirect impact of disaster on businesses

Disaster loss data are important for making effective recovery policies and through these policies, different communities with varied level of disaster impact can be targeted to make the recovery process effective. The first step to achieve this is to consider availability and accuracy

of disaster loss data, which is important to identify and prioritize recovery actions. Downton and Pielke (2005) suggest that many of the disaster losses are intangible and vary over spatial and temporal scale. This highlights the need to work with disaggregated data while making recovery policies rather than aggregated data which might distinguish the highly damaged from not so damaged ones.

The immediate consequence of a disaster is its impact on the life and property. Zapata-Marti (1997) categorizes disaster impacts into two types; direct and indirect. Where the direct damages include damage to fixed assets, capital and inventories of finished and semi-finished goods, raw materials and spare parts that occur simultaneously as a direct consequence of the natural phenomenon causing a disaster as well as expenditure on relief and emergency response. This classification restricts direct damage to mainly physical and economic damage and loss. While the Indirect damages or flow losses include all losses that are not provoked by the disaster itself, but by its consequences leading to a disruption in the flows of goods that will not be produced and services that will not be provided after a disaster. This results in increasing operational cost and incur additional cost for alternate methods of productions due to personal loss of income and livelihood.

Direct Loss
Complete or partial damage of immovable assets and Stock

Indirect Loss
Business interruptions as consequence of direct loss or due to impact on supply chain, client, leading to reduction in production and revenue

Wider Impacts
Loss of market, higher competitions, labour shortage, insurance, impact on reputation
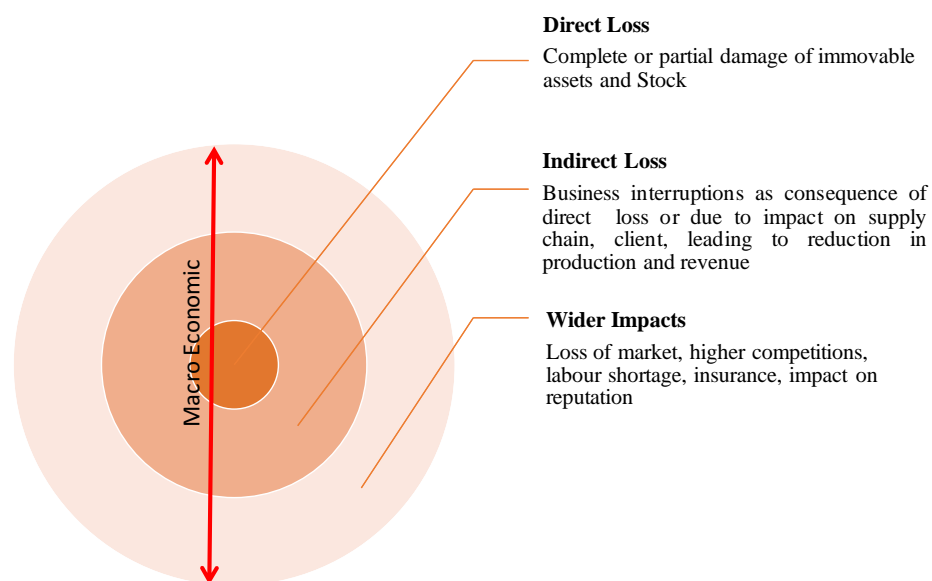
Figure 2.1 Types of impacts of disaster on businesses

(Source: adopted from GAR, 2013)

In addition to this GAR (2013) suggests that disaster has wider impacts on the businesses through loss of labour, clients, rise in the cost of commodities among others. The impact of a disaster on the macroeconomics is a cumulative effect of these three types of impacts (Figure

2.1). Hallegatee and Przyluski (2010) suggest that direct and indirect losses share a nonlinear relation based on their study on damage and loss caused by Typhoon Katrina in 2005.

2.1.4 Post disaster recovery of businesses

Olshansky (2006) opine that disaster recovery is about rebuilding lives and livelihood. Alesch et al. (2001) based on their study of Northridge earthquake suggest that businesses do not immediately fail after a disaster unless they were highly vulnerable before the disaster. Further, the owners have little idea on how to recover and mostly are reluctant to innovate, change their business operations, and seek new opportunities. In addition, the impact on customer, type of products, multiple units and locations and ability of the owner to adapt to the market change influences the recovery process. Berke et al. (1993) suggest recovery process is a complex socio-political process where multiple conflicting interests to keep rising and influencing the process. The report of the Natural Hazard Center (2005) state that local economic recovery is important for holistic disaster recovery. This can be done by making multiple financial resources available to the community specially for reconstruction and future development.

On the other hand, Mayunga (2007) suggests that the availability of income and property value (savings) could speed up the community's recovery process and stimulate economic activity. It would, however, not be expected to have a significant effect on business recovery. Marshall and Schrank (2014) in their small business disaster recovery framework suggest five phases of business recovery, namely; operating, non-operating, demised, survived, recovered or resilient. Tierney (1995) on her study on 1993 Midwest floods and 1994 Northridge Earthquake share that disaster have non -uniform effect on business and small scale business are most affected due to direct and indirect damage. Tierney and Nigg (1995) suggest various lifeline services impacts the recovery of businesses. They further found that electricity is the most important services for businesses.

Presence of hazard insurance is limited among the businesses and owners use personal savings to offset their losses. Since the Indian Ocean Tsunami in 2004, donors have become aware that post-disaster recovery strategies should increasingly address the need for rehabilitation of local economic activities that have been destroyed or displaced if the affected are to reach levels of self-sustainment in as short a time as possible. But until very recently, only very little academic research has been done in this field, prompting leading international agencies such as the International Federation of Red Cross and Red Crescent Societies (IFRC), the United Nations Development Programme (UNDP), and the World Bank (WB) to proclaim the urgent

need to address the shift in post-disaster management from emergency relief to sustainable livelihood recovery. Documented case studies and lessons to be learnt are still limited to developing any meaningful best practices.

In continuity with researches on more general business risk factors, it is observed that the post disaster recovery outcomes also differ according to economic sectors (Rodriguez et al., 2007). Businesses in the wholesale and retail/trading sectors seem particularly vulnerable to disaster, no doubt owing in part to the high competitiveness and normally high rates of business failure and turnover within the sector. Construction-related businesses tend to enjoy higher revenues in the aftermath of disaster even though these effects may be short-lived. With respect to post-disaster recovery, it is important to point out that recovery processes and outcomes are affected not only by the direct physical impacts a business experiences at the time of the disaster, but also by the ways in which the disaster create a longer-term problem for business owner. These problems can include extended periods of business interruption, difficulties in supplies and receiving products/ raw materials, a decline in revenue due to loss of customers, closure/displacement of support services (banks, lenders, etc.), and other operational problems (Tierney, 2007).

Many business losses stem directly from damage and loss of capacity in the lifeline system, Which includes transport lifelines (Rodriguez et al., 2007). Lifeline disruption involves the interruption of essential, external services critical for business operations, such as communication services, electricity, fuel, natural gas, transport, water, and the sewage system. As business operations are heavily dependent on electric power and/or natural gas and telephone services, the loss of these services in disaster situations plays an important role in predicting economic losses or even business relocation or closure (Tierney, 2007); firms may be forced to close down for extended periods of time if they lack critical power supplies or access to natural gas, and businesses may lose suppliers or buyers as a result of power outages in impacted areas (Rodriguez et al., 2007).

2.1.5 Time is an important factor of the recovery process

Time is an important factor of the recovery process. Bruneau et al (2003) has stressed on time to recovery as a measure of community resilience along with other factors. Various studies have emphasized on time of recovery or speed of recovery in the past (Mileti, 1999; Olhansky et al.; 2012 Olhansky, 2006). Past government recovery frameworks have often been divided into short, medium and long-term recovery. Scholars like Anderson and Woodrow (1989) have

pointed out that most recovery revolves around short-term engagement with limited long-term impacts. Berke and Campanella (2006) shares the role of a disaster recovery plan is to provide vision and direction for short term actions and aim for long term resiliency with support from strong facts and policies. They stress on flexibility and adaptability as important characters of a recovery plan. Godschalk and Brower (1985) opine that post disaster mitigation should consider rebuilding houses, business and infrastructure. Comerio (1998) share such recovery must be concluded within first 2 years of a disaster with enough financial support for the economic sector. Rose and Krausmann (2013) suggest business performance is most crucial to economic recovery in the initial phase of a recovery. The studies following the 1994 Northridge earthquake showed that within a time span of 18 months after a disaster most businesses do at least return to pre-disaster levels of economic functioning. Xiao and Zandt (2012)) have studied linkages between households and businesses after 2008's Hurricane Ike affecting Texas. The findings imply that reopening of businesses can significantly influence household decision to return to their homes and directly reflects on the resilience of the affected community. On similar lines (Winter et al., Marshall and Schrank, 2014) argues that opening or closing of businesses does not correlate to resilience or recovery, but is an event in the part of the recovery process and this might be influenced by other factors such as death, decisions and other factors as part of the business owner's household. The Natural Hazard Center (2005) share recovery time is an important aspect of keeping businesses alive and acting quickly in the post disaster situation can prevent people from rebuilding on their own. From the above discussion, it can be inferred that both restarting time and recovery time are two important aspects of disaster recovery process.

2.1.6 Business recovery and household recovery

Chang and Miles (2004) considered household as the smallest unit of the society and proposed a comprehensive disaster recovery model that included household economic variables as a means of assessing household recovery from disaster and its connections to lifelines, neighbourhood, business and community. A shortcoming of Chang and Miles (2004) findings was that social capital was not addressed in this study. Hence it is not possible to know what confounding impact social capital may have had on the pre-disaster household characteristics and on post-disaster household recovery. Other studies on household recovery focused primarily on socioeconomic and housing issues (Marshall and Schrank, 2014). Nigg (1995) suggested four broad factors that affect household recovery: extended family, socio-economic

status, race and ethnicity, and location (urban vs. rural). But this study did not consider the peri urban areas where most of the businesses are located in the present time. These fringe areas become a link for connecting the rural and urban areas and as result show both charters. The socio-economic factor which directs the household recovery is related to the income and livelihood of the household. It is important to note that not necessarily all livelihood generates incomes. Chambers and Conway (1991) defines livelihood as "capabilities, assets (including both material and social resources) and activities required for a means of living". While Ellis (1998) elaborates, that livelihood comprises of both incomes in cash and in kind. As a result, it can be said that household recovery is dependent on assets and capacities present within the household. This further link it to the circular income flow of the household and business. Marshall and Schrank (2014) suggest that other than the model developed by Chang and coauthors, no conceptual or research models of the recovery process at the household level were found in the literature.

Nigg (1995) suggests that family and business community have lots of commonalities based on size, income, social networks, access to resources among others. She further links business failures to neighbourhood impact and overall societal impacts. Runyan (2006) suggests households owning farms and non-farm enterprises are struck twice, once at household level and then in their livelihood. In context of disaster recovery, Raymond et al. (1988) suggest that, government creates a window of opportunity for household and businesses. But on the other hand, Haas et al., (1977) shares that if building stock is limited then marginal businesses and low income families face difficulty in recovering.

Among low income households there is a growing trend to rely on multiple income sources which necessitates to widen the scope of circular income flow. Rakodi (1999) suggests at household level, the assets available are a superset of capitals which can be used to create income or other benefits for the household. Further, she discusses four strategies to cope with impoverishment. First, by increasing resources usage, second, change the quantity of human capital, human capital, third, drawing on stocks of social capital and lastly, by limiting a decline in consumption. It can be inferred that at the basic level, household and livelihood are connected by the circular income flow where households provide labour, land and capital and in return gets wage, income and goods and services.

2.1.7 Governance and disaster recovery

"Disaster governance consists of the interrelated sets of norms, organizational and institutional actors, and practices (spanning pre-disaster, trans-disaster, and post-disaster periods) that are designed to reduce the impacts and losses associated with disasters arising from natural and technological agents and from intentional acts of terrorism" Tierney (2012). While UNESCAP (2009) extends the definition to implementation of the decisions made. This is an important aspect of disaster recovery frameworks to consider its operationalization as an integral part of the planning process. Further, eight factors have been identified in the report for good governance such as participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follow the rule of law. (Holly et al. 2011) defines risk governance as an innovative and accountable approach that needs to be flexible, adaptive, and learning- based. Mileti (1999) argues that recovery is hindered by the poor design of development strategies implemented by the policy makers, while at the same time establishing that local networks, increased capability and consensus, a holistic government framework.

Becker (2004) comments that informality point at lack of good governance. Short term recovery actions can have long term implications for resilience building. The role of the government, both local and national is of utmost importance in recovery in directing other agencies and external resources for effective planning, coordination and implementation. Minnesota disaster recovery handbook suggest the government and private sector are mutually dependent. In the context of the 2004 Indian Ocean Tsunami government policies for land use and recovery were found to have a negative impact on the livelihood of the coastal community (Oxfam 2005; Chamy and Martin, 2005; Harris, 2005). Rose and Krasuuamn (2013) advocates that government at various levels plays a key role in economic recovery.

Governance has to bear on the socio-economic vulnerabilities and exposure of the community to a hazard (UNISDR, 2011). Tierney (2012), suggests disaster governance spans across pre-disaster, trans-disaster, and post-disaster periods. Jha and Stanton-Geddes (2013) call for considering long-term invisible risks under the realm of disaster governance. Government is one of the many stakeholders in governance where NGOs, academia, private sector and community equally share the responsibility. Though disaster governance is multi-stakeholder at the same time requires government approval as a result making the government accountable directly or indirectly (Lassa, 2013). Further, the author suggests harmonizing both formal institutions (laws, regulations, policy) and informal institutions (norms, culture, customs) and

highlights the need to be inclusive. Taking a cue, this article does not limit itself to the role of government to understand governance and disaster recovery, but considers the role of government central to the recovery process and in connecting the other stakeholders.

In poor countries, primary and systemic limitations, like ineffective governments, inequality, and resource crunch and trust issues, particularly at local levels hinder effective disaster governance (Djalante et al. 2011; Li et al. 2013). Nepal has struggled to move from political instability to a stable, democratic government, which could boost their economy. Gall et al. (2014) point out three challenges for disaster governance as access, need to shift from monocentric to polycentric approach and clear role and responsibilities. In the context of the informal sector, the access is limited in Nepal as there is no record of the informal sector and hence they do not become part of the government's disaster management initiatives. Further, due to the nonexistence of local political representation the community voices are not represented. It has been a monocentric approach for disaster management in Nepal, where the government is solely responsible. In addition, as line agencies are linked in for disaster management there is overlapping of roles and responsibilities.

In the pre-earthquake situation, there have been various policies for disaster risk reduction in Nepal but implementation has been a major challenge for the government. The Building codes were enforced in 2003 and put the municipal authorities in charge of the enforcement. The codes envision different codes for rural and urban areas which would require trained human resources to support such a drive. Chamlagain (2009) and Jones et al. (2014) highlights that though there has been hazard mapping and vulnerability assessments done mainly in the urban areas, but findings have not been integrated with development plans. Further, they underline the shortage of human resource, lack of disaster-specific plans and dependency of the local authorities on NGOs and INGOs for training and capacity building. Further, Jones et al. (2014) question the legitimacy of NGOs in Nepal for disaster risk governance as most of the aid flow is for developmental needs rather than humanitarian need and there are issues of transparency. Policy/Institutional Support for DRM was done by the Ministry of Home Affairs and United Nations Development Programme (UNDP). Under this, training of masons, setting up of Disaster risk management focal points, mainstreaming of land use planning and building codes were done.

2.1.8 Formal and informal businesses and disaster recovery

The definition of formal and informal sector has already been shared in chapter 1. This section discusses the characteristic features of formal and informal sector. Further, reviewing the limited number of case studies focusing on formal or informal sector disaster recovery supports the student in developing insight of their recovery process and challenges. This is reflected in Chang and Rose (2009) comments that there is sparse literature on economic recovery linking it with the recovery of households, institutions, and informal sector leading to overall community recovery. In the literature, three different ways of addressing the formal and informal sector has been found; Dualists, Structuralists and Legalists (ILO 1972; Castells and Portes 1989; De Soto). While the first treat the formal and informal economy as clearly demarcated the other two considers them to be linked. This study goes with dualist approach and looks at formal and informal sector as two distinct entities without dwelling in to understand their linkages. Table 2.1 lists out characteristic differences in formal and informal sector.

Table 2.1 Characteristic differences in the formal and informal sector

Formal sector	Informal sector
Formal contract, Regularity of employment, Fixed wage rate, Fixed working hours, Legal provisions of protection	Verbal contract, Irregular employment, Uncertain wage rates – Low income, Long & uncertain working hours, no legal provision of protection

(Source: ILO, 2004)

A formal sector is a rule abiding business. Most of the studies focusing on the private sector are in the formal sector due to availability of statistical data or the ease of collecting data. The first mention of the informal sector was made by the International Labour Organization (ILO) in its Kenya Mission Report, which defined informality as a "way of doing things characterized by (a) ease of entry; (b) reliance on indigenous resources; (c) family ownership; (d) small scale operations; (e) labour intensive and adaptive technology; (e) skills acquired outside of the formal sector; (g) unregulated and competitive markets". Becker (2004) suggests that the informal sector is an outcome of the incapacity of the formal sector to employee surplus labour force. Further, she shares weak institutions, cheap goods and services, lack of government awareness aid their growth. At an individual level, an Informal sector is an outcome of two reasons; 1. Survival strategy for the low-income households who have limited educational skill

and want to increase the household income. 2. A rational choice of maximizing the profit by not paying taxes.

Carson (1990) assimilates the concepts of limited proactivity and personal management to elucidate how SME's marketing strategies are often influenced direct involvement of the owner-manager and his or her intuitive ideas and decisions making process. Further Ansoff Marketing Matrix shows the various strategies taken up by businesses to approach new market or product and ultimately leading to diversification of business (Figure 2.2). There are possible outcomes of this change and every outcome is linked with risk of failure where continuing with the product without making any change has lowest risk while diversifying after a disaster has the highest risk associated.
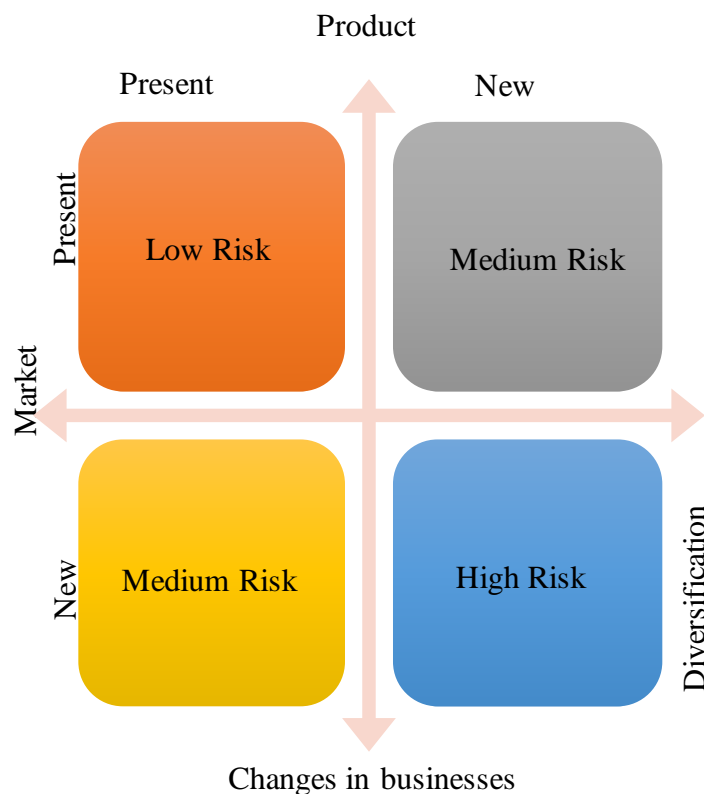
Figure 2.2 Ansoff product market matrix

(Source: Ansoff, 1965 modified by the Author)

2.2 Role of assets in disaster impact and recovery

Moser (1997) suggests assets as a households' mechanism to mitigate the impact of a disaster. On similar lines, Vatsa (2004) mentions the availability and access to assets across various income groups in the society as an important factor for differential disaster recovery. A change

in asset usage leads to change in the relative vulnerability. As a result, the damage to an asset is directly linked to the increase in vulnerability of an entity or a system.

Assets are an integral part of livelihood and changes are made in asset to cope with stress or shocks (Rakodi, 1999). The asset transformation in disasters happens by various means like storing and accumulation, exchanged or depleted and put to work to generate a flow of income or other benefits for the individual or the community depending on the nature and unit of study. The various types of assets identified are natural, physical, social, human, economic and cultural (Siegel and Alwang, 2000; Sebstad and Cohen, 1999). Each of these assets has various dimensions which are listed in table 2.2.

Table 2.2 Classification of assets

Type of Assets	Dimensions
Natural assets	Forests, fisheries, water, agriculture land
Economic assets	Cash, savings, loans and gifts, regular remittances or pensions, other financial instruments
Physical assets	Building, equipment, raw material, finished goods
Human assets	Skills and knowledge, labour, good health, bargaining power, autonomy, decision making
Social assets	Social networks, memberships, access to wider institutions of society
Cultural assets	Respect, a relationship of trust, marriage related physical asset gains

(Source: Based on Siegel and Alwang, 2000; Sebstad and Cohen, 1999 and modified by Author)
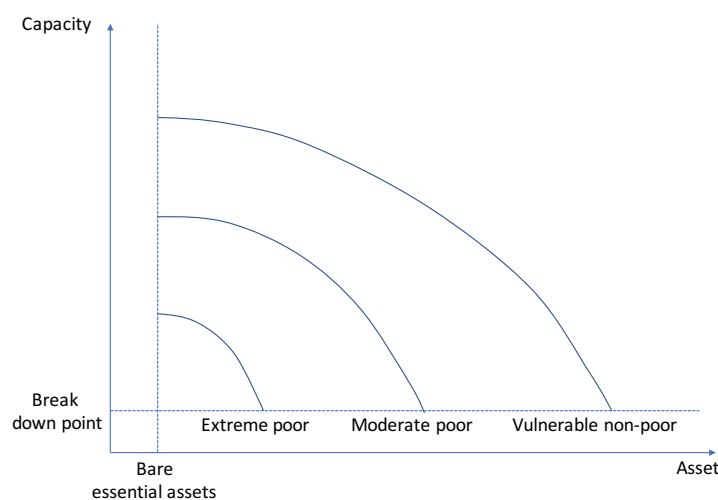
Figure 2.3 Relation between capacity and assets

(Source: adopted from USAID report, 2000)

USAID in their study of assets at household level shares that availability of assets contributes to a higher capacity to mitigate the impact of a disaster (USAID report, 2000). They further categorize three different levels of household based on the assets as shown in figure 2.3. This concept is useful to study the formal and informal businesses where the disaster leads to impact on the assets present. As a result of this impact on the business, the capacity falls to a point called breakdown point which is synonymous to business disruption. At this point, the asset usage and availability goes down to a bare minimum level. This can be in terms of not investment capital, but also availability of space, customers, raw materials among others.

2.3 Learnings from case studies

This section discusses various case studies of past disaster in relation to the formal and informal business recovery. The case studies considered here are from 2004 Indian Ocean Tsunami, 2005 Typhoon Katrina, 2010 Pakistan floods, 2011, East Japan earthquake and Tsunami and 2011 Canterbury Earthquake.

2.3.1 Indian Ocean Tsunami, 2004

Case-1
The case studies discussed in this section are focused on small family business firms producing coir fibre in southeastern part of Sri Lanka after the 2004 Indian Ocean Tsunami. The study suggests growth as an important factor for survival of a small-scale enterprise. Further, they elaborate growth as a factor of business owner's background, nature and environment of the business, decisions taken, and market and labour conditions. The findings suggest all firms were affected directly or indirectly and assets influence business recovery (fewer assets aid faster recovery). Post Tsunami, banks were less willing to give loans to partially affected firms. The recovery aid created an unbalance in the market by increasing supply and lowering the demand. Further, food, medicine and housing had greater impact on household, business recovery than the condition of infrastructure and communication. The international donors played an important role in the business recovery process, but lacked interagency coordination leading to duplication. The study concluded that good governance and social capital are important for family business recovery.

Case-2

This case study is focused on the recovery of the informal tourism sector in the backdrop of the 2004 Indian Ocean Tsunami in Sri Lanka. The damage percolated down to the secondary and ancillary sectors servicing the tourism sector. The study reports that the assessment did not consider the damage and loss to ancillary sector and hence the assessment did not give the exact extent of the damage. The informal sector in order to evade tax did not keep any record of the business transactions leading to difficulties in knowing per disaster conditions and hence establishing recovery benchmarks.

The recovery of tourism sector was the focus of the recovery plan. Post disaster, debris clearance was immediately followed by entrepreneur support by providing tools and supplies to restart businesses including local grocery stores. Formal training of entrepreneurs was provided on food and beverage service, management and housekeeping based on training needs assessment. Further the author documents innovation and diversification of businesses in the affected area as a means of increasing household income. This was diversification was supported by the government. But on the other hand, local governance and community participation as over looked leading by establishing a central command and control of recovery agency. Further the policy gaps lead to reconstruction illegal constructions and loss of livelihood.

Case-3

This case study discusses the formal and informal reef tourism resilience in Phuket, Thailand. Though it is not directly based on the recovery process following a disaster but draws heavily from the 2004 Indian Ocean Tsunami and 2008 political instability experience to compare the formal and informal sector's resilience. Various contributing factors are studied such as financial condition, social capital, government support, lifestyle benefit, crisis management perception. The findings state significant differences between the formal and informal sector enterprises in factors associated with resilience. For instance, the informal sector is more prepared than the formal sector to face a disaster event due to higher social capital and lifestyle benefit. The three most common strategies for the formal sector were cost cutting, strengthen marketing and downsizing. While for the informal sector, downsizing, shifting jobs to secondary source and additional loan were the strategies. The informal sector has higher amount of support from friends and families. The study finds significance difference in the customer base and capacity to promote businesses. While the informal sector is limited to local tourist, but the largest enterprises can have access to the international market easily.

2.3.2 Hurricane Katrina, 2005

This study focuses on business recovery at individual level in New Orleans after the 2005 Hurricane Katrina mainly involving the formal sector. Instances of wide spread staff loss and labour shortage was stated as a direct impact of the disaster. The findings share that short and long term planning had no significant impact on recovery. Further the size of the business does not affect the organizational performance in disaster other than the large firms have more financial capital. The paper further highlights the influence of the type of industry, local population and physical damage on the organization performance in the post disaster condition. The construction, retail and wholesale sector performed better in comparison to the other sectors.

2.3.3 Pakistan Floods, 2010

This study is conducted after 6 months in 3 provinces of Pakistan affected by 2010 floods involving small businesses. Business recovery is dependent on internal and external factors. The internal factors are type, size, risk mitigation, physical damage and business continuity planning, and ties. While external factors are mainly related to social and institutional support. The findings show the business took one week to 35 weeks to due to both direct and indirect impacts of the flood. The majority remained closed for 3 months and while 1 in 10 businesses had closed. There was limited insurance coverage among the small-scale enterprises due to non-availability of schemes and most businesses restarted on their own. The author highlight that most of these small enterprises use traditional tools and hence their dependency on electricity and water is limited. The major reason for the loss was due to inaccessibility of the business facility. The authors suggest that recovery is dependent on the local market and settlement and the reopening of the business is a survival strategy. The NGO and Government aid had no significant impact on restarting of the business as they focus more on household recovery and limited advice was given to the business owner for recovery. There was no significant relation to owners age, educational background, gender with recovery, but social capital played an important role in recovery.

2.3.4 Christchurch Earthquake, 2011

The Christchurch earthquake of 2011 caused physical, social and economic damage to the central business district in Christchurch. This study was conducted within first 15 months of the earthquake. The scholarship does not mention details of the type of business. The study

shares issues such as risk of capital flight from the local areas, issues with insurance payouts and social dislocation of communities and possible impact of new building codes on recovery. The establishment of recovery agency early in the recovery phase is considered a crucial decision which leads to a positive impact on the recovery. The study highlights the importance of restarting market away from the affected area and the importance of the restarting grocery store for community recovery.

2.3.5 East Japan Earthquake and Tsunami, 2011

This study is conducted in the Tohoku region of Japan to understand the impact of 2011 East Japan Earthquake and Tsunami which caused a direct damage of 221 billion US Dollars. The business in Japan belongs to the formal sector, but only a small fraction of the damages was covered by the insurance. The author share that both primary and secondary sectors were affected and it is difficult to estimate the exact indirect loss from a disaster. The majority of the 656 businesses who declared bankruptcy following the disaster were indirectly affected by the loss of market demand. The manufacturing sector was mainly affected by physical damage to the production unit, transportation and lifeline services. The transportation sector was the first to recover due to the recovery of the small business forming the base of supply chain. The retail sector was affected within the impact area and outside as well due to controlled expenditure exercised by the consumers, but large retail companies recovered within 2 months of the disaster. The central government in order to reconstruct infrastructure and recovery changed the taxation policy and revised other financial policies as a result transferring the recovery to the citizens and from government bonds.

2.4 Developing a conceptual understanding of the study

This section debates emerging topics from various literature reviews discussed above to create a conceptual understanding of this study and decide on the methodology of the study.

From the above literature, it can fair to agree to Rubin et al. That recovery is a complex process with no end point and no agreement on the process of achieving successful outcomes, but one can only strive to better the process by enhancing the speed and quality. Ohlansky (2005) suggest a post disaster recovery is not a rational process and hence for studying the community recovery process, the most effective way is by adopting a qualitative case study approach. Further, Rubin et al. (1985); Frisema et al., (1979) observe that recovery process is difficult to

measure with quantitative data due to unavailability of timeline based data and trends were more indirect without showing any clear indicators.

To study the recovery, process this study assumes that every business has pre-disaster assets which are affected by the disaster. The impact of the disaster is either direct or indirect. The direct impact is mainly in terms of physical damage to property and equipment. The social damage can be in the form of life loss or injury and the economic loss is in terms of financial loss incurred due to damage to the property. The indirect losses in the private sector is more spread over time and can result from the closure of the unit, disruption in services, loss of raw materials, loss of client, change in policy, migration among others.

It is assumed that the goal of a business is to recover the losses incurred in the disaster. Post-disaster, a business can start immediately or may remain closed for some time and then restart the business. During this phase, there is utilization of assets which is a subset of the capacities which were present with the owner as well as new assets acquired from external aid. Following restarting of the businesses, various recovery trajectories can be taken up by the businesses as shown in figure 2.4. There are mainly four possible trajectories of the businesses after they restart. Trajectory A is the normal recovery curve without assistance, trajectory B is recovery curve with external assistance, trajectory C is recovery showing possible failure of business with external support and trajectory D is possible failure of business without external support. At the same time, individual businesses will vary based on their restarting time as shown in figure 2.5. As a result, there will be multiple recovery curves, but based on the aggregated value sectoral restarting and recovery curve can be analysed.
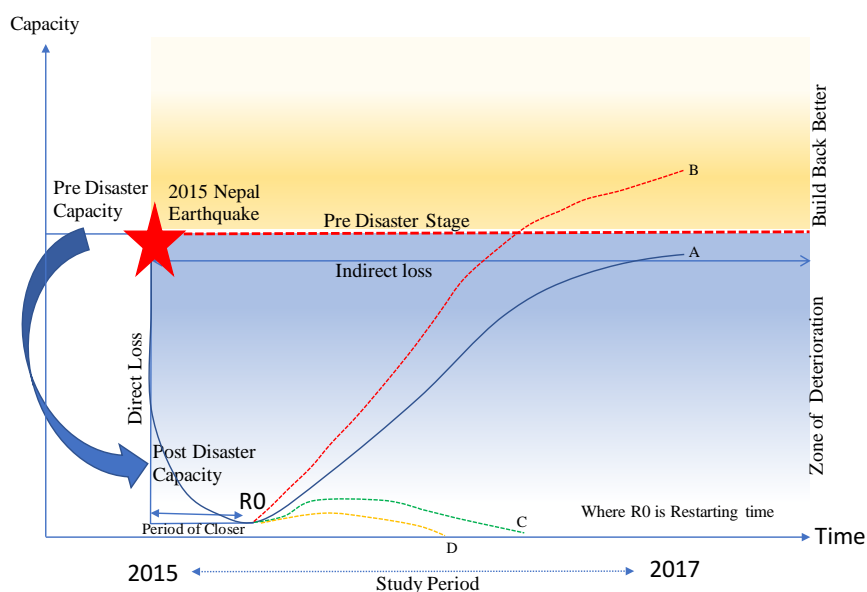
Figure 2.4 Conceptual model of recovery trajectory based on Business functioning

The private business recovery in the literature has been linked broadly to the character and scale of business, attributes of the owner and staff, external factors such as NGOs support, and government interventions. While on the other hand private business recovery has been linked to household recovery where household and business act as one single unit. There is a dearth of literature to see if this is applicable for both the formal and informal business. Combining Rakodi (1999) and Runyan (2006) a conceptual model linking household and businesses is used for this study (Figure 2.6).
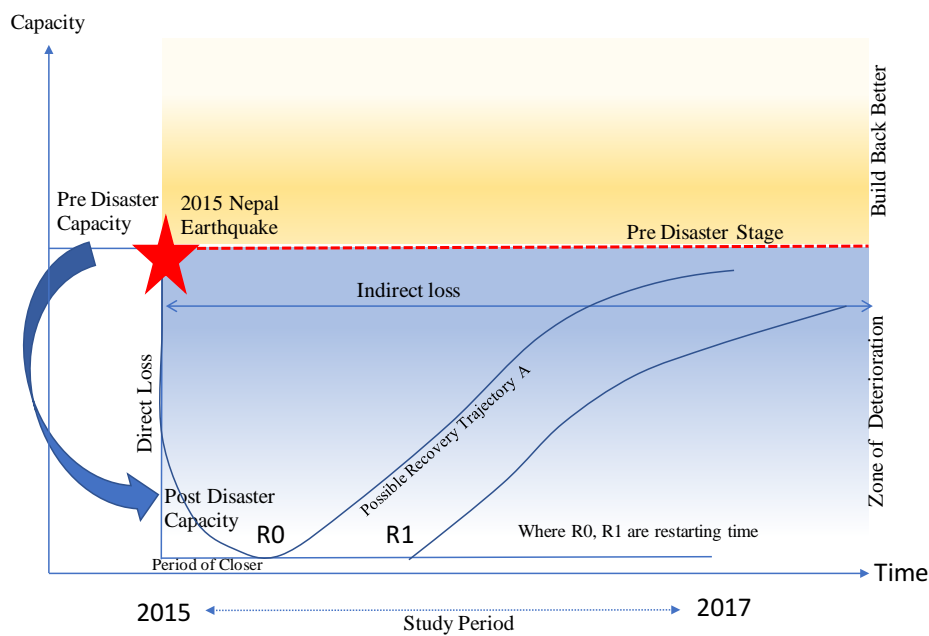
Figure 2.5 Conceptual model of recovery trajectory based on restarting time
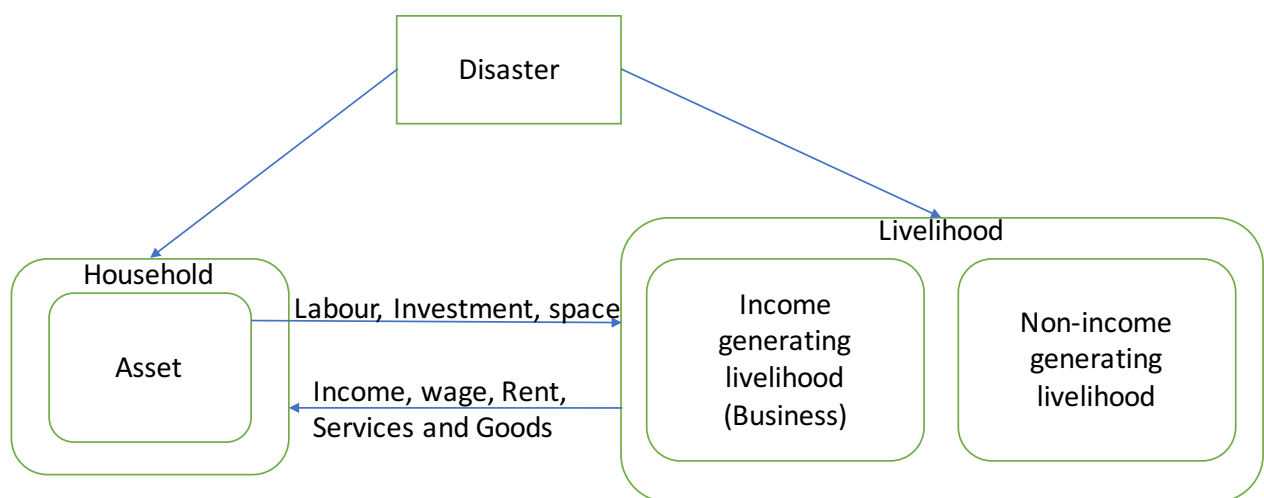
Figure 2.6 Conceptual model linking household and livelihood through asset and capital

In this figure, the household has different assets, as has been discussed in the earlier section. These assets (labour, investment, operational space) are used for generating livelihood and in return the business generates income and other goods and services for the household. In case of a disaster, the impact is on these assets at the household and business level, which stops the circular flow of income leading to business disruptions.

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Chapter 3

Methodology

This chapter deals with the methodology of the study and details the research design, various tools and techniques employed for collecting primary and secondary, data processing and subsequently analyzing the data. The later part of the chapter elaborates on the issues of data validation, limitations and ethical consideration made for this study.

3.1 Research design

A social science research can be of two board types, descriptive and explanatory where first try to document an ongoing process and later tries to explain why the process is going on. Research design refers mainly to the plan or proposal to conduct research, involves the intersection of philosophy, strategies of inquiry, and specific methods (Creswell, 2008). Considering the disaster recovery as a complex process, a single approach is not sufficient to encompass the complexity. Hence this study takes a combination of constructivism and pragmatic approach to understand the ongoing process of recovery among the private sector (formal and informal sector) and envisions to generate theory by engaging with multiple stakeholders and understanding their social and historical construct. While the pragmatic approach allows the study to focus on consequences of action and real world practices.
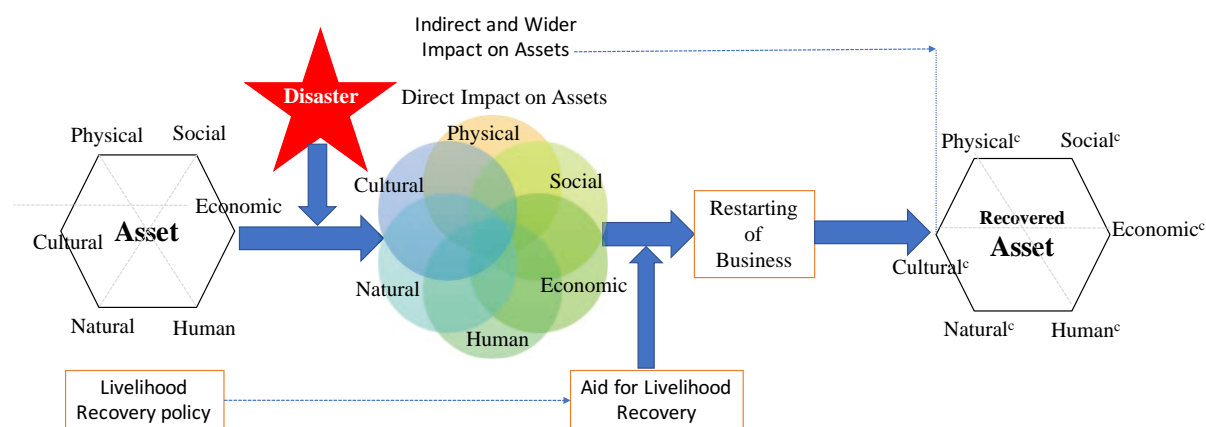
Figure 3.1 Conceptual research framework

The figure 3.1 elaborates the conceptual research framework for this study. This study considers the starting of recovery process right after the occurrence of the 2015 Nepal earthquake and studies the recovery process within the first 2 years. it is assumed that every business has assets which can be classified into six categories, namely; physical, social, economic, institutional, natural, cultural. In case of a disaster, these assets are impacted by a

either directly or indirectly or both. The direct impacts are mostly limited to physical, human and economic assets. The direct impact of this study relates to mainly physical and human assets. The economic damage was not considered as a part of this study as this would only give a rough estimate of the damages based on the owner's account. In Physical assets, building damage, equipment damage, damage to raw materials and finished goods are considered. While the indirect impact in the study is considered as distributed over the period of study and was studied for all the six types of assets. Considering that there is a lack of baseline data for studying the indirect impacts in case of the study areas, interviews are relied upon to understand the indirect impact of the 2015 earthquake on the businesses. This study considers the extent of indirect loss is linked to length of disruption which leads to production disturbance. As the length of the disruption is case specific hence, individual cases are taken to understand the reason for the disruption in businesses and what factors lead to it.

After the disaster, the pre-disaster assets which lies with the business is transformed to overcome the damage and leads to restarting of the businesses. These assets are in the form of insurance, savings, support from family and friends, availability of raw materials. Considering the Cottage, Small and Medium scale businesses are single owner driven, the restarting of businesses is critical decision taken by the owner based on his understanding of the market and available assets. In addition, external support from the government and humanitarian aid agencies adds physical and economic asset to the businesses. Whereas any policy changes would have possible positive or negative short and long term impacts on the recovery process of the businesses.

The restarting of the business is closely followed by transformation of the available assets of the owner to adapt to changing conditions and with a sense of steering the businesses towards recovery. The understanding of recovery is subjective based on the understanding of the owner and hence the strategies to cope by transforming the assets varies from one to the other. There are three possible asset conditions in the post disaster phase. Assets which are damaged by the disaster, assets which continue to be used as in pre-disaster and assets which are transformed to support the post disaster business functioning.

For the recovery time two cases are considered in this study, actual recovery time, which is for the business owners who reported to have recovered by the time of this study. While probable recovery time is a projected time, which is based on the estimation of the business owners. In both the cases it is the usage of assets combined with external support that leads to the recovery of the businesses.

3.2 Qualitative study

The overall research is a qualitative research with a case study approach. The reason for choosing this approach is because it facilitates investigation of a phenomenon within its context using a variety of data sources ensuring a holistic understanding of the actions and decision. Hancock et al. (2009) shares a qualitative research is related to rationalization of social phenomenon. He adds that such a study tends to focus on how individual or a group of individual approach a problem differently in real world context by considering their experiences as data. Further, he elaborates that this type of studies does not manipulate vary and is based on the description and interpretation leading to new concepts or evaluation of a process. As in case of this study, the main aim is to understand the process of recovery of the private business, the qualitative method is deemed suitable. Further, as there is a dearth of secondary literature relating this topic hence a flexible and systematic qualitative method is preferred over the quantitative method that needs to predefine the research process.

Qualitative research involves an interpretive, naturalistic approach to its subject matter; it attempts to make sense of, or to interpret, phenomena in terms of the meaning people bring to them (Denzin and Lincoln, 2003). According to Domegan and Fleming (2007), "Qualitative research aims to explore and to discover issues about the problem on hand, because very little is known about the problem. There is usually uncertainty about the dimensions and characteristics of the problem resulting in use 'soft' data to get 'rich' data. According to Myers (2009), qualitative research is designed to help researchers understand people, and the social and cultural contexts within which they live. Such studies allow the complexities and differences of worlds-under-study to be explored and represented (Philip, 1998). The research question at the start of qualitative study are mostly vague and as the study progressed the methods and questions are refined (Hancock et al., 2009). In this study as discussed in chapter 1 the study starts with a basic set of research questions and based on the first fieldwork in Nepal in January 2016. The questions are refined to the more specific topic based on the local context and availability of data. Following Creswell, (2008) suggestion this study employ an inductive style of analysis, a focus on individual meaning, and the importance of rendering the complexity of a situation.

The study considers an etic approach as was stated by pike (1971) to understand the business recovery process after a disaster. The present study involves both formal and informal business focusing on micro, small and medium scale businesses in an urban setup. From the literature

review, it can be said that there is limited systematic research in this area backing various policy decisions for the MSMEs and one of the reasons for this is lack of data (Ayyagari et al., 2005).

3.3 Case study method

A case study method a common approach among qualitative studies is considered appropriate for this study because case knowledge is central to human learning (Cragg, 1940). There are two types of case study method; one proposed by Robert Stake (1995) and second by Yin (2003). On the surface, both uphold the constructivism idea that truth is relative and is dependent on one's perspective (Baxter and Jack, 2008). Advantages of this approach being the close association of the researcher with the participant and supporting the participants' narratives (Crabtree and Miller, 1999; Lather, 1992; Rockbottom and Hart, 1993).

