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Planning for Uncertainty: Evaluating the Role of Tole Sudhar Samiti (TSS) in Strengthening Community Disaster Resilience in Patan, Nepal

A Thesis submitted in the Partial Fulfillment for the Requirement of the Degree of Master of Science in Integrated Urbanism and Sustainable Design

by

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July, 2023

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Executive Summary

Planning for Uncertainty: Evaluating the Role of Tole Sudhar Samiti (TSS) in Strengthening Community Disaster Resilience in Patan, Nepal
Samjhana Maharjan

Disasters can have devastating consequences globally, with developing communities being particularly vulnerable. With rapid urbanization, growing population, and climate change, more communities are becoming more vulnerable in an uncertain risk landscape. Nepal has a history of recurrent hazards, such as earthquakes, landslides, floods, fire, and avalanches, which have resulted in severe disasters leading to loss of life, displacement, and destruction of property and infrastructure, ultimately weakening the fragile ecosystem of the country. For this research, the communities within the core area of Lalitpur Metropolitan City (LMC), known as Patan were selected to represent the traditional settlement in the valley. Tole Sudhar Samiti (TSS), which translates to "Community Improvement Association," is a social organization responsible for the management of community infrastructure, organizing various community activities, and fostering social cohesion within the community. The focus of the research is to understand and evaluate the role of TSS to strengthen and support communities in anticipating and preparing for disasters, coping with and adapting to the impacts of disasters in the short-term, and supporting relevant stakeholders in long-term recovery efforts. The thesis also studies the paradigm shift in the political scenario of Nepal regarding the disaster plans and policies. Multiple methods of data collection were used to gather the necessary information for the research. These methods include secondary data desk research, observation, and key informant interviews. The findings from the analysis of the data collected reveal insights on how TSS fosters social cohesion, facilitates collective action, and promotes a sense of ownership and responsibility among community members. The study highlights the aspect of strong social capital within the studied communities in the form of social and cultural ties and interactions that contribute to the social fabric, enabling individuals to rely on each other for support, cooperation, and shared resources.

Keywords: Community resilience, Tole Sudhar Samiti, disaster, Social Capital, Disaster Risk Management

Table of Contents

List of Figures

List of Tables

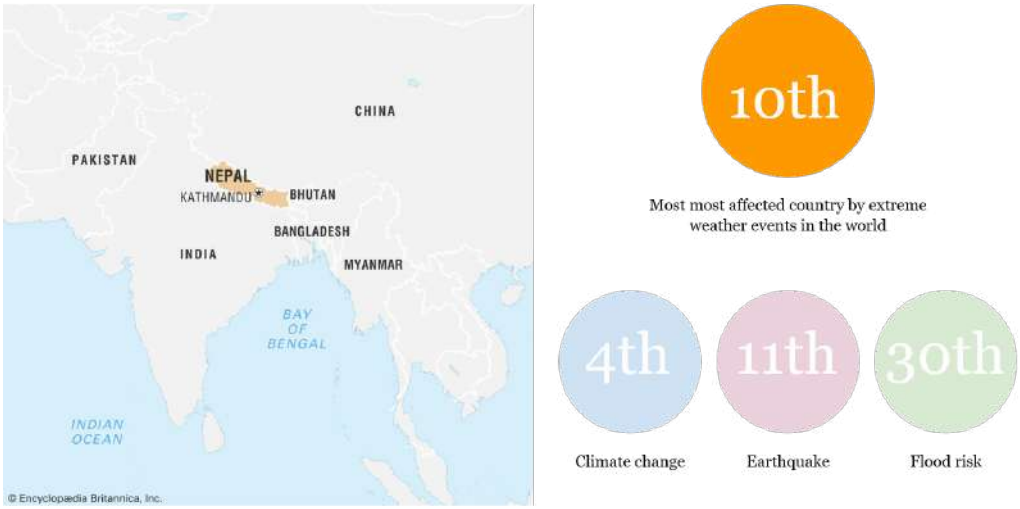
List of Abbreviations

CBS Central Bureau of Statistics
CDRF Community disaster resilience framework
DRR Disaster Risk Reduction
DRM Disaster Risk Management
DRRM Disaster Risk Reduction and Management
DROP The Disaster Resilience of Place Model
KII Key Interview Informant
LDCRC Local Disaster and Climate Resilience Committee
LMC Lalitpur Metropolitan City
MoHA Ministry of Home Affairs
GoN Government of Nepal
NGO Non-governmental Organizations
SFDRR Sendai Framework for Disaster Risk Reduction
TSS Tole Sudhar Samiti
UNDRR United Nations Office for Disaster Risk Reduction