Yin (2003) suggests various ways of selecting a case study design; a. The focus of the study is to answer "**how" and "why**" questions; b. One has little control on the behaviour of those involved in the study; c. One tries to cover contextual conditions because you believe they are relevant to the phenomenon under study; and/or d. The boundaries are not clear between the phenomenon and context. Based on the above, it is relevant that a case study approach is taken up for studying the private sector recovery after the 2015 Nepal earthquake. In case of this study, the research questions are seeking answers for the "**how and why**" in the process of private business recovery. Further, there is little control of the various activities taken up by the stakeholders in their struggle for recovery. This study positions itself to understand the various activities happening in different planes, but has direct or indirect linkage to the private businesses' recovery process. The evidence based approach is selected based on the discussion in the earlier chapter, especially in context of the gaps mentioned by Adam and Krassuman, (2013). This character of this study makes it suitable for adopting a case study approach. Additionally, as outcomes of the recovery process is not definite and has been studied as a continuous process within the timeline of the research hence there is little knowledge of the boundaries. Lastly, there are not enough studies focusing on the private sector recovery, especially on the formal and informal sector's recovery in Asia or particularly in Nepal

For the overall research, a multiple case study approach is selected to compare the findings from the various cases selected for this study and supports replication of findings across cases or highlight contrast among the cases (Yin, 2003). To the limitation of generalization of case study research, Giddens (1984) elaborates that anthropological studies on small communities are not in them- selves generalizing studies. But they can easily become so if carried out in some numbers, so that judgements of their typicality can be justified. Considering the above,

this study considers two different categories of private sector; a. Formal businesses and b. Informal businesses. The cases selected for the study conform to either of them. As in disaster scholarship there is not enough studies focusing on the recovery process of these two sectors within the private sector. Based on the initial findings from the study areas, the Bungamati case was taken up for intrinsic case study. This done is accordance with Stake (1995) suggesting that researchers who have a genuine interest in the case should use an intrinsic approach when the intent is to better understand the case. Further, Bungamati case selection do not represents other cases in Nepal nor does it demonstrates a typical trait or problem. But because in all its particularity and ordinariness, the case itself is of interest to the researcher based on the initial findings linking the present recovery to 1934 earthquake recovery process.

3.3.1 Case selection and defining the study boundaries

The Balaju Industrial District (BID) and Patan Industrial Estate (PIE) are selected to study the formal business, while Bungamati is selected to study the informal business. The common criterion considered for the site selection initially are;1. Sites were severely damaged by the 2015 earthquake (Figure 3.2, 3.3, 3.4). 2. Sites were severely damaged in 1934 earthquake. 3. There is predominant presence of either formal or informal businesses. Sites with mixed type was not considered. The case study site selection was made based on 2015 earthquake reports and expert consultation in Januray 2016. Subsequent field visits were made in January 2016 to understand the sites better.

The BID and PIE and Bungamati provide contrasting cases where the first two are an Industrial area comprising manufacturing and service sector, while the Bungamati is a traditional settlement with presence of manufacturing, service and wholesale & retail sectors. The industries in the Balaju and Patan represents the formal sectors that are registered with the industrial development authority, whereas the shops and workshops in Bungamati are informal in nature fulfilling one or more criteria as discussed in chapter 2.

The study limits itself to the process of recovery within the first 2 years of the 2015 Nepal earthquake and do not tend to generalize the findings by comparing with other case studies of long term recovery in different countries and disaster context. Argument behind this is, every disaster varies widely in its local and national context and hence related vulnerabilities and capacities will be different across social, economic, institutional and physical context. The 2 years have been selected as a timeline for this study based on prior studies on business recovery by Tierney (1997) and Comerio (1998).

Figure 3.2 Damages to buildings in Balaju Area

(Source: Kaneko, 2015)

Figure 3.3 Damages to Patan Durbar Square near to Patan Industrial Estate

(Source: Caritas, 2015)

Figure 3.4 Damages to buildings in Bungamati

3.4 Primary data collection and sampling

In qualitative studies the researcher is considered the primary instrument of data collection and analysis. The researcher engages the situation, makes sense of the multiple interpretations, as multiple realities exist in any given context as both the researcher and the participants construct their own realities (Creswell, 2008).

Hancock et al. (2009) lists various methods generally followed in qualitative research. The following section details out the various data collection tools, their appropriateness for this study and how they are used in the field (Figure 3.5). The adequate sampling suggested Hancock et al. (2009) is dependent on reaching theoretical saturation as and when new cases does not contribute to the development of emerging theory.

3.4.1 Questionnaire survey

A questionnaire survey was conducted for 28,30,30 samples, respectively in Balaju, Patan and Bungamati to collect data on the type of disaster impact on the businesses. The sample size was decided as 30% of the total functional units. While in incase of Bungamati as there was no database of a number of shops, a rough estimate based on discussion with local people was made initially.

3.4.2 Semi-structured interviews

The "interview" is a managed verbal exchange (Ritchie & Lewis, 2003 and Gillham, 2000) and hence its success rely on the communication skills and contextual understanding of the interviewer. There are mainly three types of interview processes of qualitative research, namely; open ended, semi structured and structured interviews. A semi-structured interview is the most effective and commonly used as a qualitative data collection tool. The primary advantage of this kind of interviews is that they provide much more detailed information than what is available through other data collection methods.

In the context of Nepal, Dhakal (2010) suggests, from his work on the informal sector, that mixed household and shop surveys give a better insight into the informal sector functioning in Nepal. Considering this, open ended interviews in the first field work followed by semi-structured interviews with the business owners were directed to understand both the impact of the earthquake on the businesses and households and the kinds of strategies that were adopted to mitigate the impacts (Figure 3.6).
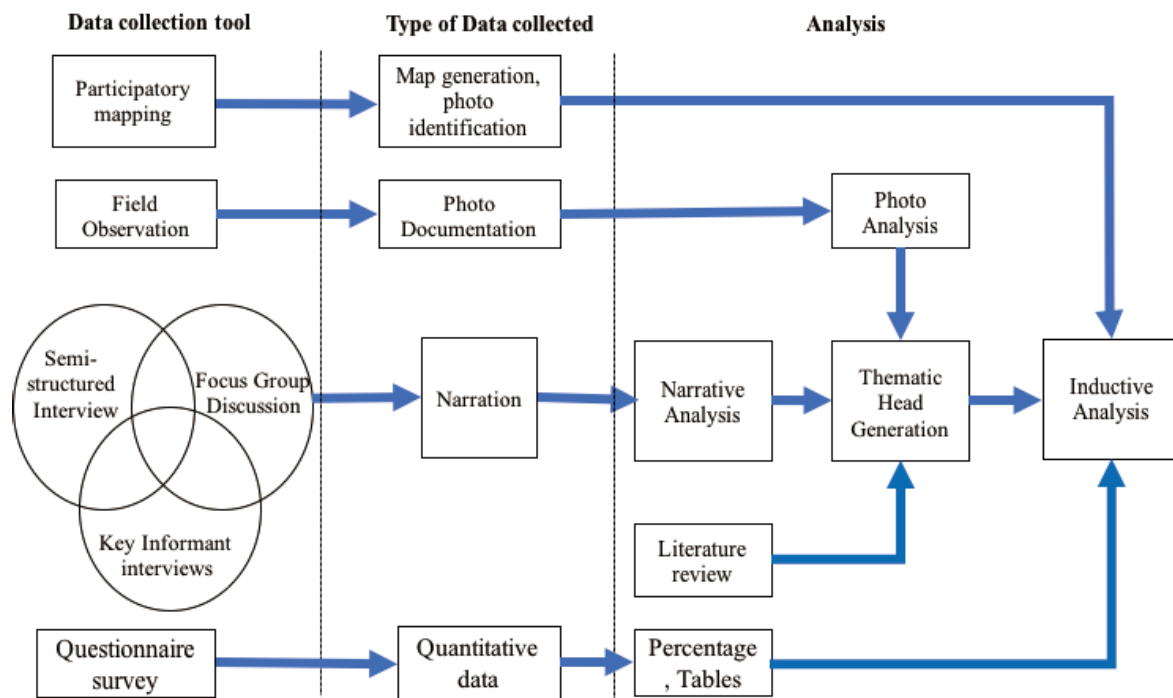
Figure 3.5 Types of data collection tools and data analysis methods

The change from open ended to semi structured interviews was done in order to facilitate covering factors which otherwise could have been missed out due to non-understanding of the local context. The interviews also gave insight into the kinds of problems involved in restarting the businesses and what the business owners' understanding of recovery is. A total of 82 shops/factory owner interviews, 24 of which were conducted in Bungamati (coded as H1, H2… H24.), 28 of which were conducted in Balaju, and 30 of which were conducted in Patan (coded B1.. B28, P1.. P30). To cover all types of industries/shops present in the study area, purposive random sampling was done.

Figure 3.6 Interviews with Shop owners and industry owners in Bungamati and Balaju

Additionally, in Bungamati, 8 interviews were conducted with people who survived the 1934 earthquake and 1 interview was conducted in Khokana to validate the data from interviews

conducted in Bungamati (Figure3.7). The people interviewed for documenting the 1934 earthquake were between age of 5 to 14 years at the time of the 1934 earthquake and had clear memory of the happenings and the recovery process. The interviews were conducted in Newari and was translated with the help of local youths who assisted with the interviews. The sampling was purposive as the respondents were selected based on the information provided by the village elders during the Focus Group Discussion (FGDs). The interviews are coded as (O1.. O2…. O9).

Furthermore, the industrial management office staff were interviewed in the Balaju and Patan Industrial areas to understand the overall picture of the damage and the recovery process. Seven Key informant interviews were done to gain deeper insights and validate data collected from the business owners. Three members of the National Reconstruction Authority were interviewed to understand the implementation of the recovery framework for the formal and the informal sectors and the current gaps. Interviews were conducted both with Balaju and Patan industrial, office management staff and by project staff of OXFAM GB and UN-Habitat, due to these people's active engagement with the recovery process. Each interview lasted between 20 to 45 minutes, on average, and involved questions on the nature of the damage to shops and households, restarting the shops, the recovery process, and changes to the households and livelihoods.

Figure 3.7 Interviews with survivors of 1934 earthquake in Bungamati and Khokana

The interviews are done face-to-face and the answers were recorded on a voice recorder and field notes were made during these interactions. As the author was not allowed to record the interviews in the Balaju and Patan Industrial offices, notes of these interviews were made. The interviews were mainly conducted in Hindi, which the author and most of the people in Bungamati can speak. In three cases, the interviews were conducted in the local Newari and Nepali languages; these were subsequently translated into Hindi by local youth volunteering for the study. All other interviews were conducted in English.

In addition to the above, one semi structured interview (D1) is done by the member of Danish architects' team member who visited Bungamati in 1968. Their perception and understanding of Bungamati is used as validation for the narratives collected from the local community.

3.4.3 Focused Group Discussion (FGDs)

A focus group discussion (FGD) is a good way to gather together people from similar backgrounds or experiences to discuss a specific topic of interest. FGDs can be used to explore the meanings of survey findings that cannot be explained statistically (Krueger, 1998). During this study two FGDs were conducted in Bungamati (Figure 3.8). The first FGD was conducted with the local youth group and shop owners and reconstruction committee members to understand the challenges of recovery process in Bungamati with focus on economic recovery. The second FGD was conducted with the village priest, Village Development Committee (VDC) members and community members who are above 70 years. The identification of the FGD participants was made based on consultation with local youth group in Bungamati.

Figure- 3.8 FGD with VDC members, Temple Priest and village elders in Bungamati

3.4.4 Participatory mapping

Participatory mapping - also called community-based mapping - is a qualitative data collection tool that combines the modern cartography with participatory methods to represent the spatial knowledge of local communities. In this study, participatory mapping is used as a tool to understand Bungamati settlement better (Figure 3.9). The need arises from the fact that there are no maps available for the area. The participants for the participatory mapping are in addition to the ones who participated in second FGD in Bungamati, local students and member of local youth group are included. As a part of the participatory mapping, the development of shops

during the 1934 earthquake till 1968 are done. Further, festival routes, ward boundaries, and traditional "Tole[1]" boundaries are mapped. Based on Tole boundaries the occupational caste based "Tole" are identified. The map of Bungamati prepared by 1968 Danish architects is used as a base map.

3.4.5 Photo documentation

Photographs and photo documentation has been used in this study from time to time to serve various purposes. This section details the various types of photographs used as a data collection tool. Firstly, photographs of the physical damage and reconstruction and repairing work in all the case study areas have been done. As this study follows the earthquake immediately, hence most repairing works were still in progress and could be documented.
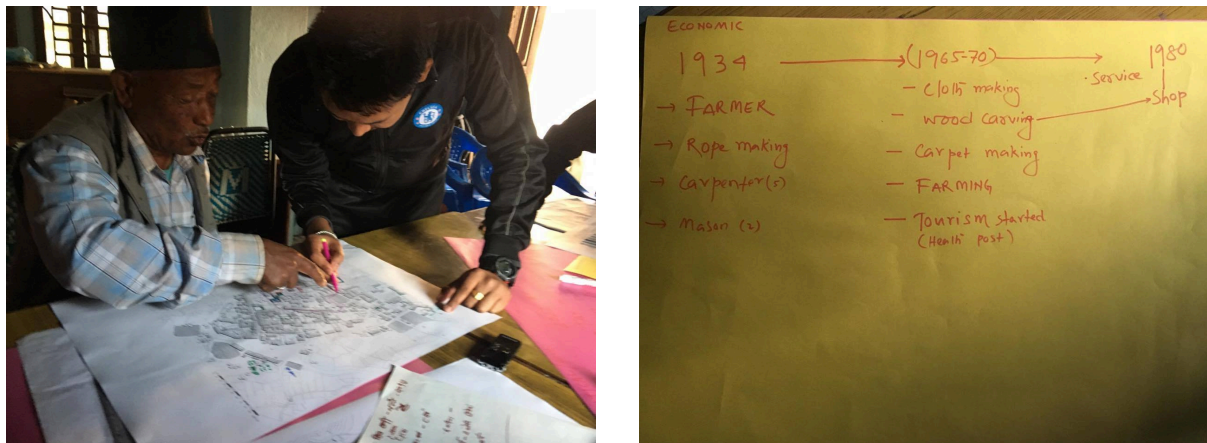
Figure 3.9 Participatory Mapping and outcome in Bungamati

Photographs of Bungamati taken in 1968 by the team of Danish architects are collected from the archives of Taragaon museum and station points and Point of View (POV) are identified in present day Bungamati through consultation with the local community. The station points are identified based on landmark features in the photographs. Photographs with similar POV are taken of the present condition of streets and houses in Bungamati to compare the architectural changes. For the current photographs of Bungamati, a wide-angle lens is used to capture as much detail as possible. Lastly, photographs of damage to various streets and lanes of Bungamati are collected from the local community and are used in study to validate semi structured interview findings mainly in relation of restarting of shops.

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[1] The smallest unit of village and is equivalent to ward in cities

3.4.6 Inventory creation of informal shops in Bungamati

The formal sector industries in the BID and PIE are registered with the respective industrial offices. On the other hand, the shops and workshops in Bungamati are not registered and local authority has not list of how many shops are there. Hence a complete inventory of the all the shops functional in January 2017 is created. The inventory includes the name of the shop and owner, type of product, date of starting, time of closure after the 2015 earthquake, staff strength and status of recovery.

3.5 Secondary data

The study depends highly on secondary data to select case studies, develop understanding of the local culture, traditions and context and further to understand and examine the impact of the 2015 earthquake in Nepal. Various articles relating to issues of disaster, governance and private sector in Nepal and read in conjunction with available government reports. Further, situation reports of the response and recovery of the Nepal earthquake are considered. The post disaster needs assessment is an important document which gives insight into the extent of overall damage in Nepal due to the earthquake and categorically details the damage across sectors. Further, the post disaster recovery framework report is consulted to identify various activities proposed by the Government of Nepal for recovery of various sectors especially the private sector.

In case of Bungamati, secondary literature in the form of survey forms conducted in 1968 are collected from Taragaon Museum in Kathmandu for developing understanding of the settlement and their livelihood in 1968.

3.6 Analysis

In qualitative study the data collection and analysis occur concurrently. The type of analysis engaged in will depend on the type of case study. Yin (2006) briefly describes five techniques for analysis: pattern matching, linking data to propositions, explanation building, time-series analysis, logic models, and cross-case synthesis. Further, Yin (2003) notes that one important practice during the analysis phase of any case study is the return to the propositions (if used); there are several reasons for this. First, this practice leads to a focused analysis when the temptation is to analyse data that are outside the scope of the research questions. Second, exploring rival propositions is an attempt to provide an alternate explanation of a phenomenon. Third, by engaging in this iterative process the confidence in the findings is increased as the

number of propositions and rival propositions are addressed and accepted or rejected. Various analysis method used in this study (Figure 3.5) are discussed in the following section.

3.6.1 Questionnaire survey

The data collected from questionnaire survey in the case study areas were tabulated in excel. Two types of data were collected from the survey, namely; nominal and interval data. Simple mathematical functions for descriptive statistics were performed (average, percentage) on them to state the direct and indirect impact of the 2015 earthquake on the businesses.

3.6.2 Analysis of structured interviews

The structured interviews give definite answers and are put in a tabulated answer sheet. Content analysis is conducted for the collected interviews and frequency of similar themed data is calculated. In this study, mostly frequency is considered for identifying physical damage, preparedness measures, dependency on lifeline services. For analysing data on age, gender scale of industry, etc. in conjunction with restarting time and recovery time trend analysis is done to identify emerging trends in the collected data and establish casual linkages. In analysing the data on restarting time and recovery time, timeline analysis is done and data is categorized under the different heads. Pie charts and bar diagrams are used to represent data.

Table 3.1 Steps for analysis of semi structured interviews

Steps	Actions conducted on the interviews
Step-1	Listening of the interviews and transcribing the important points emerging in the interview. At this stage, the focus is about sorting out important from unimportant material in the transcripts.
Step-2	Observations are developed into preliminary descriptive and interpretive themes based on evidence presented in the transcripts in combination with literature review to guide the research.
Step-3	Thorough examination of these preliminary codes to identify connections and develop pattern codes.
Step-4	The fourth stage of analysis involves a determination of basic themes by examining clusters and trying to relate it to the findings from the FGDs, key informant interviews and field observations and field notes.
Step-5	The final stage examines themes from all interviews across such groupings, to delineate predominant themes contained in the data. These predominant themes, then serve as answers to the research questions.

Source: Adopted from Piercy (nd.) and modified by the author

3.6.3 Analysis of semi structure interviews, key informant interviews

The analysis of semi structured interviews follow the steps as put forth in five steps analytical processes (Table 3.1) by Mc Cracken's (1988). The Household and Business assets are classified based on the themes generated during the interview under six heads; 1. Natural; 2. Social; 3. Cultural; 4. Physical; 5. Economic; and 6. Human.

The strategies followed by the formal and informal sector to recover are analysed based on Rakodi (1999). The various strategies for recovery identified from the interviews are categorized under 4 heads as given in table 3.2. The interviews with the National Reconstruction Authority (NRA) members and NGOs and staff of the government training college are considered for analysis of the governance issues in the recovery process. Mimicopoulos et al. (2007) suggest good governance has 8 major characteristics. It is participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follows the rule of law (Figure 3.10).

Table3.2 Categorisation of strategies for recovery

Strategy -1	Strategy -2	Strategy -3	Strategy -4
Strategies to increase resources by intensifying the use of natural, physical, and/or human capital	Strategies to change the quantity of human capital	Strategies involving drawing on stocks of social capital	Strategies to mitigate or limit a decline in consumption

3.6.4 Analysis of Focus Group Discussions (FGD) and Participatory mapping

Overall the FGD analysis follows a similar process as is discussed above in the semi structure interviews. The first step for analysis of FGDs notes or reflections produced during the sessions are referred. The second stage is identifying the key thought streams or themes that seem to have emerged through the data and similar themes are put under one head. Then these themes are seen vis –a vis the themes generated from the analysis of the semi structure interviews and other data collection tools. The mapping session under a series of thematic headings, illustrated by quotations from participants and the images of the maps are detailed and text are added to explain the maps.

3.6.5 Photo analysis

The photographs are analysed based on the themes generated as a part of the other data analysis. The photographs are taken on themes to depict; physical change, document types of businesses, diversification of business, repairing and reconstruction work among others.

3.7 Data validation

Data validation is an important part of qualitative research and employs four main types of validation techniques for addressing issues of credibility, transferability, dependability and confirmability of the study as has been highlighted by earlier studies (Guba, 1981, Sandelowski, 1993). Each of the techniques employed in this study is discussed below.

3.7.1 Credibility and dependability

It is the extent to which the data and data analysis are believable and trustworthy and is analogous to internal validity, that is, how research findings match reality. In order to achieve this as a part of the research, triangulation of data through various sources are done while interviews. Further cross checking of data with key informants from the same areas is done to validate the truth value of the data. Photographic evidences add to the credibility of the data. As suggested by Merriam (1998) a detail description of the settings in which this study is conducted and how data is collected and analysis is done adds to the dependability of the study findings.

3.7.2 Transferability

The transferability of the findings of the research is done in the discussion part through compared with findings of empirical researches. This helps with generalization of the findings on a global scale, but has its own limitation as should be based on sound understanding of the local context. In addition, following Seale (1999) the transferability of this study's outcome is achieved by providing a detailed, rich description of the settings studied. Further the multiple case study approach as adopted for this study creates a window for generalization of the findings of this research.

3.7.3 Confirmability

Seal (1999) suggest auditing as a measure to address the issue of confirmability of the research. For this researcher, different data collected are archived in an organized manner for retrieving in the future.
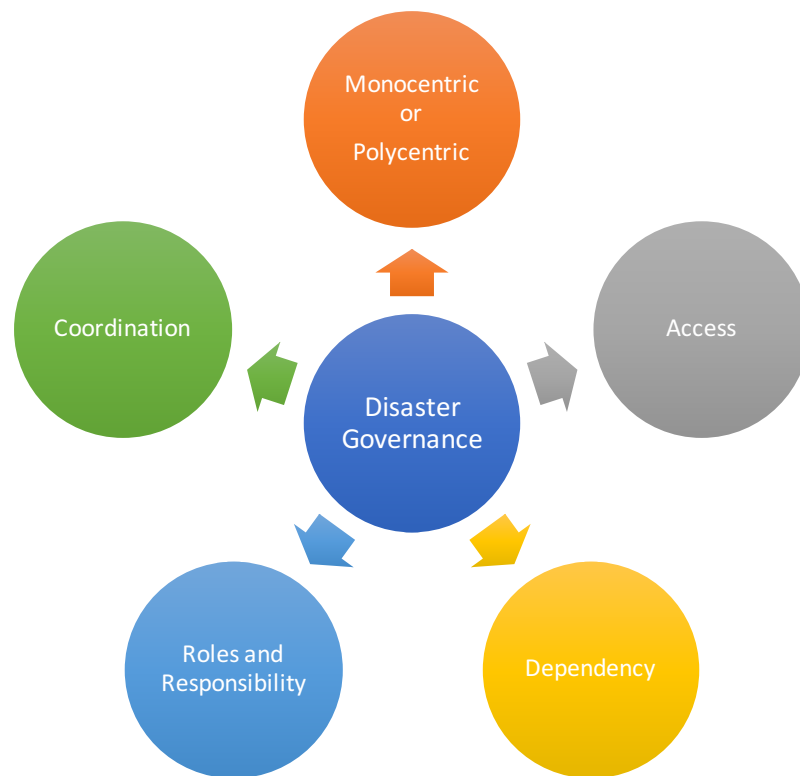
Figure 3.10 Disaster Governance indicators

3.8 Limitations of the study

The case study approach of the study has a limitation to generalize the findings over larger population, but at the same time gives a specific understanding of the studied cases and gives a detailed account of the recovery process which is important for an evidence-based approach. Further, as suggested by Yin (2003) the findings from case study needs to be generalized into a broader theory rather than over a large population sample.

While conducting field interviews, a possible data loss or deviation from the topic was noticed due to the translation of few terminologies into the local language. The estimated recovery time is based on the perception and understanding of the business owner and cannot be validated with supporting data. It is important to note here that it's this perception which will further enable the owner to make critical decisions for the recovery activities. The scale of the business

and its relation to the recovery process is not studied due to the small variance in the collected sample.

The qualitative nature of the study was preferred over quantitative data for its flexibility and considering that there is no statistical information available in the informal sector. A door to door survey was preferred over mailing of questionnaire survey as an educational qualification of the business owners in Nepal varied across the formal and informal businesses. The data collection methods had to be customized based on the ground situation from time to time. Especially for the informal sector, a direct approach without any governmental and NGO support was necessary to have free interactions and sharing of their point of view.

3.9 Ethical considerations

The study being qualitative in nature the ethical considerations are an integral part of methodology while interacting deeply with the respondents and covering their personal domains of values, weaknesses, individual learning disabilities and the like to collect data. The following has been done during the data collection and as a part of this thesis. Firstly, it was made clear to the respondents that the research was only for academic purpose and their participation in it was voluntary in nature. Secondly, informed consent for recording the interviews were asked and the narratives are given codes to keep the anonymity, privacy, confidentiality of the responders. Lastly, the photographs and other materials used from the archives of the museum have been used with due written consent of the museum authority. The photographs clicked of individuals during the study are done with due consent and the names are not used in the thesis.

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Chapter 4

Disaster Management in Nepal

This chapter gives an overview of Nepal and its history with special reference to the ethnic Newari community. The hazard profile Nepal is discussed with special reference to earthquakes. In addition, this chapter reviews various disaster legislations in Nepal in the pre-earthquake period to identify possible gaps. The latter part of chapter focuses on the 2015 earthquake and its economic impact on the formal and informal businesses and gives an insight into the various steps taken for the earthquake recovery.

4.1 Introduction of Nepal

Nepal, a Himalayan country shares borders in the north with the People's Republic of China, and to the south, east, and west with the Republic of India. The country covers an area of 147,181 square kilometres (56,827 sq. mi) and has a population of approximately 26 million. The average family size is 4.88 persons per household and national literacy rate is 65.9% with the percentage of educated males higher than female (Census, 2011). Nepal continues to be a largely agrarian economy with around three fourth of its workforce employed in the agricultural sector (Central Bureau of Statistics report, 2014).

DFID report (2014) finds Nepal's economic growth low and irregular just before the earthquake. Theses have many contributing factors such as fluctuation in Nepal's labour, high migration, high cost of transport and energy, adverse business environment. These have resulted in discouraging productive enterprises, sapping growth and overall deterring development. Nepal being a post conflict country and in the early years of its democracy has faced political instability and frequent regime change (Jones et al., 2014). In such circumstance the 2015 earthquake struck Nepal, causing extensive damage to life, property and the economy.

4.2 Introduction of Kathmandu Valley

Kathmandu Valley lies between the 27º 32' 13" and 27º 49' 10" north latitudes and l85º 11' 31" and 85º 31' 38" east longitudes and is at a mean elevation of about 1,300 meters (4,265 feet) above sea level and is the most populated region of Nepal. The Kathmandu valley comprises of three districts (Kathmandu, Bhaktapur and Lalitpur) and has a population of 2.5 million of which 58 percent were living in the municipal areas (Census 2011).

Nepal has a long history of trade and commerce and use to act as a connecting trade route joining China to India and other parts of the South Asia. During this time, the Kathmandu

valley was an important trading hub and trade is credited for the spread of Buddhism in Nepal from Tibet (Rankin,2004). The Newari are the original inhabitants of the Kathmandu valley area and were depended on agriculture and business as the major livelihood activities (Bista, 1967, Shrestha, 1999). In the context of Nepal, traditional economy can be understood as an economic system, in which traditions, customs, and local beliefs influence the production and distribution of goods and the services the community produces. The use of traditional knowledge and practices becomes a pivot between natural or ecological resources on one hand and human interventions and socioeconomic development on the other hand (Berkes & Folke, 1994; Cochrane, 2006).

4.2.1 Newars of Kathmandu Valley

In the context of Kathmandu Valley and for this research it important to introduce the Newari community and its importance in relation to private businesses and earthquake. Kathmandu valley till 17th century was ruled by the Newari kings (Malla dynasty) an ethnic minority group in the present Nepalese society. During the 14th century, metal and wood carving, Thangka painting, and other arts and craft peaked in the Newar society as well as the clothes, ceremonies and festival that are still in practice (Sharma, 2015). The change of rule leads to a sea of change in the Newari society in terms of losing its social, political and economic status leading to marginalisation of the Newari community in the current society. Further, the rapid urbanization of the valley post 1970's has led to a shift in occupation from agriculture to secondary sector and the socio-cultural ties are in a state of collapse (Tofin, 2008). Currently there are approximately 52 Newari settlements in Kathmandu Valley left in small pockets (Figure 4.1). The Newari community has been urban in its character and trade is an important part of their life. The Newari community has distinct caste based occupations and these occupations decide the societal network and hierarchies. As a result, the Newari society is divided vertically and laws of marriage are governed by caste status and indirectly by the occupation. In a Newari community, the household is the smallest socio-economic unit and competition and distrust is often fierce among households (Rankin, 2004). She further elaborates that much of the social practices in the Newari society are based on production and exchange for honour at household and market level. Sharma (2015) suggests the socio-cultural life of a Newari revolves around its *gates*.

Bungamati is one these 52 Newari Settlements in Kathmandu valley and is predominately a ***Jyapu[1]*** settlement formed by the Licchivi king around 7th century A.D by resettling 100 people each from Bhaktapur, Lalitpur and Kathmandu.
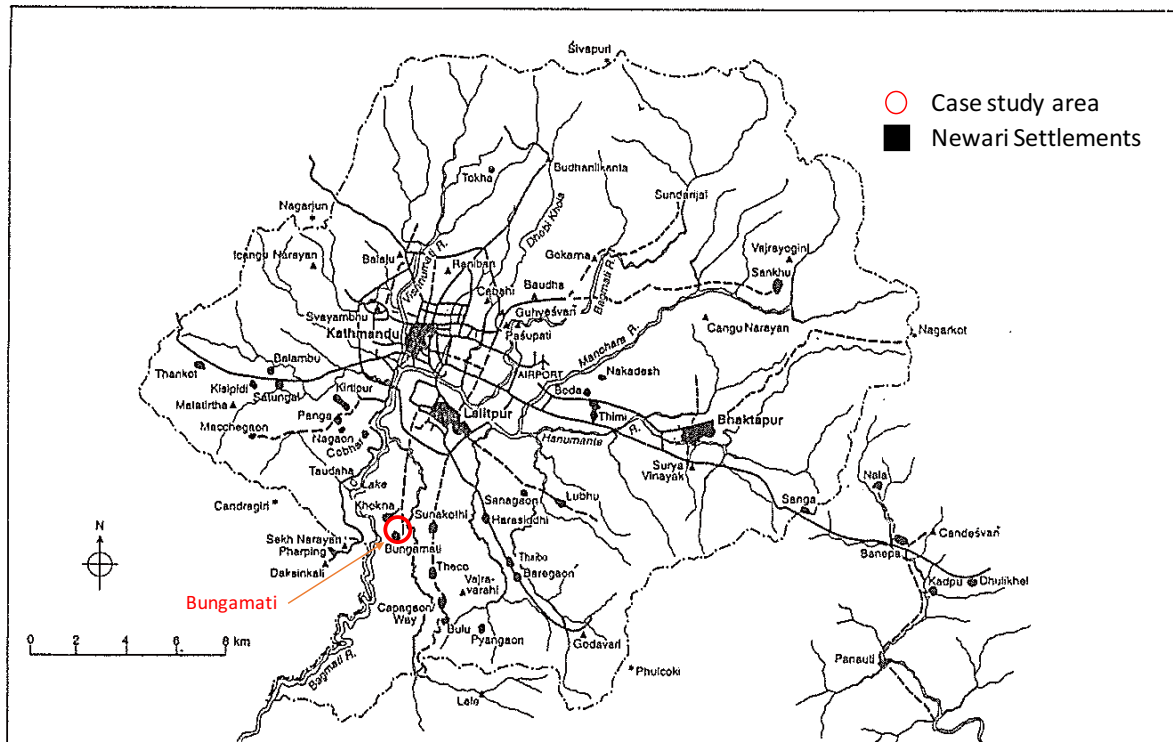
Figure 4.1 Distribution of Newari settlements in Kathmandu valley
(Source: Gutschow, 1979 modified by author)

4.2.2 Newari architecture

Architecture has been an important aspect of Newari culture. The Newari temple and houses display exquisite craftsmanship and has been attracting tourist from all over the world. The Nepal tourism board promoted Newari architecture in Kathmandu valley as an important tourist attraction leading to the development of tourism in these Newari settlements and growth of various tourism related businesses. The history of traditional Newari architecture contributing to built form of Kathmandu valley's and city planning is indebted to various dynasties (such as Licchavis, Mallas, Ranas and Shahs lately). Newari Society is caste based and the settlement plans reflected this in its spatial layout (Tofin, 2008). The higher caste occupied the centre, while the lower castes are in the periphery.

Müller (1981) details a typical Newar house as a three to four storied building which either faced the courtyard or the street. The side of the houses which faced toward the streets were

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[1] A Newari caste who's caste based occupation is farming.

often used as shops, the inner sides are used as workshops or living space approached through the courtyard. The notion pure and impure is attached to the space utilization of the house. The lower floors are considered impure while purity increases as one goes higher up the floors (Figure 4.2). As per the Newari belief system the ground floor of the buildings is not fit for human inhabitation. Based on the record of Colonel Crawford, the general characteristic of Newari architecture was that most houses were three to four storeys high with the ground floor having no windows, and the second-floor windows were small and square while upper floors had large openings (Hamilton, 2009).
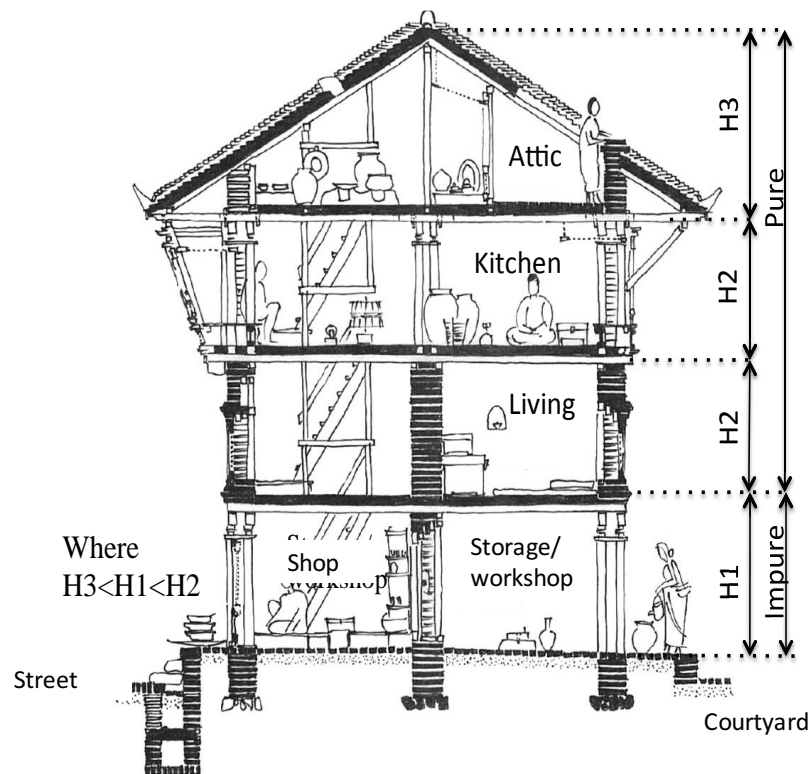
Figure 4.2 Typical Newari residential building with notion of purity
(Source: Toffin, 1991 modified by Author)

4.3 Nepal and natural hazards

Nepal is a multi-hazard prone country with high exposure to natural hazards like earthquake, flood, landslide among others (Table 4.1). In the last 10 years, though the frequency of flooding and landslides are higher, but by far earthquakes have the most devastating impact on Nepal. The first documented earthquake in the Kathmandu valley dates to 1255 AD (Chitrakar and Pandey, 1986). Over the past centuries, earthquakes of 7.5 Magnitude and above have struck Nepal, especially the Kathmandu Valley (Pant, 2000; Rana, 2013). A few significant ones being that of earthquakes of 1255AD, 1833AD and 1934AD in the Kathmandu valley. The

1934 earthquake as was documented extensively by Rana (2013) had caused life loss of 8519 and turning most of the Kathmandu valley into rubble. Considering the timeline of pervious earthquakes of 7.5 Magnitude and above in Nepal, it can be said that they have a return period of 80 to 100 years.

Table 4.1 Damage and loss from natural disasters in Nepal (2007-2017)

Disaster type	Events count	Total deaths	Total affected	Economic loss in USD (000)
Earthquake	3	8,976	5,810,099	5,174,000
Flood	20	1,644	2,889,074	78,429
Landslide	9	298	8,012	15,000
Storm	1	83	175	0
Wildfire	1	11	0	0
Drought	1	0	303,000	0
Epidemic	3	387	64,246	0
Extreme temperature	4	109	25,000	123

(Source: EM-DAT, created in November 2017)

4.3.1 Community based recovery after 1934 Nepal Earthquake in Kathmandu Valley

An 8.4 Magnitude earthquake on 15th January 1934 caused immense damage in Nepal, especially in the Kathmandu Valley region with a total death of 8,519 and loss of millions of rupees. In Kathmandu, road settlements were noticed in Balaju and Sankhamul while in Bungamati 99% of the buildings collapsed. The annals of Rana (2013) shares a detail of the activities cross taken up by various stakeholders for recovery within 1 year of the earthquake. This section borrows heavily from the book by Rana (2013) titled "Nepal's Great Earthquake 1934" and an article by Bhandari (2014) to build on the case of community capacity and business recovery which is important to look at longitudinal recovery and development of Bungamati.

Immediately after the disaster, the prices of goods and commodities increased, specially for buildings materials and food and people relied on their food grains to survive (rice, maize, soybeans). The government order daily needs commodities and timber to be sold at pre-disaster prices and the penalties for disobeying the order. The electricity services were restored in the city area by one and half months. Rana (2013) observed that a similar earthquake had struck Nepal almost 100 years before back and community had rebuilt on their own in 5-7 years similar instances were foreseen for the recovery from the 1934 earthquake. The employee was granted leave to back home and an institution named Institute for reliving Earthquake victim was setup to look after the earthquake relief work. The private sector supported the relief work through cash grants and were felicitated by the king. "Most people from the hills and those

from locality while building small houses are seen to set up walls of stone, etc. and even their own children joined as labourers". The family, neighbours and friends helped in rebuilding and caste based occupancy was not given much importance in such times. The focus was building small houses with a few storey. The people who funded their house reconstructed were considered paying for the Earthquake Relief fund. An earthquake relief fund was set up to support an interest free loan based on collateral for 4 years. The Nepal trading company was started to facilitate trade and as a consequence of the earthquake demand of indigenous goods increased. The Guthis supported the reconstruction of the community infrastructure was not taken up due to shortage of funds. Foreign donors and aid agencies helped with lending, grants, providing food and sharing of expenses in building houses and infrastructure. Migration from the periphery of the capital for job was seen after the earthquake. The demand for mason and carpenters was high and they started charging higher, leading to increase 2 to 3-fold increase in construction cost. The government brought in masons and carpenters from India to tackle this. Very few people got loans and in rural areas people built with help from family and friends. People built like the pre-disaster houses with little modification in the structural elements. Further, based on risk assessment done after the earthquake Bungamati and Khokana were inferred as high risk areas.

The reasons for failure in the buildings were due to too many floors; domes or brick pillars; too many windows; lack of toothing; no holding ties; greater load on upper storey; and use of mud mortar.

4.4 Institutionalization of disaster management in Nepal

The legal framework for disaster management has a long history in Nepal with the Natural Calamity (Relief) Act of 2039 (1982) coming into force in 1982, assigning the responsibility for preparing and responding to disasters to the Government of Nepal. Further to this, in the 2009 National Strategy for Disaster Risk Management (NSDRM) presented the concept of a disaster-resilient Nepal to realize the strategies of DRR put forward by Hyogo Framework of Action 2005-2015. Along with this there have been other major acts and policies by the line ministries in Nepal. This section reviews the available policies and the current gaps in the institutionalization of disaster management in the prior to the 2015 earthquake.

4.4.1 Natural Calamity (Relief) Act of 1982

The Relief Act of 1982 was the first of its kind in Nepal to consider natural calamities as an important issue for legislation. The Act puts forward a 3-tier relief mechanism (Figure 4.1); at the central level, it constituted the Central Disaster Relief Committee (CDRC) under the Minister of Home Affairs as the Chair supported by a 27-member apex body from other ministries. The second tier is at regional level supported by regional committees, but it is functional only during a crisis as was activated during the 1988 earthquake and 1993 floods. While at the District level, Disaster Relief Committee (DDRC) is a permanent authority to coordinate relief and preparedness. DDRC is chaired by the Chief District Officer (CDO) and is supported by line departments. The Act of 1982 was amended twice and was strengthened by the Local Self Governance Act (1999) which delineated the responsibilities of the urban and rural areas to municipal authority and DDRC respectively (NSET report, 2008).
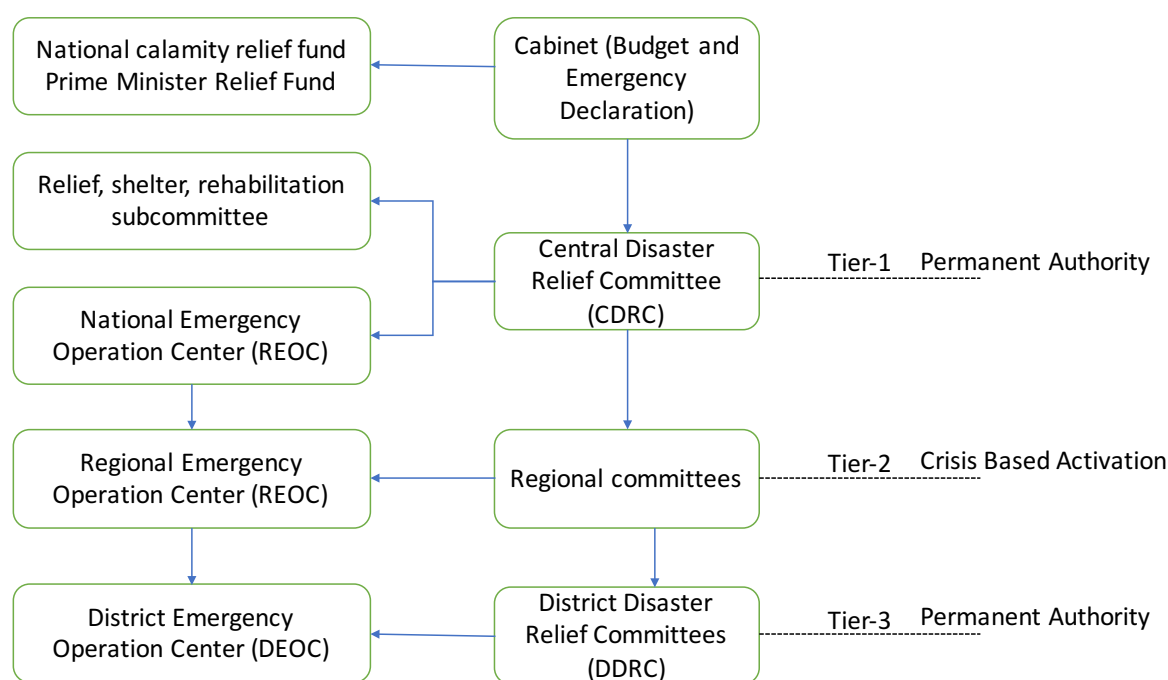
Figure 4.3 Three-Tiered structure for Relief and Response in Relief Act 1982
Source: (Author based on Relief Act, 1982)

4.4.2 National Strategy for Disaster Risk Management (NSDRM) of 2010

The NSDRM was formulated with the support of UN agencies, Government of Nepal and NSET with an idea of a paradigm shift in the national structure of disaster management from response to risk reduction centric approach. The act envisioned to enhance capabilities of proactively enhancing DRR and preparedness of the country for effective disaster response. A

three-tiered structure is put under the National Commission for Disaster Risk Management (NCDRM) (Figure 4.2). The NCDRM is designated as an apex policy body that will meet at least once a year for discussing DRM issues and its implementation status at the national level and provide policy guidance for implementing disaster management and risk reduction. Under the NCDRM is the National Authority for Disaster Risk Management (NADRM) for the planning and implementation of DRM plans and projects in coordination with academic institutions, line ministries, NGOs, etc. The second tier in the institutional structure is the District Authority for Disaster Risk Management (DADRM) and finally the last tier will be Municipal Authority for Disaster Risk Management (MADRM). Both DADRM and MADRM are like NADRM in terms of their responsibilities. The DADRM considers the rural areas through the Village Development Committee (VDCs).
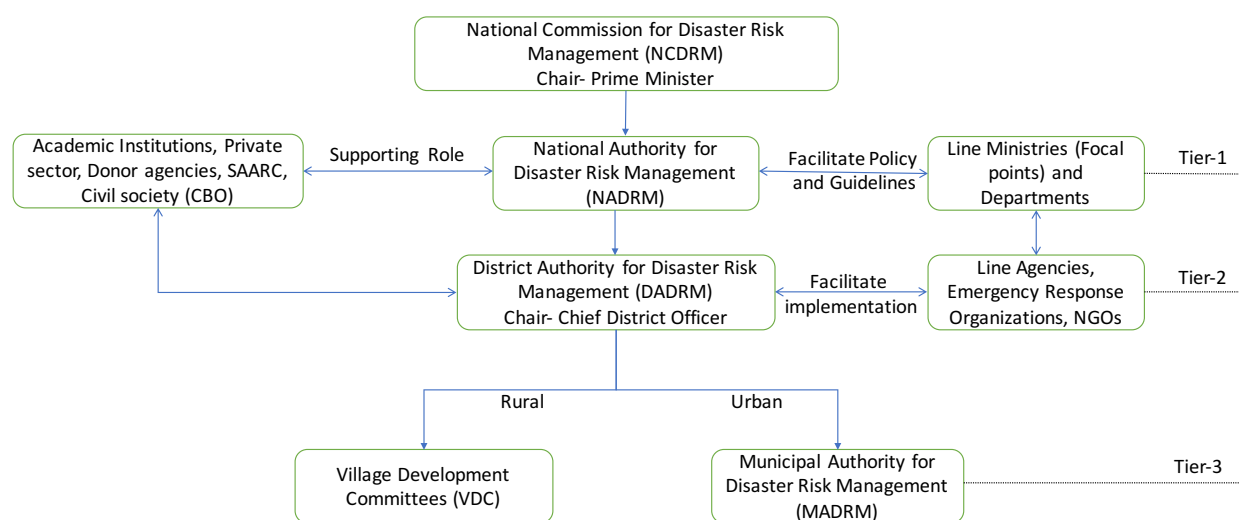
Figure 4.4 Structure of National Strategy for Disaster Risk Management in Nepal

4.4.3 Industry Enterprises Act of 1992

The above Act came into force in 1992 and details out classification and various guidelines in relation to the role and responsibility of the committees and industries. A few of the relating ones with implication on risk reduction are highlighted here

a. **Permission and registration –** A permission is required for industries which manufacture explosives or alcohol or tobacco due to issues of public health. Further the information asked for registration includes location, machinery, chemicals and the name of the owner.

b. **Functions and duties-** The industrial committee has the power to make facilities and concessions available to the industries and make services available for the industries.

c. **Closure of the industry and sick Industry –** Any industry closing business needs to inform to the concerned department within seven days. While any industry operating at a loss for five or more years with a production below 20% of the production capacity and any diversification by procuring equipment will not be taxed.

4.4.4 Limitations of disaster related legislations in Nepal

From the above discussed three main Acts and policy concerning this study, it can be said that there is a lack of linking them up through common factors. Needless to say, in Nepal implementation has been a major challenge for the government. Further the IFRC report (2009) points out that earlier relief act was only for response and relief and was not effective for risk reduction due to its ad-hoc nature. As was highlighted in the report by NSET (2008) there is a lack of integration of disaster management policies and policies of other ministries. On the issues of livelihood, the report shared that livelihood protection, diversification and enhancement are not focus on disaster risk reduction in Nepal and foresee a collapse of livelihood protection infrastructure due to political interference.

In the context of buildings in Nepal, instability in political and economic situation, there are phenomena of the rapid construction of new buildings which do not adhere to building codes and are adding on to the existing unsafe building stock (Dixit, 2008). The Building codes were enforced in 1994 and put the municipal authorities in charge of the enforcement. The codes envision different codes for rural and urban areas which would require trained human resources to support such a drive. In addition, a report submitted by consultants to government of Nepal highlight the lack of resources, expertise for updating the codes and there is no statistical records on the application of codes in the Government and the Private Sectors and its applicability is limited to urban areas (Consultant report, 2009). IFRC report (2009) highlight that the Building Act has no approval mechanism for smaller buildings at local level and there is no legal provision for safety check of existing buildings for fire, earthquake or other hazard risks. Policy/Institutional support for DRM was done by the Ministry of Home Affairs and United Nations Development Programme (UNDP). Under this, training of masons, setting up of Disaster risk management focal points, mainstreaming of land use planning and building codes were done. Amends to Act based on learning from different disaster is important, but in case of Nepal, the 1982 relief act had hardly any amends after it came into force (Aryal and Dobson, 2011).

Chamlagain (2009) and Jones et al. (2014) highlights that though there has been hazard mapping and vulnerability assessments done mainly in the urban areas, but findings have not been integrated with development plans. Further, they underline the shortage of human resource, lack of disaster-specific plans and dependency of the local authorities on NGOs and INGOs for training and capacity building. Further, Jones et al. (2014) question the legitimacy of NGOs in Nepal for disaster risk governance as most of the aid flow is for developmental needs rather than humanitarian need and there are issues of transparency. On the other hand, IFRC (2011) shares the limitation of registration for the Nepali civil society organizations who can technically only operate in the district of registration.

4.5 Formal and informal businesses in Nepal

4.5.1 Formal businesses in Nepal

The peri-urban and rural communities in Nepal are still dependent on the traditional economies. A trend in these types of settlements as stated by Basnett et al. (2014) is setting up a small shop stocking biscuit and water, or producing arts and crafts to sell to tourists. The report further states that this is a livelihood strategy to add a potential source of income to supplement the growing family expenditures and there is no planed entrepreneurial approach to such businesses but more of copycat mentality. This results in increasing the risk and do not lead to innovation in products.

To understand the effect on the industries it is important to understand their classification. In general, every country has their classification of the industries based on defined norms. In Nepal as the industrial act of 1992, Cottage industry is defined as one with a fixed assets less than 1870 USD[2] (except house and land), employ less than 9 persons, mostly operates at household level, and energy consumption not more than 5kiloWatt. Small Enterprises are ones with a fixed asset of up to an amount of 281,000 USD whereas Medium Enterprises are with a fixed asset between 281,000 USD and 935,000 USD. In Nepal, industries refer to the manufacturing, construction, minerals and agro and forest enterprises and commerce refers to services, business, and traders.

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[2] 1 USD= 107.70 Nepalese Rupee

4.5.2 Informal businesses in Nepal

Nepal is one of the poorest countries in Asia and has a wide economic disparity in the societies. In Nepal, the informal economy is growing rapidly in comparison to the formal economy and employs more than 95 percent of the people (Timalsina, 2011). ILO (2004) list out characteristic feature of the informal sector in contrast to the formal sector, such as; dispersed operational units and activities; technology, economies of scale, the use of labour intensive processes for producing goods and services, and absence of well-maintained accounts. Informal sector includes independent enterprises owned and operated by individual household members or by several members of the same household, as well as standalone partnerships and cooperatives formed by members of different households if they lack complete sets of accounts (Hussmanns, 2005). As per the classification in the industry act of 1992 most informal sector conforms to the cottage, micro, small scale enterprises either by investment capital or by the labour force employed.

Table 4.2. Industry and Commerce Profile of Kathmandu and Lalitpur

Micro Enterprises				
	Industries	Business	Services	Others
Kathmandu	4,062	30,428	15,230	3,684
Lalitpur	3,569	8,199	5,498	1,064
Small Scale Enterprises				
Kathmandu	10,243	0	17,405	0
Lalitpur	5,441	0	4,374	0
Medium and Large Scale Enterprises				
Nepal	4,836	0	1,064	0

(Source: Department of Cottage and Small industry, Household survey 2011, CBS)

The informal sector supports the formal sector in Nepal and becomes a conduit for marketing their products in rural areas. Hence the survival of the informal sector is important not only for the household but also for the local economy and private sector. Considering household as the basic unit of the society, such social relations originate at the household level. Chatterjee and Okazaki (2017) suggest in informal economies, household play dual role of a producer and that of a consumer and hence livelihood recovery is important for household recovery. Generally,

in Nepal and particularly for Newari households, there are multiple sources of income and hence risk is distributed.

The central bureau of Statistics does not collect data of the informal sector and hence not much is known about them (Suwal and Pant, 2009). As discussed earlier, the informal sector is the highest employer needs to recover to enable people to physically rebuild the damaged buildings. Post-earthquake, Shrestha et al. (2015) mentions informal sector recovery as a challenge for earthquake recovery. Further, they suggest that a long-term vision with appropriate strategies for the formal and informal sector is missing.

4.5.3 Political instability, conflict and its effect on livelihood and private sector

The political instability and decade long armed conflict (1996-2006) took its toll on the economic growth of Nepal affecting the livelihood and private sector. Upreti et al. (2012) in their study lists both positive and negative effects of the conflict on the livelihood of Nepalese people (Table 4.3).

Table 4.3 Effects of political instability on livelihood of Nepalese

Positive Effect	Negative Effect
The social capital becomes stronger with a greater willingness to invest in trust-based transactions and to contribute to public goods. Presence of an 'institutional mechanism' whereby conflict fosters the adoption of 'new norms' and more pro-social behaviour	Local food production and food security due to the reduced family labour; out-migration; conscription; the confiscation of farmland; disruptions to agricultural services and inputs; and frequent blockades
The reduction in livelihood opportunities has led to a trend of diversification; that is, the adoption of multiple income-generating activities, particularly prevalent among those previously engaged in purely agricultural forms. Further, shifts in livelihood to non-farm and non-land based forms can also be related to rapid urbanisation	Out migration to escape from conflict
The employment rate of women rose sharply after the conflict and changed the gender dynamics of the society. But women in Nepal has women continue to have low access to property ownership, financial credit and political power	Discontinuation of existing means of livelihoods, while constraining new livelihood opportunities

(Source: Upreti et al., 2012)

The report by World Economic Forum (2011) suggests the conflict and instability in government and politics are a few major causes of difficulty in doing private business.

4.6 The 2015 Nepal earthquake and its economic impact

The Nepal earthquakes impacted livelihoods of 2.3 million households and 5.6 million workers lost their wages amounting 250 million USD. The maximum loss has happened to the social sector (housing, education, culture) followed by the productive sector. The impact on the private sector is detailed in the following part. Before the 2015 earthquake, 25 % of the population were below the poverty line and non-productive employment among youth was high. Further, weak services and public infrastructure (power, water, gas) contributed to the 22% of the losses of the private sector (Afram and Pero, 2012). ILO, working paper (2011) suggests that share of employment in the manufacturing industry is 6.8 % of the total employment and the sector has been showing the slowest annual growth of 0.43% annually in the last decade. As per the Federation of Nepal Chamber of Commerce and Industries (FNCCI) report of 2016 the Foreign Direct Investment (FDI) in the manufacturing sector is the second highest after energy sector. But the overall growth as per ADB (2015), the industry sector, which comprised of mainly the manufacturing sector that contributes 15% of GDP, grew by 2.6% compared to the projected pre-earthquake growth forecast of 4.6%.

4.6.1 Impact of the 2015 earthquake on the businesses

The private sector suffered heavy loss in the Nepal earthquake, which is almost to the tune of 76% of the total losses suffered by the productive sector (National Planning Commission, 2015). In the productive sector the Industry and commerce suffered a loss of 30% of the total loss of the sector almost equaling the loss of tourism and agriculture (Fig- 4.5, 4.6). The various reasons for the industry and commerce sector suffering, loss are due to damage to the physical structure, damage to public infrastructure, loss of human resources and reduced demand of commodity due to less purchasing power and loss of local market. The lack of labour has led to increase in wage rates in the market, which is putting additional pressure on the industry owners' vis-a-vis reduced demand in the market and reduced buying capacity of the business community (mainly those in the manufacturing sector). The report further states that the large private sectors, mainly suffered financial losses, but on the other hand smaller businesses faced damage to the buildings and has limited capacity to build back their business and industry.
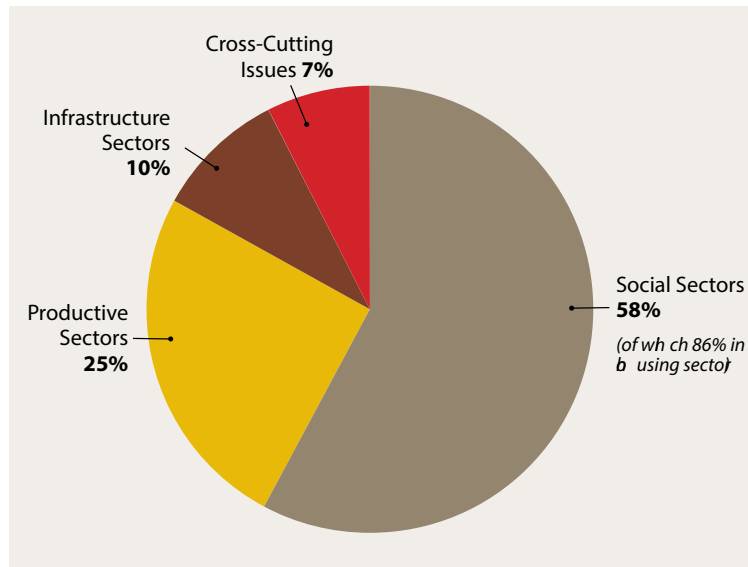
Figure 4.5 Losses across various sectors in Nepal Earthquake 2015
(Source: NPC, 2015)
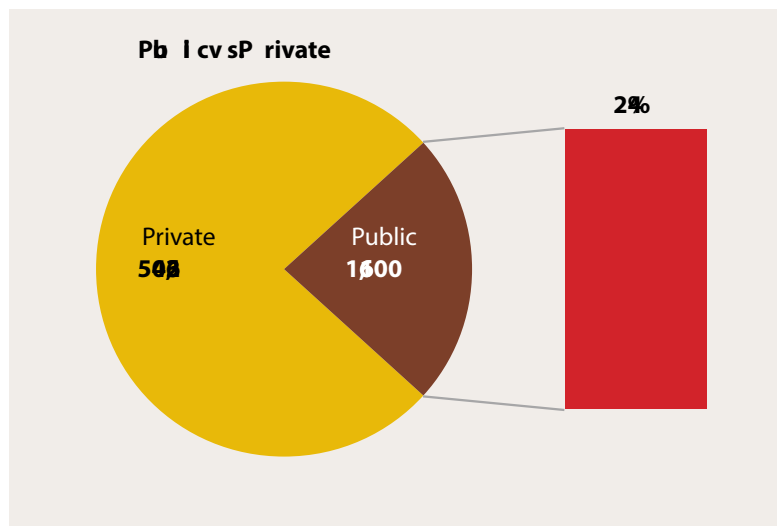
Figure 4.6 Loss faced by private and public sector
(Source: NPC, 2015)

The specific damage to the formal businesses is shown in table 4.4. It is observed that combined damage and loss of the micro, cottage and small businesses is more than that of the medium and large scale businesses in Kathmandu and Lalitpur for commerce while among the industries the loss is higher in medium and small scale businesses. The reason being the number of industries in Kathmandu and Lalitpur registered are limited in comparison to the industries not registered with the government.

Table 4.4 Damage to the formal sector in the earthquake

Damage and loss to Commerce (in Million USD)				
	Micro	Small and cottage	Medium and Large	Others
Kathmandu	26.5	12.39	19.08	0
Lalitpur	6.20	0.58	4.85	0
Damage and loss to Industry (in Million USD)				
	Micro	Small and cottage	Medium and Large	
Kathmandu	11	22.40	33.21	0
Lalitpur	5.50	2.28	13.23	0

(Source: NPC, 2015)

4.7 Recovery process

As discussed in chapter 2, the recovery process is a continuous process starting from the point a disaster strikes and various phases as have been described by Hass et al. (1977) are seen not following a linear time scale, as has been proposed by them. Rather it conforms to view put forward by various authors (Berke et al., 1993; Bolin, 1993; Bolin and Bolton, 1983; Mileti, 1999; Rubin and Popkin, 1990, Quarantelli, 1989; Schwab, 1998; Rubin et al.1985; Stuphen, 1983). In case of Nepal this is due a variety of factors such as weak governance mechanism, limited expertise and resources, the sheer magnitude and impact of earthquake overwhelming the existing planned mechanism among others. This section gives an overview of the various activities undertaken by the government, NGOs, aid agencies, external donors and other stakeholders within the first 2 years of the earthquake (Figure 4.7).

4.7.1 Relief and response

Immediately after the earthquake, emergency response was carried out by local, national and international organizations. The Central Organizational System (COS) during disasters has been divided into three tiers: incident commander, command and general staff under the Ministry of Home Affairs, Nepal (MOHA). COS commands and controls the situation of the disaster through Central Disaster Relief Committee (CNDRC) with the authority to command other ministries and departments to coordinate and cooperate by providing obligatory support from the departments. COS lies above National Emergency Operation Center (NEOC), which

is the main body to formulate policy and strategy required for NEOC. It does not mention anything about the Incident commander whether it is the Prime Minister or the President of Nepal. However, the document describes in detail on standard operating procedures carried out immediately after a disaster. Nepal Army (NA), Nepal Police (NP) and Armed Police Force (APF) coordinate immediately with CNDRC or the nearest District Disaster Relief (DDRC) for response during a disaster. Some of the activities done were search and rescue, relief distribution, camp coordination, treatment of injured and so on. They follow the Commander in Chief for response and rescue in absence of local authority (GoN disaster report, 2015).

The immediately following the earthquake a disaster aid was declared by the government based on Disaster Victims Relief Standard 1982 a sum NPR40, 000 Per human death in the family; NPR5, 000 for complete house damage; NPR3, 000 for partial house damage; NPR2, 000 for immediate food. Additional grant was sanctioned as per the decision of Council of Ministers; NPR100, 000 for who have lost a family member/s and NPR15, 000 for reconstruction of temporary shelter for complete and partial house damage. In the next phase, debris clearance was done through cash for work. The government worked with different NGOs and CBOs and provided work for local communities. This continued for 3 months after the earthquake. The ADB report (2015) raises concerns on the relief distribution due to the prevalence of high corruption among the government department and would depend on a transparent assessment of the damage by local authorities.

Although, there is the presence of different standards for disaster management in Nepal, but serious implementation gap was there mostly due to the incapability of the government (EMI, 2015). Most of the documents related to disaster risk management have been drafted without must detail the roles and responsibility and relying mainly on training and awareness generation. The various gaps identified during the relief and response phase are listed in table 4.5.

4.7.2 Post Disaster Needs Assessment

The Post Disaster Needs Assessment (PDNA) was conducted 3 days after the 12th May 2015 earthquake with National planning commission heading the team. The pre-disaster baseline data was taken from Central Bureau of Statistics (CBS) to compare the pre-and post-disaster losses. Based on the evaluation of disaster effects and impacts in each sector recovery strategies were planned. For the informal sector, there were no baseline data available as CBS does not collect data on them. Hence, the PDNA had not accounted for the impact of the earthquake on

the informal sector. As PDNA was the baseline document for deciding the recovery framework, this is an important gap in PDNA considering that 96 % of the Nepal's employment are in the informal sector.
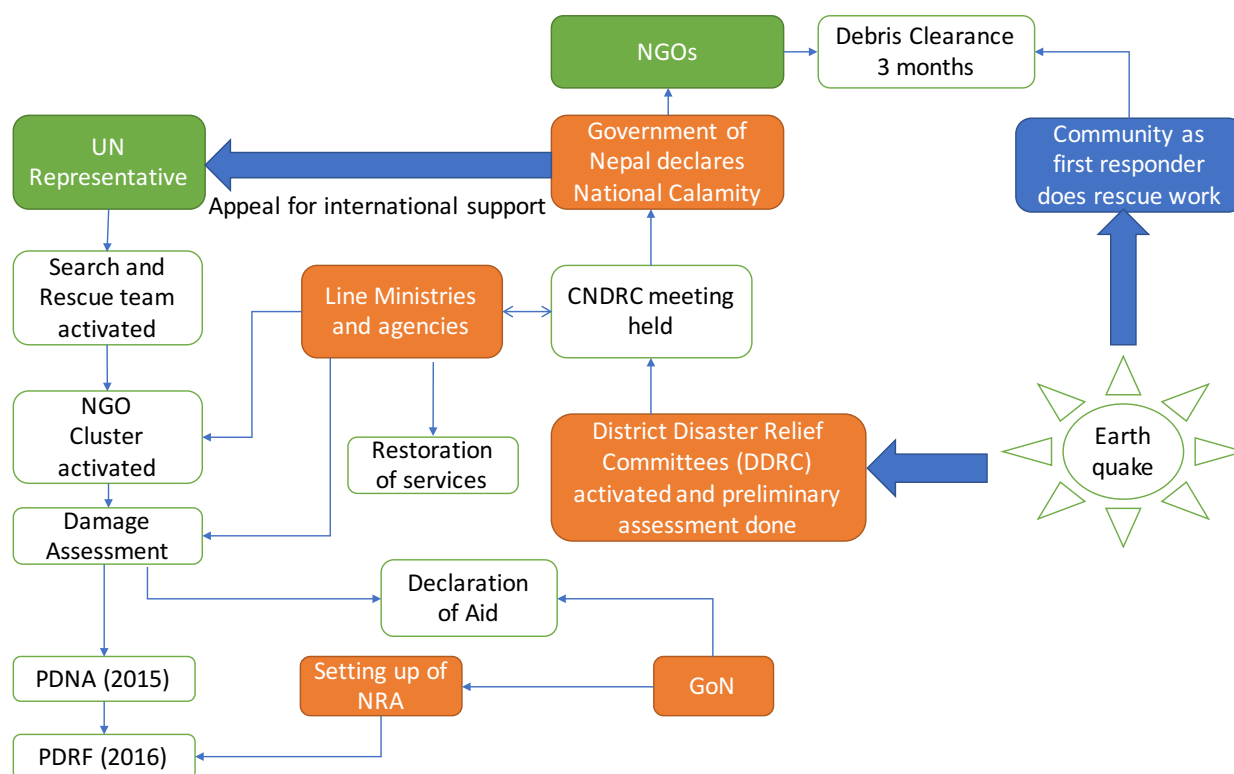
Figure 4. 7 Major activities after the 2015 earthquake

Table 4.5 Gaps identified in the relief and response phase in Nepal

• Slow Search and rescue coupled with coordination problem among the various teams.
• Delay and serious lapse in damage and needs assessment was felt all the time. Further, there were gaps between the need of the affected people and delivery of services.
• The high cost of employing a foreign team
• Logistics and Infrastructure for relief distribution was lacking (warehouses, prepositioning of relief materials with proper inventory was lacking
• Debris management took longer time due to lack of debris management equipment, tools and techniques
• Open spaces for temporary settlement of the displaced population were lacking
• Weak database, absence of modern technology and lack of SAR equipment.
• Lack of inter cluster mandate led to confusion among internal aid agencies and the Government of Nepal

(Source: GoN disaster report, 2015; Amartya et al., 2017; EMI report, 2015, GoN situation report, 2015)

4.7.3 Constituting the National Reconstruction Authority (NRA)

The National Reconstruction Authority (NRA) was set up as an independent body on 25 December 2015 headed by a Chief Executive Officer (CEO) appointed by the government with a mandate to priorities for recovery and reconstruction by considering short term, medium and long-term needs (Nepal Gazette, 2015). Advisory Council, Steering Committee, Executive Committee constitute the core of the NRA and the CEO is overall in-charge. Under the CEO, 5 major groups are formed to consider various issues relating to housing, heritage, finance, administration and policy. The CEO monitors and oversees the district coordination committee work. Each of the major groups is divided into further subgroup consisting of line departments (Figure 4.8). The issues relating to livelihood are handled by policy and coordination, major group without any involvement of line department. Further non- governmental organization which would include NGOs, CBOs and the private sector is handled by the finance major group. Overall the hierarchy shows a top down approach with least collaborative work among departments in the lower level specially for implementation. In government departments, the rule of business is a big setback for interdepartmental collaboration and implementation. As discussed earlier, recovery process of this magnitude as is needed in Nepal, needs to have essentially cross cutting, transdisciplinary approach which seems to be missing in the organizational set up of the NRA.
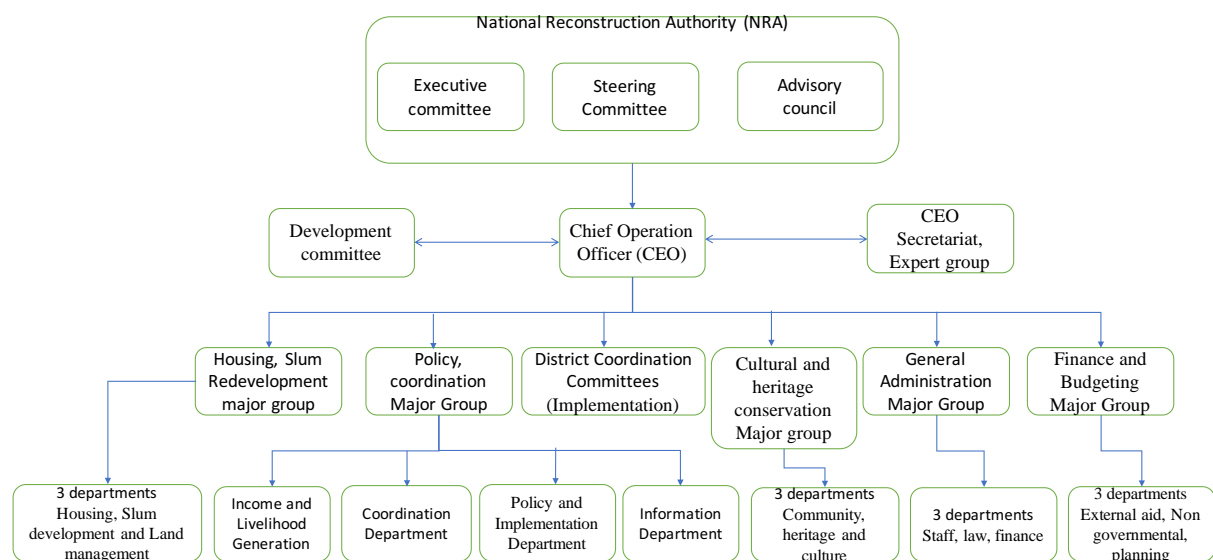
Figure 4.8 Structure of National Reconstruction Authority
(Source: Translated and drawn by Author based on organization structure on NRA website)

4.7.4 Post Disaster Recovery Framework (PDRF)

There was a consensus that a 2015 earthquake is an opportunity to bring changes across various sectors to make resilient to future disasters. The NRA was tasked to prepare the recovery framework based on the PDNA. The Post Disaster Recovery Framework (PDRF) aimed at developing and restoring economic opportunities and livelihoods and re-establish productive sectors for economic recovery. This also serves as a guideline for the external agencies to participate in the recovery process. It is envisioned that the large owner-driven housing reconstruction programme will also support local livelihoods, businesses, and products, thereby strengthening the local economy. The PDRF tries to fill up the human resource gaps by capacity support from both within and outside the government system in the short term. Table-1 lists various livelihood recovery strategies envisioned in PDRF. Along with this a recovery aid of 300,000 NPR was allocated to distribute in instalments.

4.7.5 Risk insurance and claims

Insurance sector in Nepal has limited penetration and has no earthquake insurance till 2015. Aon Benfield reports (2015) shares that despite the high level of economic damage caused by 2015 Nepal earthquakes, a very small portion of the losses was covered by insurance companies. Overall insured losses in Nepal, India, Tibet and Bangladesh were estimated around USD200 million. As of August 2015, the Nepal Insurance Board (IB) reported that 16,603 claims were filed to the 17 non-life insurance companies operating in the country with a total value of USD175 million against the company's estimated cost around USD190 million. While life insurance companies received ~400 claims with payouts USD1.0 million. It is important to stress here that claim received and claim settled has a time lapse which is crucial for the survival of the claimant.

4.7.6 Restoration of lifeline Services

The lifeline service damage, their restoration has been studied as an important factor for private sector recovery. Four main services are considered in this section, namely; electricity, water, gas and road each of them are discussed here in the backdrop of the 2015 Nepal earthquake. The PDNA reports an almost 15 % of the hydropower dams in Nepal were affected by the earthquake resulting in drop of electricity generation by 115 megawatts. Further about 800 km of distribution lines at different voltage levels and 365 transformers was damaged.

Table 4.6 Strategies envisioned in recovery framework with timeline

Livelihood recovery strategies envisioned by the PDRF (NRA, 2016)	Time-period
Cash transfer	Short term
Food for work or cash for work	Short Term
Cooperatives, savings and credit groups, and microfinance institutions will be encouraged to assist cottage, small and micro-industries.	Medium Term
Skills training and entrepreneurship will be facilitated	Medium Term
Financial concessions to the private sector will include extended loan payment periods and loan restructuring for hydropower projects, tourism infrastructure and goods and service industries.	Medium to long Term
Tax breaks will be given for a limited period to restore specific industries and businesses.	Medium to long term
Tourism will be revitalized through subsidized loans to those running hotels, homestays and tourist lodges, the reconstruction of infrastructure in tourist areas and maintenance of trekking routes.	Medium to long term

(Source: NRA, 2016)

4.8 Summary

Nepal is very high risk countries of the world prone to earthquakes. In Nepal, the Kathmandu valley has emerged as the economic hub and become a magnet to attract migrating population from other parts of the country. This has led to urban footprint expansion and construction of unsafe buildings. Not only has urbanization put the population at risk of disasters, but also along with it the culture, economic and traditions are slowly disappearing. The 2015 earthquake accelerated this by manifolds and putting extra on already pressured services and resources for recovery.

As presented in chapter, it is seen that business and trade have been part of communities' life, especially for the Newari community and has shaped the spatial layout of the cities and towns in the Kathmandu valley. The formal businesses in Kathmandu valley have a systematic approach in their investment and keep a distinct accounting system. Hence it is easy for them to gauge the direct impact of the earthquake on their business. Further, the formal sector which operates mainly in the local market in Nepal uses the informal sector to reach out to rural and peri- urban markets in Nepal. While for the informal businesses are an integral part of their life and hence difficult to segregate from their daily activities. The saving and investment capital is managed based on rudimentary understanding and often balanced with household

expenditure. Hence the recovery of the informal sector is essentially the recovery of the community household and for the formal sector. This would necessarily take a transdisciplinary and collaboration from various stakeholders with the government at the helm of such activities. Looking at the past legislations of disaster management and risk reduction in Nepal it is evident that the focus was mainly on training, awareness generation and policy making without focusing much on strengthening the implementation on the ground. This is limitation can be attributed to the lack of human resources and expertise within the government and lack of political leadership. Considering the history of earthquake and the return period of a disastrous earthquake in Nepal and especially when the consequences 1934 earthquake are well documented. The lack of initiatives to enforce stringent legislation points a finger at the government's lack of good governance. In addition, the legislations made by various departments which relates to disaster management lacked a common ground.

Livelihood protection has been neglected from the very beginning in the policies and the government has made less effort to formalize the informal sectors. Lack of data, regular monitoring has been issues with the line departments. Further a top down approach in the government has kept the other stakeholders from active participation and bolstered their say in decision making. Just before the earthquake, a resolution to create new municipalities in January 2015, led to the establishment of 100 new municipal offices. This created job opportunities for the population, but ethnic group like Newars did not gain much from this as the education requirement for entry level jobs in the Municipality is fixed. This steered higher establishment expenditure for these new municipal offices, leaving a little for government to manage the earthquake.

The private sector recovery takes a neoliberal approach with too much of reliance on the market economy and individual responsibility to manage and recover from disasters. As a result, the private sector recovery has been relatively slow and much of it is unaided and without any external support. The government of Nepal did not compensate the private sector losses as ideally if they are registered and have insurance coverage, the losses should be covered by insurance and moreover their basic services (water, electricity) are subsidized. The Government of Nepal White paper (2015) proposes rescheduling of principal and interest payment and reduction of accrued interest on the loan taken by tourism and productive industry as part of post-earthquake recovery. Further, reducing demurrage charges outside Nepal, using Re-rescued fund at Nepal Rastra Bank for re-rescue and rehabilitate business industry. Training program for handicrafts and skilled and semi-skilled professional workers for the construction of earthquake resilient buildings will conducted to support reconstruction and livelihood.

Industrial production growth was (-) 6 % as was shared in the 2016 budget session. The earthquake-induced total gross value added loss for the financial year of 2015 was 62.9 million US dollars but projected need for recovery is 641 million US dollars. As a part of the recovery process, in January 2016, Nepal Rastra Bank (NRB) has started an Economic Revival Fund (ERF) worth 1 billion USD through contributions made by the government, banks and financial institutions (BFIs), and development partners to give investment loans to SMEs, service sector. Considering that the loans will be extended to good borrowers not everyone can benefit from such financial measures, as many SMEs do not take loans from the formal sector as they consider the process complicated and very bureaucratic and hence rely on the cooperatives and other private institutions for loans (EEC report, nd.).

The above discussed points snowball into bigger issues experienced during the post-earthquake recovery period. Shaw (2015) observes that both DRR and recovery in Nepal are donor driven and hence deal mainly with nonstructural component supported by NGOs while the government is left to make structural mitigation. The earthquake recovery process faced initial governance failure, which was aggravated by the border blockade with India in September 2015. While the recovery framework envisioned a livelihood recovery in the construction industry due to huge demand for new buildings after the earthquake. But in reality, delay in sanctioning of funds, non-availability of loans and the rise in the material and labour cost has led to the crisis situation in the labour market. From the above it is seen that there clearly a lack of employment recovery strategy with the three-main factors in the economic recovery; enterprises, market and labour. Further, within the policy maker the understanding of the contrast present among the various sectors is limited as a result the present policy have limitation for an inclusive recovery.

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Chapter 5

Formal Businesses in Balaju Industrial District and Patan Industrial Estate

This chapter introduces the formal businesses in Balaju Industrial District and Patan Industrial Estate. The first section gives an overview of the Balaju and Patan. Second section shares incidences of past disaster in the selected study area. This followed by the impact of the 2015 Nepal earthquake on the businesses. Their restarting time, recovery strategies and actual and probable recovery time is studied.

5.1 Growth of Industrial Districts (IDs) in Nepal

In Nepal, eleven Industrial Districts (IDs) states have been set up with the assistance of various donor countries like USA, India, Netherlands and Germany. Among the 11 IDs, 10 are functional: Balaju, Patan, Hetauda, Dharan, Nepalgunj, Pokhara, Butwal, Bhaktapur, Birendranagar and Gajendranarayan Singh (Rajbiraj) and one at Dhankuta is not operational (Figure 5.1). The location of the IDs is selected based on topographical condition, existing infrastructure facilities and regional balanced economic development of the country. In Kathmandu valley, 3 IDs namely; Balaju, Patan and Bhaktapur are at present functional. A comparative table of the all the functional IDs is detailed as Annexure-1.

5.1.1 Institutional set up of IDs

In the initial phase, Balaju and Hetauda Industrial District were undertaken by the Nepal Industrial Development Corporation (NIDC) and Patan, Dharan, Nepalgunj and Pokhara Industrial Estates were under the Department of Industries. Subsequently, all of them were undertaken by of Government and managed by the Industrial Services Center (ISC). After the establishment of IDML as a separate corporate entity in July 1988, it was entrusted with the overall management and supervision of all IDs plus other tasks such as conducting feasibility studies of IDs in potential areas, materializing new IDs and planning and promotion of industries therein. IDM is wholly an undertaking of the Government of Nepal incorporated under the company Act in the form of a Public Limited Company with Government of Nepal and department of industries as shareholders (IDM website, 2017).

5.1.2 Infrastructure and services

The Balaju and Patan IDs have developed 5.2 and 5 kilometres of road network respectively. The electricity requirement is 6000 KVA and 2500 KVA in Balaju and Patan while they require 630 kilo litres and 21 kilo litres of water daily. The IDs do not have their own power generation plants, but have sewage treatment plants. In Balaju and Patan there is facility of storing water in overhead tank.

5.1.3 Operational challenges of IDs

Shrestha (2012) shares that IDs were developed on the Develop, Operate, Sustain and Handover (DOSH) concept, but due to change in government it would not materialise for Balaju and Patan IDs. This is considered as a setback resulting in lack of maintenance and repairing works limited budgetary provision. Further the income from the land is very low, especially in Balaju and Patan resulting in no income generation to support maintenance and repair works. The buildings in Balaju and Patan were constructed at the time of establishing it and are mostly loaded bearing. The setting up of IDs have supported the growth of infrastructure, ancillary industries and businesses, employment and local economies. While on the other hand, issues of absence of a strict regulatory mechanism, labour problems and red tapeism is common in these IDs. Further commercial banks and institutions are not ready to lend without financial securities and they do not accept IDM lease agreement as a collateral from the industries.

5.2 Introducing the case study area

For this study, Kathmandu valley has been selected as it is Nepal's economic hub and highest investment in the private sector is made in this area. Further, out of the three IDs in Kathmandu Valley, Balaju and Patan IDs are selected based on three factors; 1. Higher incidences of personal injury and damage to physical infrastructure as has been discussed in the first chapter; 2. The Balaju and Patan are the first two IDs setup in Nepal in early 1960 and 1963 respectively, and Bhaktapur has been set up 1979; 3. During the first field work, it was informed by the Industrial District Management Limited (IDML) officer that there is chance of shifting Bhaktapur ID in the near future due to pressure from the public and also the declaration of Bhaktapur as a heritage site.

Figure 5.1 Location of Industrial Districts in Nepal

(Source: IDML Souvenir, 2012)

5.2.1 Balaju Industrial District (BID)

Balaju industrial District was the first of the IDs set up with assistance from the United States of America in 1960. The 98 percent of the investment made in 690 Roappni[1] of land in Balaju is by the private sector (Figure 5.2). A total of 131 private sector is there of which only 97 are functional while others are either closed or under construction (IDML Souvenir, 2012). The total number of employees is 3,506 and in addition to this, daily wage labourers are also employed. The BID has its own electricity distribution network and its own water boring system, water supply systems as well as the water filtration plant. Most the current buildings were made 50 years back as single storey sheds and after them to leasing individual owners, modifications have been made as per their requirements.

5.2.2 Patan Industrial Estate (PIE)

The Patan industrial Estate was set up in 1963 with supporting from India and houses a total of 112 industries of which 102 are functional while others are closed or under construing. The total area covered by the industrial estate is 270 Roppani and is in the central area of Patan. A total of 1,586 people is employed and has also daily wage labourers. The consumption of electricity and water is less by 2.4 and 30 percent of the BID. This depends on the nature and scale of the industries present in both the areas. Most the current buildings were made 50 years

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[1] 1 Roppani= 508.74 sq Meters

back as single storey sheds and after them to leasing individual owners, modifications have been made as per their requirements.
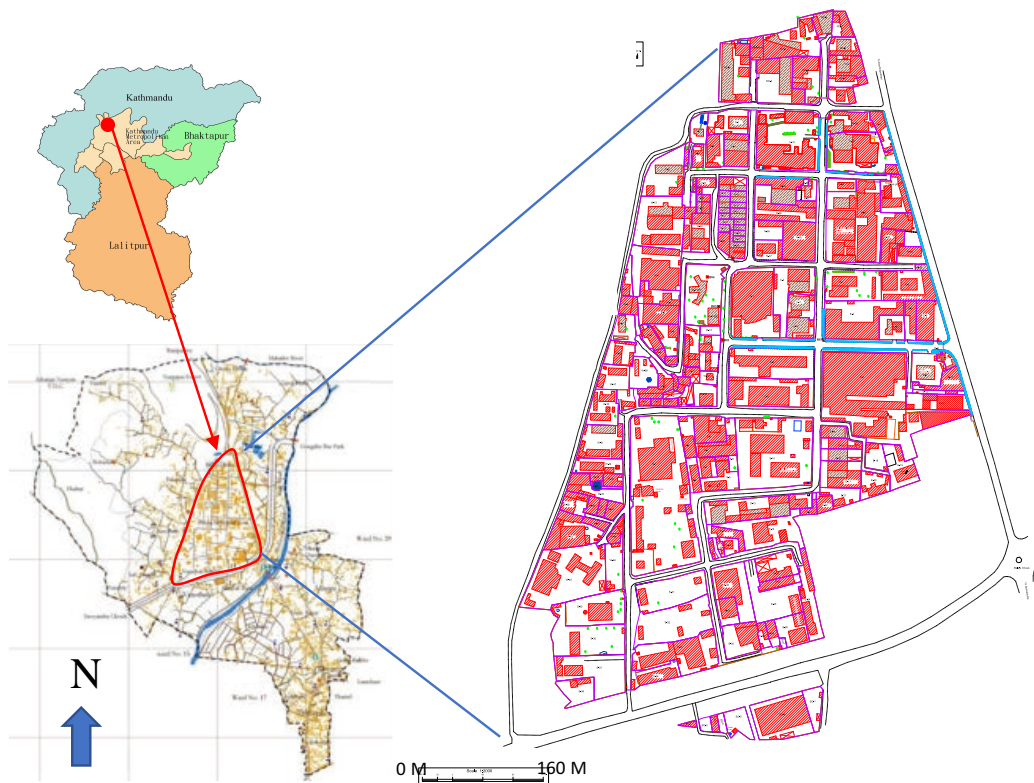
Figure 5.2 Map of Balaju Industrial District
(Source: Kathmandu Metropolitan office, IDM 2017)
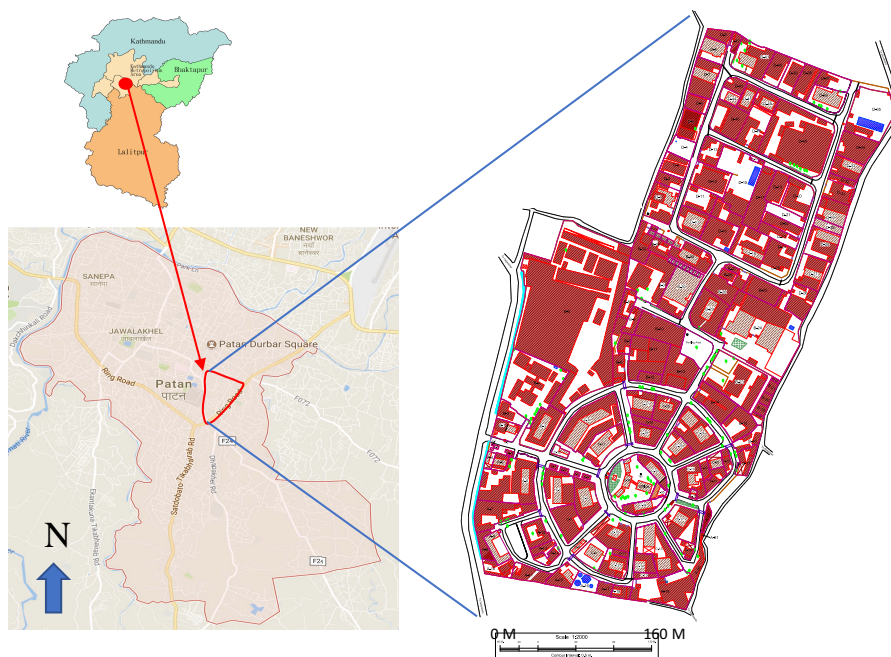
Figure 5.3 Map of Patan industrial Estate
(Source: IDM, 2017)

Comparing profile of industries in both the Industrial clusters, the BID has more capital investment and the scale of industries are bigger within the class of industry in term of investment. Further PIE has more micro and cottage industries and no large-scale enterprises in comparison to BID. The manufacturing industries make up for the maximum number followed by the service sector (Table 5.1).

Table 5.1 Classification of Industry in BID and PIE based Industry Act 1992

Classification of Industry based on investment						
	Micro/ Cottage	Small	Medium	Large	Total	
Balaju Industrial District	4	69	12	2	97	
Patan Industrial Estate	22	73	7	0	102	
Classification of Industry based sector						
Balaju Industrial District						
Manufacturing	Energy	Agro	Mineral	Tourism	Service	Construction
58	4	17		1	15	2
Patan Industrial Estate						
91	1	2	0	0	5	3

(Source: Author based on information in Souvenir IDML, 2012)

In Bid the manufacturing sector mainly are dealing with bottles, machine parts while a considerable amount of manufacturing industry in PIE are into wood carving or furniture manufacturing.

5.2.3 Past disaster incidences in Balaju and its repercussion in the present

In the past earthquakes of 1880 and 1934 Balaju has been badly impacted due its location on the basin area (Bilham 1995; Rana, 2013). After the 1934 earthquake, Rana (2013) mentions that most of the stables in the Kathmandu city area were relocated to the Balaju area for widening of city infrastructure. Though not explicitly mentioned, but this might also be a possible move to restrict residential development in Balaju area. In Balaju area, foundation sliding was observed due to liquefaction and moreover areas which were affected in 1934 earthquake are nowadays converted into heavily constructed areas

After the establishment of the BID, the first major earthquake faced by it which caused damage to various properties is 2015 Nepal earthquake. Before this there was 1988 earthquake which was experienced in Kathmandu, but there was no structural damage or life loss caused by this.

This is confirmed from the reconnaissance report by Fujiwara et al. (1989), mentions no incidences of structural damage in Kathmandu in the 1988 earthquake.
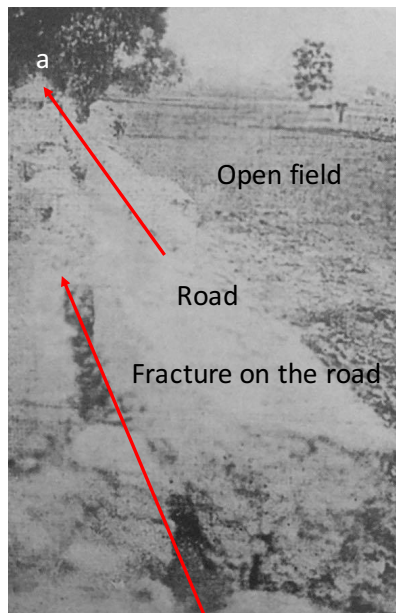
Figure 5.4 a. Fractures documented in Balaju after 1934 earthquake (Source: Rana, 2013; modified by Author)

Figure 5.4 b. Panoramic view of Balaju (Present) Photo credit- Pravin Mishra

5.3 Impact of the 2015 Nepal earthquake on BID and PIE

The impact of the 2015 earthquake has been divided into three heads; physical, social, economic each of them is discussed in detail in the following sections. The physical impact is immediate and easy to observe on the ground and can be linked to the direct economic loss, but on the other hand the social impact and indirect economic impact are difficult to put in numbers as there no way to measure the impact.

5.3.1 Physical impact

Balaju and Patan were severely affected by 2015 Nepal earthquake and even engineered reinforced concrete (RC) structures collapsed due to local site effectively (Gautam, 2017). In Balaju 6 buildings collapsed or were severely damaged in the earthquake while in Patan, medium to minor damages were reported, but unlike BID there were no cases of building collapse. This might be due to the reason that Balaju is a basin area as a result has higher ground acceleration in comparison to Patan.

Based on the questionnaire survey, various types of physical damages have been identified in the BID and PIE. Putting them under various emerging heads gives four thematic heads; life loss, building damage, equipment damage; and damage to raw materials and finished products. Further, building damage has been categorized into three subgroups such as total collapse, major damage, minor damage and no damage.

In BID 24 (86%) of the companies reported experiencing physical damage in the earthquake (Figure 5.5). The type of damage varied across units in BID but overall there was no life loss or injury reported as the earthquake happened on a Saturday all the industries had weekly holiday. 22 industries reported damage to the buildings while 13 reported loss of raw materials and 4 reported cases of equipment damage (Figure 5.6).