1| Introduction

1.1 Background

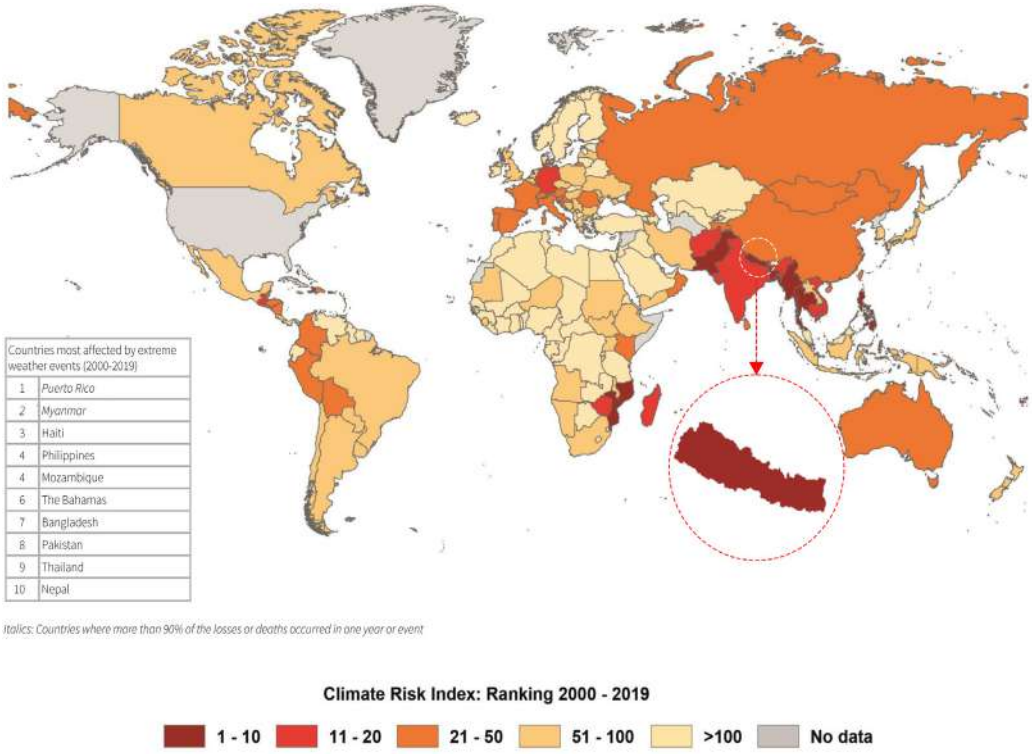
Disasters can have devastating consequences globally, with developing countries being particularly vulnerable. With rapid urbanization, growing population, and climate change, communities in these developing nations are becoming more vulnerable in an uncertain risk landscape. Urban populations encounter numerous risks encompassing both threats to health caused by substandard living conditions and devastating events taking form of disasters, that can lead to substantial loss of life and damage to property (Bull-Kamanga et al. 2003). According to the United Nations Office for Disaster Risk Reduction (UNDRR), there were 239 urban disasters in 2021, affecting 1.3 billion people and causing $120 billion in damage which is more than double the cost of urban disasters in 2010. Although the frequency and intensity of natural hazards, such as hurricanes, floods, and droughts, are increasing globally due to climate change (Aksha and Emrich 2020), it is important to note that the impacts are not the same in all places, and vary depending on the location, context, and community. Lower-income countries with weak governance face a higher level of vulnerability to disasters (Pandey 2019). These countries are more susceptible to the negative impacts of disasters due to various factors such as limited resources, inadequate infrastructure, and insufficient disaster management systems. For instance, in 2011, Asia, which is home to 60% of the world's population, accounted for 85% of disaster-related casualties worldwide, highlighting the devastating impact of disasters on developing communities.