In Balaju, 1in every 2 buildings (56%) is a Reinforced Cement Concrete (RCC) building rest are load bearing structures (Adhikari, 2015). The physical damage in the earthquake was experienced mostly in the load bearing structures who experienced collapsed floors, severe damage to the walls or minor cracks in the walls. Out of 24 formal units reporting damage 7 have severe damage while 13 have minor damages in the form of cracks in the wall and 2 reported damage to their compound wall.
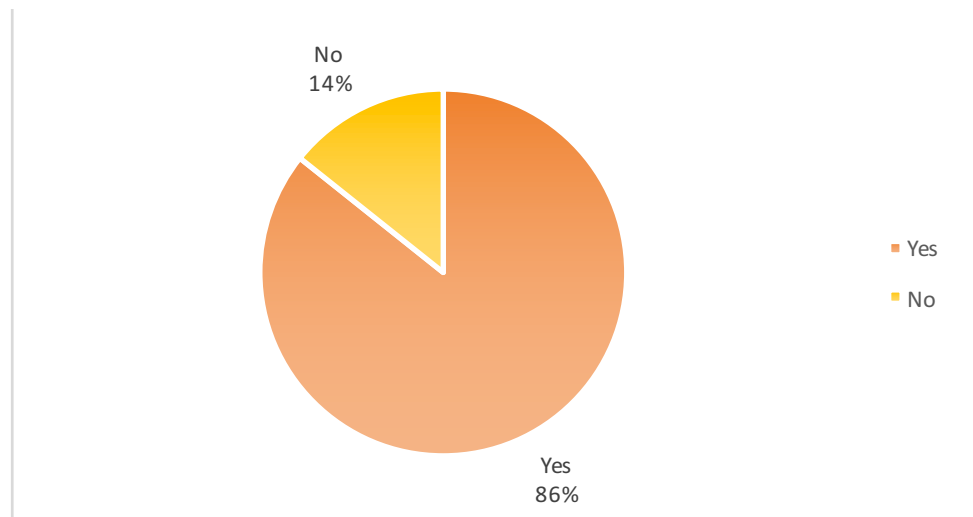
Figure 5.5 Physical damage faced by industry in BID (n=28)

In PIE, out of 30 samples 15 formal units (50%) reported some type of damage to their structure while others had no damage (Figure 5.7). No life loss was reported in PIE and out of 15 physical damages only 4 reported collapse of floors or major cracks in the wall while 8 reported minor cracks and 3 had damage to the boundary wall (Figure 5.8).
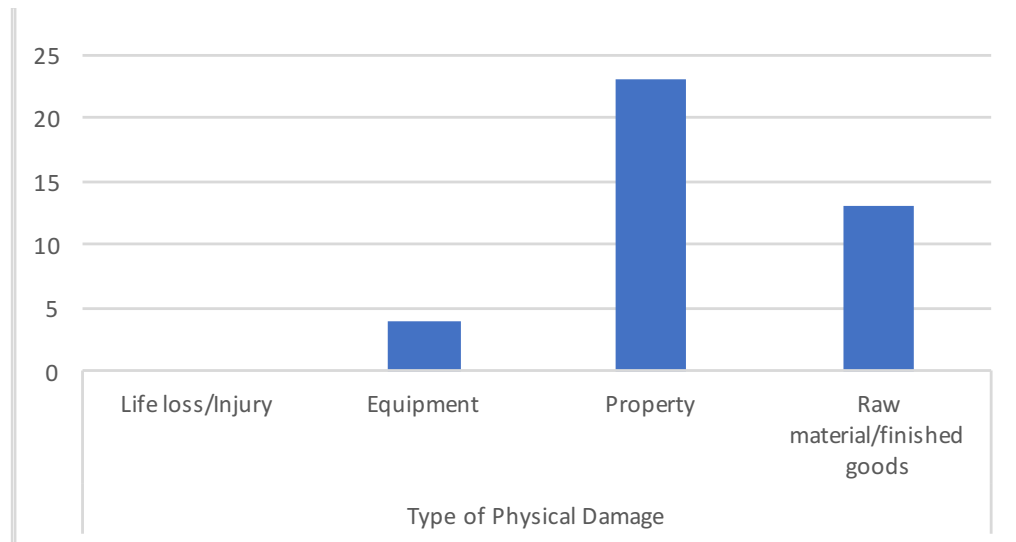
Figure 5.6 Type of physical damaged faced by units in BID (n=24)

5.3.1.1 Repairing and reconstruction

As this study was done immediately after the disaster, hence during the field visit not only the repairing status could surveyed but also the type of repairing work being done could be observed. In BID, 18 people repaired their building with their own money and one person is currently reconstructing as his office collapsed in the earthquake and another 3 have not repaired their building. In PIE, 9 units have been repaired while 1 unit was under repair during the field work and 5 units were yet to start repairing. Both in BID and PIE, owners who have not repaired the units shared that the damage is very minor and can be taken up later. The quality of repairing is a concern as was observed in both study areas, the owners employed local mason for the repairing work with any structural stability checks on the building.
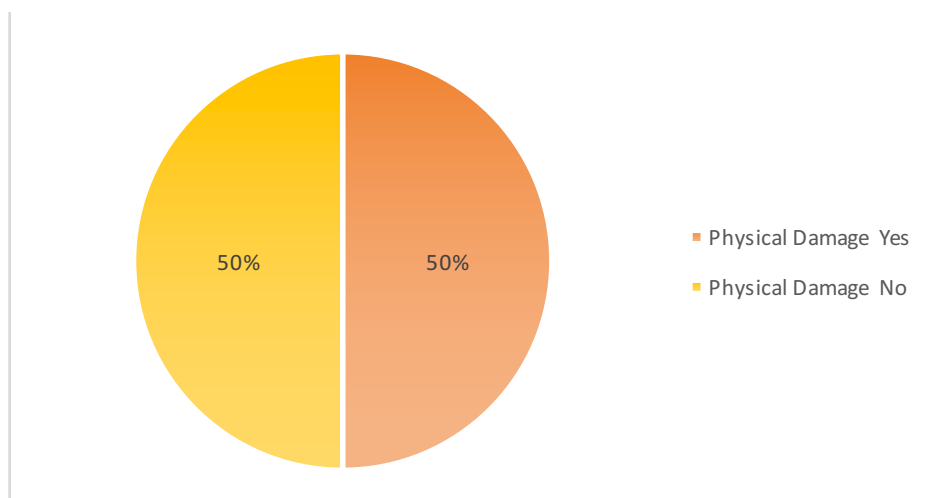
Figure 5.7 Physical damage faced by industry in PIE (n=30)
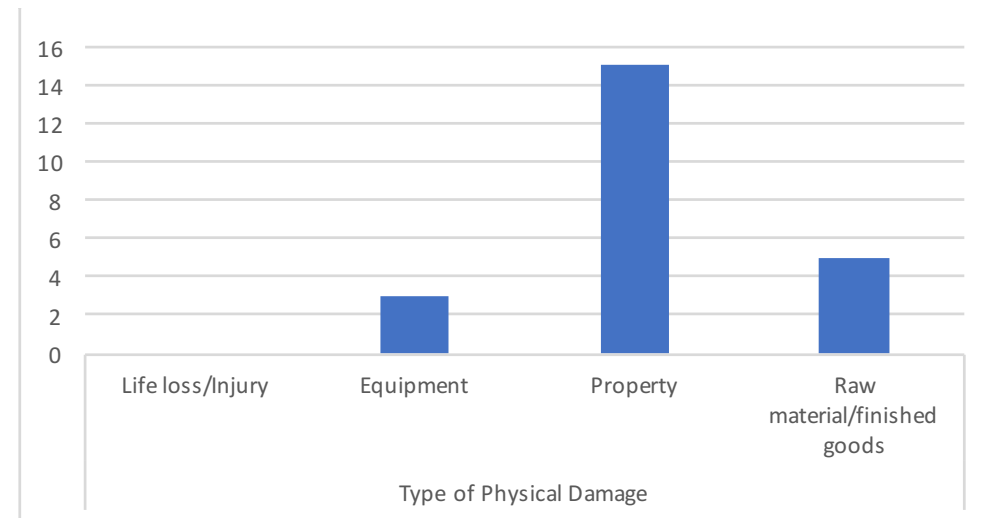
Figure 5.8 Type of physical damaged faced by units in PIE (n=15)

During the key informant interview, it was shared by the office bearers of BID and PIE (A10; A7) that;

> *Industries free to build and construct the buildings as per their requirements. Industry owner has full right for new construction where he should pass the designs of buildings from the industrial district office.*

This is a big challenge as once the building is approved there are no subsequent checks to ensure modifications follow building byelaws. This resulted in owner driven repair works where the cost and speed of the work was the main concern. Various types of structural inappropriateness were noticed in the repairing works such as; improper teething; free standing stool columns; patch repairing of the walls, out of plumb walls, exposed reinforcements in the roof slab (Figure 5.9). In one case in BID, it was observed after repairing of a framed structure cracks have developed in the wall during the second earthquake on 12th May 2015.

5.3.2 Social impact

The social impact on the industrial districts has studied as a factor of the human resources, both owner and labour force employed in the industries. In BID, one third of the labour force are local people while the rest has come from outside Kathmandu. There were two kinds of impacts noticed in both the industrial districts. Firstly, the staff stayed in the industry buildings after the earthquake for varying time ranging from a minimum of 2 days to a maximum of 22 days. 10 and 12 cases were reported in BID and PIE respectively. Secondly, post-earthquake, the labours went back to their families living in other parts of Nepal as well as foreigners, mainly from India and Bangladesh returned to their respective countries. In addition, the earthquake

happened during the rice sowing season (April- May) and hence labourers who were not affected by the earthquake also went home for rice sowing. As a result, there was a shortage of labour in the industrial districts.

This was confirmed from both interviews at BID and PIE (A10; A7)

> *There was difficulty in labour availability, and now after a year, many of them have shifted to the NRA (National Reconstruction Authority) supported recovery work.*

This highlight, presence of daily wage labours among the formal sector and its high dependency on them. Further, due to closure of the industries daily wage labourers lost their income source. Further, because of the labour shortage and the need for human resource in the construction sector, there was an increase in the wages. On the other hand, employees who were on the payroll was paid a full salary.

At the owners' end, there has not been significant impact of the earthquake. Three factors were investigated namely; changes in the life style (change in food consumption, schooling); use of social networking; and participation in recovery. Firstly, among the industry owners' in the BID and PIE, there has been no significant impact on the family and lifestyle. The food consumption, expenditure on schooling and clothes have not changed. But, reduction in the spending on travel, entertainment and festivals was identified in 4 and 5 cases BID and PIE respectively.

Figure 5.9 (a, b, c) Repair works observed in the BID

Figure 5.9 (d, e, f) Repair works observed in PIE

5.3.3 Economic impact

The economic impact is of two types direct economic impact as factor of physical loss and indirect economic impact based on market loss, closure of business and others. Further, the direct economic loss is immediate while the indirect economic impact is long term and is intertwined with the change in local and national conditions. As the aim of the study was not to document the actual economic loss, but to understand the reasons contributing to the loss, hence data were not collected for the actual loss amount.

Hallegatte (2105) shares that indirect losses include all losses that are not provoked by the disaster itself, but by its consequences; they span over a longer period of time than the event, and they affect a larger spatial scale or different economic sectors. The direct economic impact in the BID and PIE is limited to 22 and 15 industries who have faced physical damage. While most the industries in the BID and PIE reported some kind of loss in business after the earthquake. The various direct and indirect losses, as was documented in the BID and PIE are given in Table 5.2

Table 5.2 Types of Economic Impact experienced in the BID and PIE

Economic Impact	Direct Impact	Indirect and Wider Impacts				
	Building, Equipment, Raw materials and finished products	Market failure	Labour	Client loss	Services	Governance
BID	22	1	16	13	22	4
PIE	15	20	13	1	4	2

From the above table, two different trends are seen in the indirect economic impact of the earthquake of market failure and client loss in the BID and PIE. This can be attributed to the time of the data collection and overall economic and political condition in Nepal. The data collection in BID was done in January 2016, at that point of time Nepal was facing a border blockade with India and at the local market in Nepal is highly dependent on India hence the client demand had decreased. While the next set of field data collection was done in May 2016 and January 2017 by which the border blockade had been lifted and the market situation had altered. Further businesses have got their client base back. Labour issues have been a perennial problem in the IDs of Nepal and this was accentuated by the starting of reconstruction work which specially employed lots of daily wage labours especially in the rural areas.

In past disaster cases, damage or loss of utility services had been studied to have larger consequences than direct losses, on businesses (Gordon et al., 1998; Tierney, 1997). Similarly,

in BID and PIE many of the owner's felt services as a significant factor for the business loss and a factor for recovery of the business (Figure 5.10). Among services, electricity and road & transportation came out as two major factors affecting businesses in the BID and PIE after the Nepal earthquake. There is a significant difference in dependency of transportation in the BID and PIE which is due is due While water and Gas has no minimum dependency when it comes to surveying companies and hence there was not a major concern among the owners though in Nepal there was a huge shortage of gas and fuel prices after the border blockade. As for water as stated earlier, there are overhead tank in the IDs to supply water and further, owners pay for the tankers in case they need additional water.
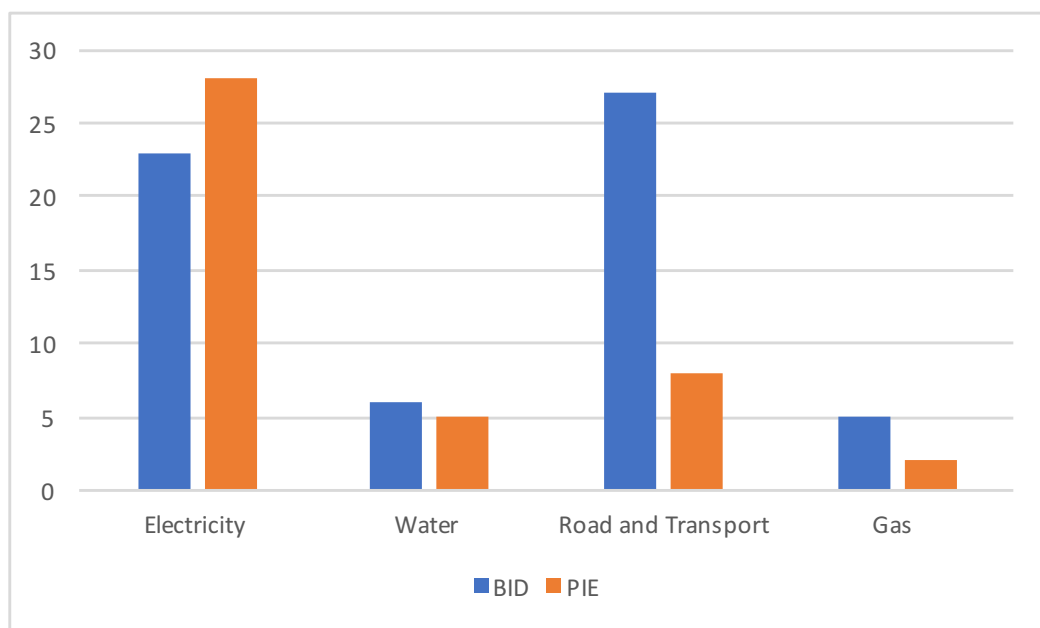
Figure 5.10 Business dependency on services in BID and PIE

5.4 Recovery process

This section considers the recovery process as a sum up of different activities taken up by private sector and various stakeholders that aids in the recovery of the private sector. Various activities are sequentially arranged starting from restarting of the businesses, strategies adopted for recovery and a possible time frame for recovery as consequence of the strategies.

5.4.1 Contextualizing business recovery

The word "recovery" is understood differently by different stakeholders, as is evident from the field interviews. The officer in the Balaju industrial, office (B1) suggested

> *Recovery is the availability of resources (labour, raw material, Transport, Market) for the industry*

On similar lines, a Patan industrial officer stated;

The smooth running of the company is important for recovering.

Interviews with the business owners in Balaju, Patan, and Bungamati revealed that, for them, recovery refers to production, number of orders or items sold, and customer footfall, as compared to what these parameters were before the earthquake for manufacturing, service, and wholesale units alike.

5.5 Restarting time

The restarting time is an important step for the local economy towards recovery. In Bid and PIE the recovery time is studied in number of weeks and is categorized accordingly. The officer (A10) BID shared that;

All the units started functioning within 1 to 2 months of the earthquake, with one or two exceptions. The market demand of the product was an important factor for the early restarting of certain units, like dairy and tents.

In case of PIE, officer (A7) shared that;

All the units started functioning within 1 month of the earthquake, as the physical damage was less and majorly were impacted by water and labour shortage and gas supply during the blockade.

Further data was collected from individual businesses during the field survey and the results are shown in figure 5.11.
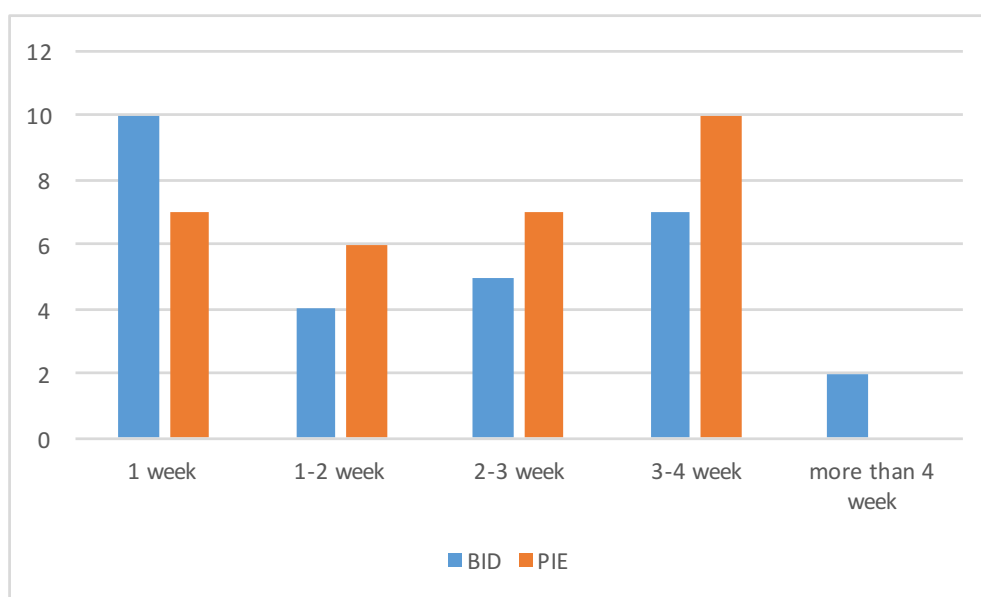
Figure 5.11 Restarting time of businesses in BID and PIE

96

Based on the factory units' surveys conducted in Balaju and Patan, 10 and 7 units, respectively, out of the total 28 and 30 surveyed, restarted within one week of the earthquake. Within one month of the earthquake, 26 units in Balaju and 30 units in Patan had started operations. One unit in Balaju took two months to start, while another reported a restarting time of four months. Overall, this shows that 46% of the factories in the formal sector (Balaju and Patan) restarted within 2 weeks, while 96% of them were functional by 4 weeks (Figure 5.9). Overall, it can be said based on the field data and key informant interview that in both BID and PIE, most of the industries started functioning by the end of 2nd month.

5.5.1 Restarting time and type of product

The restarting time was influenced by the immediate market demand in the post-disaster phase, which may influence the decision whether to restart the business, both in the formal and the informal sectors. The shops that started functioning within 1 week after the earthquake in both sectors are listed in figure 5.12. Although the industrial board said that market demand influenced the kind of businesses restarted in the first week in Balaju and Patan, there was no evidence of a trend in businesses based on types of products, apart from the tents and home appliances, which were in high demand post-earthquake.
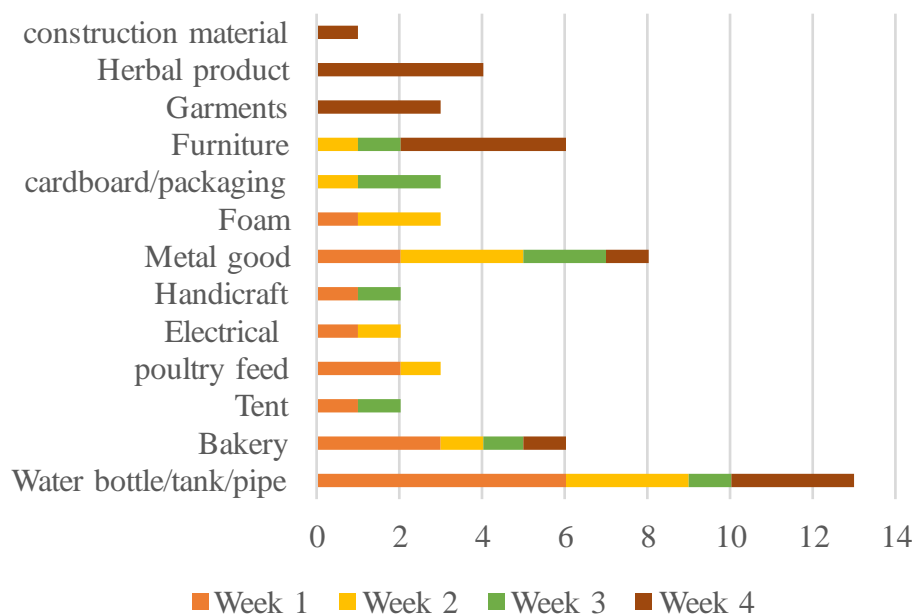
Figure 5. 12 Restarting time of surveyed formal businesses and type of products

5.6 Strategies for recovery

This section is divided into two parts, the first field data is presented and assets are identified and in the later part recovery strategy as identified from the interviews are categorized under various thematic heads.

5.6.1 Assets

The assets are resources present with the business and can be categorized into two broad groups; common assets and personal assets. Further the assets are categorized based on the nature under 4 heads; physical, social, financial and institutional assets.

Physical asset

Land, building and equipment are physical assets of the businesses in the formal sector. In BID and PIE the land is owned by the Industrial offices and cannot be transferred to the business owners but can be leased. At present in BID and PIE 670 and 293 Roppani of land is developed or which 540 and 220 Roppani is leased out rest is used for other common infrastructure. The buildings have been found to have three different status, namely; owned; rented and leased. The owned buildings can make modifications as per their own requirements, while the rented ones must take permission from the owner and lastly the leased ones are the initial buildings for which modifications must be permitted by the respective ID office. The equipment is a physical asset and incase have been bought from bank loans then are hypothecated to the bank for a repayment time of the loan. Hence this makes it not possible for mortgaging as an asset. Most of the owners surveyed have own house and have assets such as car, bike, telephone among others. In PIE, none of the surveyed owners have agriculture land, though a few do agriculture on lease land.

Social assets

In social asset, family networks and business networks, link to government officials are studied. The business owners shared that mostly, the business is the single source of income for the family and different family members are part of the same business. Hence the continuation of the business is important for income generation of the family.

At the business level the owners have regular interactions with other business owners in the same field and discuss rate changes and strategies. In post disaster case, such interactions have helped in keeping one updated on the change in market. As all the business owners, are

registered hence can benefit of various supports under the Industry Act 0f 1992. But with no clear policies in the private sector in the relief act or other disaster management act, the business does not have any added advantage of registering with the government in normal times. But in case of post-earthquake, the government of Nepal offered low interest loans, restructuring of previous loans and tax benefits. Further, the ID offices supported the industries in applying for loans for business expansion by acting as a guarantor.

A few owners have family members staying abroad, but there has been no remittance from them after the earthquake to support the business recovery.

Human resource asset

Labour is an asset for business and in case of BID and PIE, the business units have a high dependency on labour and in the post disaster scenario it is seen that adjustment in labour was made as recovery strategy. Furthermore, post-earthquake, labour change was used to balance loss and increase production in the formal sector, as can be seen from excerpts from an interview with the owner of a plastic unit (B8);

> *I wanted to increase the production to overcome the loss suffered in the earthquake and, hence, I increased my labour (force) from 4 to 12 and brought in new machines.*

Similar reasons were given by B10 and P15, 16, 19, 20, and 23.

In addition, a tendency towards labour optimisation to reducing the overhead cost was identified among the business owners. (P3), who runs an electrical equipment unit stated;

> *3 workers left after (the) earthquake and we continued to work with the remaining workers as there was no need to increase the labour force.*

A similar trend has been seen with P4, P8, P10, and P18 and B9.

Economic assets

As part of financial assets, savings, insurance and access to loans are considered. Most of the companies have savings though among the small-scale enterprises, it has not always been segregated from the household savings. Further, the small and medium scale enterprises use this savings as rolling capital for buying new raw materials. Insurance is an asset in which majority of the businesses in the BID and PIE have invested, but as has been discussed in the earlier section do not support the recovery process. In BID and PIE, the industries relied on bank loans to start their business. Further post-earthquake, the government made structural changes in the loan availability for the private sector, which created a window for the industries to expand their business and survive the earthquake.

Business diversification

Considering from the survey respondents in the formal business in the BID and PIE has a single source of livelihood hence the business diversification is a more apt term to be used. Various strategies have been identified mostly at the organizational level to adjust, restructure and adapt to the change in the market conditions. From the interviews, business diversifications were not identified in any of the studied cases. But on the other hand formal businesses were trying to venture into new products to widen the income options as seen in the case of (P 6);

> *I used to manufacture plastic bottles, but after the earthquake, I also started making plastic jars.*

In the other cases, most changes are made in raw material procurement, working hours, staff strength, advertising policies among others (table 5.3).

Table 5.3 Coping strategies identified in the BID and PIE

Heads for coping strategies (Rakodi, 1999)	Identified strategies in the BID and PID
Strategies to increase resources by intensifying the use of natural, physical, and/or human capital	• Changing working hours • Improving supply chain • Increasing raw materials' stock • Increasing the production space • Advertisement and customer outreach • New collaboration • Catering to market demand after disaster
Strategies to change the quantity of human capital	• Increasing labour force
Strategies involving drawing on stocks of social capital	• Loans from banks through industrial office • New collaborations • Borrowing from friends and family members
Strategies to mitigate or limit a decline in consumption	• Alternate supplier identification • Delaying repairing of factory units • Changing short term contracts to long term

5.6.2 Role of insurance in recovery

Risk insurance has been promoted time and again as an important risk transfer mechanism in the post-disaster scenario and as a strategy that will also support recovery. In Nepal, there is a complete contrast in the penetration of the insurance sector among the formal and informal sector. The penetration of the insurance is high, especially in the IDs.

In BID and PIE a total of 23 and 29 companies had insurances among the sample collected but only 1 company in PIE got claim of the insurance that too from motor insurance as his vehicle was damaged.

From the figure 5.13 It is evident that mostly all formal industries in the BID and PIE had insurance for the unit in terms of property or machine insurance. While insurance for the staff

is not prioritised among the businesses, especially in the BID. While the businesses not having, insurance shared they do not feel there is any need. From figure 5.14, it is seen that accidental and health insurance make up for majority of the insurance. While insuring for fire and damage to raw materials was seen in only one case each in the BID and PIE. No disaster specific insurances were found to exist in both the IDs. Many a businesses experienced damage to raw materials or finished products experienced, but due to non-insured losses they could not be claimed.
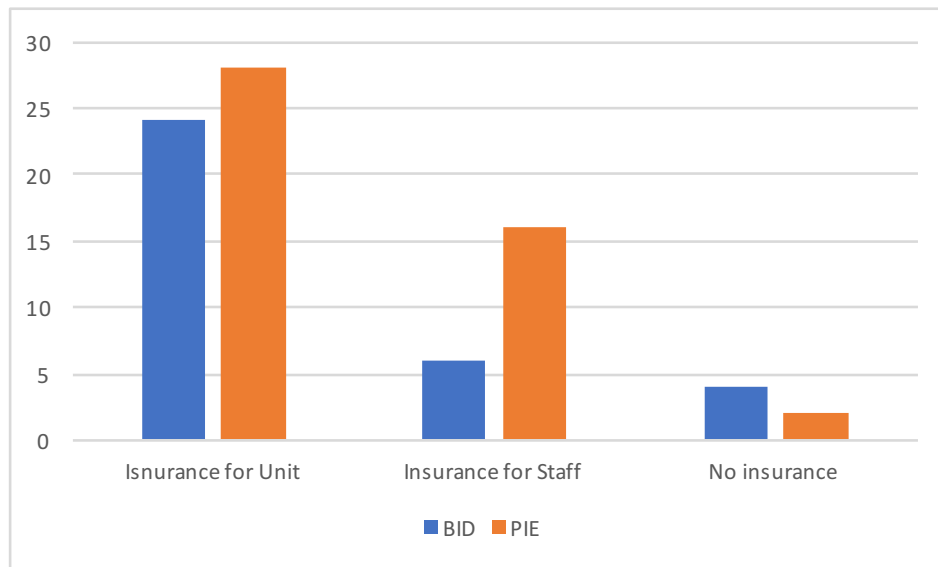
Figure 5.13 Prevalence of insurance among surveyed businesses in BID and PIE
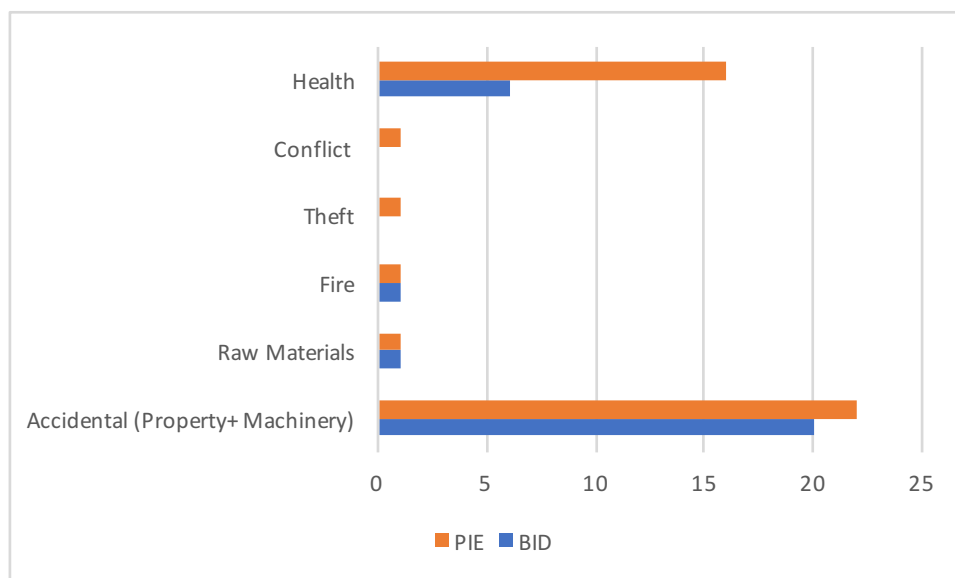
Figure 5.14 Type of insurances bought by surveyed businesses (Multiple choice)

In both the IDs, property insurance was common, but the key informant (A10) in Balaju stated;

> *Insurance schemes were not effective, as the coverage was 10–20% of the total damage due to historical depreciation of the value of buildings.*

Post-earthquake in BID, surveys were conducted to assess the damage to property, and claims were made; however, none of these claims had been settled by the date of the survey, in January 2016. According to a recent interview with the Balaju Industrial, office, in June 2017, a total of 18 claims has been settled, but the settled amount is 10–20% of the total damage, based on the historical cost depreciation. Similarly, in PIE, only one unit received the claimed amount from motor insurance, as the owner's car was damaged. In Patan, a textile unit owner (P 22) who experienced minor damage to the building and the boundary wall of his unit and who had accident insurance for his unit stated;

As the damage was minor I did not report it for an insurance claim.

During interviews with other owners, it was revealed that most repair costs were borne by the unit owners and, considering the physical damage and business loss in the earthquake, cheaper options were taken for repair. Chatterjee et al. (2017) have suggested that such repair tends to neglect basic safe construction norms and, consequently, makes the units more vulnerable to future earthquakes.

There are two major issues that gets highlighted based on the case of BID and PIE. Firstly, the insurance sector has good penetration in the formal private sector but have not customized products as per the need of the customers. Along with this there are no strict rules and regulations binding the insurer and insurance company. This is supported by the statement from key informant (A2);

> *At present, rules and regulations for insurance are not in place in Nepal, resulting in it not being effective for recovery.*

Secondly, time of the insurance claim is an important factor as seen in these cases, by the time claims are made repairing or restarting of the business units have already been done. This relates to the research infrastructure of the insurance companies as immediately after a disaster there is need to expand the human resources for conducting damage surveys. But due to impact on the local population, the local human resources are also impacted hence there is a way to work all out after a disaster.

5.6.3 Recovery aid and participation in recovery

It was found during the interaction with the officials and business owners of BID and PIE that no recovery aid was given by the government or by the humanitarian aid agencies. One of the reasons as stated by the NRA member (A2) is

> *It is an understanding with the government that business units will recover on their own and, in doing that, they can take advantage of the loans. In many cases, the private sector did not disclose the extent of damage in the earthquake; hence, we do not have complete understanding. As a result, we did not discuss them in detail.*

This points out to a lack of communication between the government and the private sector in general and lack of data to understand the private sector's needs.

On the other hand, the business in the BID and PIE were involved in the recovery process immediately after the Nepal earthquake. Two types of involvement are identified based on the interviews with the business owners; 1. Relief material distribution; 2. Cash aid

The business owners distributed relief materials like food packets, blankets and tents as relief materials after the earthquake while others contributed cash aid to the prime minister's relief fund. In most of the cases, relief distribution was preferred over cash aid as the owners could distribute their own products like (bottled water, food, tanks etc.). At the ID level, there was no coordinated relief work from the BID and PIE industrial office. The business owners shared that in future we will like to be only involved in short term relief work as long term commitments are difficult due to market uncertainties. On the broader realm, this has implications for developing public private partnership projects for recovery and reconstruction in Nepal.

5.7 Recovery time

The formal sector (Balaju and Patan) recovery time varied from less than one year to more than 7 years, with most businesses expecting to recover within 5 years of the earthquake. In Patan, 18 of the industries expect to recover between 2–3 years after the earthquake, while another 7 expect to recover between 3–4 years; 2 said that they cannot predict their recovery time due to fluctuation in the market. In comparison to Patan, the industries in Balaju show wider variation, with 1 industries reported to have recovered within one year of the earthquake. Most the industries reported 2–3 years as the recovery time, while 2 industries stated that its recovery time will be 5–7 years (Figure 5.15). Furthermore, during the interview, the industries in both Balaju and Patan clearly defined their present condition as either recovered or not recovered.

Overall, both in the BID and PIE, most of the formal businesses would recover by the end of the 4 years considering the market conditions does not change drastically in Nepal. This is significant as it falls within the recovery time set forth in the recovery framework made by the government.
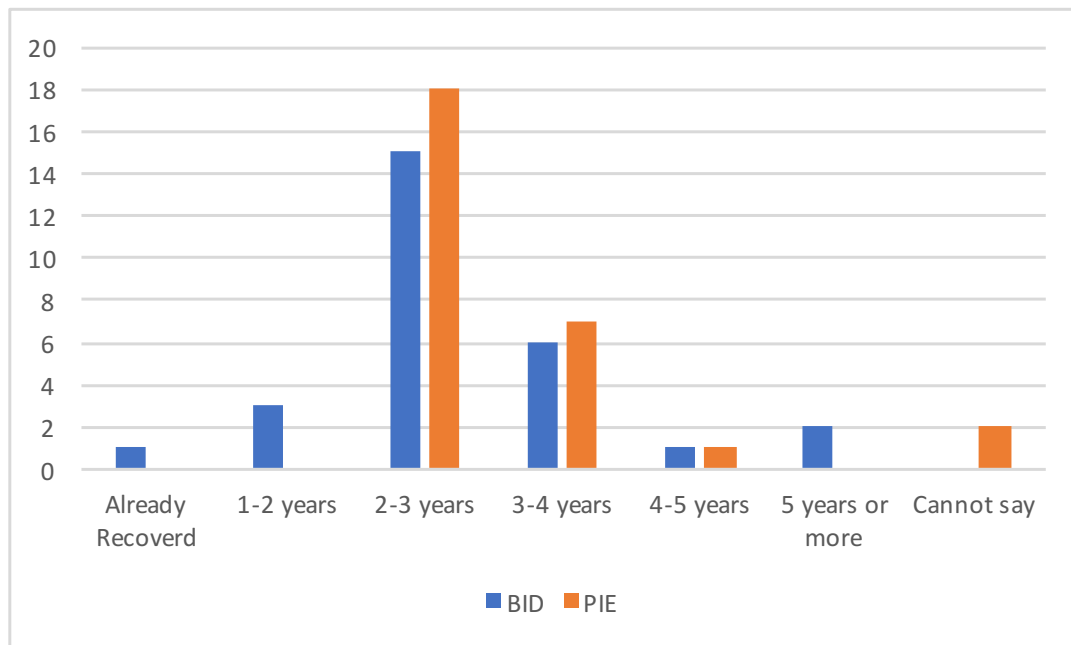
Figure 5.15 Recovery time of businesses in BID and PIE

5.8 Discussion

This chapter focused on two Industrial districts within Kathmandu Valley as representative of the formal sector in Nepal. Five different aspects were studied in this case study locations and drawing parallels between the individual findings of each case study shows many similarities and a few differences. Each of these similarities and difference are discussed here in details.

Both BID and PIE were set up almost at the same time with the help of external aid and has similar institutional setup. The location of BID and PIE is within a radius of 6km but has a differential impact on the severity of the damage as was seen in the case the BID which is in the basin area. The lack of a proper land use plan using disaster data is highlighted as during the 1934 earthquake, documented data shows the Balaju area was one of the most affected areas in Kathmandu but at present this region has the highest population density in Kathmandu. Further, having 44% load bearing structure in such high ground amplification zone puts the buildings at higher risk of being affected by future earthquakes.

There is a similarity in the type of damages faced by the different industries in both the IDs, the physical impact mainly involves the damage to the property followed by raw material and

equipment. The damage to property can be attributed to the weak legislation, monitoring and limited maintenance funds with the respective industrial offices. Further, in the post disaster condition, though the totally collapsed structures are reconstructed under proper checks, but the partially damaged structures which have already been repaired are the ones which also needs to be properly monitored and structural checks done to check the stability.

The social impact of the earthquake mainly in both IDs was limited to the labour forces and translated into to alteration in the family expenditure on travel and festivals. Coming to the economic impact, the direct losses were mainly due to physical damage, but the indirect losses showed both similarity and variation in the BID and PIE. Similarity is seen in the case of labour and governance which are not more regional and national level phenomenon. Whereas variance in client loss, market failure and dependency on services points out the industry specific impact. The restarting time of industries in both BID and PIE shows a similar trend where most of the industries restarted with first 2 months of the earthquake. This can be attributed to the fact that, the business units are the primary source of income for the owners' family. While the availability of labour and market demand governs the decision to restart the business.

The recovery of the business among the surveyed industries seems to go beyond 2 years and the majority of the business in the BID and PIE will recover between 2-4 years. As this is an expected recovery time it will vary based on the local, national and international market and policies. A benchmark of recovery among the owners is when resources, supply chain is normalized to support the running of the business. Hence form this there is no further motivation for incorporating the building back better as part of this normalization process. Insurance as a risk transfer mechanism in recovery among the formal sector in Nepal is not effective due to the no timely payment of insured loss. Further, the historical depreciation of insured property based on the age of the building makes the insurance scheme less efficient for old buildings where the probability of damage is higher. Currently, the formal private sector is not considered as a beneficiary for recovery aid as a result neither monetary or technical support is provided. On the other hand, the formal sector is involved in the relief through distribution of their own products and does not eye for long term engagement in the recovery process.

Business diversification was not identified as a common strategy for recovery among the formal sector in this study. The asset and capital linkage among the formal sector is restricted mainly to the business except for social network which extends into the family networks. The various strategies involved in supporting recovery as a result involve in transforming assets, human resources or in some cases on financial assets.

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Chapter 6

Informal Businesses in Bungamati

This chapter introduces the informal businesses in Bungamati. The first section gives an overview of Bungamati. Second section shares incidences of past disaster in the selected study area. This followed by the impact of the 2015 Nepal earthquake on the businesses. The following section deals with restarting time, recovery strategies and actual and probable recovery time of the businesses studied. The concluding part discusses the findings of the case study.

6.1 Newari community engagement in the informal sector in Nepal

The occupation has been the backbone of the Newari society and its complex caste system and though 1963 code of law (Muluki Ain) largely obliterated caste system in Nepal but it is still very much in existence in the present times. The stratification of society based on caste has varied levels of social, political and economic interactions within a homogenous community. Dumont (1964) suggests that a Newari society is a "conglomerate of groups" distinguished by their profession, social status and religion". This uneven distribution of power within the society is an important concept of practice theory and in case of any material condition change there is a restructuring of relationships and power (Roseberry, 1989).

The Newars are though listed as an ethnic group in Nepal with only 5% of the total population, but census of 2011 shows that has one of the highest per capita income in Nepal and are located mainly in Kathmandu valley. Shrestha (2016) shares that smaller traditional settlements in Kathmandu valley like Khokana, Bungamati, Sankhu among others, have specific non-farm activities apart from agriculture. Various indigenous handicraft and art work are pervasive to one specific village or community among the Newars. This supports Dumont findings that Newars are heterogeneous within their own society and this is because every Newar settlement before the 17th century was never a single homogenous group as stated by Shretha (1999). Traditionally trade has always played an important role in Newar economy, and today Newar society's expansion outside the Nepal Valley coincides with the flow of trade.

A typical Newari society till recently had agriculture as their primary occupation taken up by the majority of people. In these Newari settlements, there is existence of co-operative associations called "***Bola***" which is made up of members of local Newari who have agreed to help each other with their agricultural work in return of similar help when they will need (Haimendorf, 1956). Due the close connect with trade in the earlier times, most of these Newari

settlements lie on or near the main trade routes, and administrative centres, where Newar merchants use to cater for the needs of Government officials. Toffin (2008) elaborates that the duality among the Newari settlements is urban in its physical form but rural and inward-looking in its socio-economic structure. Adhikari and Bohle (2008), in their study of rural livelihood, highlight the existence of multiple survival strategies among resource-crunched households in Nepal.

Rankin (2004), in her study on the cultural politics of markets among Newars, suggests that the household is an elementary social and economic unit of the Newari society, where capital is managed by strict age and gender-based division of the household. Quigley (1985) compares a Newari merchants' household with a structured corporate system and suggests that household hierarchies and division of labour are crucial for livelihood diversification and the availability of a safety net against shocks. One of major fallout of the land reform of 1964 in Nepal was the loss of community groups (Guthis) who use to have control over the land and were responsible for carrying out the festival death rituals in Nepal (Shrestha, 1999).

In Nepal, different traditional settlements are known for a specific type of handcrafts. For instance, the carpet clusters are mainly located in the Kathmandu valley and in the Lalitpur and Bhaktapur districts, and employ around 1.6 million workers. Wool spinning clusters are found in Dhading, Kavre, Jhopa, Marang and Lyanja. Patan is known for metal work, Khokana for mustard oil industry and, Bungamati for woodwork and, Sundhara and Bhinsebaal for stone work at (Sarkar and Banerjee, 2007; Muzzini and Aparicio, 2013). A majority of these handicrafts is informal in nature and are linked to the tourism sector in Nepal. In addition to these, the grocery shops, restaurants and workshops all add to the informal sector as they fulfil one or more informal sector criteria listed by ILO (2004). Muzzini and Aparicio, (2013) observed a decline in export competitiveness due to lack of effective marketing and branding at the cluster level while lack working capital, access to microcredit, bargaining power with retailers and exporters, and dependable power and water services at the individual level. Rankin (2004) specific to the Newari businesses in Sankhu observes the existence of a "copycat principle" in the setting of local businesses among Newari settlements at normal times. As a result of this, shops selling similar products are found within a smaller area generating more supply to local market in comparisons to a mostly constant demand.

6.2 Introducing Bungamati; A traditional, informal Newari settlement

Bungamati is one of the 52 traditional Newari settlements in Kathmandu valley known for its strong community ties, small scale enterprises and heritage. This section gives an overview of Bungamati focusing on the socio-economic, physical and institutional characteristics.

6.2.1 Location of Bungamati

Bungamati is located around 8km from Kathmandu in Lalitpur district and is known for Rato Machindranath temple, Newari architecture and various festivals and covers an area of Area of 3.89 square km (Figure-6.1). Bungamati can be accessed by road from Jawalakhel and there is a proposal for a new ring road connecting it to the other centres of Kathmandu valley. The route of Machindranath Yatra in Bungamati defines the boundary of the settlement.
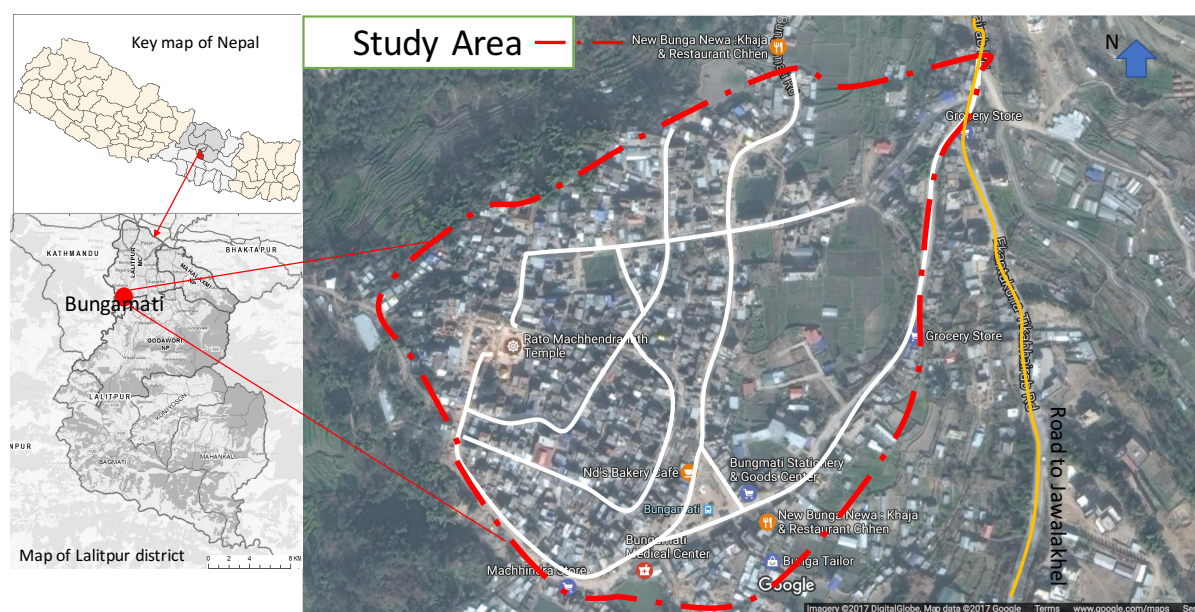
Figure- 6.1 Map of Bungamati
(Source: Maze Solutions, Google image modified by author)

6.2.2 Social-cultural and religious importance of Bungamati

Bungamati has a total population of approximately 5,966 people comprising of 1,304 households and the population density is 1,534/km²as per census of 2011. The population of Bungamati is mostly homogenous with 92% of them belonging to Newari community and the change in population has been +0.51%/year between 2001 and 2011. The average household

size is 4.5 members against the national average of 4.9 which is a divergence from the traditional Newari's household, which includes extended family and thus having a large household size. The ratio of number of male to female is 1:1. The educational profile does not replicate the gender balance in Bungamati and number of illiterate female population over 30 years is higher in comparison to the male population.

Figure 6.2 Photograph of Bungamati in February 2017

Table 6.1 Agriculture land and food balance in Bungamati in 2001

Status		Bahun/Chetri	Newar	Tamang
Crops (Roppani)	Paddy	7,865	37,149	3,273
	Wheat	5,791	8,847	139
	Maize	8,141	4,831	4,740
	Total	2,179	50,827	8,151
Total requirement		15,834	41,397	7,211
Food balance		5,963	9,430	940
Food balance/per capita		129	78	45
Avg. Family size		5.2	5.9	5
Avg. Landholding		7.4	6.3	5.5
Avg. animal holding		0.7	1.6	0.8

(Source: Maharjan and Joshi, 2007)

This is due to the existing gender hierarchy within the Newari society. In Bungamati 90% of the household have mobile phones, while more than 45% household has two wheelers (bike, scooter) but only 1.6 % of the population have a car. Bungamati has on an average a food surplus of 86 days per capita in comparison to the 78 days for Newars and 129 day per capita

for Bahuns and Chetris who owns 35 percent of productive land table 6.1 (Maharjan and Joshi, 2007).

6.2.3 Economic condition of Bungamati

Bungamati was a subsistence economy based on agriculture, but due to rapid urbanization of the peripheral areas there has been a shift in the livelihood activities. But having said that still 80% of households having their own farmland or do farming on rented or leased land (UN Habitat, 2016). Maharjan and Joshi (2007) suggest agriculture as the main occupation, but wood carving, carpet making are also present as alternate livelihood. The median annual household income and expenditure per head are 507 and 442 USD respectively, where the highest source of income is from work abroad followed by the business while expenditure heads include food, education and medical expenses. This income is lower than the national per capita income of 661 USD (CBS, 2011) and leaves a small margin for savings or reinvestment in as capital for businesses.

6.2.4 Institutional changes in Bungamati

Bungamati was setup during the Licchivi period around 7th century AD. The settlement has under the rule of various Nepali dynasties till the introduction of the Mulki Ain in 1960's. From that point till January 2015, Bungamati had been a rural Village Development Council (VDC) under the Lalitpur district authority. After the establishment of 75 new municipal corporations in 2014, Bungamati along with other four VDCs became a part of the Karyabinayak municipal office. In 2017, another urban body reform lead to subsuming of Karyabinayak municipal area under the jurisdiction of Lalitpur sub metropolitan office. Figure 6.3 shows this on a timeline.
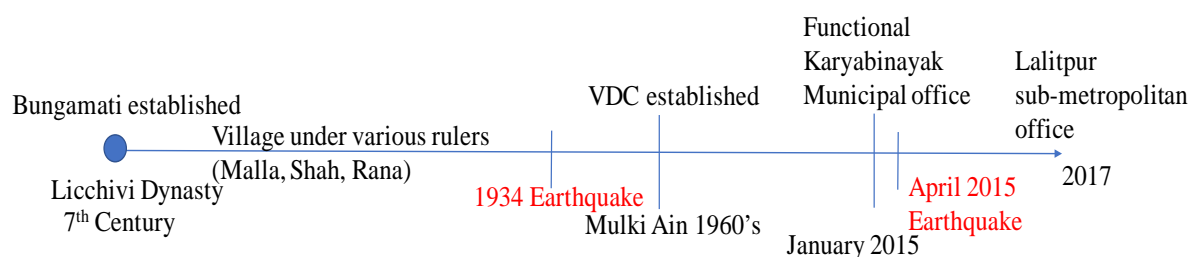
Figure 6.3 Timeline of important institutional changes in Bungamati

6.3 Bungamati and 1934 Earthquake recovery

The recorded impact of earthquakes in Bungamati goes back to 1833 which shares that Bungamati was one of severely affected villages in the Kathmandu Valley (Rana, 2013). In the earthquake of 1934, 99% of the houses in Bungamati were destroyed and caused death of many people (Ibid). Though there is no official documentation of the exact number of deaths

and injured particularly in Bungamati. But referring to the (Ibid) it can be said that settlements outside Patan city suffered the highest number of casualties in three districts of Kathmandu valley and Bungamati was one of them. An archived London news article covering the 1934 earthquake reports *"The little Nepalese village of Bagmati (of 310 houses; all destroyed), where 123 were killed and 99 injured out of about 2000" (*London illustrated 14th Edition 1934*)*. A total of 853 people from Bungamati and Khokana received treatment in the temporary hospital (Rana, 2013). The figure 6.4 shows the surviving Rato Machindranath temple while other buildings lay collapsed around after the 1934 earthquake.
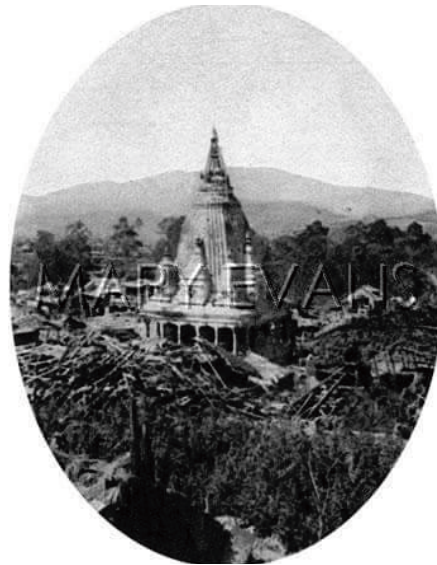
Figure 6.4 Destruction in 1934 Earthquake in Bungamati
(Source: Illustrated London News Ltd/Mary Evans)

The urban nature of the Newari settlements with narrow streets and adobe buildings caused this higher mortality. Immediately after the earthquake, relief work was mainly supported by the local people and Rana (2013) reports that at least 100 unclaimed corpses were disposed in the river Bagmati in Bungamati alone. The family could not perform their last rites and later the government took charge of their disposal. This evidence points out to two aspects in Bungamati during the 1934 earthquake; first, the collapse of the social infrastructure (Guthi) that is responsible for the funeral rites. Secondly, Bungamati was not economically strong as family members could not bear the cost of conducting funeral for the deceased and had to leave the corpses in the river.

An aid of maximum Rs.100 was given to people after inspecting their economic condition in the rural areas. While the loan was given to people who had the capacity to pay back and use of property as a mortgage. A sum of Rs.500 for Pakki (strong/permanent) building and Rs.100 for Kachhi (weak/temporary) buildings were sanctioned. Needless to say, the people of

Bungamati could neither way build strong buildings based on the aid or loan and further considering that 99% of the houses were damaged and majority of the land was under the gate, most of the people in Bungamati could not take long for rebuilding their houses.

6.4 Development of Bungamati and evolution of businesses post 1934 Earthquake

This section presents a longitudinal understanding of the overall development of Bungamati in conjunction with the development of businesses, mainly shops after the 1934 earthquake till 2017. The timeline is created based on interviews and focus group discussion and participatory mapping with survivors of the 1934 earthquake and senior citizens who are above 65 years of age, village priest and ex-VDC members in Bungamati. Further, evidences in the form photographs of Bungamati collected from archives of Taragaon Museum are compared with recent photographs of the same area to show the change in street scape and built form influenced by the growth of the business. A total inventory of the functional shops in Bungamati is created by location to analyse the temporal change in the growth of businesses in Bungamati. The findings are grouped under four heads; Social, Economic, Physical and Institutional and under three-time period 1934-64, 1964-1990 and 1990-2015. The time is divided based on the available data from the field and each of these time-period marks an Institutional change in the Nepalese society.

6.4.1 Recovery and development in Bungamati post 1934 Earthquake till 1964

This part shares the development in physical, socio-economic and institutional changes in Bungamati between 1934 and 1964.

6.4.1.1 Physical recovery and development

In Bungamati before the 1934 earthquake there were 3 Tola based on caste (Figure 6.6) and the houses were made of bamboo, mud and straw. The 1934 earthquake destroyed all the houses in Bungamati hence what is seen at present in Bungamati has been built after the 1934 earthquake (*locally called 90 ka Bhukamp*). The total process of reconstruction took 7 to 10 years in Bungamati and all materials were procured locally. The reconstruction was done by the people themselves and neighbours helped each other. A survivor (O1) from Khokana shared that

> *Bungamati, Panga and Chaubar had masons and carpenters while Khokana did not*
> *have any. But people who could construct did it on their own. The king gave a land in*

Khokana for starting a brick kiln. Loans of different amount (Rs. 30 to Rs 60) were availed by people for reconstruction and my father got Rs.60 while the village head got Rs. 300. Later all loans were waived off by the king.

There were four shops prior to the earthquake in Bungamati and all of them use to sell grocery and vegetables. Salt, tobacco were main products. After the earthquake, all the shops opened within a week's time. There were only 5 carpenters and 2 masons belonging to the Brahmacharya caste in Bungamati who had a Guthi which stopped functioning after 1964. They all use to live in the Kota Tola till 1964's land survey after that they shifted out of that Tola. In the earthquake, the road connecting Patan and Bungamati was damaged, but it did not cause much hardship as people use to travel by foot. Till 1964 there was no tea shops in Bungamati and people use to go to Patan once a year to have tea.
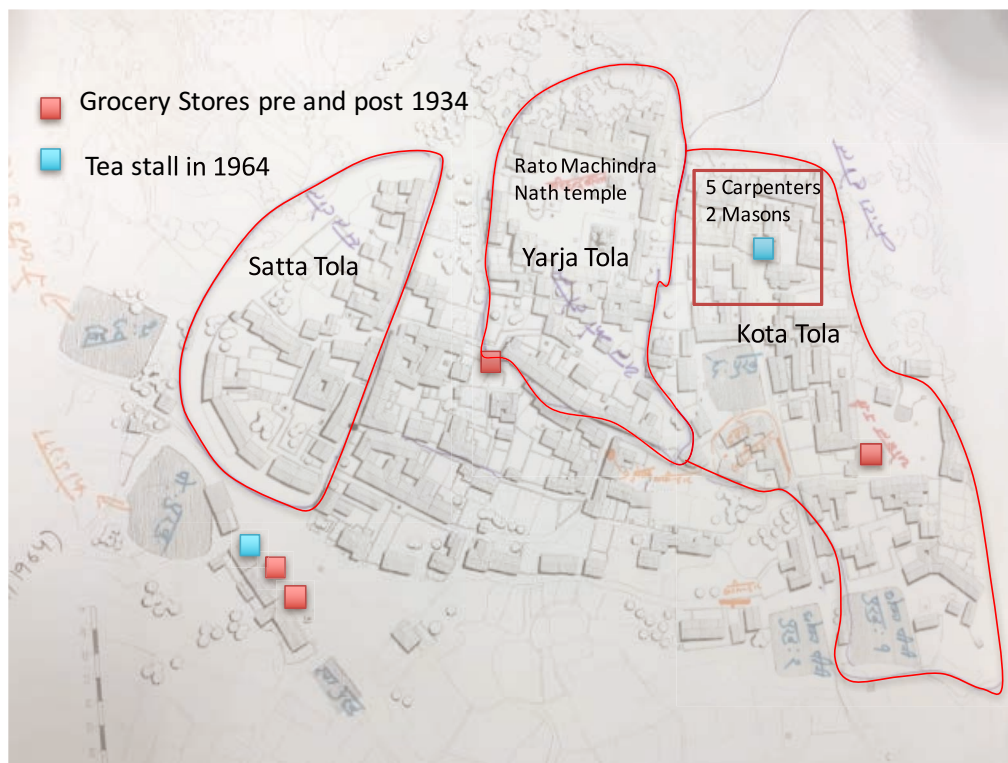
Figure 6.5 Location of 3 Tolas, shops and Guthi of carpenter and mason in Bungamati

6.4.1.2. Socio-economic recovery and development

Three Tola as shown in figure 6.4 had a different mix of Newari castes as was found from the FGD. The Yarja Tola which includes the Rato Machindranath Temple complex and Kota Tola were a mix of higher and lower caste Newars. Yarja Tola comprised of Bajracharya, Shrestha, Shakya, Khadgi, Maharjan, Pode and Sarki. While Kota Tola had Bajracharya, Brahmachraya, Tuladhar, Mali, Desar and Kapali. The Satya Tola was a homogenous Tola of only Maharjan.

The main occupation of the people of Bungamati was agriculture and secondary option was making mats and rope (Dori) for typing the roof joist and other members in building construction. Multiple income generating sources were present at household level in Bungamati during this time where women would involve in making clothes, sell milk, curd and carpets. Patan was the market for selling the rope. After the 1934 earthquake, there was huge demand of the house and the masons and carpenters were not enough hence other people started learning from them. The change in material for roofing happened and the demand for ropes went down in the market slowly. After a certain point of time only poor families in Bungamati would make ropes for livelihood. There was a shortage of food in the village and no meat was available for many days.

Immediately after the earthquake as more hands were needed for reconstruction of the houses in Bungamati and elsewhere, other caste people were trained in carpentry and masonry work in Bungamati by the 7-skilled people in Bungamati. Wood was used from the local forest and adobe bricks were made in Bungamati and Khokana. The "Daju Bhai's" (brothers) helped each other in the reconstruction of the houses.

A master wood carver (H17) who's three generations have been in this business shared;

> *The carpentry was earlier limited to Bramhachryas and Shakyas belonging to Bare caste, but with time it spread to other castes. I learned the art from my father and great grandfather and started working when I was 17 years. Both my father and great grandfather use to work for making buildings and kings' Durbars and windows. There was no set up in Bungamati but use to go on call. There were only 5 skilled carpenters in Bungamati and my grandfather was the head.*

In Newari culture, male member is the head of the family and makes all decisions for the family including controlling of the finance. A Woman's role is to care for her children, provide food and help the family in the field. But one instance was identified during the interview with (O7) whose mother use to run a grocery store before the 1934 earthquake. This suggests there was no clear demarcation of gender roles among the Newars in Bungamati when it comes to business.

In 1934 Earthquake, Bungamati had high casualty which lead to increase in inter-caste marriages in the society, though there is no statistical data to prove this. These marriages between castes mainly priest and Jaypu's gave rise to an intermediate Tuladhar caste. But during the discussion with the elders it was shared that before 1934 there weren't many Tuladhar in Bungamati. This marriage between two different ranking higher castes in Bungamati is unique as it is not observed in other Newari settlements. Tuladhar in other Newri

settlements is due to marriage between Newars and Tibetans. This is caste is entitled for the son or daughter born of this inter-caste marriage. Tuladhar' have access to both the higher and lower castes in terms of knowledge and mainly involved in business.

As shared by O (8)

> *A major change that leads to economic recovery in Bungamati immediately after the earthquake was the use of chemical fertilizer for the fields instead of using organic fertilizers mainly cow dung. In next 3-4 years, the yield was good and people made lots of profit from the additional yield and they could reconstruct their house. In Bungamati, people started doing wood carving and carpet making after the 1934 earthquake.*

The foreign people started visiting Bungamati after the setting up of the missionary hospital in 1952. Various scholars like Shrestha, (1999); Bjønness (1983) have suggested this as the period when Nepal opened its borders and tourism started flourishing in Nepal and wood carving became a commercial activity to sell to the tourist.
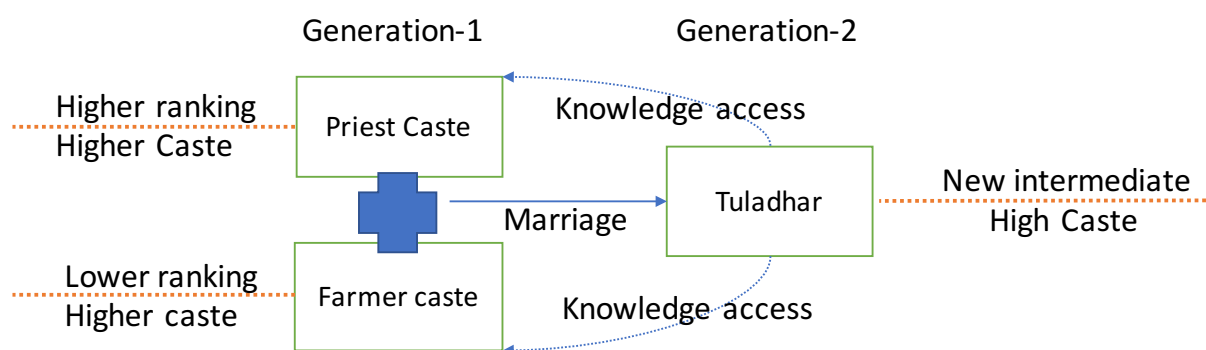
Figure 6.6 Inter-caste marriages and development of a new caste a special case of Tuladhar of Bungamati

6.4.1.3 Institutional recovery and development

From the various narrations of survivors, it was clear that Bungamati did not have access to government institutions under the Rana (king). This is evident from the fact, as shared by A (21)

> *My grandfather went to ask a loan from Rana and was the only person to get a loan of Rs. 50.*

This shows that there was no uniformity in the distribution of the loan after 1934 in Bungamati and had less access to loans in comparison to Khokana and mostly the reconstruction in Bungamati was community driven. The Rana use to monitor the recovery and reconstruction work from the top of the table land near Bhainsapatti.

6.4.2 Development in Bungamati 1964 to 2015

This part draws heavily from archived raw data of household level surveys, field notes and images collected by the Danish architect's team in 1968 and further input during the interviews and FGDs. Selective data have been collected from the archives of Taragaon museum for this study. In addition, studies done by various scholars on Bungamati are referred to validate the data.

Figure 6.7 Typical Newari houses with tiled roof near De-pukhu
(Source: Thomson et al., 1968)
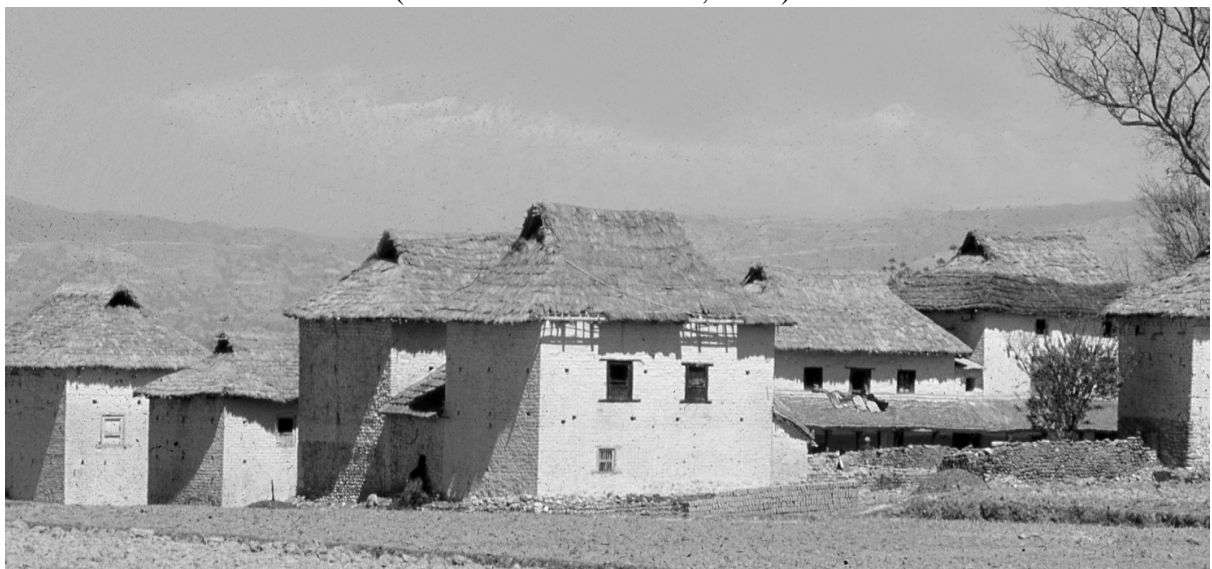
Figure 6.8 Typical Non-Newari houses with straw roof on the outer periphery
(Source: Thomson et al., 1968)
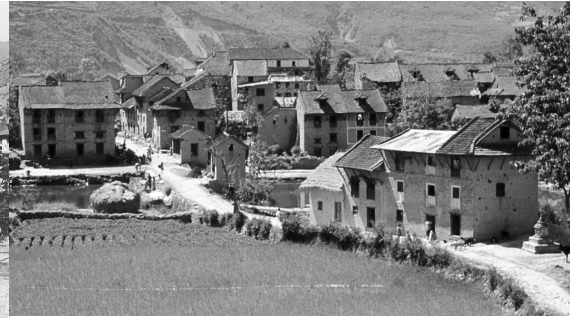
Figure 6.9 a View of Bungamati from
north road

Figure 6.9 b. View of Bungamati
from south road

(Source: Thomson et al., 1968)

6.4.2.1 Physical development

One of the major public infrastructure that was developed in this period was a primary school in Bungamati started by the government. In 1969, Bungamati got electricity connections, while neighbouring Khokana got it in 1911. Analysing the photographs from 1968, most of the houses were made of exposed brick without framework. Two different types of house typologies are identified from the pictures of 1968; 1. Newari house (6.7) and ; 2. Non-Newari house (6.8).

A typical Newari house was of three floors and had two entrances to the house. The doors and windows were made of wood while tiles were used for roofing. While a typical non-Newari house was two floors with straw roof and bamboo rafters. Spatially the Newari houses occupied the core area while the non-Newari houses were on the periphery closer to the farmland. The roofing pattern also differed among both the typologies. The Newari houses had an open gable or combination roofs while the Non-Newari houses had the Mansard type of roof. The core area had rows or houses flanking both sides of the narrow lanes. Further analysis images of 6.9 (a and b) showing houses in Bungamati from north and south, it can be said that till that time there were no concrete houses present in Bungamati.

Based on the raw data of the house construction in 1968 (Figure 6.10) it is seen that all houses were built after 1934 earthquake and 14 of them (29%) were constructed between 1934 to 1940 where exact year is available for the year of completion. While 30 (63 %) did not mention the year of construction. Only one house was constructed in 1965. Except one, all the other houses were constructed by the owner himself. The house of the Panchayat member belong to Chetri caste was constructed by the owner with the help of local craftsmen.

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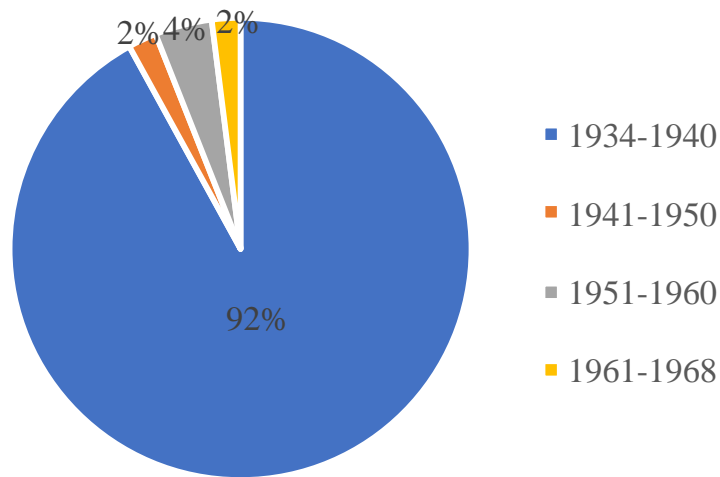
Figure 6.10 Year of construction of houses documented in 1968 Bungamati
(n=48)

6.4.2.2 Socio-economic development

By 1968 Bungamati had a population of 2,863 people as was noted by the team of Danish architects who visited Bungamati. The Newari people were in majority making up for 68 percent of the population among which Bare, Jaypu were in the majority. Among the Non-Newars Chetri were the majority. Overall the population of Chetri, Jaypu and Bare were around 650 to 750 people in each group. Each of the Tola was based on caste as shown in figure 6.11.
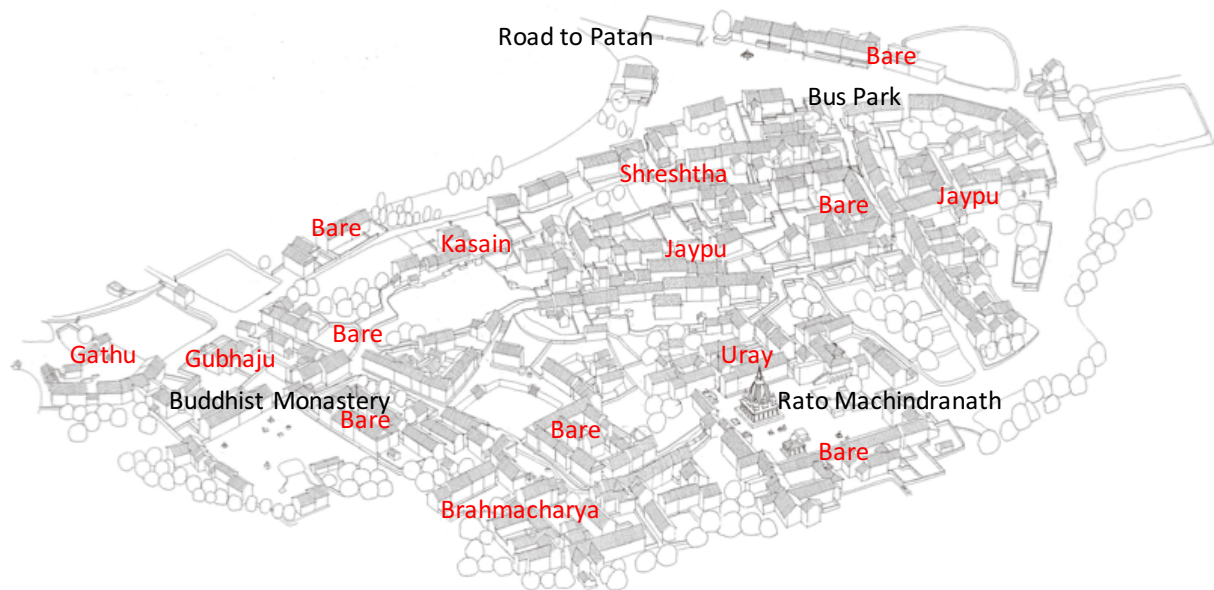
Figure 6.11 Distribution of different Newari caste in Bungamati around 1960-70

There was apparently no unemployment and most the household was involved in agriculture as the primary occupation while most households had a secondary source of income through livestock rearing, masonry, carpentry among other (Figure 6.12). People working as daily wage labour were less in number due to the existence of the Bola system of exchange labourers in Bungamati.

A little is known about income and expenditure back then, but from the entries in survey form, income of various household shows a wide range. The lowest income had been Rs. 400 per annum to Rs. 3500 per annum. This income varied based on the type of occupation and number of earning family members. From the raw data of 1968, it is seen that 20 percent of the houses were rented to one or more tenants. Tenants paid the rent in the form of crops rather than cash. Only two instances were identified which mention both cash and crop as means of rent payment. This signifies the role of crop in the Bungamati society. The crops collected were sold at market in Patan and Kathmandu.

People bought daily commodities from the grocery shops in Bungamati but went to Patan and Kathmandu for buying clothes, shoes and other more expensive goods. The survey documents confirm presence of 4 shops in Bungamati in 1968 of which two are tea shops. In participatory mapping, the community mapped a total of 6 shops (4 grocery, 2 tea shops) in 1968 as shown in figure (6.5).
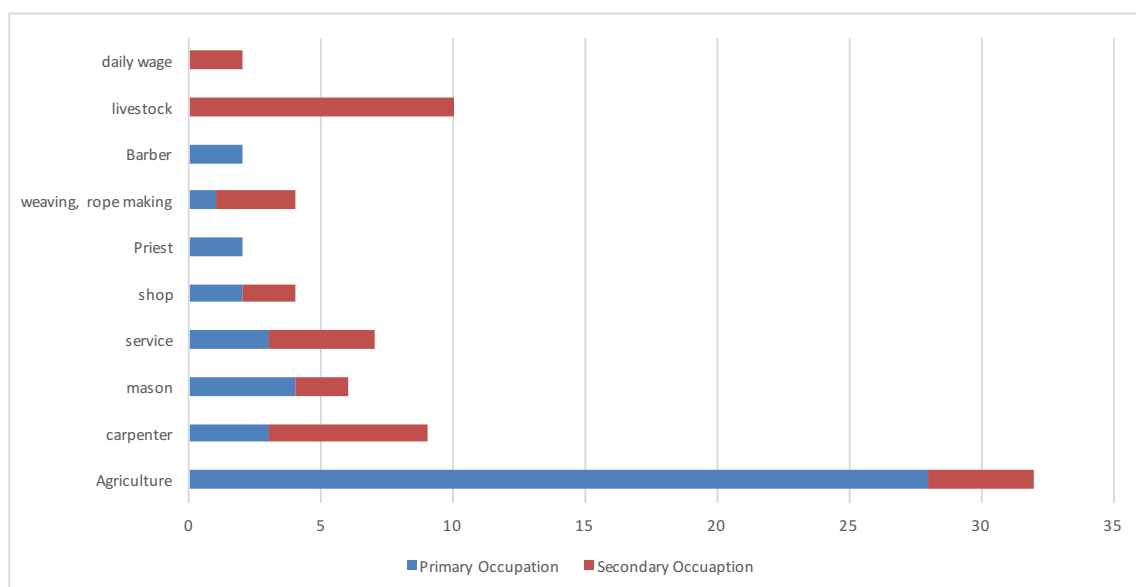
Figure 6.12 Primary and secondary occupation in Bungamati in 1968 (n=48)

6.4.2.3 Institutional development

During this period, Village Development Committee (VDC) was set up in Bungamati who diveide Bungamti into 6 wards (Figure 6.13). Taxes were levied based on rules set by the district authority. Owners of shops and hotels were supposed to pay tax on establishment of new business. The Village Panchayat (VP) started selling uncultivated land to people who could like to buy and cultivate. There was an appointed person "Dhama" who use to oversee the construction of canals and was paid by crops for his services to the VP. The chairman of the VDC is an elected member from the local people. Further, the core area of Bungamati was divided into 6 wards with each ward having an elected ward representative. The VDC chairman in consultation with other elected members can decide and approve developmental projects and request for funds from the district. On the other hand the VDC had no control over land transactions and building checks in Bungamati.

Another major development during this period was the setup of Patan Industrial Estate (PIE) in 1963 which influenced the wood carving industry in Bungamati. As shared by (H17);

> *The setup of Patan Industrial Estate brought in demand for learning wood carving. Me along with other people went to Patan to learn making miniature windows. The market was not established so we use to sell to the middleman and they use to sell to foreigners.*

As seen earlier till date PIE has presence of wood carving and furniture making related cottage and small industries.
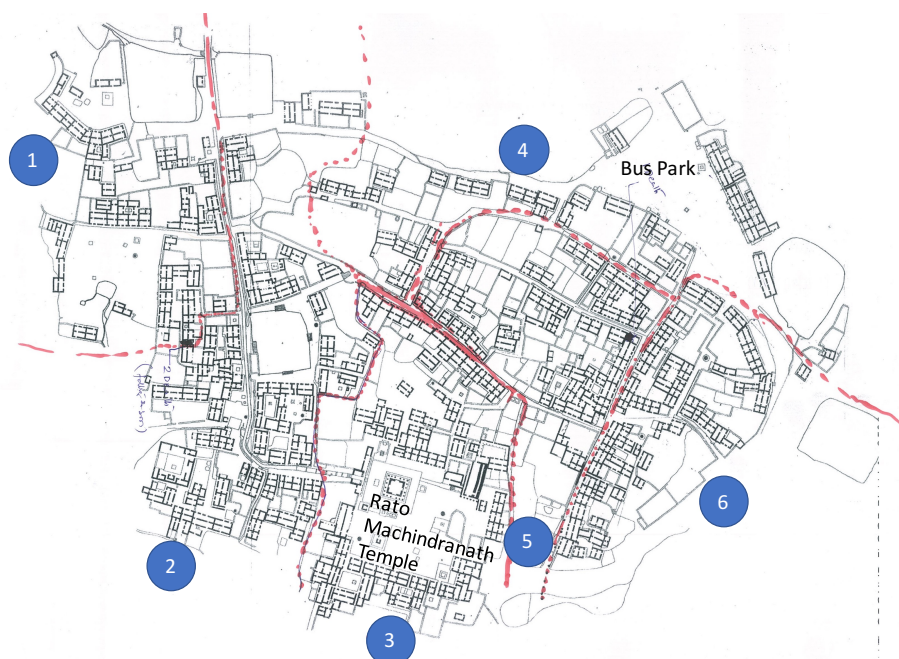
Figure 6.13 Ward boundaries under the VDC in Bungamati

6.4.3 The transformation of Bungamati between 1990 and 2015

Bungamati have seen a major transformation across socioeconomic, physical and institutional factors. The major period of this transformation spans between 1990 and 2015. A series of political, social and economic change in Nepal has influenced this change. This section discusses each of the factors in detail. Based on the discussion with the village elders the various transformations in the built form are shared in table 6.2. Further photographic evidences are given in annexure- to support each of the discussion.

6.4.3.1 Change in physical factors

The major change in physical factors happened during this period. The building codes were implemented by the government in 1992 and there was drive to build buildings in cement mortar a total shift from earlier mud mortar in Newari buildings. By 2015, a total of 193 Reinforced cement concrete (RCC) building, 107 mixed and 53 were cement mortar load bearing buildings were documented by (UN Habitat, 2016).

Table 6.2 Transformation in Landholding and Built form

Transformation	Explanation
Vertical division of building and division of farm land	Families started becoming nuclear and the head of the family divided the floors vertically to distribute property. Similarly, farm lands were divided between brothers resulting in smaller landholding sizes.
Floor addition	The vertical division lead to lesser floor space per family as a result, floors were added to compensate the loss of space. (Annexure-1)
Space usage	The lower floors were used as space for storage of grains and cattle, but with people having lesser livestock and need to increase in income lead to usage of the ground floor for shops by the owner or renting it. This also led to a change in opening on the ground floor. The shop would require bigger frontage for displaying items.
Material and construction process	The material of construction changed and people started using glass and iron instead of wood as the price of wood went up.
Demolition of old structures	The old Newari houses in the core area were row houses sharing common walls but due this new construction old walls were demolished, which damaged the buildings considerably (Figure 6.15 c, g). Leading to collapse of the old building

Selling of agriculture land	The selling of agriculture land due to transfer of land ownership right by the VDC facilitated selling of land which was earlier not possible under Guthi. As Kathmandu and Patan saw huge migration in 1990's the land value went up in Bungamati.

The rest 503 buildings were loading bearing traditional mud mortar buildings, mainly built after 1934. This shows a shift in the material of construction and a transformation in the construction process.

6.4.3.2 Change in socio-economic factors

Population growth happened in Bungamati during 1990 to 2015 (Figure 6.14). Bungamati being a close-knit community the rate of migration was lower than the other regions for both within and outside Nepal. Further, during this period the literacy rate grew with starting school in Bungamati and people started preferring service over agriculture. The growth of PIE was influencing this change in Bungamati. The skill of wood carving which by now had crossed the caste divide was more easily acquired through training in Patan. Further, in early 2000, the government started to promote tourism in Nepal, specially in the Kathmandu valley, this lead to a shift in wood carving products from doors and windows to more tourist centric handicraft. Cash, replaced crop as agriculture lost its importance in Bungamati. This lead to commercialization of agriculture products which earlier was used for household consumption and for bartering of goods. The occupational caste jobs also started slowly becoming obsolete and Bola systems of exchange labour in the field transformed into paying labour. The shops and businesses become the new source of earning for the household. The economy also started benefiting from the migration outside Nepal and by 2015 the foreign remittance was the highest source of income at the household level (UN Habitat, 2016). By 2015, Wood and metal craft and own business together had more than people than service and labour jobs (Figure 6.15). The working age of the new generation n Bungamati has seen a shift, while earlier a male would start earning by 12 years old by but now there is a considerable shift due to preference for higher education and hence the earning member in the family has decreased.

Though there was growth of tourism based products in Bungamati but this lead to two other issues; firstly, the local people could not talk and sell the product to the tourist who were from varied countries like china, Korea, France, UK among others. Hence there was no bargaining power with the shop owners. Secondly, the middleman or local guide asked for higher

commission for selling the product and hence the profit margin got reduced a lot. Some of the owners who were educated did well. One Instance is (H1);

I studied till secondary and can speak a little English. I learned to say welcome in Korean, Chinese and French and that would bring tourist to my shop.

While H10 shared

I started a small group of wood carvers and I shared my work. Also, I made an online catalogue of my products for outside Nepal buyers and share the picture of my product on mobile.

While owner of another woodcarving shop (H21) nearby shares;

I cannot speak English properly, hence have problems in talking to customers. Some owners are good at talking to customers and can sell easily.
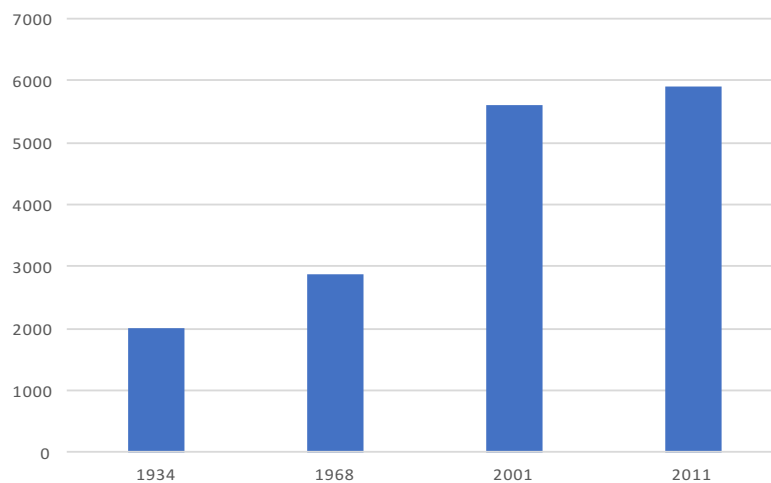
Figure 6.14 Change in Population in Bungamati
(Source; Author, based on London illustrated 1934, Thomson et al., 1968, census 2001,2011)
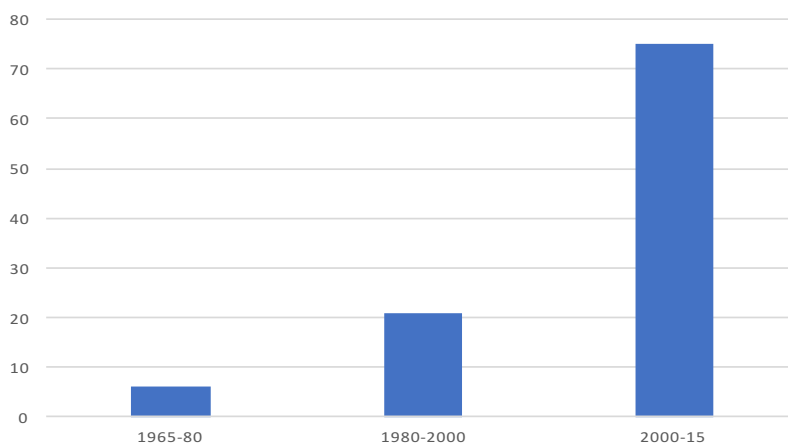
Figure 6.15 Growth of shops in Bungamati

From the above, it can be felt, that wood carving industry in Bungamati before the earthquake was facing issues of market competition within Bungamati and other operational issues like language, the establishment of the local market, lesser profit margin. Further, it was shared that the owner of handicraft shops prefers to sell through middleman as the middleman can handle the loan paperwork and high level of corruption within the bureaucracy.

6.4.3.3 Change in institutional factors

An institutional change as a major fallout of 1990's political instability in Nepal was the dissolution of the National Panchayat system and as result the VDC in Bungamati. As a result, there was no peoples' representative to propose and sanction projects from Bungamati and it totally depended on the district authority for all development work. This was the condition till 2014 when Bungamati and another 4 VDCs were together, put under the Karyabinayak Municipal office which continued till mid 2017.

Another major fallout in Bungamati was the closure of the cooperative due to the governance issue. H (17) whose son was part of the cooperative shared;

> *There was an issue of preference within the managing committee and orders were passed on to relatives of the committee members. Further, there were issues of quality check and commission taken by the members. This all led to distrust and finally closure of cooperative in 1990's.*

Later, there was no other cooperative formed to market the local handicrafts from Bungamati. The Guthi in Bungamati became weak due to privatization of Guthi land and increase in the cost of festivals and other Guthi ceremonies. Further, people interaction in Guthi became less as more and more people become involved in business or service.

6.5 Impact of 2015 Nepal earthquake on Bungamati

There are 130 shops in Bungamati which caters to mainly 3 sectors, manufacturing, tourism and service as per 1992 Industrial Act. The majority of the shops (84%) in Bungamati is owned by high caste Newari with a domination of Shrestha, Shakya, Tuladhar community while only 5 shops belong to non-Newari (Figure 6.16). This is due to the economic background of the higher and lower caste Newars in Bungamati.

Figure 6.16 Distribution of functional shops based on caste in Bungamati

Figure 6.17 Distribution of shops and main approach roads to the core area in Bungamati

As the tourist zone developed within the core area housing the Rato Machindranath temple complex, most of the high caste Newars lived in this region as seen earlier and hence the shops were mainly owned by the high caste Newars. 14 different categories of shops were identified of which majority are grocery stores and cold storage followed by wood carving. The figure 6.17 shows the three main approach roads to the temple complex used by the tourist and local people. The bus park area has developed into a market with variety of shops while the walking route generally taken by a tourist has mostly all the handicraft shops lined up on both sides of the narrow lane.

6.6 Impact of the 2015 Earthquake

As shared in the earlier chapters, Bungamati faced severe damages from the 2015 Nepal earthquake across various socio-economic, physical, institutional parameters at different levels. This section details the impact of the 2015 earthquake on the local businesses in Bungamati across social, economic and physical parameters. A total of 30 functional shops was surveyed randomly of which 29 samples are taken for analysis as 1 respondent had set up the shop after the earthquake.

6.6.1 Physical impact

An assessment of physical damage in the Karyabinayak Municipal area reveals Bungamati as one the most damaged area in the Karyabinayak municipal area. The table 6.3 shows the various types of buildings in Bungamati and the level of damage due to the earthquake. The category of damage in the assessment has been classified into five grades, which corresponds to the four-scale used in the study.

Grade 1 relates to no damage, where grade 2 and 3 corresponds to minor damage, grade 4 to major damage and lastly, grade 5 relates to total collapse.

It is observed that in Bungamati most the buildings are either made of burnt brick in mud mortar or adobe bricks. Ward 10 and 12 have been highly damaged, whereas ward 11 has not been damaged so much in comparison. Further, among all other wards in Karyabinayak, ward 12 and 10 has one of the highest monetary requirements for repairing of the buildings. Needless to say, these costs will have to be borne by the owner.

Among the 29 shops surveyed in Bungamati, 4 of them reported no physical damage while all other 25 reported physical damage. Among these 25 shops, all of them faced property damage of various degrees (Figure 6.18) while 15 shops faced damage to their raw products or finished

goods. 11 shop owners reported damage to equipment while one shop reported injury to family members (Figure 6.19).