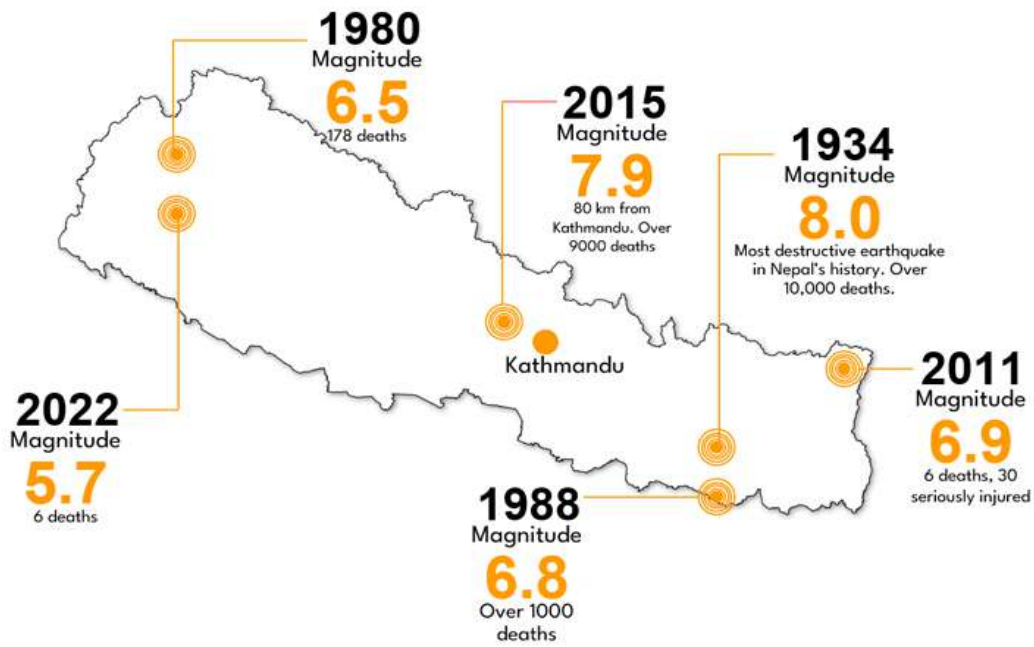
(fig. 1)—Location of Nepal and World Ranking in terms of disaster and extreme weather events
Source: Encyclopedia Britannica, Inc.

Disaster Profile of Nepal

Nepal, a landlocked country located in South Asia, is geographically diverse, with the Himalayan mountain range in the north, lush green hills in the middle, and the flat Terai region in the south. Nepal's varied terrain, and unique social and demographic distribution, combined with geophysical and hydrometeorological processes, make it a hazardous landscape that is susceptible to multiple hazards (Aksha and Emrich 2020). Although small in land mass, Nepal ranks as the 10th most affected country by extreme weather events in the world according to the Climate Risk Index 2019 (Eckstein et al. 2021). In a global comparison of natural hazard risks, Nepal ranks 4th, 11th, and 30th respectively in terms of its risk of climate change, earthquakes, and floods (IOM, 2023). Recurrent hazards include earthquakes, landslides, floods, fire, and avalanches which have resulted in severe disasters leading to loss of life, displacement, and destruction of property and infrastructure, ultimately weakening the fragile ecosystem of the country. Additionally, in the densely populated capital, Kathmandu Valley, the rapid urbanization of the country in recent years has exacerbated the occurrence of urban disasters.



(fig. 2)—Global Climate Risk Index: Ranking 2019
Source: Edited from: (Eckstein et al. 2021)



(fig. 3)—History of Earthquakes in Nepal
Source: Author (Referred from Al Jazeera)