Table 6.3 Assessment of building type and damages in Bungamati

Material	Ward 10	Ward 11	Ward 12
Adobe	78	27	51
Brick block in Cement	58	57	57
Brick block in Mud	102	69	179
Mix	17	21	9
RC frame	73	38	56
Stone in Mud	1		1
Total Buildings	329	212	353
Type of Damage			
Total collapse	72	37	73
Major	92	41	90
Minor	81	67	107
No damage	83	64	83
None	1	3	0
Types of possible Repair			
None	15	14	25
Repair	118	83	95
Retrofit	27	32	73
Demolish	160	78	157
Further evaluation	9	5	3
Repairing cost in each ward as % of the total estimated cost	10	4	13

(Source: NSET, 2015)
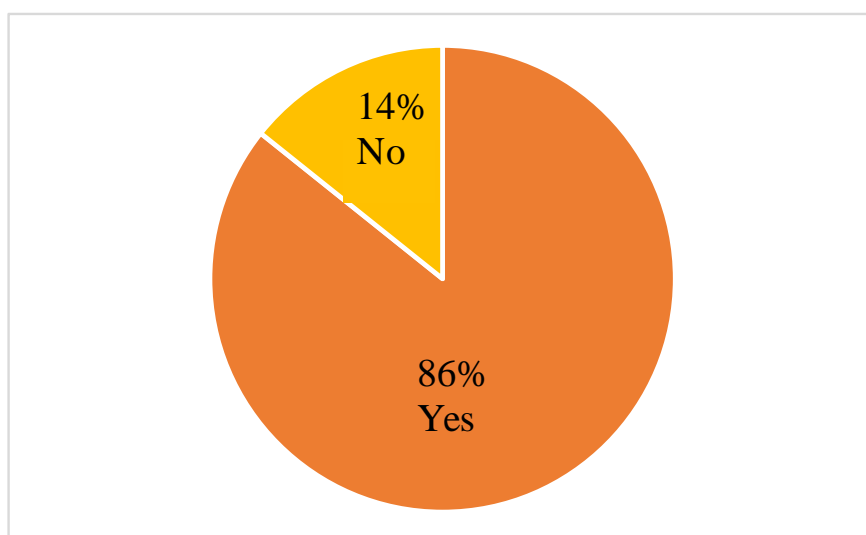
Figure 6.18 Physical damage faced by industry (n=29)

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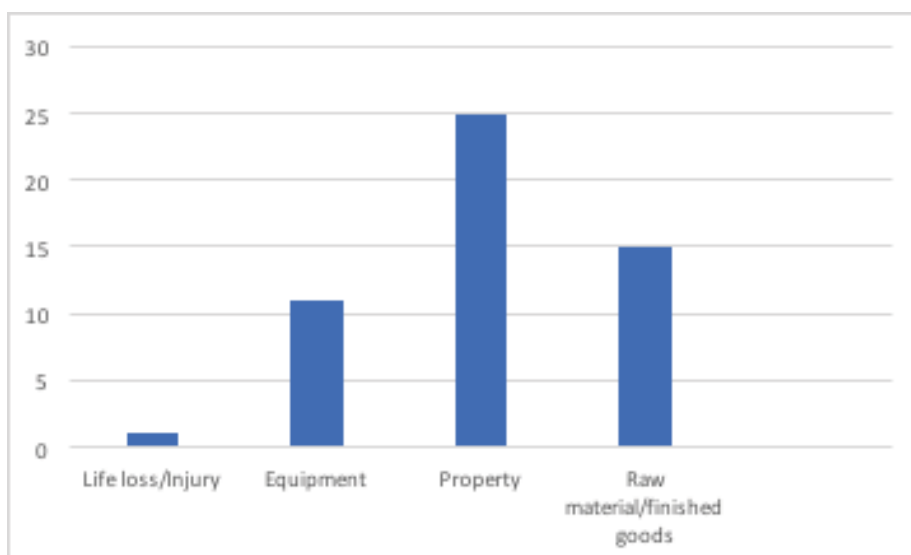
Figure 6.15 b Type of Physical damage(n=25)

Based on the observation on site of the surveyed buildings the categorization of damages is done (Table 6.4). Among the 25 shops which faced damage to property, 9 of them collapsed completely, while 10 had major damage in the form of some collapsed floors and major cracks and rest 6 had minor damages to the building. It is observed that framed structure did not face serious damage with one exception where one floor of the building had collapsed. Among the load bearing structure, the ones which used cement mortar faced minor damages. The major damages have been faced by the load bearing structures with mud mortar. These all structures were built after 1934 by the owners themselves. A few of them reported modifications in the ground floor and the addition of floors to the existing buildings in recent times.

Table 6.4 Type of building materials and binding material and extent of damage among the surveyed shops in Bungamati

Type of building	Binding Material	Number of buildings	Type of Damage
Framed structure	Cement mortar	5	1 major damage, 4 no damage
Load bearing	Mud Mortar	19	9 collapses, 9 major damage, 1 minor damage
	Cement Mortar	6	5 Minor cracks, 1 no damage
Total		**30**	

Bus Park

6.14 (f,g)

Rato Machindranath Temple

6.14 (d,e)

6.14 (b,c)
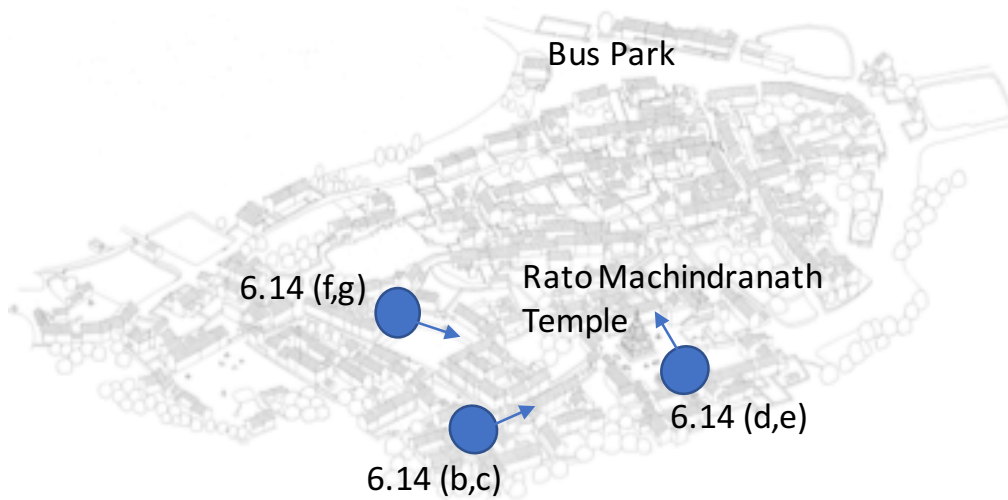
Figure 6.20 a. A key map showing the location of the photographs taken in Bungamati

b

c

Figure 6.20 b. Photograph of the street leading to the temple taken in 1968. (Source: Retrieved from Taragaon Museum by author)

Figure 6.20 c. Photograph of the street leading to the temple taken in 2017 by author.

d

e

Figure 6.20 d. Photograph of the row houses in the Rato Machindranath temple complex showing the symmetry of openings taken in 1968.

Figure 6.20 e. Photograph of the row houses in the Rato Machindranath

temple complex showing changes in
symmetry of openings taken in 2017.

Figure 6.20 f. Photograph of the row houses near De-pukhu taken in 1968 with symmetrical openings and buildings made of brick in mud mortar with tiled roof. (Source: Thomson et al., 1968)

Figure 6.20 g. Photograph of the partially collapsed row houses near De-pukhu taken in 2017 with unsymmetrical openings and changes in the building materials.

Comparing the photographs of the buildings taken in 1968 with the photographs of buildings after 2015 it is seen that structural changes have been made to suit the ground floor for commercial purpose. Newari buildings which had a symmetrical plan and elevation had changed the openings hence altering the solid and void ratio in the buildings as shown in figure 6.20 (a to f). The age of the building had no clear relation to the damage or type of construction in Bungamati. Out of 29 buildings surveyed, 12 buildings were constructed after the 1934 earthquake, but on the other hands other show a varied year of construction.

6.6.1.1 Repairing and reconstruction

The repairing and reconstruction of damaged buildings in Bungamati has started by the time this study was conducted. There are two types of shop building ownership; own building; rented shop. Out of 30 shops surveyed 9 are rented while the rest are owned by the owner of the building. The shops which are rented have no direct bearing for the repair of the damage, but in two cases a change in rent was documented. While in other cases it was observed that no repairing work has been done. Out of rest 21 shops which owned by the owner 13 of the shops surveyed have not repaired their shop till the date of the study (Figure 21 a to d). 7 shops have repaired the damages from their own money while one shop owner reported taking a loan.

Figure 6.21 a A wood carving shop running from a temporary shelter on the way to the temple

Figure 6.21 b. A relocated metal shop after collapse of his rented shop near de-pukhu

Figure 6.21 c. A tailoring shop running from major damage building in the bus park

Figure 6.21 d. A grocery shop after repairing in the temple complex

6.6.2 Social impact

Bungamati had been a close-knit community but after the earthquake the survey done by UN Habitat reported a total of 3,908 people living in Bungamati in October 2015. Going by the census data of 2011 the population of Bungamati was 5,901 which means around 2,000 people

either migrated temporarily or permanently outside Bungamati. It was found during the FGDs, that it's mainly the male population, which migrated out of Bungamati for the income generation due collapse of local markets and non-availability of job in and around Bungamati. This had a direct impact on the customer base of businesses whose customer base was mainly from Bungamati like grocery shops, vegetable shops, cold storage, bakery etc. As reported by a grocery shop owner (H15);

> *Footfall in my shop has decreased by 25% of what it used to be before the earthquake and hence my sales have gone down by 50-75% of what it was earlier.*

Another problem faced by the shop owners mainly employing staff from outside is after the earthquake the staffs who were from outside Bungamati went back to their respective village resulting the owner along to run the shop. This affected the carpet industry, mostly as they owner does not stay in the Bungamati but employ local women and have a manager to look after the factory.

A different aspect of the social impact of the earthquake was shared by two female tea shop owner (H13) and a grocery shop owner (H24);

> *I got married and came to this village, my father and other relatives stay in Kathmandu valley. After the earthquake, I could not ask for help recovering my business from them as their house had also collapsed. I send them tarpaulins and food items.*

In case of a disaster of this magnitude affecting a wide region within which the extended relatives and family members stay it is difficult for the extended family to support each other as they themselves are impacted. This is more pronounced in case of the Newars, as they are mainly located within the Kathmandu valley and their marriage happen with the Newar community. This is an important issue for the social capital to support the recovery process in Bungamati.

Unlike Balaju and Patan industrial districts, the shops in Bungamati are either run by family members, or the staff are locals (Figure 6.22). All the shops are single proprietorship and owned by mostly male. The female help the business as non-paid staff. It is observed that 53 (41%) of the shops in Bungamati are run by one person while another 30 (23%) are run by two persons and 20 (15%) by 3 members. Overall, only three wood carving shops reported more than 6 members (11,11 and 12 respectively).
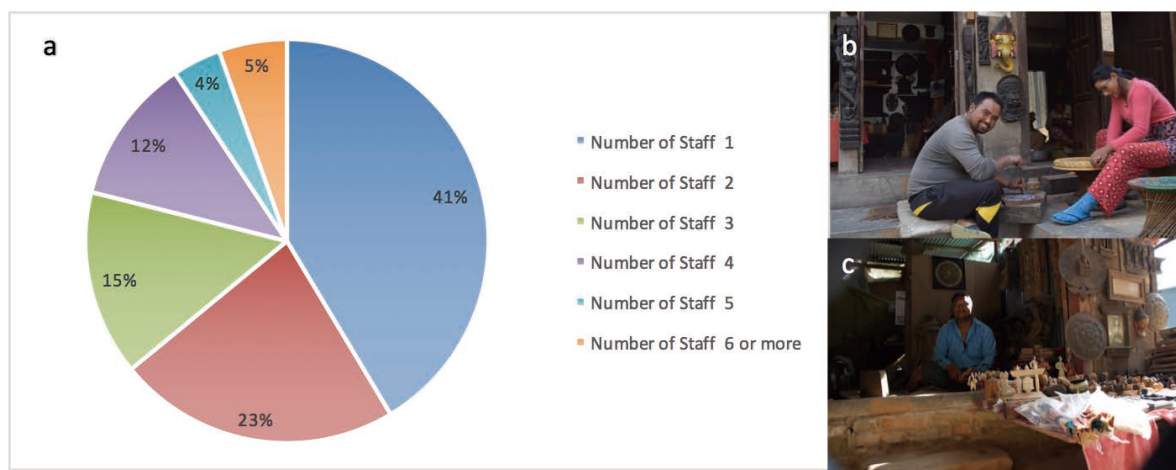
Figure 6.22 a Staff in shops and workshops in Bungamati (n=130); Figure 6. 22 (b, c). Typical family-run shops in Bungamati

From the survey done in Bungamati, only 6 shops reported having reduced the staff strength after the earthquake. All the shops who have reported staff shortage had more 4 or more people as staff. One shop shared

> *We had two Indian staff who went back to India after the earthquake and have not returned.*

Hence it can be said that 109 (79%) shops with up to 3 staff members are mostly run by family members were not affected by labour problems due to the earthquake. As the market demand was less during that time, hence this was not a big problem for the shop owners to start their businesses. Further 28 out of 29 shops have their staff from the same village ie Bungamati. While the only art shop whose owner use to stay in a nearby village within a radius of 5 kilometres. He started his shop in Bungamati due to increase in tourism in Bungamati.

The third social impact of the earthquake due to loss of business was on the schooling of children. As people from Bungamati prefer to admit their sons and daughter to good schools in Patan and other areas. The loss of income source after the earthquake made a many opt for changing schools as they could no longer afford the higher fees. Within the family, the earthquake impacted the food consumption, travel and festivities. These are discussed later in the chapter in detail under strategies for recovery.

6.6.3 Economic impact

An assessment of Karyabinayak Municipal and Kirtipur area was done by Oxfam GB in May 2015 covering all wards and the impact of the earthquake on household income, change in food

consumption and impact on livelihood and assets was assessed. Overall, it shows a considerable impact of the earthquake on the household income and livelihood in both the areas. In general, the report finds local retailers were affected due to damage to their stocks and local people buying goods on credit leading to a shortage of capital among the local traders and they are unable to re-stock their supplies. Traders are also experiencing a shortage of labour to load and unload the stocks in the market place, which might be due to local people busy with collecting relief and risk of aftershock. In addition, changes in food consumption and loss of assets were reported as shown in figure 6.23, 6.24, 6.25. It is seen that the main change in food consumption happened in consumption of meat, fruits and condiments while the consumption of cereals, pulses and vegetables were high. This is because most of these are grown locally by the households for consumption, which in normal times household store for later use. Another reason is barter of these commodities within households.

This report gives an overview of the impact of the earthquake, but as every Newari community is different in their culture and tradition and economic standards. Further the report focuses more on the agricultural community while failing to appreciate the change in the primary source of income from agriculture to business and other sources specially infringes on Kathmandu and Lalitpur.
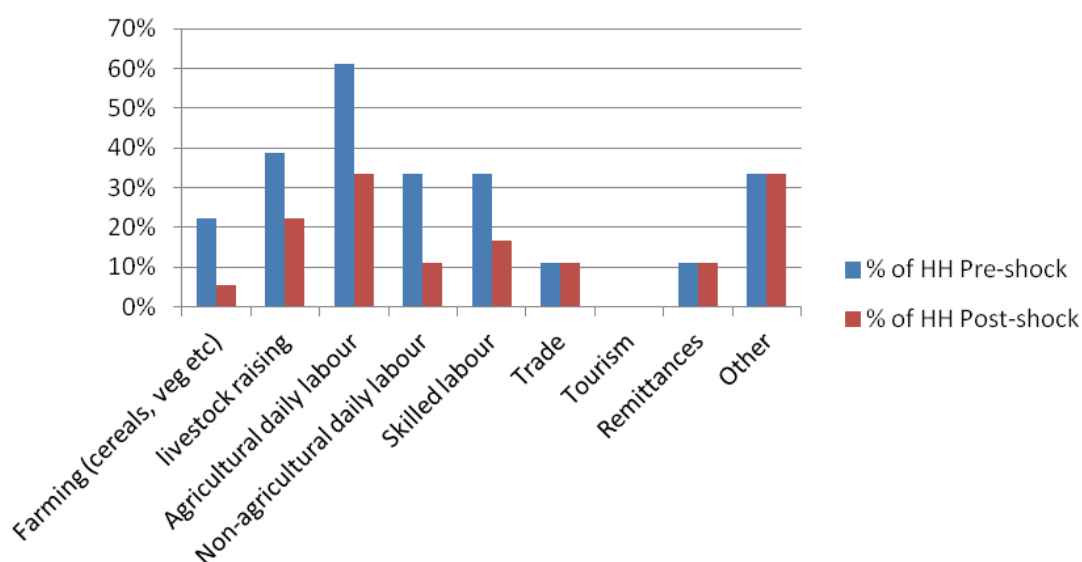
Figure 6.23 Change in livelihood in pre-and post-earthquake in Karyabinyak and Kirtipur

Figure 6.24 Changes in diet across Karyabinayak and Kirtipur due to the earthquake

(Source: Oxfam GB report, 2015)
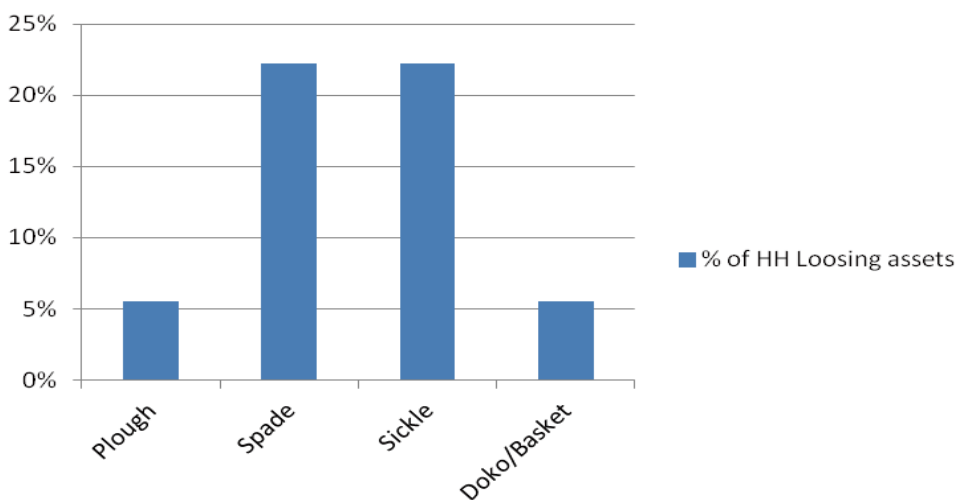
Figure 6.25 Loss of assets reported in Karyabinayak and Kirtipur

(Source: Oxfam GB report, 2015)

In Bungamati, though not distinct but is different from economic standard based on caste from the other Kirtipur and even across the wards. One of the interviews (O8) while commenting on another old person who survived the 1934 earthquake and belong to a lower caste commented;

He is a Mali and he does not wear the ear ring[1] because he does not have money.

The direct economic impact of the earthquake was the damage to the residential buildings, equipment and raw materials. While the indirect impact of the earthquake spanned across

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[1] In Newari tradition people wear ear rings to commemorate their coming of age celebration which is three time after reaching an age of 84 years. One ring after crossing 84 years, 2nd at 88 years, 3rd ring after 92 years of age.

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various factors. Dividing the economic impact into direct and indirect economic impact table 6.5 lists the observed economic impacts of the earthquake of the businesses in Bungamati.

Table 6.5 Types of Economic Impact experienced in Bungamati

Economic Impact Bungamati	Direct Impact	Indirect Impact and Wider Impacts				
	Building, Equipment, Raw materials and finished products	Market failure	Labour	Client loss	Services	Governance
	25	26	6	26	18	0

Change in prices of raw materials

One of the indirect impact of the earthquake was the change in prices of the raw materials in the local market. The combined effect of earthquake and border blockade lead to this. The change in prices of commodities leads to changes in consumption pattern at the household level while the increase in prices of finished products in the handicraft industries. Taking a case of the wood carving industry in Bungamati, the prices of wood went up after the earthquake, but on the other hand the demand for wood products went down after the earthquake (Table 6.4). Most wood carvers keep a stock of wood, as a result, though in the initial phase, they could continue making wooden products, but as they could not sell these products hence they could not reinvest the money into the business. There are mainly three ways of selling wood products as identified in Bungamati.1. Direct selling to tourists visiting Bungamati; 2. Selling in Patan and Kathmandu through a middleman; 3. Direct orders from outside Nepal. New products like fake sal wood from Malaysia was introduced in the local market to keep in pace with the increase in demand for construction material and furniture.

Loss of tourism

A majority of the shops in Bungamati started due to the development of tourism sector in Nepal. Due to collapse of the Rato Machindranath temple and other traditional Newari houses in Bungamati, the tourism stopped. This not only impacted the handicraft sector, but also the restaurants and other tourist services operated by people of Bungamati. This also affected the revenue generation of Karyabinayak municipal office as they had before the earthquake set up a tourist ticket counter to generate revenue from tourists.

Loss of space

The income generation activities stopped for the owner mainly involved in wood carving whose shop building either collapsed or had major damage. Because of the damage, they had to relocate to temporary shelters on the periphery of Bungamati. It was observed during the field survey that many of the wood carvers uses public space like roads or community spaces in the temple complex for making doors and windows. Due to the collapse of the temple and damage along the streets in Bungamati most of the wood carving works using the public space stopped. Further, grocery shops whose building collapse not only lead to wastage of raw materials, but at the same time due to no availability of storage space new raw materials could not be procured.

6.7 Restarting time

In Bungamati a total of 108 shops was identified which existed before the earthquake and were functioning during the study. The restarting of the shops was a crucial decision taken by the owner. The restarting time was found to vary in Bungamati from a minimum of 1 day to maximum of 18 months from the date of the disaster for functional shapes (Figure 6.26). Within 1st week 8 shops started functioning, followed by another 4 and 6 in the next two weeks. By the end of the first month after the earthquake, a total of 31 shops started functioning in Bungamati (6.27).

Table 6.6 Change in prices of wood before and after earthquake

Type of Wood	Usage of wood	Prices after Earthquake (NPR/ cubic ft.)	Prices after Earthquake (NPR/ cubic ft.)
Sal	Structural element, exposed part of building, windows	5,000	7,000
Sesam	Inside furniture, showpiece of window, idol	4,500-5,000	7,000
Chanp	Inside furniture, showpiece of window, idol	3,000	5,000
Karma	Interior of houses, showpiece	2,000	3,000
Salla (Pine)	Furniture, joist	1,300	1,700
Utis	Photo frame, frame	200	500
Saanz	Joist	2,000	3,200
Fake Sal (Malaysia)	Substitute of Sal	Not used	3,500-4,000
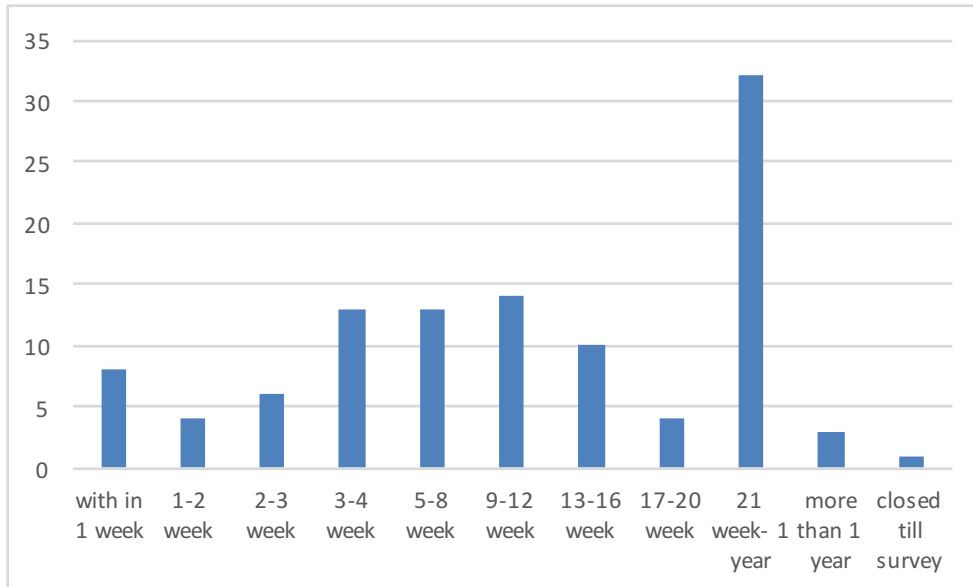
Figure 6.26 Restarting time of surveyed shops in Bungamati

Looking at the type of products the shops sell and their respective restarting time it is seen that in the 1st week 8 shops mainly shops selling grocery started functioning. In the second week as well, mainly grocery, tea shop and meat shops started functioning. Third week saw tailoring shop and electric shop open. Overall mostly shops selling grocery, meat and other food items were the first to open followed by shops selling construction materials and electric items. The market demand plays an important part in the early restarting of the shops as after the earthquake people would need food and other daily necessity items.
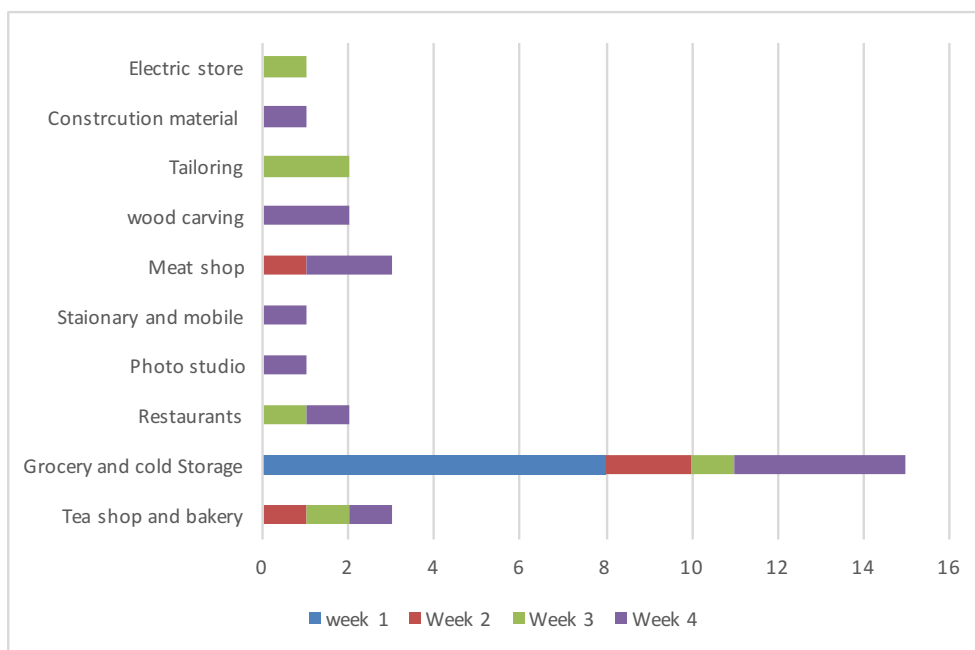
Figure 6.27 Type of shops restarted within 1st month of the 2015 earthquake

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Based on the interviews on what factors influenced the restarting time the following main reasons were generated.

Blocking of the lane and access to shop by falling debris

As Bungamati had narrow lanes connecting different wards and these lanes have buildings on both sides. The earthquake lead to collapse of buildings and these debris fell on these lanes, hence blocking the access to shops. Looking at the restarting time vis-à-vis the location of the shop it is seen that 15 shops (48%) started functioning in ward 4 by the end of 1st month (Figure 6.28).
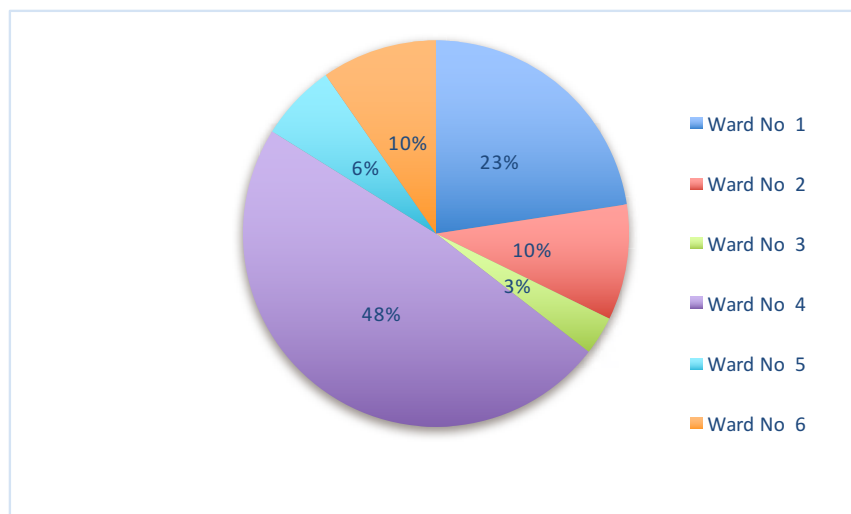
Figure 6.28 Location of shops which restarted within the first month (n=31)

This area is near the bus park and has open space along the road. As was shared by one of the grocery shop owners;

> *I brought everything on the road started selling as my house with the shop collapsed in*
> *the earthquake.*

Figure 6.29 a. Street blocked by collapse of buildings

Figure 6.29 b. Street closed due to falling debris

Ward 3 and 5 were severely damaged and has the highest density of built form. These two areas had the least shops restarting within the 1 month. It took almost 3 months to clear the lanes (Figure 6.29 a,b).

Fear psychosis

Secondly, the shop owners did not open the shop due to trepidation of another earthquake striking among the constant tremors. Post 25th April earthquake, a series of high magnitude tremors followed by a second earthquake on 12 May 2015 lead to fear psychosis among people. H (17) shared;

> *Due to the fear of another earthquake I with my family and grandchildren occupied our wood carving shop for almost one month.*

Following the traditional life style, people in Bungamati generally had their bedrooms on the 3rd floor of the house, but after the earthquake they occupied the ground floor which had the shop. In some cases, the upper floors collapsed the owners' family was forced to occupy the ground floor. While for others they could prefer living in open fields. In these conditions the shops could not be restarted.

Loss of tools and working capital

Thirdly, loss of tools, raw materials and non-availability of working capital were other reasons shared by owners during the interview. For people who were into wood carving the loss of raw material was a major, but accessing the raw material was the issue as the wood were covered by falling debris. The grocery stores could retrieve their raw materials as most of them as stored in sacks.

6. 8 Strategies for recovery

This section is divided into three parts, the first field data are presented, next section identifies various household assets and last part discusses different recovery strategies. Creation of shop inventory of operational shops in January 2017 followed by in-depth interviews of shop owners in Bungamati gave a rich insight into characteristics of the household and livelihood recovery. The following section details the findings from the field.

Household assets

The majority of the shop owning households surveyed had multiple sources of income ranging from shops, farming, salaried job, part-time work, renting of space among others. Contrary to

initial assumptions that households with shops earns their primary income come the shop exceptions was seen in the case of (H-15) who runs a shop to augment his earning from the caste based occupation of a barber. Further, such exceptions were noticed in women headed shops where the main income comes from either husband's salary or other type of work. All shops are sole proprietary typing and in most cases the family members are contributing members except for wood carving, metal carving and tailoring where local people are employed on daily wage but such instances are very few. The household members do not pay any wage for their contribution to the business. The money saving comes mainly from the non-farm based income while storing of food crops by drying is also a strategy at the household level which add to household food sufficiency. Further, in case of women owned shops, the income from the shop is an additional income for the household. All shops before the earthquake had saved, but the majority reported they did not save now due to loss of monetary income. None of the interviewed shops have insurance though most them knew the benefits of insurance.

Land as a natural asset

Though most of the household does farming income from the shops which is important for running various expenses of the family. This was explained by the owner of a wood carving shop who opened within 1 month of the earthquake (H-1);

> *Like most people in Bungamati I learned wood carving initially from my brother. I have 3 Roappni (1 Roappni= 508.7 sq meters) land in which I grow Potato, Rice, Snake Gourd and Wheat for household consumption. My family can survive for 3 months on this, but for buying other food items, cost of child day care and health expenses shop's income is needed. I had savings though not separate for the household. During the closure of the shop, I spend from my savings.*

Similar experiences were shared by other households (H-7, H-13, H-21).

6.8.1 Strategies for household and livelihood recovery

This section details out various strategies adopted by the shop owners to recover from the impact of the 2015 Nepal earthquake. Based on the outcome of the analysis the interviews with shop owners and based on observations, the identified strategies are divided into thematic heads based on categorization by Rakodi (1999).

External aid and recovery support

Post-earthquake the government distributed relief aid of NPR40, 000 per human death in the family; NPR5, 000 for complete house damage; NPR3, 000 for partial house damage; NPR2, 000 for immediate food assistance. Additional grant was sanctioned as per the decision of Council of Ministers; NPR100, 000 for who have lost a family member/s and NPR15, 000 for reconstruction of temporary shelter. In Bungamati, a relief and reconstruction committee was formed by the local people and they were made in-charge of the relief aid distribution. In addition to this, Oxfam GB distributed 24,000 NPR worth tools, equipment, furniture and other items as a business recovery aid to 50 business owners in Bungamati (Annexure-). In addition to this government had pledged NPR 200,000 as a grant in aid for the reconstruction of the houses to be disbursed in phases. This amount was later upgraded to NPR 300,000. Along with this the government announced other loans which have been discussed earlier.

But having said that these were not enough to support the economic recovery of the household businesses as had been learned from an officer (A8) with Oxfam GB, an INGO which did the livelihood assessment in Bungamati;

> *The home-based workers do not get enough money, based on their skill and work, and local markets need to be supported. In the case of small businesses, household and business incomes are linked, and these people do not document their net income, profit, and investment; hence, in most cases, they do not know how much the actual loss was. The NGO supported Bungamati in the relief phase through cash for work, fresh food vouchers, and business grants but is not part of the recovery phase based on government consultation. The settlements like Bungamati need long term engagement, as they are core areas. The local vendors from neighbouring areas were given contracts, as the vendors in Bungamati did not have VAT and PAN numbers, which was a prerequisite for the contract. Also, government prioritised the far-off areas in Nepal, where we have not worked. We aimed for restoring the business by means of grants, which most beneficiaries used for buying assets.*

From the excerpts of the interview and the figure 6.30, it can clearly be observed that much of the aid went towards household expenditure or in physical reconstruction or for buying assets rather than capital investment in businesses. Further, as discussed as seen in physical impact the cost of reconstruction is high and the current support of the government may not suffice for repairing or reconstructing the house. Hence, the income generated through business is an important source for the physical recovery.

The assessment of the community was done prior to the selection of the beneficiaries, one of the important criteria for this assessment is land ownership. In Bungamati three different types of land ownerships are identified, namely; 1. Land certificate is available; 2. No land ownership document; 3. Guthi land taken on lease. In the last two cases, the households get agriculture produce from the land but have no legal document as a result the selection process of beneficiaries based on land ownership might have not targeted neediest households. Further, OXFAM GB report (2015) mentions local political interference in the selection of the beneficiaries. During the FGDs, and interviews it was found that not everyone in Bungamati knew about the various aid activities due two reasons; 1. As it was kept within small network; 2. People settled outside Bungamati temporarily after the earthquake as a result, they were not included.
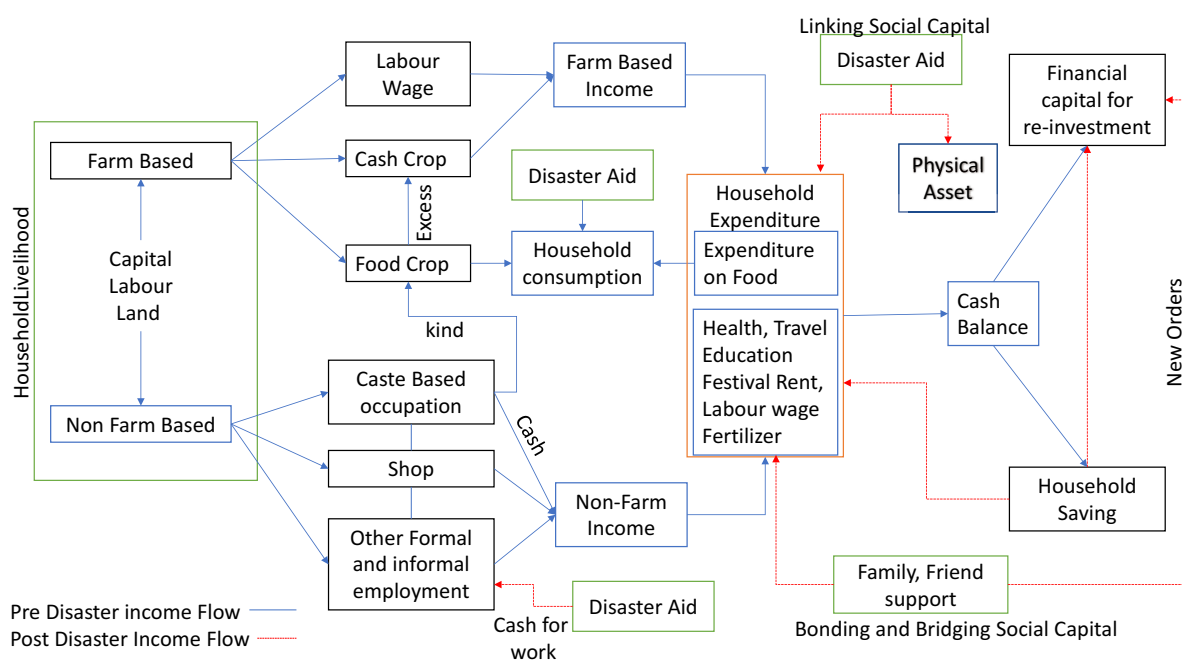
Figure 6.30 Effectiveness of aid in supporting business and household recovery

Household and extended family as source of social, cultural and economic capital

In Newari culture dowry (Gifts brought in by bride to the house of the bridegroom. The gifts can be utensils, gold ornaments among others) is prevalent, but not compulsory and act as a capital for setting up of shops. One such instance shared by a tea shop owner (H-13) in the bus park area;

> *This shop is in my name and I took a loan from my father to set up the shop. I invested in the business by selling my gold jewellery from dowry.*

Capital for starting shops come from household savings or is borrowed from family and friends. After the earthquake, the family and friends provided credit to ease out household expenditure.

In one instance friends brought in order which motivated shop owners to restart working. Taking credit from local cooperatives and Guthis are preferred over banks due to lesser paperwork and no mortgaging is required. Household expenses mainly cover food, medicine and education, among others and due to loss of closure and subsequent loss of income from the shop, H-20 who runs a wood carving shop closed his business for 3 months shared;

> Before the earthquake, I use to pay for my 2 daughter's nursing education fees (90,000 NPR/person/year) from the income of the shop and by selling vegetables. After the earthquake, I sold 4 Anna (1 Anna = 31.79 Sq m.) off my 4 Roppani land. Further my daughter got a loan from her friend.

While a metal shop owner (H-4) and tea shop owner (H-24) shared;

> We had to manage and reduce our expenditure on food, travel and spending on the festivities.

Similarly, H-21 shared;

> We stopped using milk in tea and stopped having biscuits.

Expanding income portfolio of the household

Increasing number of income sources at the family level, but engaging non- earning members were noticed among households. The women were likely to get engaged in shops or other part time jobs. This was seen in the case of a jewellery shop owner (H-7) in the bus park who restarted after 1 year shared his experience;

> I was the only earning member before the earthquake and my earnings was from the business I do in the shop. My four storey house has only the ground floor remaining. My two brothers did not work before the earthquake but after the earthquake both started working.

External remittance, livelihood diversification and migration

A Teashop owner (H2) in similar lines shared;

> After my house collapsed in the earthquake, I closed my restaurant for a year and now I have started a tea shop. My son use to work in Saudi Arabia and send money. I spent from my savings to pay for my grandchild's school fees.

In addition, various diversification was noticed in shops where owners added new products to increase the sale (fig. 6.31 a, b). *These* shops are the ones who dealt with the local tourist and due to loss of tourism looked at other options. Post- earthquake in Bungamati, the number of new shops have increased in relation to the pre - earthquake period. This is due to rise in rent,

loss in customer base and other operating cost in the Patan area leading shifting of shops. Also, within Bungamati, shops which were severely damaged or had collapsed, these shops moved into new location which are more centrally located to recover the loss in the Earthquake.

Figure 6.31 a. A woodcarving shop selling confectionery	Figure 6.31 b A metal carving shop selling wooden masks

Patch repairs or delayed repair and reconstruction

It was observed in the surveyed shops, damages caused by the earthquake have mostly not been repaired (Fig. 6.32 a). While a few which has been repaired have been done either by the shop owner or by local mason (Figure 6.32 b). In both he cases the reason being the sales have gone down and the further government compensation amount for the earthquake has not been distributed. At the same time building materials have become dearer due increase in demand and diminishing supply due to border blockade with India. Further, none of the shops had any insurance to cover the cost of the damage. So, the money either came from savings or by selling of agriculture land. In both the cases the physical vulnerability of the shops has increased to future earthquake event.

Figure 6.32 a. Damages in the shops which have not been repaired	Figure 6.32 b. Damages in the shops which have been patch repaired

6.9 Recovery time of the informal sector in Bungamati

The recovery time of the informal businesses in Bungamati was documented based on a questionnaire survey conducted among the 30 shops in Bungamati in 2016. Further, in January 2017, a questionnaire survey covering all functional shops was done in Bungamati to understand their status of recovery and further tally it with the questionnaire survey done in 2016. The results are presented in this section.

Recovery time for the surveyed informal shops in Bungamati varied widely from less than one year to more than 7 years. From the figure 6.33, it is observed that 4 shops (14%) recovered from the loss within 1 year of the earthquake while another 1 said it is expected to recover in one more year. But a majority (50 %) of the shops said they will need more than 5 years to recover of which majority said it will take more than 7 years to recover. Further, during the interviews these shop owners suggested that the recovery of the tourism sector and stabilization of the local market is an important factor for the recovery.
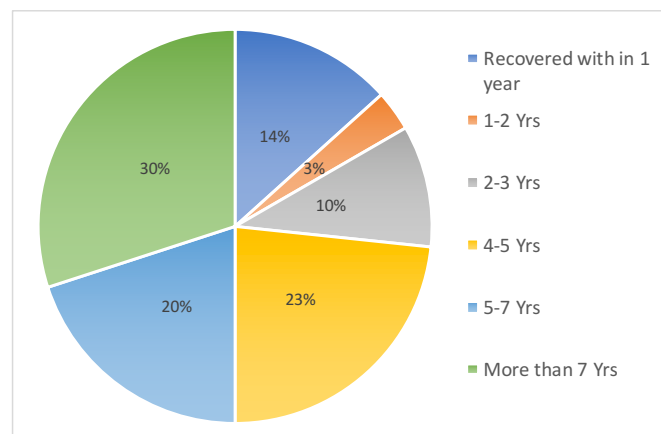
Figure 6.33 Expected recovery time of the informal shops in Bungamati (n=30)

As during the period of this survey Nepal was still experiencing border blockade, a second around of sampling of the all the functional shops in Bungamati which existed before the earthquake was done in January 2017.
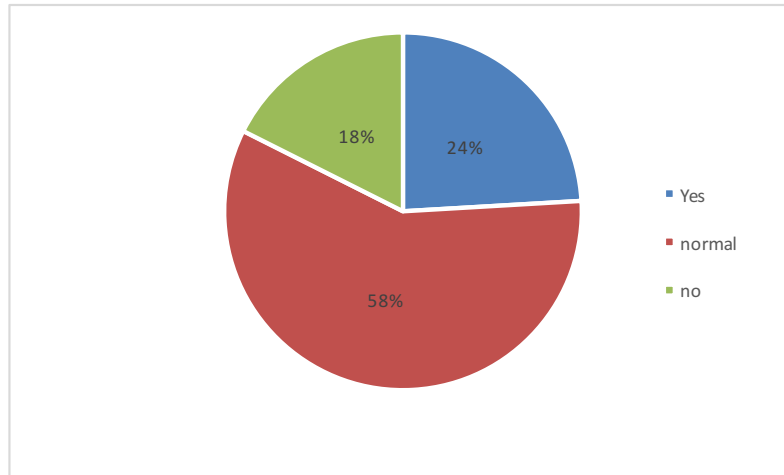
Figure 6.34 Recovery Status of the informal businesses in Bungamati (n=108)

The results are shown in figure 6.34. The figure shows that 26 (24%) of all shops functional in Bungamati have recovered by the end of 2 years after the earthquake.

A total of 19 (18%) shops said they have not recovered from the loss faced in the 2015 earthquake. But interestingly, 63 (58%) shops said they can have not yet recovered but have reached a stable state. This strengthens the argument that informal sector, as there is no accounting system for the businesses, hence they cannot clearly differentiate between recovery of the business and household. Furthermore, according to most of the shop owners in Bungamati, this state may continue for a long time, depending on the market situation and future government support.

The comparing the restarting time with the recovered businesses show that businesses which recovered by the end of two years had an earlier restarting time when compared to the businesses which did not recovery (Figure 6.35). While on the other hand, businesses which shared that they are in a new normal state do not show any trend when compared to the shops which recovered and those have not recovered.