The frequency of disaster events has been steadily increasing globally in recent decades, and this trend is expected to continue in the coming years. In Nepal, the Gorkha earthquake in 2015, with a magnitude of 7.8, claimed more than 9,000 lives, injured over 22,000 people, and caused extensive damage to infrastructure, including roads, buildings, and cultural heritage sites. Epidemics have emerged as another leading cause of fatalities with water, vector, and infection-borne diseases taking the lives of most affected individuals. The diseases, such as diarrhea, kalaazar, hepatitis, influenza, typhoid, acute respiratory infection, malaria, tuberculosis, and leprosy, are commonly reported during such outbreaks and account for 41.8% of all disaster-induced deaths (Pradhan and Chauhan 2020). As per the national disaster database maintained at the Disaster Risk Reduction (DRR) portal, between 2015 and 2021, the most reoccurring hazards in ascending order are fire (13,811), landslide (2,058), thunderbolt (1,682), heavy rainfall (1,292), flood (1,112) and windstorm (607). Based on hazard and vulnerability levels, Nepal has lost on average about 2.665 million USD annually from disasters during the period 1990–2014 (MoHA, 2015).

Developing countries such as Nepal are particularly vulnerable to these hazards due to several factors such as poverty, lack of infrastructure, and limited access to resources and information. These countries often have weaker systems in place for Disaster Risk Management (DRM) and are less able to cope with the impacts of natural hazards. As a result, they are disproportionately affected often exacerbating existing social and economic inequalities, making it challenging for communities to develop resilience against shocks and stressors associated with such events (Aksha and Emrich 2020) and more difficult to recover.

1.2 Research Hypotheses

Tole Sudhar Samiti (TSS) is relevant in the modern state and can be promoted as a practice model in growing communities to enhance disaster resilience.

1.3 Research Questions and Objectives

Questions

1. What potential and challenges does Tole Sudhar Samiti (TSS) have in responding to disaster risk for strengthening communities' resilience?

2. How does the collaboration between the government and TSS take place to better address the systemic risks of the future?

Objectives
- To study the existing urban policies for Disaster Risk Management (DRM) in Nepal and how they are implemented at various levels of governance.
- To document TSS practices, approaches, initiatives, and efforts.
- To understand the role of TSS in strengthening community disaster resilience.
- To analyze the role of TSS in the modern state and its future potential.

1.4 Significance of the Research

By examining the role of the Tole Sudhar Samiti (TSS) in strengthening community disaster resilience in Patan, Nepal, the research aims to provide insights into the effectiveness of community-centered approaches to DRR. The study showcases the significance of pre-existing community-led activities and initiatives in supporting and strengthening resilience in an uncertain risk landscape. By highlighting the importance of activities initiated and driven by community organizations, the research underscores the value of community-led efforts in facilitating a more cohesive and integrated response to disasters. The findings can inform disaster management professionals and community organizations in regional and international contexts facing similar challenges. By promoting the TSS model and other community-based approaches, it may be possible to build more resilient communities, reduce disaster risks, and minimize the impacts of natural hazards and urban disasters on vulnerable communities.

1.5 Limitations of the Study

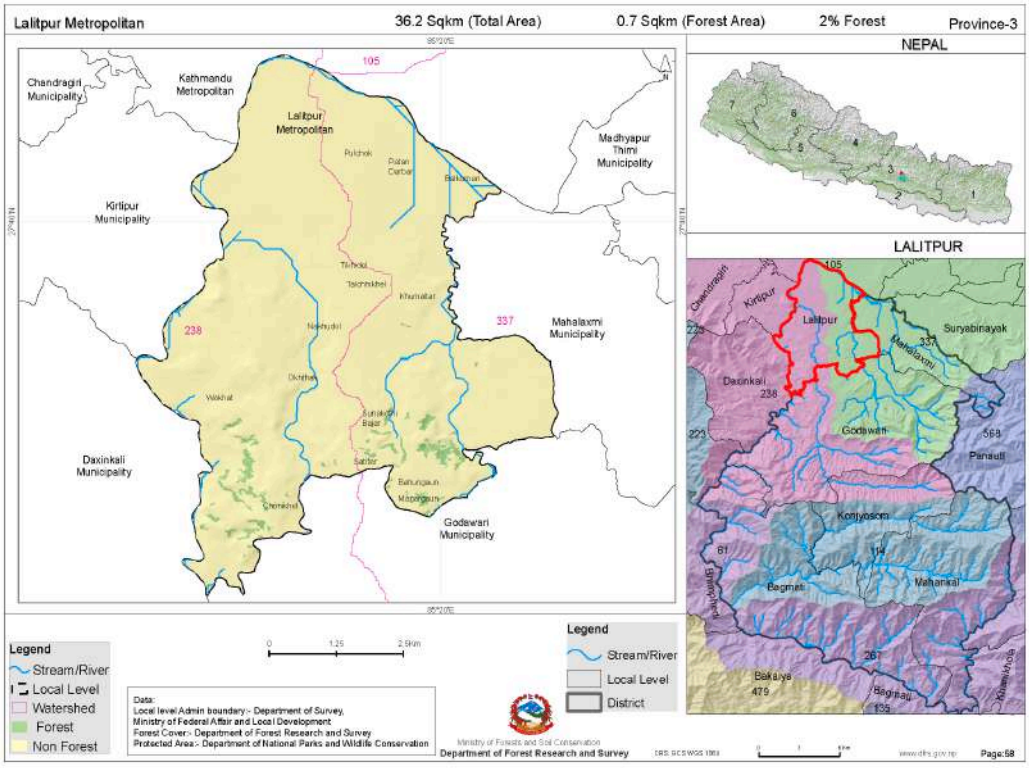
- The study will only focus on the role of TSS in one specific geographic area (Patan, Nepal), which may limit the generalizability of the findings to other contexts.
- The research may face challenges in accessing accurate and comprehensive data on the impact of TSS's efforts, particularly in the absence of a standardized monitoring and evaluation system.
- The research may be subject to biases or inaccuracies resulting from social desirability bias, where participants may provide responses that are more socially acceptable rather than reflecting their actual behavior or opinions.
- The researcher's personal bias as a member of the community may influence the interpretation of the findings and the overall perspective on TSS's strengths and limitations.

2| Community, Culture, and Practices in Patan

2.1 Overview of the study area

Lalitpur Metropolitan City (LMC), also known as “the city of fine arts”, is situated in the Lalitpur district of Province No. 3 in Nepal. It has an area of approximately 36.12 square kilometers. LMC is one of the three major cities located inside the Kathmandu Valley, besides Kathmandu and Bhaktapur. Lalitpur is known for its vibrant arts and crafts scene, with skilled artisans producing intricate woodcarvings, metalwork, pottery, and traditional paintings. The Patan Durbar Square, the then royal palace and now a UNESCO World Heritage Site, serves as the heart of the city. It features numerous temples, courtyards, and historical structures in and around the ancient royal palace.

Lalitpur was declared a “metropolitan” city in 2017. As of the 2021 population census, the total population of LMC is 5,47,624, who reside in 97,388 households in 29 wards (CBS, 2021). The built-up area of LMC is primarily concentrated in the northern part, particularly around the core area known as Patan with the traditional settlements, exhibiting a high population density. In the southern regions, the landscape gradually transforms into agricultural land. Based on hazards assessment by (GoN, 2019), it has been determined that LMC is at a high risk of experiencing earthquake disasters. Additionally, other potential disasters such as floods, road accidents, fires, landslides, and droughts are also a concern. Meanwhile incidents like road accidents and fires have mainly occurred in the densely populated city center, while droughts and landslides have been observed in the southern regions of LMC.



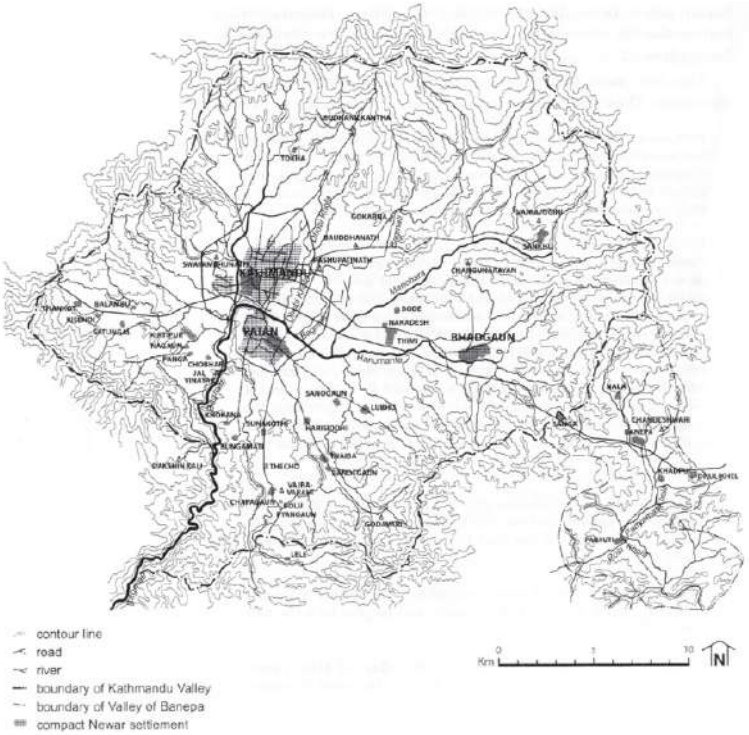
(fig. 4)—Map of Lalitpur Metropolitan city
Source: nepalindata.com