Contrary to the findings of earlier researches recovery to the type of product, the informal sector recovery does not follow any trend with the products the shops were dealing in Bungamati. This can be said as shops, dealing with same products can be found across all the three categories of recovery.
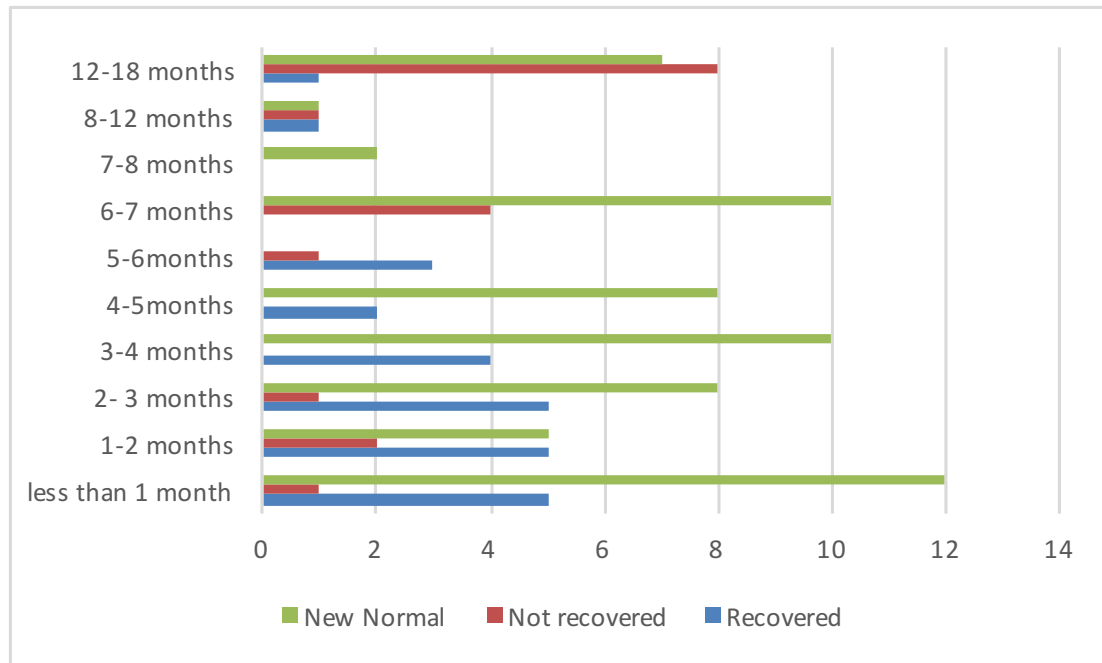
Figure 6.35 Comparing Restarting and Recovery status of the shops in Bungamati.

An NRA members (A3) shared

The focus of the recovery is physical reconstruction with priority given to schools, hospitals and residential buildings. Livelihood recovery is related to reconstruction and we may focus on livelihood and economic recovery may be from next year.

The above shows a monocentric approach to recovery and underestimating the interlinkages and overlaps of various sectors. Further, Bosher (2014); Hao Li et al. (2012) have linked mono-Centricity to governance failures. While key informant (A3) acknowledges the need to priorities livelihood recovery before reconstruction, but blames it on political and social pressure which has driven the recovery process. The informal sector is linked to owners' household through assets and capital and hence considering them as two mutually independent entities in the recovery policy was not desirable.

6.10 The growth of shops in Bungamati post 2015 earthquake

Post 2015, there has been a considerable amount of growth in new businesses in Bungamati. The major reason for this are due to the rising operational cost and lowering of the profit margins after the earthquake. An electric shop owner who shifted from Bhainsapatti to Bungamati shares

After the earthquake, my rent for the shop went up and my business was doing well, hence I decided to shift back to Bungamati as it has a good market for electrical products.
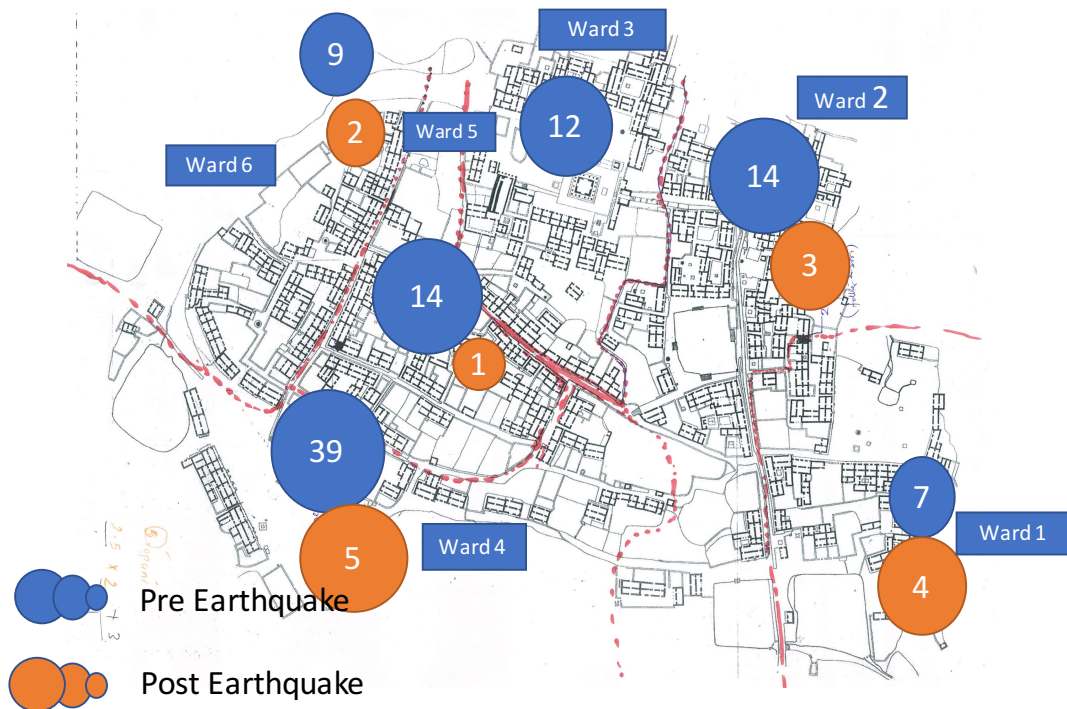
Figure 6.36 Growth of shops in Bungamati before and after earthquake

While it was seen that women or non-income generating members of the household got engaged in opening new shops as a source of increasing the household income.

H 24 shared;

My husband lost his job and I started this grocery shop as investment is low and I must increase my household income.

From the total survey conducted in Bungamati it is observed that 19 shops started functioning after the earthquake. Among the new shops, grocery and cold storage is the most preferred product for the shop. This is due to the low investment cost for setting up of these shops, constant demand in the market as has been seen in case other grocery stores and no extra skill set is required. Among the various locations, it is seen that the bus parking area is the most preferred location while no shops have come up in ward 3 followed by ward 5 (Figure 6.36). This can be attributed to the high density of existing shops in this area and prevalence of handicraft shops as these two wards have tourist routes.

6.11 Discussion

The case study of Bungamati highlights the complexity of intertwined socio-economic, physical, cultural and psychological factors linking household and informal sector recovery in the informal economy of Bungamati. The informal businesses in Bungamati share with their households not only assets, manpower and finance, but are linked through culture, traditions and values which governs their daily interactions. As a result, the understanding of the recovery process goes beyond the extent of damage of faced by the business and incorporates the recovery process of the household and scale up to the community level. Characteristically the informal sector in Bungamati does not have access to insurance, are single proprietorship and operate within the local market.

In traditional settlements like Bungamati, it is seen that various phases of development have influenced the social, economic and physical and institutional change. Over the years, the physical built form has undergone a sea of change from bamboo and straw construction to adobe brick and mud mortar in post 1934. The 1934 earthquake played an important role in this process of sudden change, in the built form which otherwise might have taken a long time to bring in the change. With the collapse of most of the 1934 and later built adobe buildings, a new physical built form will be built in Bungamati.

Drawing parallel to the recovery process of the 1934 earthquake and the 2015 earthquake, there are a few trends which are seen to be repeating in Bungamati. First, the recovery process is mostly dependent on the recovery of livelihood. In 1934, it was the recovery of the agriculture with the introduction of chemical fertilizer and currently based on the findings the opening of new shops and diversification of the older businesses will drive the recovery. Secondly, in both cases, the reconstruction is mainly done by the local residents. In the current condition UN Habitat is proposing an owner driven reconstruction. Third, the loans in both cases were linked to the mortgaging of property and people reluctance to take a loan.

Dependency on external actors as seen here in the case of Oxfam who were not involved in Bungamati before the earthquake does not contribute effectively to the long term recovery due to lack of understanding of the local community. This is reflected in the designing of recovery activities and the means of engaging the local community. The informal sector is highly relied upon in the post disaster scenario with new businesses being set up to increase the income opportunities at household.

From the case of Bungamati it is evident that how the built form was influenced by the change in livelihood in the community necessitated by a change in the economic system from crops to cash. The need for income in the form of cash has changed the dependency of the community on income generating livelihood rather than non-income generating livelihood like subsistence agriculture. In case of 2015 it was seen that community went back to non-income generating livelihood options for sustenance when the income generation failed. The various strategies adopted by the shop owners serves both household and business recovery.

The Bungamati case also highlights that there is no significant relation between the restarting time and recovery status, at least within the first two years of the earthquake. The recovery status would highly depend on the asset access, usage and decision making of the business owner. The recovery of the local market is essential for the informal businesses. But as seen here, such copycat principle followed will ultimately make the local market a buyers' market and take the competitive edge.

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Chapter 7

Comparative and Combined Analysis of Case Studies

This chapter compares the findings from the formal and informal businesses to identify commonalities and differences. The impact of the earthquake, restarting time, asset usage strategies and recovery time is compared.

7.1 Introduction

In this chapter, the key findings of this research are discussed based on the comparative and combined analysis of the three case studies representing the formal and informal business in Kathmandu valley. The chapter ends in a discussion, highlighting the key issues emerging from this research and drawing parallel with earlier researches.

7.2 Impact of the disaster on the formal and informal business

The 2015 Nepal earthquake's impact on the formal and informal business from this study indicate both similarities and variance across physical, social and economic impact. The emerging issues then are linked to broad issues in local and national context.

The physical impact of the earthquake on the formal and informal business shows over all similar trends. Both formal and informal businesses faced damages to their property, equipment and raw materials and finished goods. The location of the cluster played an important role in physical damage as is seen in the case of Bungamati and Balaju which had severe damage in 1934 and again in 2015 earthquake in comparison to Patan which is not located in the river basin. Along with the location, the type of building construction technique and maintenance influenced the vulnerability reduction. These mainly relate to issues of governance within the industrial districts and at the city and national level in relation to land use planning and implementation of building byelaws. Further, as has been touched upon earlier, a major reason for this the lack of mainstreaming of risk assessment into land use and developmental plans in Kathmandu Valley.

The social impact of the earthquake on the formal and informal business differ widely based on their linkage with labour market and household. While in the case of the formal industrial districts the dependency on external labour forces makes it vulnerable to be affected economically though the physical assets are not damaged. In comparison, the informal business in Bungamati in relation to the labour market is self-sustaining. Further, in the informal

business, as the family members double up for the labour force in the business, there is a unified goal of achieving economic recovery as a factor of family wellbeing.

The social impact of the earthquake in the formal business was observed to be affecting the businesses, but there was no significant impact of the businesses on the owner's household. In case of the informal business the impact of earthquake on business is countered by modification in expenditure at the household level. Further service plays an important role specially in the formal sector for influencing the restarting of the businesses. Two major types of services are emerged as essential for reducing business disruption from this study namely electricity and road. Further, the local market recovery is an important factor for both formal and informal businesses operating in locally dealing mostly in household goods, food products or tourism based businesses. As for the economic impact, the direct impact of the earthquake is similar for both the formal and informal business but differed widely in their indirect impact.

7.3 Disaster brings new opportunities for the formal and informal business

Overall, both formal and informal businesses showed a rise in the number of units post-earthquake (Figure 7.1). The Balaju industrial area had 98 functional unit housing 127 businesses before the earthquake; immediately after the earthquake, the industrial board reported a rise in the number of businesses in the designated industrial area with 146 functional businesses in 2017. The reason for this increase, as mentioned by key informant (A10), is new mergers and shifting of companies to Balaju from other areas after the earthquake, as Balaju had better infrastructure. While, Patan industrial area had not registered any new units after the earthquake and till the date of this study.

In Bungamati, 17 new shops started operations between April 2016 and January 2017, when a complete survey of the shops was conducted. Figure (7.2) shows a drop in the number of new shops immediately after the earthquake, but more new shops opened in the following year. Subsequent interviews with the new shop owners revealed that higher operating costs of the shops in Patan and Kathmandu after the earthquake forced them to shift to Bungamati. Contributing factors to this are increases in rent and loss of customers, reduced profit margins. Furthermore, new products, like mobile phones and electrical goods, which were earlier brought from markets in Patan and Kathmandu could now be bought in Bungamati. The shop owners dealing in such products saw an opportunity to invest in the competition free market. Meanwhile, grocery stores experienced high market demand, as many pre-earthquake grocery

shops stopped functioning, and the initial investment for these shops is lower than for other businesses.

Hence, from this it can be summarised that both formal and informal businesses saw a growth of units but the reasons varied widely. In case of the formal business no new units were established, but on the other hand, for the informal business along with relocation, new units were established as a strategy to increase the household income.
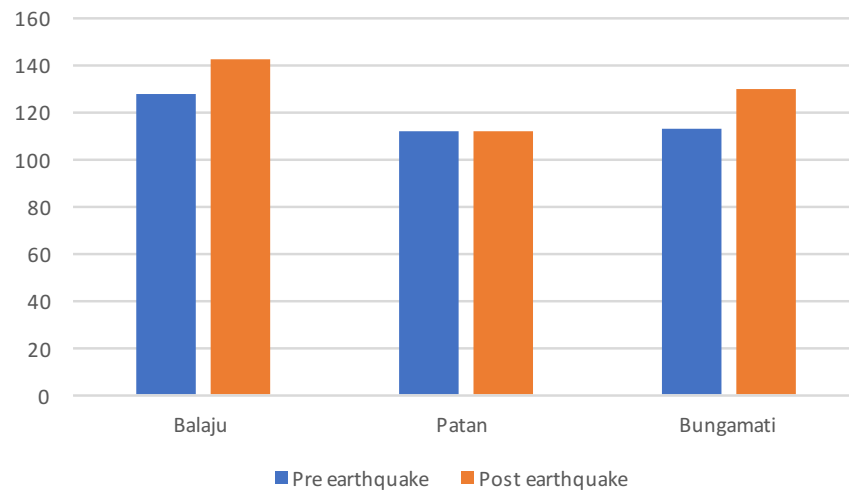
Figure 7.1 New formal and informal businesses started post-earthquake
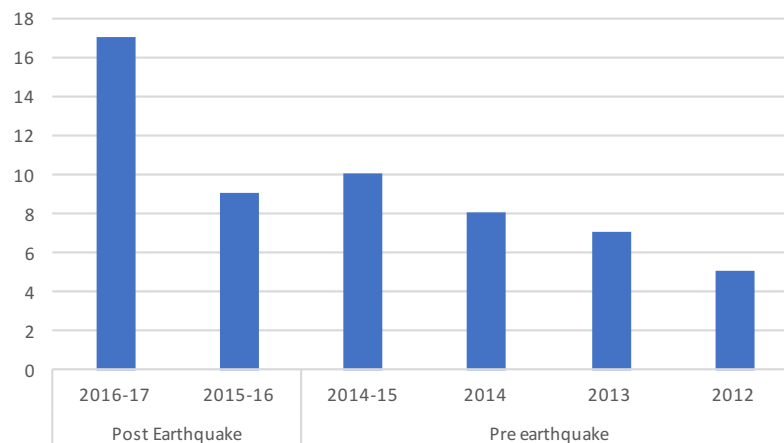
Figure 7.2 Growth of informal businesses in Bungamati before and after the earthquake

7.4 Business restarting time

The restarting time is crucial for a business and requires critical decision making by the owner after understanding the change in the market. This study shows a variance in restarting time in

the formal and the informal business (Figure 7.3, 7.4). The formal business's early restarting time may be attributed to available infrastructure and services in the industrial area, availability of finance, labour, and raw material, a rise in demand for certain goods, and dependency of the owner of the business. On the other hand, the informal business exhibits a longer time range for restarting of businesses, in comparison to the formal businesses. This can be attributed to the extent of physical damage, market demand, availability of finance and multiple sources of income in a household, and the psychological trauma of the repeated aftershocks. The external cash aid for buying assets was effective in restarting businesses for a few business owners in the informal business. Further, the scales of business do not show any significant trend in the study area.
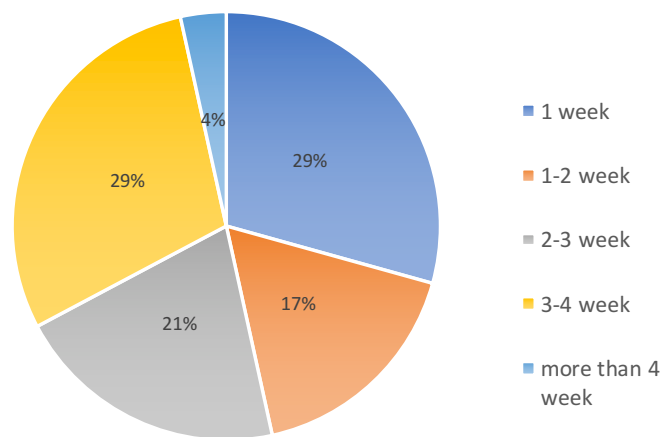
Figure 7.3 Restarting time of the formal businesses (n=58)
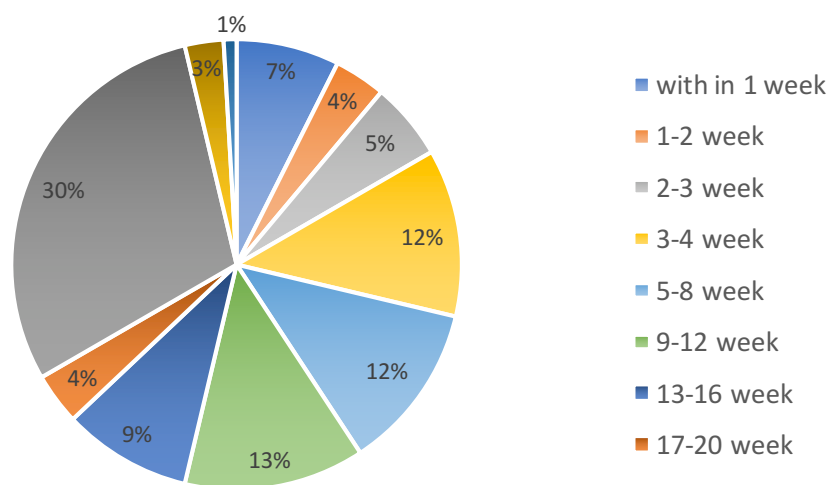
Figure 7.4 Restarting time of the informal businesses (n=108)

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7.5 Recovery strategies

Within the two cases studies for formal business considered for this study, it is observed that there is a similarity in the recovery process. But on the other hand, shows a total contrast when the recovery process and strategies are compared with the informal businesses as shown in table 7.1.

Table 7.1 Asset usage strategies among formal and informal businesses

Heads for coping strategies using Assets (Rakodi, 1999)	Identified strategies in Balaju Industrial district and Patan industrial Estate	Identified strategies in Bungamati
Strategies to increase resources by intensifying the use of natural, physical, and/or human capital	• Changing working hours • Improving supply chain • Increasing raw materials' stock • Increasing the production space • Advertisement and customer outreach • New collaboration • Catering to market demand after disaster	• Diversification of business to include new products • Starting household part time work for additional income • Involvement in cash and food for work programme by NGOs • Temporary migration from Bungamati to other areas for work • Migration of shops from outside Bungamati to Bungamati • Use of social media for reaching out to customers outside Nepal • Non-contributing household members start earning • Raising selling price of finished products
Strategies to change the quantity of human capital	• Increasing labour force	• No related data identified in the field
Strategies involving drawing on stocks of social capital	• Loans from banks through industrial office • New collaborations • Borrowing from friends and family members	• Remittance from household members staying abroad • Borrowing from friends and extended family and getting new orders from friends and family • Government and NGOs' disaster financial aid
Strategies to mitigate or limit a decline in consumption	• Alternate supplier identification • Delaying repairing of factory units • Changing short term contracts to long term	• Reducing expenditure on food brought from the market, such as meat, snacks, and tea • Reducing travel, entertainment, and spending on clothes and festivities • Shifting of school due to inability to pay fees • Selling of agricultural land • Delayed repairing of housing and shop damage

From the table above, overall the formal businesses use all four types of coping strategies as has been listed by Rakodi (1999) while among the informal businesses, there has been no

identified strategies to change the quantity of human capital. This is because most of the informal businesses are run family members and has limited capital to investment for employing external labour.

Among strategies to increase resources by intensifying the use of natural, physical, and/or human capital, it is can observe that the formal businesses, mostly increase the raw materials, production capacity and reach out for new collaborations. While among the informal businesses, diversification of the business gives more income sources. Additionally, migration and change in selling price can be observed as strategies followed by them. The informal businesses are more flexible in making such changes and as there is no price regulation, hence these kinds of changes are based on the owner's decision. Both the formal and informal businesses used advertisement as a strategy to reach out to more clients. While the formal business used advertisements in electronic and print media to advertise their product to create wider market. The informal businesses, mostly resorted to social media to reach out to the external customer based outside Nepal. Further, among the informal businesses owner's household non-contributing members start contributing to the income generation.

Secondly, in the formal and informal businesses, strategies involving drawing from social capital stocks are widely present. In both types of businesses, post disaster family and friends were the main source of the financial capital for investment in businesses. Remittance from outside Nepal by family members were observed only in the case of the informal businesses. The formal businesses reported using bank loans to repair and reinvest in the businesses while the informal businesses do not have access to bank loans due to non-availability of mortgaging capacity or due to the unwillingness of the owner owing to lengthy paperwork and uncertainty in the market.

In the strategies to mitigate or limit a decline in consumption, commonalities are observed in delaying repairing works of the damaged buildings among both types of the businesses. This is due to non-availability of additional funds or insurance to cover the cost of repairing. Among the surveyed cases in the formal and informal businesses, the latter is more likely to adopt such a strategy. In addition, shifting of land, shifting schools and reduction in household consumption is seen only in the informal businesses.

Overall, considering the various strategies documented from the case studies, it is inferred that the informal businesses are more likely to diversify and this will lead to higher risk of failure in future following the Ansoff product market matrix. A few of the informal and formal businesses would try to approach new markets and venture into new products. While majority would continue to with the pre-earthquake products which has the lowest risk of failure. The

diversification or necessity to take up higher risk comes mainly from the failure of businesses after the earthquake.

7.6 Disaster governance

This study shows that the earthquake recovery framework of Nepal has not been effective in economic and livelihood recovery among both the formal and informal businesses. Additionally, the different activities planned under livelihood recovery do not support the formal and informal uniformly. Instead, it is seen that some applies, only to the informal business while others only to the formal business with varied short term and long term goals (Table 7.2).

Table 7.2 Livelihood recovery strategy implementation status

Livelihood recovery strategies envisioned by the PDRF (NRA, 2016)	Time-period	Beneficiary (Formal/ Informal)
Cash transfer	Short term	Informal businesses
Food for work or cash for work	Short Term	Informal businesses
Cooperatives, savings and credit groups, and microfinance institutions will be encouraged to assist cottage, small and micro-industries.	Medium Term	Discussion phase will assist formal businesses
Skills training and entrepreneurship will be facilitated	Medium Term	Partially done mainly mason training
Financial concessions to the private business will include extended loan payment periods and loan restructuring for hydropower projects, Tourism infrastructure and goods and service industries.	Medium to long Term	Discussion phase will assist formal businesses
Tax breaks will be given for a limited period to restore specific industries and businesses.	Medium to long term	Discussion phase will assist formal businesses
Tourism will be revitalized through subsidized loans to those running hotels, homestays and tourist lodges, the reconstruction of infrastructure in tourist areas and maintenance of trekking routes.	Medium to long term	Discussion phase will assist formal businesses

From the table above it is observed that the informal businesses were mostly targeted for the immediate assistance while the formal businesses were given mostly medium and long term assistance. The recovery plan in Nepal is made for a period of 5 years (2016-2020) within this

period, it is seen that among the formal businesses, most (98%) of them would recover from the loss by the end of 5 years in the present situation. But among the informal businesses only 50% of them would predict that they will recovery by the end of 5 years. Further, the present status of the various activities like tax benefit, financial concession, proposed under the livelihood recovery is still being debated and discussed. The actual implementation of these activities would take more than two years and hence would not correspond to the proposed timeline.

This study shows in Nepal, governance and government are synonymous where all decision making and implementation is controlled by the government directly or indirectly. Underdal, (2010) criticizes such a centralized ''command and control'' approach, as not leading to sustainable development after disasters. As informal sector is the highest employment generator in Nepal, the recovery process could have stressed on their recovery to safeguard the livelihood of most its citizens. As the grant in aid given by the government is not sufficient for reconstruction of damaged houses hence income generation is important for making community cover the cost of reconstruction.

The current livelihood recovery in Nepal focuses on capacity building activities and skill development. Considering informal business have different characteristics, Shrestha et al. (2015) find no demarcation of formal and informal employment in the government policies. Further, the designing of various recovery activities, inclusiveness and access should be considered to enable informal business and other such marginal businesss to take benefit from it. In addition, Chatterjee and Okzaki (2017) find that informal business diversification after the earthquake in Bungamati follows copycat principle rather than a logical approach. Taking cognizance of this, the recovery assistance needs to focus on giving assistance on entrepreneurship rather than skill development which is already existing within local peer networks. The processes limit the involvement of diverse stakeholder in decision-making processes as having been seen in the informal business in Nepal.

The case of redistribution of NGOs across Nepal, mostly in the rural areas after the response phase negatively impacted the traditional settlements like Bungamati which are located closer to urban centres. Further, these settlements became part of municipality just before the earthquake. Hence, they still are inward looking close-knit communities who have transitioned from agriculture to another source of income generation. As was shared by A8 there was a need for a longer engagement in Bungamati to support this transition and recovery process.

In line with the findings of Gotham and Campanella (2011) and Kapucu et al. (2010), the study suggests a need to iron out interdepartmental coordination and start collaborations for effective

governance. Further Shrestha et al. (2015) have highlighted issues of institutional ownership and consensus building in Nepal. For effective coordination, there is a need for information collection and sharing across stakeholder.

7.7 Business recovery time

The formal business (Balaju and Patan) recovery time varied from less than one year to more than 7 years, with most businesses expecting to recover within 5 years of the earthquake. In Patan, 19 of the industries expect to recover between 2–3 years after the earthquake, while another 9 expect to recover between 3–4 years; 2 said that they cannot predict their recovery time due to fluctuation in the market. In comparison to Patan, the industries in Balaju show wider variation, with 4 industries reported to have recovered within one year of the earthquake. Most the industries reported 2–3 years as the recovery time, while one industry stated that its recovery time will be 5–7 years and 2 said that it will take more than 7 years (Figure 7.5). On the other hand, the informal business in Bungamati showed that they need a much longer time for recovery in comparison to the formal business. Four shops reported recovery within one year of the earthquake, while 50% of the shops expect that they will need 5 years or more to recover (Figure 7.6).
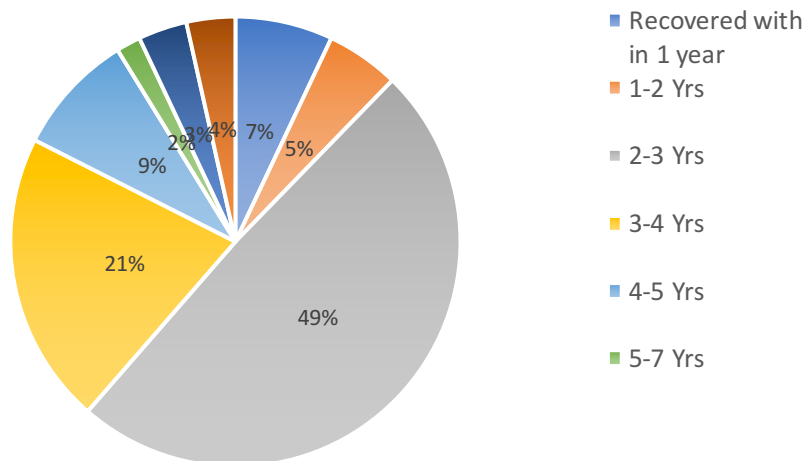
Figure 7.5 Expected recovery time among the formal businesses (n=58)
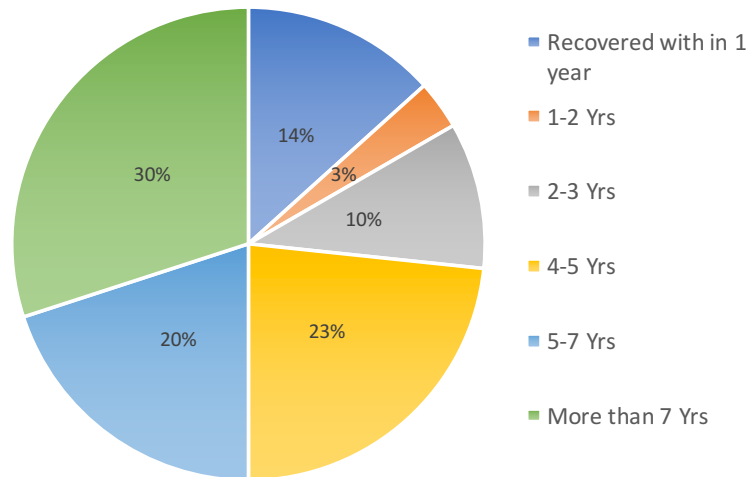
Figure 7.6 Expected recovery time among the informal businesses (n= 30)

Furthermore, during the interview, the industries in both Balaju and Patan clearly defined their present condition as either recovered or not recovered. However, in the case of Bungamati, we identified three different status categories – recovered, not recovered, and a new stable state – that differed from both the pre-disaster state and total recovery. Marshall and Schrank (2014) report similar states in their study on business recovery. Furthermore, according to most of the shop owners in Bungamati, this state may continue for a long time, depending on the market situation and future government support.

7.8 Discussion

The recovery of the formal and informal businesses is crucial for economic recovery after a disaster. As seen in this research, the direct damage to businesses have been mainly due to the impact of the earthquake on the buildings housing the factories and shops. But on the other hand, not much damage had been observed for the equipment and raw materials for both formal and informal businesses. But such damages did not deter the industries from restarting the businesses. The formal businesses could quickly repair the damages from their savings while the informal businesses could start operating from the damaged building, temporary shelter or would shift to new location. Further, within the first year of the earthquake, the disruption in the services, particularly electricity, was a major concern for the formal and informal businesses among the locations studied. This is analogous to the findings of Tierney and Nigg (1995) dependency of the businesses on the electricity as the most critical of the services.

Further, among the other indirect damages caused by the earthquake, market failure is a major concern for the businesses operating in the local market and had a high dependency on tourism. As seen in the case of Patan and Bungamati, the market failure is a major concern. The livelihood recovery framework did not focus on the local market recovery. As Chang (2010) is suggested in case of the Kobe earthquake, the local market for the retail businesses are dependent on the customer footfall. In case of Nepal, the reduction in tourist and out migration of residents leads to lowering of the monthly sales in all the studied location. In addition, a decision among the household in Bungamati to lower the expenditure on the buying from external sources reduced the profit of the retail and wholesale shops. Similar findings have been shared by other researchers like Alesch and Holly, 1996; Zhang et al., 2008.

The study shows a major variance in the impact of the earthquake on the labour market. While the formal businesses reported fluctuation and limited availability of labour due to temporary and permanent migration as an indirect impact of the earthquake. While among the informal business the labour market is stable due to utilization of household human resources. The reconstruction process in the rural areas starting an out migration from urban areas is a new phenomenon that was experienced in this study. A comparable study by Bowden et al. (1977) showed within one year of a disaster, more than 74% of the informal employee migrated out of the affected area. Further, the disconnect between the businesses and government is seen in both formal and informal businesses.

The difference in restarting time of the formal and informal business is evident from the cases studied in this research. The formal businesses dependency on single income source, taking advantage of the new market demands and capacity to invest made the restarting faster than the informal businesses. As for the informal businesses, the owners were seen to switch between income and non-income generating jobs which is mostly governed by the change in market demand of the products. Alesch et al., 2001; Bolin, 1993 are of the idea that a longer time to restart essentially leads to a longer period of regaining customers could be terminal for small businesses. But in the case of informal retail businesses with no fixed clientele such relation does not apply. Dahlhamer and Tierney (1996) though, suggests disruption of business operations is a significant predictor of recovery, but in the studied cases, no such direct relations has been found by comparing the restarting and recovery time. This may be because in most of the studied cases the recovery period is just a perception of the business owner. Secondly, the term recovery itself in the business parlance holds different meanings for different individual.

Though this study is done over a small sample but it shows significant difference in various strategies adopted by the businesses in recovering from the earthquake. The absence of Business Continuity Plans (BCP) has been observed in both formal and informal business. There is a lack of awareness in both the formal and informal businesses on BCP and till the date of this study no such training programs have been conducted on this topic. Among the formal businesses, a few showed willingness to start BCP while in the informal businesses BCP is not a feasible option. In both cases, the Assets usage has been made to mitigate the direct and indirect impacts of the disaster. The interdependency of the household and businesses in recovering is observed among the informal business while formal businesses were limiting themselves to the business for mitigating the loss. Hence, for the informal businesses the repairing or reconstruction of the damage buildings is dependent on the livelihood recovery. Further, the current trends of selling agricultural land to compensate the loss as seen in Bungamati is a very serious sign of exposing themselves to higher risk in the future. The loss of land as a fixed asset, in the long term will have an impact on the household food sufficiency and make the community vulnerable.

The perception of recovery time among the business owners and the failure of the local market is a major cause for limited involvement of the business community in long term disaster recovery efforts. Most of the formal and informal businesses studied involved in one way or other to help the affected community immediately after the earthquake. In countries like Nepal which has a majority of the industries in the small, medium and the cottage industry segment, the prospect of involving the businesses within the impacted region in public private partnership is bleak.

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Chapter 8

Conclusions and Recommendations

This chapter outlines each of the earlier chapters, discusses key issues, to make an overall conclusion of the study. The next section deliberates on possible recommendations based on the finding of the study. Lastly, the chapter shares future research directions.

8.1 Summary of the chapters

This section summaries each of the earlier chapters by highlighting the important findings of each chapter.

Chapter 1

Disaster recovery is a social process of rebuilding lives and livelihood, but in reality, reconstruction takes the center stage of the recovery process and livelihood is seldom prioritised. In developing and least developed economies, the private businesses provide most of the income generation and hence the recovery of the private businesses is linked to the economic wellbeing of the community. Nepal as a country after a long period of instability was making headlong progress in strengthening its economic foothold in the region. The Nepal earthquake of 2015 dealt a big blow to this, causing a steep fall in Nepal's GDP growth. The productive sectors including the private businesses was the second most affected sector in the 2015 earthquake after social housing. The reconstruction of social housing has been the priority and little has been done to ensure economic and livelihood recovery. This warranted for study to understand the recovery process of the private businesses. Three cases were selected in Kathmandu valley for conducting this study.

Chapter 2

Disaster recovery as a social process has varied outcomes and depend heavily on the decision-making process at various phases of recovery. This chapter reviewed various secondary data on disaster recovery, businesses recover, formal and informal business to generate a conceptual understanding of the study. From the various secondary literature, it is theorized that business recovery takes different trajectories which is dependent on the use of assets to cope with the direct and indirect impacts of a disaster. Further three types of disaster impacts were identified namely; direct, indirect and wider impacts.

Chapter 3

This chapter details out the methodology and the selection of the case study locations. Overall the research is qualitative in design. Questionnaire survey, semi-structured interviews, key informant interviews, participatory mapping and photo documentation were conducted within two years of the earthquake in selected case study locations. Latter in the chapter various analysis methods are discussed.

Chapter 4

Kathmandu valley has been a centre of trade and commerce for a long period of time and has faced severe devastation in the past earthquakes. Due to rapid urbanization and in migration, the valley has emerged as an economic hub. Hence the 2015 earthquake though had epicenter in Gorkha but caused higher damage to both physical infrastructure and economic functioning. Being the economic hub, business has been integral part of the community in Kathmandu valley and has shaped the spatial layout of the cities and towns in the valley. The formal and informal businesses in Kathmandu are interrelated and operate mainly in the local market. Livelihood protection has been neglected from the very beginning in the policies and the government has made less effort to regulate the growth of informal businesses. In addition, lack of data, irregular monitoring has been issues with the line departments. Considering the past legislations on disaster management in Nepal it is evident that the focus was mainly on training, awareness generation and policy making without focusing much on strengthening implementation of building codes and risk transfer mechanism. Further, the government had been dependent on NGOs for most of the implementation work.

Chapter 5

From the 1934 earthquake data, it is seen that both Balaju and Patan areas had been severely impacted. Location plays an important role in the extent of physical damage. The Balaju area which is situated in the river basin has been more severely damaged by the earthquake when compared to Patan. It draws attention to the lack of integration of risk assessment and land use planning in site selection. Over the years there has been no stringent policies to reduce risk of the formal businesses and mainstream them into risk reduction activities. Further, despite their high locational risk, building maintenance and other safety checks were not carried out.

The impact of the 2015 earthquake on the formal industries has been observed across physical, social and economic factors. The physical damage refers mostly to direct impact, is a result of the weak building code implementation and lack of proper maintenance of the buildings. The

repairing works carried on by the owners without any structural assessments after the earthquake raises questions on whether such recovery process can lead to Build Back Better in case of the formal businesses without any external interventions. On the contrary, ramification of the physical vulnerabilities is observed due to no technical support provided to the formal businesses for the repairing work after the earthquake.

The social impact on the business due to labour migration and new opportunities created due to the reconstruction work reflect on the uncertainty of the labour market and the highlight the informality within the formal businesses. Most of the labours who moved back to their villages were daily wage labourers. The economic impact of the earthquake on the formal businesses shows the changing needs within the business community based on time. In the initial phase, the indirect impact was due to client loss, service disruption and labour shortage, but as was seen in case of Patan Industrial Estate, the business impact was more due to loss of market.

The restarting time among the formal businesses shows that most of them restarted within first 2 months of the earthquake. In most cases, there was high dependency on business as a source of income as well as in the initial phase of the earthquake, demand for local suppliers of relief materials gives incentive for early restarting of businesses.

Considering various strategies adopted by the formal businesses, it can be observed that all of them concern adaptive changes made at the organizational level and do not link with the owner's household except for changes in expenditure on festivities and travel. Further, this study shows that having a risk transfer mechanism like Insurance does not necessarily aid restarting or recovery of the businesses unless the insurance infrastructure is strengthened. The type of strategies adopted fall mostly in low risk to medium risk ventures.

Lastly, the recovery time of the formal businesses fall within the stipulated 5-year period of recovery framework set by the government. But as most of the recovery activities are still under negotiation phase the effectiveness of the recovery framework for the formal business is debatable and needs to be monitored from time to time.

Chapter 6

The physical, social and economic development of Bungamati is linked to the development of the informal businesses over the years. Post 1934 earthquake, there has been a change in the occupation of the people due to sudden rise in demand for masons and carpenters. While changes in the building materials led to collapse of rope making industry immediately after the 1934 earthquake.

The physical change, especially on the ground floor of the residence in Bungamati was induced by the rise in the number of shops because of increasing income generation and the shift in livelihood from non-income to income generating due change in economic conditions of the settlements.

The physical impact of the earthquake on the informal businesses do not affect the operation of the businesses directly but can limit business owners access to raw materials and finished goods. In addition, collapse of Newari houses and the Rato Machindranath temple affected the tourist flow, thus leading to collapse of the local market. Further, out migration from the village was a major cause of the reduction in market demand for the retail shops catering to the local community. The informal businesses are not affected by the labour migration after the earthquake, but were severely impacted by the loss of tourism and service disruption. The restarting time of the informal businesses varies widely as the business owners shift between income generating and non-income generating livelihood options based on market and seasonal demands. Further, community involved in caste based occupations has more livelihood options and has constant source of livelihood generation and sustenance.

Informal businesses and household recovery are inseparable as in seen in the case of Bungamati. This is evident from the various strategies adopted by the informal businesses in the post-earthquake recovery phase. The diversification of businesses in case of Bungamati shows no rational principle, but rather follows copycat principle in the decision-making process. There is likely chance of this increasing the market competition among the shop owners and in future lead to survivability issues. The projected recovery of the informal businesses shows majority of the businesses will take more than 5 years which is the stipulated time mentioned by the recovery framework.

Chapter 7

This chapter compared the findings of the formal and informal businesses which showed a difference in their impact, restarting time, recovery strategies and predicted recovery period. This raises question on the current disaster recovery and disaster risk reduction frameworks which considers the private sector as a heterogeneous entity based on the scale of enterprises. This research shows the formal and informal businesses have different approaches to recovery and hence there is need to revisit the recovery policies and DRR policies to incorporate such wide variance.

8.2 Key issues emerging from the study

These key issues emerging from this study are not generalizable for whole of Nepal as that would need a much wider study to establish the findings. Nevertheless, this study being first of its type provides the foundation to conduct similar studies across Nepal.

- **Private sector is not a homogenous entity-** This study establishes that the private sector is not a homogenous entity and the formal and informal nature of a business play an important role in the recovery process.

- **Damage and loss data is important for effective decision making -** The private sector incurs more loss in comparison to the public sector. Damage and loss assessment data needs to collect data on both formal and informal businesses to give a realistic estimate of the economic impact of a disaster. Further, this will reflect in the post disaster needs assessment which is followed by the external donors and aid agencies for the immediate response and relief work. This study highlights the need for detailed and accurate damage and loss data for making a comprehensible and realistic recovery plan. Further, the disaster loss data are needed for an effective decision making process and supporting risk modelling as has been indicated in GAR 13 (UNISDR, 2013). Fakhruddin et al. (2017) suggest a systematic collection of damage and loss data is important to compare the disaster loss data and establish reduction in economic damage from disaster as has been envisioned by SFDRR.

- **Recovery framework is not a one-time plan-** GFDRR report (2015) recommends that recovery measures need to be aligned with the development process following a disaster. This study suggests designing of the recovery framework needs to consider direct, indirect and wider impact of a disaster. In the initial phase the damage and loss data mostly signify the direct damage while the indirect and wider damage data can be obtained much later but are crucial for the business recovery. Further, the interconnectedness of various sectors in the recovery framework is important. The livelihood recovery approaches need to clearly delineate between income and non-income generating livelihood support. Further, there is a need to for periodic evaluation of the recovery framework based on changing ground realities. Based on the outcome of the evaluation, the recovery framework can be altered to incorporate new needs.

- **Timeline of recovery framework-** The timeline of the activities needs to be based on the actual restarting time, changing demand in the market and probable recovery time. As seen in the case of the formal and informal businesses, the restarting and recovery time varied widely and hence as most of the livelihood activities are still in the discussion phase while reconstruction has been prioritised. These activities, if implemented in later phase will not benefit the formal businesses as they would have recovered by then. While the informal businesses would not take advantage of such activities due to their nature and way of doing business limiting their access to such benefits. Overall, it can be said that the recovery framework design and implementation timeline is a crucial factor for its success.

- **Designing of livelihood recovery aid and activities-** As seen in this study, the livelihood aid provided by the government and NGOs had no significant impact on restarting of the businesses. The livelihood recovery activities such as alternate skill development training, tax benefits serve only a section of the affected businesses. As seen in the case of the informal businesses, such skill development is a duplication of the existing peer to peer learning networks existing within the society prior to the earthquake. Further informal businesses, need capital, entrepreneurship training, support in establishing their market contacts and a cooperative to maximize their profit. As was seen in the case of Bungamati, such cooperatives run by the community would lead to issues of trust. Hence a government or NGO supported cooperative would help them in reaching out to market and maximize their profit.

- **Balancing labour market during and post- reconstruction phase-** As was seen in the case of the formal businesses, there has been migration of the labour force mainly daily wage labours to rural areas for participating in reconstruction activities. This created a shortage of labour in the labour intensive industries which hampered the productivity. Further, as stated in the recovery document, training of masons and carpenters would lead to the creation of jobs but once the reconstruction phase is over there will be a surplus of mason and carpenters with the demand of new houses going down.

- **Disruption of basic services influences business recovery-** In both formal and informal businesses, the disruption of basic services especially electricity play an important role.

- **Low awareness among formal businesses on BCP-** BCP has been considered as an important risk reduction tool for the businesses. As seen in the case study location, none of businesses had BCP. Prior studies have highlighted that emergency preparedness may reduce the impact of natural hazards (Jha and Stanton-Geddes 2013). But on the contrary Baba (2013) share that many businesses are not willing to make BCPs as was seen in the case studies in Nepal. Hence there is a need to create a window to institutionalize BCP for the formal businesses.

8.3 Conclusion

This study establishes that the formal and informal businesses differ widely in their recovery process in terms of their disaster impact, restarting time, recovery time, and strategies for recovery. The direct, indirect and wider impact of a disaster event was related to the overall development process in the past and in the present conditions. Market demand, services and labour influence the business recovery more than the physical damage. Further, this study presented that the formal businesses restarts faster than the informal businesses. The recovery process has though been considered as an opportunity to bring in developmental gains. But due to the limited period of engagement, it has seldom addressed the root causes of a disaster. This has made build back better and strengthening of resilience a distant dream to achieve. As observed in this study, both the formal and informal business recovery by transforming existing assets or by adding new assets to organization or at household level or both. Overall, this study highlights that disaster recovery planning as part of disaster governance is a key issue to be addressed to make the recovery process effective and far reaching.

8.4 Recommendations

Based on the findings of this study the following recommendations are suggested to make the economic recovery process effective after a disaster.

- **Establishing a business network for baseline data, damage and loss data collection, recording and reporting system**

Setting up a network of business houses and institutions and empowering them to collect baseline data in normal times at the ground level and same institutions can engage in carrying our damage and loss assessment in post disaster situation.

- **Customizing disaster recovery policy for formal and informal businesses**

From this study, it is evident that formal and informal businesses vary in their recovery process. Taking cognizance of this aspect, future recovery policy can be designed to address specifically formal and informal businesses with due consideration to the restarting time, asset usage and access to various resources. Further, the national recovery policy to be effective for implementation must be linked the recovery policy of the local government. Such an integration will lead to sharing of resources for implementation, broadens the scope of addressing economic, social, and environmental sustainability concerns of achieving a broader conception of community resiliency. A polycentric approach in preparing such plans with the involvement of the local community would lead to a pragmatic plan.