For this research, the communities within the core area of LMC known as Patan were selected to represent the traditional settlement in the valley.

2.2 History, Community, and Culture

2.2.1 Patan: Then and Now

With its history dating back as far as 2300 years, the city of Patan is considered the most ancient among the three main cities of the Kathmandu valley. Patan is said to have been founded in the third century BC as a small settlement on the banks of the holy river Bagmati. The city grew in importance during the Licchavi period (400-750 AD) and was later ruled by the Malla kings (1200-1768 AD). During the Licchavi period, land occupation was mainly concentrated in the periphery of the then-royal palace, Patan Durbar Square, and in the north and east areas. These are now recognized as the oldest settlements in Patan where most Licchavi inscriptions can be found in shrines and chaityas.



(fig. 5)—Map of ancient Kathmandu Valley showing traditional settlements
Source: Hoskin 1976

With development, the city expanded towards the west, with the palace and diagonal streets being located in a mandelic form that reflects balance among the various elements of the Mandala (Won 2018). The Mallas were great patrons of art and architecture and main contributors to the local cultural heritage. During their reign, many magnificent temples, palaces, and public buildings were constructed, making Patan a center of artistic excellence in the nation. Hence, the period is considered a golden period of Nepalese art (Gmińska-Nowak 2014).

Following the unification by Prithavi Narayan Shah, the valley became the capital of greater Nepal in 1769. However, the Shah rule was interrupted for over 104 years as Nepal went under the political control of the Rana Prime Minister (Chitrakar et al. 2016). The cultural heritage of Patan, today, is shaped not only by the royal dynasties that have influenced its architecture but also by the diverse social groups that inhabit it, contributing to its economic, multi-religious, and ritual urban landscape (Brosius and Michaels 2020).

(fig. 6)—Urban Growth in Patan in 2003
Source: Google Earth

Urban Patan

Although the modernization of Nepal began with the territorial unification in 1769 BS (Dangol 2010), in recent years, Patan has experienced rapid urbanization and population growth. This has led to the construction of modern buildings and infrastructure, which has resulted in the loss of many traditional buildings and the development of haphazard urban settlements. The urban explosion in Patan has been driven by several factors, including rural-urban migration, economic development, and globalization.

(fig. 7)—Urban Growth in Patan in 2013
Source: Google Earth

With urbanization and changes in the built environment, a shift can also be witnessed in the socio-cultural and spatial dimensions of the growing communities. In the past families and relatives lived close to each other contributing to the homogeneity of the neighborhood. Today, a gradual change can be realized in the social structure of traditional communities. There have been demographic and spatial changes in the core settlements of the valley where the people have shifted to the outskirts of the city in individual homes or made interventions to the traditional ones (Manandhar and Parajuli, 2015). As a result, the nature and significance of traditional communities are being challenged amidst the progress in urban development.

(fig. 8)—Urban Growth in Patan in 2022
Source: Google Earth

2.2.2 Settlement

Within the Valley, the traditional towns exhibit a distinct pattern of settlement layout. Although these towns vary in size, their central areas are typically characterized by an open courtyard space. The surrounding streets and roads converge around the water ponds, forming the nucleus around which the settlement grows (Won 2018). The compact form of these settlements incorporates the communal living

(fig. 9)—Plan of Patan during Malla Period and enlarged view of the settlements and connecting courtyards

Source: KVPT, (Chitrakar 2019)) (Edited by Author)

culture of the Newar society (Won 2018).

In these communities, dwellings are commonly clustered along narrow streets and lanes, or around open courtyards located in the interior of the quarter. The inter-connected network of these courtyards forms the urban fabric of the town that resembles a honeycomb-like structure (Pant and Funo 2004). The provision of these open community spaces contributes to the unique setting of urban life in the traditional settlement (Chitrakar 2019). Dwelling blocks belonging to families from different clans are often built adjacent to one another within these larger courtyards, which are typically referred to as *nani*, *chuka*, (Pant and Funo 2004), or *laachi*.

2.2.3 People : The Newars

The Kathmandu Valley, home to many of Nepal's cultural groups, is traditionally a Newari settlement. Making up less than 5% of the population of Nepal the Newari people are the historical inhabitants of the Kathmandu Valley region

who continue to strongly influence the urban space (Magee et al. 2016). The Newars have a long and complex history, dating back to prehistoric times and form a fundamental community that embodies the local living heritage, rituals, festivals, and activities of the region. Moreover, they have been widely recognized for their highly developed craftsmanship and significant contributions to culture, art, literature, trade, and agriculture (Won 2018). This has made them an essential community that embodies the soul of Nepalese civilization.

The Newars are a linguistic and cultural community made up of primarily Indo-Aryan and Tibeto-Burman ethnicities following Hinduism and Buddhism as their main religion. They speak a common language known as Nepal Bhasa.

"Newah jhi Newah He Jui" – We Newars will always be Newars.

This is the main belief of the Newar people. The phrase "Newah jhi Newah He Jui" encapsulates the core belief of the Newar people, emphasizing their strong

(fig. 10)—The Newar community
Source: Author

sense of identity and cultural pride in their unique culture, festivals, music, dance, art, architecture, and cuisine. Social cohesion amongst the inhabitants has played a significant role in preserving the traditional culture with a sense of pride and attachment to their cultural heritage deeply ingrained in their beliefs and values.

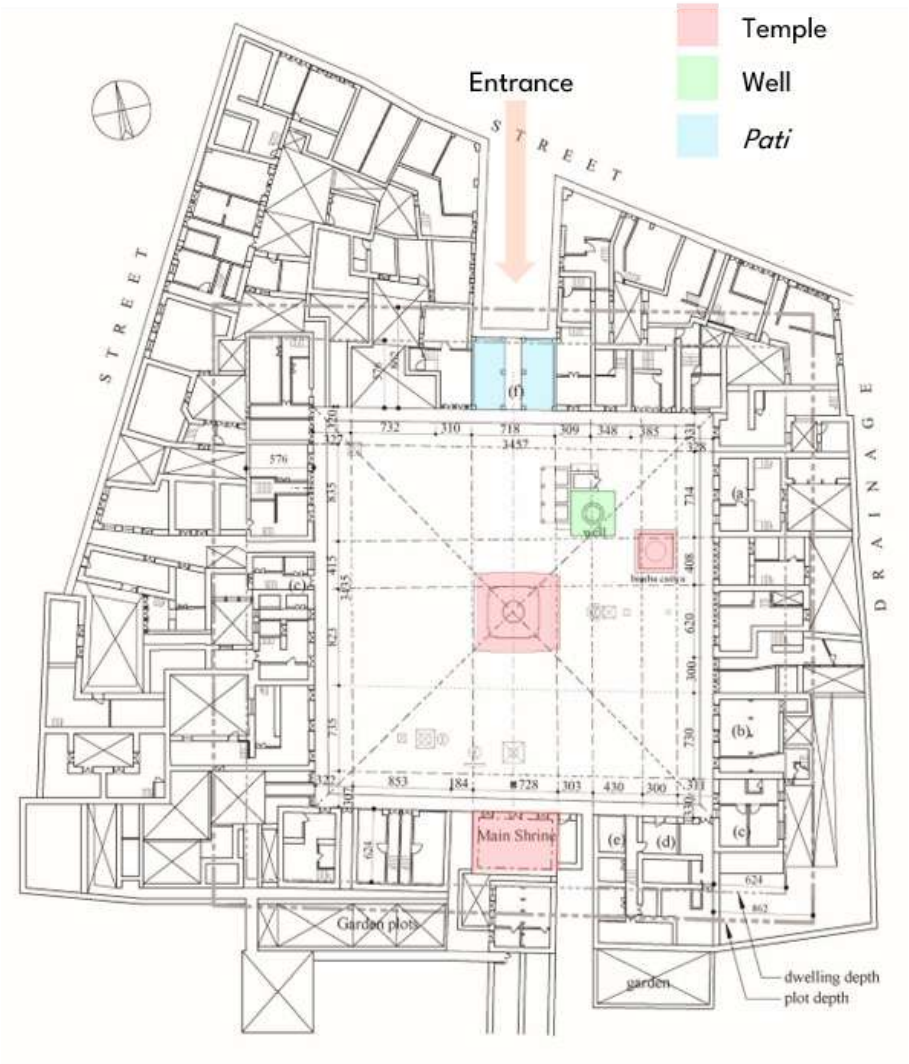
The Newar people actively engage in community life, participating in various communal activities and celebrations. This communal way of life has played a crucial role in preserving and safeguarding the Newar culture. By living closely with their neighbors and fellow community members, the Newar people have created a supportive and closely-knit social fabric. This cohesion allows for the exchange of knowledge, the passing down of cultural traditions, and the collective effort to sustain and promote their cultural heritage. The Newar community's emphasis on communal living and social cohesion not only preserves their cultural practices but also strengthens their identity as a distinct group. It fosters a sense of belonging and unity among the Newars, reinforcing their shared cultural values and customs.