- **Assessing of the recovery timeline periodically**

The recovery framework is essentially a guideline for various agencies to achieve a defined set of targets within a defined time frame. But what has been missing in this process is a reality check on the ground level achievement and the restructuring of the timeframe and related activities, keeping in tandem with the overall developmental changes happening at national, regional and local level. As highlighted in this study, various activities are designed for an effective recovery, but are based on the initial assessment immediately after the disaster. But with the progress of time, these recovery activities get intertwined with the normal developmental process. In addition, these recovery activities have different implementation challenges for different stakeholders.

- **Prioritising recovery of the local market vis-a vis individual livelihood aid**

From this study, it is observed that both formal and informal businesses in Nepal, operate mostly in the local market. Further, the recovery of the local market, including both labour market and demand and supply of goods and services were critical for recovery. Further, inferring from the cases studied, post-disaster, the restarting time is influenced by the market demand of the products. Secondly, supporting the local market will lead to stabilising the prices of the essential commodities and construction materials. Further, as seen in this study, in the initial phase of the disaster, it is essentially the daily need commodities which restart and hence the recovery process can prioritise the livelihood support based on the type of products dealt with the businesses.

- **Strengthening insurance sector for effective risk transfer mechanism**

Strengthening of insurance infrastructure at the national level with policies defining a timeline for conducting surveys, settlement of insurance claims would be necessary to make insurance as an effective risk transfer mechanism in the post disaster scenario. This will also guarantee a better standard of repairing and reconstruction and infuse new investments from the formal businesses. For the informal businesses, the recovery process is a good time to promote disaster micro insurance through the micro finance institutions creating a window for penetrating the informal sector. The NGOs working for livelihood recovery would support such an initiative by linking the livelihood aid with micro insurance.

- **Linking structural assessment and technical support for repair of industrial buildings**

The repairing of structural damage among the formal businesses goes unaided and depend totally on the owner. The local managing authority should make a structural assessment mandatory for all damaged buildings through third party auditing to assess the extent of damage and guide the business owners in the repairing process to reduce future vulnerabilities. In addition, all loans from banking institutions and micro finance institutions need to make structural safety of the business unit mandatory for availing loans.

- **Setting up of community cooperatives supported by NGOs and local authority**

Setting up of community cooperatives specially for handicraft sector will lead to maximization of profit and ensure reaching out to wider market. Establishment of community cooperatives with support from humanitarian aid agencies would create community asset and through this cooperative various training program and awareness generation can be done.

- **Organizing entrepreneurship training for informal businesses**

This study highlights the need for having entrepreneurship training for enabling the informal businesses to understand the various processes related to setting up of a business and running it successfully. AS was highlighted, there is a high tendency among the informal businesses to copy successful businesses, leading duplication in the local market resulting in the creation of a buyer's market. Considering the post disaster, there is the possibility of additional businesses being established as a measure to increase household income sources.

- **Introducing Business Continuity Planning (BCP) for the formal businesses**

At present in Nepal, as was seen in this study, there is very little awareness of Business Continuity Planning (BCP) among the formal businesses. Creating awareness and training on BCP by involving the industrial board, academic institutions and NGOs. Further research can be taken up to link bank loans and insurance with BCP to ensure high rate of compliance among business organizations.

- **Building capacities of the national and local Government**

This study highlights the issues with governance, mainly in relation to human resources within the government machinery. As a part of the recovery, policies need to design to strengthen the capacities of the human resources and prepare them for the future. An assessment of the existing human resources skill set and resources polling of volunteers and the creation of national and local level roster of volunteers will make the government machinery expand to accommodate the extra need after a disaster.

8.5 Implications for future researches

This study was conducted within first two years of the Nepal earthquake considering 3 case study locations. During the span of this research, the recovery process of both the formal and informal businesses has shown progress over time. Further longitudinal research in the similar areas would give a better understanding of the recovery process and the adjustments made later in all the six types assets that have been studied as a part of this research. Further studies documenting the actual recovery time of the businesses studied as a part of this study would reveal what kind of factors govern the actual recovery. Additionally, other case studies can be selected for the formal and informal businesses to incorporate a bigger sample survey and findings would be generalized over the region and can be tallied with the actual status of recovery by the end of government suggested recovery time frame.

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Appendices

Appendix-1

List of Industrial Districts in Nepal

Industrial District	Balaju	Patan	Hetauda	Dharan	Nepalgunj	Pokhara	Butwol	Bhaktapur	Birendra nagar	Dhankuta	G.N. Singh	Total
Estd. Year (A.D.)	1960	1963	1963	1973	1973	1974	1976	1979	1981	1984	1986	
Foreign Aid	USA	India	USA	India	India			Germany	Netherland		India	
Area (Ropani)	670	293	2829	202	233	501	434	71	90	63	294	5680
Developed	670	293	2506	202	233	501	406	71	90	-	171	5143
Leased	540	220	1904	134	189	397	348	58	66	-	17	3873
Not Leased	-	-	-	6	-	-	-	-	-	-	13	19
Land occupied by service sector	130	73	602	62	44	104	58	13	24	-	141	1251
Investement (rupees in crore)									-			
Government sector	6.22	4.01	5.33	1.3	1.75	2.82	2.3	2.24	1.54	0.56	4.86	32.93
Private sector	312	170	502	30	195.2	183	270.1	59	1.5	-	3.5	1726.3
No. of industries	131	112	100	34	35	76	71	37	28	-	4	628
Running	97	102	63	24	30	61	62	35	22	-	2	498
Under construction	26	5	17	9	4	5	2	0	6	-	1	75
Closed	8	5	14	1	1	10	7	2	0	-	1	49
Land on leased but yet in construction	-	-	6	-	-	-	-	-	-	-	-	6
Others	10	7	10		2	7	1	2	1	-	-	40
No. of employment	3506	1586	2415	706	867	1945	1480	825	163	1	29	13523
Power Capacity (KVA)	6000	2500	5000	1000	1000	2000	2300	900	500	-	25	21125
Water Production/Consumption	630	21	288	45	75	744	104	-	48	-	8	1963
Road (K.M.)	5.2	5	18.2	2.31	2.34	2.54	2.14					

(Source: IDML, 2012)

Appendix-2

Data sets used for the study

Type of Data	Numbers	Collection technique/ Language
Primary data		
Questionnaire survey	Balaju-28 Patan-30 Bungamti-30	The questions were asked and filled up by the surveyor in English.
Key informant interviews	10	8 of them were recorded 1 each in Balaju and Patan was written memo (A7, A10). English/Hindi/Nepali
Semi Structured interviews	Balaju- 28	Written memo (English/Hindi/Nepali)
	Patan-30	Written memo (English/Hindi/Nepali)
	Bungamati-24	Recorded (English/Hindi/Nepali/Newari)
Focus Group Discussions	Bungamti-2	Recorded (Hindi/Nepali/Newari)
Participatory Mapping	Bungamati-1	6 Maps created
Inventory of shops	130 shops in Bungamti	(English)
Photo documentation of Balaju	10 plates	
Photo documentation of Patan	10 plates	
Secondary Data		
Photo documentation of Bungamati	40 plates	
Collection of 1968 photographs of Bungamati	20 plates	Scanned and shared by Taragoan Museum
Raw survey data and notes of 1968 survey done by Danish architects	48 survey samples 5 notes	Survey data written down Scanned copy of the notes (English)
Collection of earthquake damage photos from residents in Bungamati	10 plates	Shared on email
Damage and loss report of Bungamati	1	Hard copy from UN Habitat (English)
Report and List of beneficiaries for livelihood aid from Oxfam	1	Excel sheet shared on email (English)
IDM Souvenir	1	Hard copy from IDM (English/Nepali)

Questionnaire for Privatesectors Recovery leading to Resilience

Introduction of the Study
The proposed study tries to understand the vulnerabilities of the private sector specifically Micro, small and medium scale industries, how does the private sector cope up with them in their daily life and after the Nepal earthquake. All the information retrieved from this questionnaire will only be used for the purpose of academic research and not given to any other party, except for the supporting organizations and research team members.

1.0 General Information

1.1 Name of Respondent:
1.2 Name of the company: Contact Details: ● **Address:**   **City:**   **Pin code:** ● **Email:** ● **Phone/Mobile:**
1.3 Sector involved: ☐Manufacturing   ☐ Service Product /Service provided: ☐Wood carving   ☐Carpet   ☐Restaurants   ☐Oil mill ☐Metal work   ☐Others (   ) Is your company listed as a Heritage Unit? ☐Yes   ☐No
1.4.1 Which category does your company fall in ☐Micro and cottage   ☐Small   ☐Medium   ☐Large 1.4.2 Average net turnover of the company in a year in NPR?
1.5.1 Number of employees/Staff: 1.5.2 How many of the staff are male: 1.5.3. Is the owner of the company ☐Male   ☐Female 1.5.3. Age of the owner of the company ☐20-30 years ☐30-40 years   ☐40-50 years   ☐50- 60 years   ☐Above 60 years
1.6 Number of Units/Offices:
1.7 Location of additional Units/offices: ☐Kathmandu City ☐Khokana/Bungmati ☐Kathmandu Valley ☐Outside Kathmandu Valley   ☐Outside Nepal
1.8Year of Establishment of the company: 1.9 Year of construction of the building:
Date of filling up of the survey:

Appendix-4

List of Shops in Bungamati withtype of shop, restarting time, reocevery status, staff, location and year of establishment

sl no	Name of the owner	Name of the Shop	Type of Business	year of starting	Ward	Restarting time	Recovery	Staff
1	Shakya Bakha maya		cold store and Grocery	2017	3	NA	NA	1
2	Mali Krishna devi		cold store and Grocery	2017	3	NA	NA	1
3	Deshar Sanu	The hill top restaurant	restaurant	2012	4	4 month	Normal	5
4	Deshar Kumar		cold store and Grocery	2017	5	NA	NA	1
5	Tuladhar Surendra	Karyabinayak cold store	cold store and Grocery	2004	1	14	Normal	3
6	Tuladhar Sunta raj	Mankal wood carving	wood carving	2012	1	6 months	Normal	6
7	Tuladhar Sunita		Tailor	2013	1	2 months	Normal	1
8	Tuladhar Sabita	Sabita cold store	cold store and Grocery	2001	1	1	Normal	2
9	Tuladhar Ramesh	Ramesh cold store	cold store and Grocery	2014	1	6 months	Normal	2
10	Tuladhar Laxman		Tailor shop	2017	1	NA	NA	3
11	Tuladhar gunna	Purna cold store	cold store and Grocery	2016	1	2 months	Normal	1
12	Tuladhar gunna	Binayak wood carving	wood carving	1989	1	6 months	Normal	2
13	Tuladhar Amrit	Karyabinayak cold store	cold store and Grocery	2005	1	3	Normal	2
14	Shakya Sabina	khusi pasal	cold store and Grocery	2017	1	Na	NA	2
15	Shakya Rajan	Rajan cold store	cold store and Grocery	2016	1	2 months	Normal	1
16	Shakya Rabindra	Ritika wood carving	wood carving	2004	1	1 year	No	2
17	Shakya Manik Raj	Bungamati wood carving center	wood carving	1980	1	5 months	Yes	5
18	Shakya Krishna	Krishna Metal handicraft	Metal handicraft	2007	1	6 months	No	2
19	Shakya Gagan	Gagan cold store	cold store and Grocery	1953	1	1	Normal	3
20	Shakya Deepak Raj	Deepak cold store	cold store and Grocery	1986	1	3 months	Normal	1
21	Mali Ramesh	Relish wood craft center	wood carving	NA	1	2 months	Yes	11
22	Mali Nabin	Naisha wood carving	wood carving	2003	1	1 month	Normal	11
23	Mali Manik Raj	Manik cold store	cold store and Grocery	1992	1	5	Normal	4
24	Mali Astha man		cold store and Grocery	2012	1	2 months	Normal	5
25	Maharjan Bikram		wood carving	2017	1	NA	NA	2
26	Magar Sangita	Sangam Store	cold store and Grocery	2001	1	1	Normal	1
27	Lama jeevan	Jeevan auto works	Auto Workshop	2012	1	3 months	Normal	1
28	K.C.Deepak	Depak cold store	cold store and Grocery	2007	1	1 month	No	1
29	Dangol chandra	Karyabinayak canteen	restaurant	2005	1	4 month	Normal	2
30	Brahmacharya Hera ratna	Hera artistic wood carving	wood carving	2007	1	3 months	Normal	3
31	Brahmacharya Hera ratna		cold store and Grocery	2016	1	NA	NA	1
32	Tuladhar Giri ratna		wood carving+ Poultry farm	2014	2	18 months	No	4
33	Tuladhar Gangalal		wood carving	1996	2	1 year	Normal	5
34	Tuladhar Dhiraj	Bunga wood carving and handicraft center	wood carving	2010	2	1 year	no	3
35	Tuladhar Deepak		wood carving	2017	2	NA	NA	3
36	Tuladhar Buddhi ratna		wood carving	1987	2	3 months	Yes	1
37	Shakya Suraj Muni	Kathmandu valley painting	Thanka painting	2015	2	closed till date	No	1
38	Shakya Shanga Ratna	Machindra Honey and wood carving center	wood carving+ Honey shop	2017	2	Na	Na	1
39	Shakya Sajita	Pran shahakari group	Embroidary	2015	2	7 month	Normal	3
40	shakya man ratna	Windows and wood carving center	wood carving	1987	2	1 year	Normal	12
41	Shakya Astha raj	adhithya cold store	cold store and Grocery	2015	2	4 month	Normal	2
42	shakya Asha	Ashin cold store	cold store and Grocery	2014	2	1 month	Yes	4
43	Shakya Anil		wood carving	2017	2	NA	NA	2
44	Mali Fulman	fulman bakery	Tea shop and Bakery	2015	2	14	Normal	3
45	Mali buddhi Ratna	Mali Kirana store	cold store and Grocery	2011	2	21	Normal	3
46	Mali Bijay	Bijay cold store	cold store and Grocery	2012	2	6 months	no	3
47	Maharajan Bishnu	Bishnu cold store	cold store and Grocery	1979	2	3 months	Normal	3
48	Brahmacharya Shankar		wood carving	1994	2	18 months	No	1
49	Tuladhar Surendra	Ghiju Ganesh wood carving	wood carving	2014	3	6 months	Normal	1
50	Tuladhar Shinga Raj		wood carving	NA	3	2 months	Normal	2
51	Tuladhar Shakya Ram	RK store	cold store and Grocery	2011	3	3 months	Normal	2
52	Tuladhar Ratna Kaji	Sanjay cold store	cold store and Grocery	2012	3	2 months	Normal	4
53	Tuladhar Raj Krishna	Shree Ganseh wood carving	wood carving	2015	3	2 months	Yes	1
54	Shrestha Suraj Man		Tea shop	2015	3	2 months	Normal	1
55	Shakya Raj Bhai	Hayagriv wood carving	wood carving	1999	3	6 months	Normal	2
56	Shakya Maya	Muna and Monika cold store	cold store and Grocery	2015	3	4 month	Normal	3
57	Shakya Man raj		Metal handicraft	2014	3	5 months	No	2
58	Napit Keshav	Binayak cold Store	cold store and Grocery	2010	3	3 months	Normal	2
59	Tuladhar Kabi	Raket wood carving	wood carving	NA	3	1 month	Normal	2
60	Dangol Sanjay	Sparsh Pharmacy	Phramacy	1998	4	2 months	Yes	1
61	Tuladhar Shyam Krishna	Sangit sargam electronic center	Electric store	2013	4	15	Yes	1
62	Tuladhar Prem raj	Thigu chatamari center	restaurant	1991	4	1 year	yes	4
63	Tuladhar Poonam		Cloth store	2013	4	3 months	Normal	1
64	Tuladhar Krishna lal	JNJ cold store	cold store and Grocery	2011	4	6 months	Normal	4
65	Tuladhar Keshari		Sweet store	1967	4	3 months	Yes	2
66	Singh mahendra	prince Khaja gahr	restaurant	2007	4	3 months	Normal	5
67	Singh Dhani Dev	Singh Mobile center	Stationary and mobile	2007	4	1 month	yes	1
68	Shrestha sujendra	Shrestha cold store	cold store and Grocery	1990	4	1 month	No	2
69	Shrestha Suberna	Ujwal cold store	cold store and Grocery	2006	4	3 months	Yes	4
70	Shrestha shyam lal	Soya cold store	cold store and Grocery	2013	4	3 months	Yes	4
71	Shrestha Ram govinda	Shrestha kitchen and gift corner	Kitchen store and gift	2012	4	5 months	Yes	1
72	Shrestha Ram	RS tailors	Tailor	2014	4	15	Yes	1
73	Shrestha rabindra	Rabi cold store	cold store and Grocery	2009	4	6 months	no	1
74	Shrestha Prakash	Bhairab Photography	Photo studio	2011	4	1 month	Yes	4
75	Shrestha Padma	MS cold Store	cold store and Grocery	1997	4	1 year	no	1
76	Shrestha Nuchey Bahadur	Nuchey ladies and men's tailor	Tailor	1976	4	2 months	Yes	3
77	Shrestha Jit govind	Arya Cold Store	cold store and Grocery	2007	4	1 month	yes	1
78	Shrestha Jag bahadur		Grocery	2007	4	1	No	1
79	Shrestha Ashok	Shrestha Stationary and gift center	Stationary and gift	NA	4	2 months	no	2
80	Shakya Suman	Suhag Electric center	Electric store	2017	4	NA	NA	1
81	Shakya Purna Raj	Shakya handicraft	Metal handicraft	2009	3	8 months	Normal	4

No.	Name	Business name	Type	Year		Duration	Status	#
82	Shakya om raj		Mobile workshop	2016	4	NA	NA	1
83	Shakya Kanchi		Tea shop	1997	4	6 months	Normal	4
84	Shakya Anup	New bunga newa khaja and restaurant	restaurant	2016	4	NA	NA	3
85	Shahi Siddhi		Kitchen store and meat shop	2000	4	1 month	Normal	2
86	Shahi Shankar		Tailor	2001	4	15	Normal	1
87	Shahi Saroj		Cycle workshop	2014	4	7 month	Normal	1
88	Shahi babu kaji		Cosmetics and gift	2002	4	1 year	No	1
89	Napit Bacchu	SUP sense haircut	Barber	2016	4	NA	NA	1
90	Nakarmi Sunil	Rato Machindranath bike workshop	Auto Workshop	2006	4	5 months	Yes	1
91	Mali Junoj	Machindra Suppliers	Construction material	2013	4	1 month	yes	1
92	maharjan Subin	Man maya maharjan grocery	Grocery	2013	4	6	yes	1
93	Maharjan Ram man	Bungamati Staionery and good center	Stationary	2015	4	2 months	Yes	3
94	Maharjan Binesh	Shree Karyabinyak Suppliers	Construction material	NA	4			1
95	Maharajan Sova		Tailor	2016	4	6 months	Normal	1
96	Maharajan Man Bhakta	Bungmati Newari Khaja Ghar	restaurant	2017	4	NA	NA	2
97	Maharajan Laxmi Shrestha	Laxi sama beauty home	Beauty parlour	2014	4	4 month	Yes	1
98	Maharajan Hari Kirshna		Hotel	2015	4	4 month	Normal	3
99	Khadgi Ram		Grocery	1996	4	12	Yes	4
100	Khadgi Prem	PRBK meat shop	Meat shop	2012	4	14	yes	4
101	Khadgi Krishna Gopal	Ashish Fresh meat shop	Meat shop	2009	4	25	Normal	2
102	Dangol Prem nath	NDS bakery	Bakery	2007	4	20	Normal	2
103	Brahmacharya Mahendra	Bunga tailors	Tailor	2013	4	1 year	Normal	4
104	Bajracharya Sunil		tea shop	2007	4	6 months	No	3
105	Tuladhar Tulsi		cold store and Grocery	2004	5	1 year	Normal	1
106	Tuladhar Jayaram		Hotel	2004	5	16	Normal	3
107	Shrestha Chandra man		Hotel	2005	5	4 month	Normal	2
108	Shakya ratna Muni		wood carving	2002	5	4 month	Yes	3
109	Shakya Puni Ratna		Metal handicraft	2004	5	1 year	Normal	2
110	Shakya Pramila		cold store and Grocery	2009	5	3 months	Normal	1
111	Shakya Nem Raj	Public handicraft	wood carving	2004	5	4 month	Normal	1
112	Shakya Becha Ratna		wood carving	1992	5	18 months	No	1
113	Mijananda Mani man		cold store and Grocery	2012	5	1 year	No	2
114	Maharjan Sukumaya		Cosmetics	1999	5	6 months	Normal	1
115	Maharjan Pandit	Pandit photo studio	Photo studio	1994	5	6 months	Normal	1
116	Maharjan Krishna Pratap	Maharjan store	tea shop and store	2007	5	1 month	Normal	4
117	Maharjan Keshri		Tailor	1995	5	10 months	Yes	2
118	Maharajan Asta Bahadur	Machindra Store	Grocery	2017	5	NA	NA	4
119	Bajracharya Dharma	Special ganesh wood carving	wood carving	2006	5	4 month	Normal	1
120	MaharjanBabu kaji	Suwa Grocery	Wholesale store	1988	6	1	yes	2
121	Tuladhar Jhalak		Tailor	2009	6	3 months	normal	1
122	Tuladhar Devi Krishna	Dev Krishna wood carving	wood carving	2002	6	1 year	Normal	1
123	Tuladhar Chand Suwa		Cosmetics	2011	6	1 year	Normal	1
124	Tuladhar Bikash	Aaj Aai Newari Khajaghar	restaurant	1974	6	2 months	normal	2
125	Maharjan Shyam babu	Shyam babu store	tea shop	NA	6	NA	NA	1
126	Maharjan Krishna Gobinda	Krishna cold store	Hotel+ cold store	1997	6	1 month	Normal	3
127	Maharjan Ashesh	Maharjan Auto works	Auto Workshop	2017	6	NA	NA	1
128	Maharajan Sapna	Sapna cosmetics and pickel store	Cosmetics+ pickel	2016	6	NA	NA	1
129	Maharajan Babu kaji	Suwa Store-1	Wholesale store	2016	6	NA	NA	6
130	Bajracharya Tri Ratna		wood carving	2015	6	9 months	No	1

Appendix -5

Caste System in Bungamati

		Buddhist Newari		Remarks
Sl no	Caste	Surnames	Traditional occupation	
1	Guvaju	Bajracharya	Household priest	High Caste Newars
2	Bare	Brahmacharya, Shakya, Bada	Non household priest, goldsmith	
3	Uday or Urey	Tuladhar, Sthapit	Merchant or Crafstman	
4	Jyapu	Maharjan, Suwal, Singh	Farmers	
5	Putuwar		Make wood available for chariots	Low Caste Newars
6	Gathu	Mali	Gardner	
7	Baun	Deshar	Sweepers in temple complex	
8	Kau	Nakarmi	Metal Smith	
9	Nau	Napit	Barber	
10	Nya	Khadgi, Shahi	Butcher	
11	Jogi	Kapali	Play music in festivals/funeral	
12	Po	Pode	Clean dishes, toilets, sweep streets	
		Hindu Newari		
1		Shrestha, pradhan	Academics	High caste
		Non Newar Immigrants		
2		Mijar, Sarki, Damai		

Appendix-6

Summary of Key Informant Interviews

Designation- Executive member NRA	Code- A1	Time- 52 Mins

- Huge number of industries damaged within 14 districts while 17 other district assessment is yet to come.
- We have not done anything in the livelihood sector as everyone is talking about houses.
- We have to generate income rather than just talking about livelihood. People have lost fundamental source of income like goats, cows, poultry and community have lost common infrastructure like irrigation canal.
- By end of 2 years the people have adjusted to the loss.
- The informal sector loss has not been recorded in the government data.
- The PDNA was consensus document where all stakeholder agreed but data might not be true.
- Recovery is an opportunity to reduce the gap between have and have nots.
- We have taken a model approach for increasing the income by supporting employment and support the gender and marginalized groups through NGOs.
- Need assessment needs to be done
- Induction program through Training and monitoring of livelihood. Example of beekeeping. Cooperatives was formed for solve the issue of marketing.
- The 300000 NPR given is not a victim compensation but economic assistance. The people have their labour, materials etc.
- People who had traditional house and now wants to build a reinforced house how is it possible. Traditional technology is as good as modern houses but floor height needs to be checked.
- 300000 NPR is given as group collateral. Birtha and Guthi are a serious problem in land ownership and is still present.
- Land ownership and reconstruction is linked. Guthi can issue evidence for landownership.

Designation- Steering Committee Member NRA	Code- A2	Time- 32 Mins

- We have not studied in detail the impact on the formal and informal businesses
- Our priority 1 is to distribute the compensation money
- Priority 2 is housing reconstruction
- Priority to 3 is school and community building
- For industries, we only focused on the rural population and final report is yet to be available.
- In terms of policy it is there that livelihood should be insured but I have no idea about the implementation status. Policy says training for livelihood and provide new opportunity.
- We have not considered the market recovery as there is no pressure for economic recovery. The imbalance is there due to social and political issues.
- People have no demand from government but in democracy it is the duty of the government.
- The economic recovery might be taken up after election.
- The rules and regulations were not formulated for insurance.
- Lot of impact of the instable government on the recovery process.

- The impact of the border blocked was not researched but it delayed the reconstruction process and NRA was established only after the blockade was lifted.
- In theory, inclusiveness was there but in practice I am not sure.
- Participatory planning was only there in the parliament.
- In principle Build Back Better but in practice I am not sure. We tried to make policy as per SFDRR.
- Inter departmental communication is extremely weak and that is making the recovery process very long. In term of claiming all department claim but in term of implementation no one takes charge.
- The city areas are not our focus.
- People are concerned about going aboard and people have stopped considering livelihood. Migration is happening to the city centers before the earthquake. The policy is not addressing the issue of migration.

Designation- Executive member NRA	Code- A3	Time- 23 Mins

- Our focus is on infrastructure, health post, school, heritage and housing
- We are lagging in livelihood we might focus from next year.
- We are doing most of work by others (line ministries, NGOs)
- Most NGOs are interested in software part. Agriculture and poverty elevation department are working on livelihood.
- Government is giving 2 kind of grant (grant for reconstruction, building restoration grant and we give soft loan at 2% and is still under process). Bank may not give at 2 % and we may fill 3% to the government.
- We have codes and people are aware of that. We have seismic code and we use Indian code as well.
- Most of NGOs are building schools and have supported pre-fabricated building. There is no way to measure the effectiveness of NGOs in livelihood.
- There is repetition is there in training by NGOs.
- BCP is important but so far we have not supported them.
- The price of materials is going up and if the government support the private sector the prices can be checked.

Designation- Training officer, Government training institute, Kathamndu	Code- A4	Time- 33 Mins

- Young male is interested in going aboard.
- Young women are most interested.
- Government started this training for education deprived people free of cost. All material is provided by government.
- Compliance is not there as people use to as a stop gap.
- Government is giving entrepreneurship training for people who are serious about business.
- Government do not give subsidy for import and export.
- After the skill development, no further engagement.
- Investment is easier if they have some money. The credit facility is not easy to access. Issues with repayment.
- Saving at household and form the seed money.
- Dowry was used for generating money. But bank needed permission from husband to use dowry. But things have changed now.

- After the earthquake, there is a lot of added constraints for the small and cottage industries. They do not have insurance or any other means to recovery and they come to zero point.
- In case of a disaster in Bungamati based on my earlier survey, the women income is very important to help the family come out.
- Wood carving training is obsolete and we have stopped it as there are no participants.
- The phone has changed the connectivity specially in the rural areas.
- The culture has now become same in urban and rural areas.
- The investment has broadened but there not much change in per capita income.
- There is no tax exemption as earlier 5 years before and the moment one registers they have to pay tax if they are making any income.
- I tell them not to register in the initial phase of the businesses. once the business is established then they should register.
- There is too much link with border blockade and businesses. But there was no assessment.
- The fund for victim had accumulated after two rainy season have passed but nothing has been given to people.
- Economic recovery is not possible.
- There is gap in government policy and implementation.

Designation- Ambassador, The Netherlands in Nepal	Code- A5	Time- 16 Mins

- Artist in Netherlands gave paintings to raise funds and the money raised to train sculptors in Bungamati.

Designation- Program Manager UNHabitat	Code- A6	Time- 52 Mins

- We are promoting traditional buildings and the building code try to enforce concrete building.
- Bungamati is a good case study to make the project visible. It is not in many highway and hence heritage can be conserved and community is unified.
- Individual were contributing relief materials and we went empty handed.
- We can help with technology and idea but people should build.
- One house cost is around 4 million NPR.
- Municipality is very new and bigger in scale and hence may not consider Bungamati.
- We should think of economy to sustain the heritage. Heritage home must generate income.
- Tole was the governance unit in Newar society.
- We are trying to work in that direction through project. Heritage tourism related activities. We must promote compatible business.
- Hoardings and rolling shutters are not allowed in the heritage zone. Large number of families will sell land to reconstruct their house.
- Monthly income is criteria for loan from banks.
- Wood carving is not the traditional business in Bungamati. There used to be traditional product in Newari settlement which is no longer existing.

Designation- Program Manager Oxfam	Code- A8	Time- 23 Mins

- We worked in earthquake emergency phase in Kathmandu valley.
- We are not part of the recovery phase.

- We worked in cash for work for clearing debris (only one person per household) based on food basket analysis and business grants. 16 days of work and payment 7500 NPR based on district rates. Disable and pregnant women got unconditional grant.
- We categorized the community based on wealth.
- Fresh food voucher was given. Each household got 4000 NPR supplied by local vendor. No vendor from Bungamati due to no PAN or tax document.
- Before the eq OXFAM was not involved in Bungamati. Based on DDRC consultation.
- We moved to other area based on line agency.
- Government sent NGOs to remote areas.
- The choice made by shop owner to buy asset and Oxfam prioritised assets.
- Bungamati is a core area with traditional business. We would have worked further if we were allowed.
- We could have to support the handicraft industry and profit goes to middleman.

Designation- Manager, Maharjan Guthi, Bungamati	Code- A9	Time- 11 mins

- We are the biggest Guthi in Bungamati and our main work is to do funeral rites.
- None of the members of Maharjan Guthi were injured in the earthquake and we did not involve in any community work as our own building was damaged. Before the earthquake, the building had tile rood now we have made tin roof and steel truss.
- We collect money from all member once a year and we give 3500 NPR to the family in case of death.
- Before the earthquake, the only men could open account but after the earthquake women were also allowed to open account. This will make women self-sufficient. We have 30 women accounts out of the total 250 members.
- Most of ladies work from home like sewing, knitting etc.
- Two times we have Bhoj (communal festival) where only gents are allowed. I can have the food but they bring it to my office. Even for the funeral only men are allowed.
- The ladies with savings account have either some work.
- The shops in the community building are rented after the earthquake to people and generates revenue.

Questions for Balaju Industrial district (Code- A 7)

Industries profile

1. *How many functional units are there?*
   Almost similar even after the earthquake.
   Before Earthquake: 129
   After Earthquake: 142
   Increase in Number

2. *What is break of scale of the units (Micro, small, medium, large)*
   Maximum: Medium Scale
   Larger in few number (Nepal Gas, Nebico, Hilltake, Maida Mill, Bottlers)

3. *Who owns the buildings (lease, own, rented) break up? What right does the industry owner has for repairing/reconstructing? When were these built?*

The present focus of BID is to provide the land on lease. However, in the starting BID commenced up with constructing 46 number buildings(Governmental Support) for the industries. Those 46 no of buildings were build in the 1960s'.

For the already constructed 46 buildings, they need to take permission from the Governmental process for demolishing and reconstructing.

Afterwards, there is no priority/focus for construction as the requirement of building depends upon the scale and nature of the industries.

So, the industries are open to build/construct the building as per their requirements. Industry owner has full right for new construction where he should pass the designs of buildings in the BID.

Entry/Renewal Charge in BID:

Land Rate per ropani: Rs 50,000.

Building rate/square feet: Rs 15

Building Charge:

Industrial building: Rs 3.71/ sq feet per month

Go Down/Storage : Rs 15

Land Lease Charge:

1. *Production Oriented: Rs 16557.7 per ropani per year.*
2. *Non Production:*
    a. Group A: (Storage/demonstration): Rs 28750
    b. Group B (Maintenance of Automobiles, Government affiliated offices) : Rs 46000
    c. Group C: (Academic institutions, trainee, hospital): Rs 115000

Total Area: 670 ropani

Lease: 541.81 ropani,

Investment: Private Sector: 500 crore,   Government Sector: 11.66 crore

4. *What kind products are in majority of units associated with?*
    Majority of the products are associated with plastic products, pipes, bottlers, etc.

5. What kind of impact does it have on neighboring areas (employment, goods and services, training)
    + **ve:** Employment, Hotel , Livelihood.
    Women of Kathmandu valley have been benefitted.
    Out of 4000 workers, around 1000 are locals.
    -ve: Pollution
        Drainage passes through this area. As the drainage plan was made in 1960s', the whole of the water nearby this place goes through this BID area.

6. *What kind of trainings are done for the industries*

    Previously, BID used to look after that (Before 1988). But, now **Training** is looked after by NPDC.
    However, it is being planned to put NPDC under one of the units of BID.

    After EQ: Water Tower (5 lakhs litre capacity) damaged. Only 2.5 lakhs litre working
    Introduction of New Technology: in the Furnace, Boiler, Mounted Tank(Where oxygen is deficit) for the Gas Filling station etc First time, Mounted Tank is being fixed (with increased thickness of tank)

So, through BID, not specific trainigns

7. *What kind of safety checks were done before the earthquake?*
   No checks

Impact

1. *What was the impact of the earthquake in the industrial area (Physical, Market, Economic, Institutional any other)*
   Labour (difficulty in the availability, and now after a year many of them has shifted to NRA (National Reconstruction Authority)
   Physical (damages, cracks,etc)
   Market (mixed outcomes in the market, increased demands and tough competition)
   Economic (Damages by the earthquake, and will take years to recover)
   Institutional: (planning of introducing NPDC under BID)

2. *How much time did the units took on an average to restart their business (minimum, maximum time)*
   Minimum: (Dairy, DDC, oxygen .. started within a couple of days, as the demands were higher)
   Maximum: (1-2 months, as the labour returned back then)

3. *What factors lead to early restarting of business or late start of the business after the earthquake?*
   Early:
   Increased Demand of Emergency Services
   Areas with minimal losses/damages
   Late:
   Continuity of Business
   Large Investments

4. What kind of problems did they face in restarting the business
   The main problem was of availability of labours
   Re-setup of the industrial physical infrastructure
   Loadshedding Problems

5. *What was the impact on the services (water, road, electricity, gas)? How much did each of them take to restart?*
   There was not a severe impact.
   Electricity: Fluctuations but provided to the emergency production units
   Water: Problems but given priority to emergency production units
   Road: not much impact
   Gas: Problem followed by the Blockade.

Recovery process

1. *What is recovery for the industry? What are the things to be considered for recovery?*
   Recovery is the availability of resources (labour, raw material, Transport, Market) for the industry. It is also about introduction of new technology to replace the old and defective ones.
   Infrastructure for the BID is (Road, Drainage, Road,etc)
   After 1990s, no provisions for construction of buildings

Permission from Government is required to construct. (As 8-10 building are seeking permissions for dismantling)

2. *What is the recovery condition of the units? How much did they take/ will take to recover from the earthquake impact?*
   Almost recovered.
   4-5 of them has stopped, not only because of earthquake, but of their own management and market problem.
   125 of them are working
   Some of them are seasonal as well (which took time for recovery) Eg. Pashmina Industry

3. *What kind of repairing was done after the earthquake?*
   Land and Building Lease Rent is not a great source of income for BID.
   Minor Repairing was done for minor cracks.
   New Building as per the budget available.

4. *How much time did it take for getting the insurance payment? How effective was insurance for recovery?*
   Only about 18-20 industries received insurance claims.
   That was also on the "Historical Cost Basis" (Depreciation of 50 years, etc)
   Total Amount of around 3 lakhs, (10-15k each for the buildings) after a year. (Shrawan, 2073 B.S)

   Was not effective for recovery because of historial cost analysis.
   However for the new buildings, Valuation has been done in the present market rate.

5. *What support was given by government for private sector recovery (loan, lower interest rate and others)? How useful were they? what would had been done better?*
   No Support from the Government.

   what would had been done better?
   Introduction of labour-industry friendly provisions.
   Tax issues from the Local Government (New System introduced in Nepal)
   Space Expansion (Expansion of areas) (as the area is almost filled up)

6. What role did the industrial management board play?
   BID Recommended industries for the loan based on their performance, machineries and turn overs. (As the leased land cannot be used for collateral)
   Pass designs of the buildings in the industrial area
   Provision of Electricity, Water
   Banking Service
7. *What new things have been introduced after the earthquake (like fire safety or any others)*
   Re-Valuation of the buildings
   Planning of Vulnerability-Capacity Assessment of the entire Industrial area.

Questions for Patan Industrial Estate (Code- A10)

Industries profile

1. *How many functional units are there?*
   118 functional units.

2. *What is break of scale of the units (Micro, small, medium, large)*
   Maximum: Medium Scale
   Micro, Small and Medium

3. *Who owns the buildings (lease, own, rented) break up? What right does the industry owner has for repairing/reconstructing? When were these built?*
   The present focus of PIE is to provide the land on lease. However, in the starting PIE commenced up with constructing 49 number buildings for the industries. Those 49 no of buildings were constructed in the 1960s'.
   There are 167 buildings at present.
   The industries are open to build/construct the building as per their requirements.
   Industry owner has full right for new construction where he should pass the designs of buildings in the PIE.
   Entry/Renewal Charge in PIE:
   Land Rate per ropani: Rs 35,000.
   Building rate/square feet: Rs 15
   Building Charge:
   Industrial building: Rs 2.54/ sq feet per month
   Go Down/Storage : Rs 15
   Land Lease Charge:
   3. *Production Oriented: Rs 10976.75 per ropani per year.*
   4. *Non Production:*
       a. Group A: (Storage/demonstration): Rs 28750
       b. Group B (Maintenance of Automobiles, Government affiliated offices) : Rs 46000
       c. Group C: (Academic institutions, trainee, hospital): Rs 115000
   Total Area: 293 ropani
   Lease: 223 ropani,
   Investment: Private Sector: 200 crore,   Government Sector: 4.76 crore

4. *What kind products are in majority of units associated with?*
   Majority of the products are associated with Handicrafts, Plastic products.

5. What kind of impact does it have on neighboring areas (employment, goods and services, training)
   + **ve:** Employment, Livelihood.
   Locals have benefitted.
   -ve: Complains of noise of factory at night
           Drainage

6. *What kind of trainings are done for the industries*

   Arrangement of any incoming trainings
   Like, Technical and Safety program by organization(CTEVT), NGOs'

So, through PIE, not specific trainings

7. *What kind of safety checks were done before the earthquake?*
   No checks

Impact
1. *What was the impact of the earthquake in the industrial area (Physical, Market, Economic, Institutional any other)*
   Labour (difficulty in the availability)
   Physical (No severe damages, cracks, etc)
   Market (mixed outcomes in the market, increased demands and tough competition)

2. *How much time did the units took on an average to restart their business (minimum, maximum time)*
   Minimum: (7-10 days)
   Maximum: (25-30 days)

3. *What factors lead to early restarting of business or late start of the business after the earthquake?*
   Early:
   Areas with minimal losses/damages
   No building collapse
   Late:
   Continuity of Business
   Large Investments

4. What kind of problems did they face in restarting the business
   The problem was only of availability of labours.

5. *What was the impact on the services (water, road, electricity, gas)? How much did each of them take to restart?*
   There was not a severe impact.
   Electricity: Fluctuations but provided to the emergency production units
   Water: Problems but given priority to emergency production units
   Road: not much impact
   Gas: Problem followed by the Blockade.

Recovery process
1. *What is recovery for the industry? What are the things to be considered for recovery?*
   Recovery is the Smoothly running of industries.
   Refers to consumption of regular electricity demands
   Refers to Coping up with the market (with high competition)
   Even running without profit (Just to prevent/sustain market)

2. *What is the recovery condition of the units? How much did they take/ will take to recover from the earthquake impact?*
   Almost recovered.

3. *What kind of repairing was done after the earthquake?*
   Land and Building Lease Rent is not a great source of income for PIE
   Minor Repairing was done for minor cracks.
   Boundary wall was also reconstructed by the individual industry units

4. *How much time did it take for getting the insurance payment? How effective was insurance for recovery?*
   Has approached for insurance. But no idea regarding it.
   Valuator from (Prabhu Insurance) has already submitted reports.

   Was not effective. However, there weren't severe damages as well.

5. *What support was given by government for private sector recovery (loan, lower interest rate and others)? How useful were they? what would had been done better?*
   Not much from government.
   Has also heard of some budget allocation for the Gharelu Udhyog. (But not received yet)
   "g]kfn ;/sf/ af6 dd{t ;+xf/"

   what would had been done better?
   Introduction of labour-industry friendly provisions.
   Tax issues from the Local Government (New System introduced in Nepal)

6. What role did the industrial management board play?
   PIE Recommended industries for the loan based on their performance, machineries and turn overs. (As the leased land cannot be used for collateral)
   Pass designs of the buildings in the industrial area
   Provision of Electricity, Water
   Banking Service
   Compulsory EIA is required to setup industry.
7. *What new things have been introduced after the earthquake (like fire safety or any others)*
   Construction of Over-Head water tanks

Besides EQ,
Appealed for the tree plantation.
Requested for the timely payment of the lease charges.

Appendix- 7

Summary of Focus Group Discussions (FGDs)

Focus Group Discussion -1 (Shop owners, contractor, Youth group)	Code- FGD1	Time- 1 hour

1. We used to have a cooperative in Bungamati which was functional for 10 years
2. There was problem of bias in giving orders to the members and relatives and friends were preferred over quality.
3. There was no mechanism to check quality of products and not best products were put in the cooperative for sell.

Focus Group Discussion -2 (Village priest, Ex- VDC members, Youth, CBO member)	Code- FGD 2	Time- 1.5 hour

1. Bungamati was established by invitation 300 people from Kathmandu valley and these people had different professions.
2. Bungamati has seen a lot of change in its culture, built environment, religious festivals and economy.
3. Earlier there was more land so houses were not very high and made of mud but now due to less land and new materials ae used for construction. The wood was cut from the nearby forest and was shaped without machine.
4. The house floors had different usage, the higher floors were used for cooking, sleeping and ground floor for keeping buffalo and goats.
5. There used to be only one Guthi machindra Guthi before and its work was to support festivals.
6. Earlier there were no schools, library or public infrastructure in the village.
7. Life in 1960 was simple, people use to engage in farming, livestock rearing and selling curd milk in Patan. The staple food was curd, rice, roti.The households had mills for wheat flour making.
8. There use to be 5 carpenter and 2 masons in Bungamati.
9. Poultry was not allowed in the Machindra Bahal area earlier. But now due to mixing of different caste people have started keeping poultry. People who work for temple donot eat meat.
10. There were three Tolas (kota, yarja, sata)
11. The carpenters and masons had a Guthi of their own but due to introduction of tax system they stopped it in 2022 BS. This was the time when migration started happening.
12. All people use to make ropes earlier as main occupation the wood carving was not a major occupation before in Bungamati.
13. There used to be 4 shops before 1934 earthquake in Bungamati.
14. Health post started in 2013 BS and foreigner and tourist coming here after that.
15. The first wood carving shop was setup in 2036 BS by Puni raj Tuladhar.

Appendix-8

Photograph of Bungamati in 1968 (Source: Taragoan Museum)

Bus Park Area

Typical street usage by household

Usage of street for agriculture product

Livestock rearing

Narrow street of Bungamati

Adobe buildings

Machindranth temple complex

Inside a Newari house

Weaving by women in Bungamati

Street view of Bungamati

Construction/repairing work in Bungamati

Use of public place for business

Appendix-9

Photographs of physical damage in Bungamati after 2015 earthquake collected from residents

Building collapse near De-pukhu

Blocking of road due to collapsed building

Blocked internal street in Bungamati

Blocked street in Bungamati

Appendix-10

Photographs of Bungamati taken in 2016-17

Photographs showing change in door openings in shop

Photographs showing change in door openings in shop

Shop operating from temporary shelter

Provision of shops in new buildings

Shops in Bus park area

Shops in newly constructed buildings

Use of public space for wood carving

Women engaged in carpet making at house

Appendix-11

Photographs of Balaju Industrial District taken in 2016-17

A damaged industrial building in Balaju

The layout map of Balaju Industrial District

Internal road in Balaju Industrial District

Entry gate of Balaju Industrial District

IDM office in Balaju Industrial District

A typical unit in Balaju Industrial District

Appendix-12

Photographs of Patan Industrial Estate taken in 2016-17

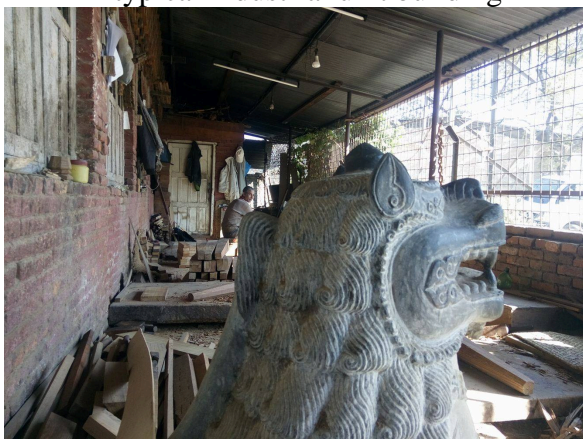Entry gate of Patan Industrial Estate

IDM office in Patan Industrial Estate

A typical industrial unit building

A textile unit in Patan Industrial Estate

A typical wood carving workshop

A typical metal workshop