2.2.4 Community (Tole) in Patan

The ancient towns of the valley exhibit clusters of settlements organized in the form of courtyard structures. The neighborhood quarters encompassing these courtyards are prominently known as "*Tole*" and are one of the important social and spatial structuring units within the Valley (Pant and Shuji 2002).

During the medieval period, the structure of town settlements was organized hierarchically, with various levels of organization. The spatial organization of settlements was reflected in the toponyms used in the documents of the period. The highest level of organization was the *desha* (country/kingdom), which referred to the entire area of the town within certain boundaries. The lowest level was the *chhen* (house), which referred to an individual dwelling. The *nani* (courtyard) was an area of a dwelling cluster whose inhabitants were typically members of the same clan, and a group of *nani* formed a neighborhood quarter known as a tole (Pant and Shuji 2002).

The size of the toles is highly variable, with certain toles containing fewer than ten households, while others comprise over one hundred households, representing a considerable range in size (Pant and Shuji 2002).



(fig. 11)—Typical Newari community and the community amenities
Source: (Pant and Funo 2004) Edited: Author

(fig. 12)—Community Temple
Source: Author

(fig. 13)—Well (Drinking water source)
Source: Author

(fig. 14)—Resting place (Pati)
Source: Author

(Table 1)—Community amenities in traditional settlements, their function and description

Element	Function
Community Courtyard (*Nani*)	Commonly known as "*nani*" or "*laachhi*" in the local language, courtyard spaces are an integral part of the cultural and social life of the inhabitants. The area serves as a communal space for social gatherings, festivals, and other cultural events.
	Promotes interaction and cohesion among residents
Rest house (*Pati*)	*A pati* or public rest house serves as a place for respite and a place for travellers to stay overnight. These also serve as a place for leisure in which to spend daily life, a place for exchanging goods and a place for playing traditional music. In most cases, these do not appear in isolation but are always physically embedded within the built mass or fabric.
	Facilitates informal conversations and socialization
Community Temple (*Dega*)	Temples hold religious importance but also serve as centers for community-oriented activities. The temples become focal points for religious ceremonies, festivals, and cultural performances, creating a sense of unity and shared identity among the community members.
	Symbolizes cultural and historical significance
Drinking Water source	Wells and stone water spouts (*dhungedhara*) are extensively present in traditional neighbourhoods as a source of water for the residents and define a public domain in neighbourhood space.
	Facilitates community daily need

2.3 Community Practices and Organizations

Civil society is composed of a diverse array of spaces, actors, and institutional forms, each varying in their level of formality, autonomy, and power. Civil societies often include registered charities, developmental non-governmental organizations (NGOs), professional associations, and community-based organizations such as women's, youth, and faith-based or religious organizations. As

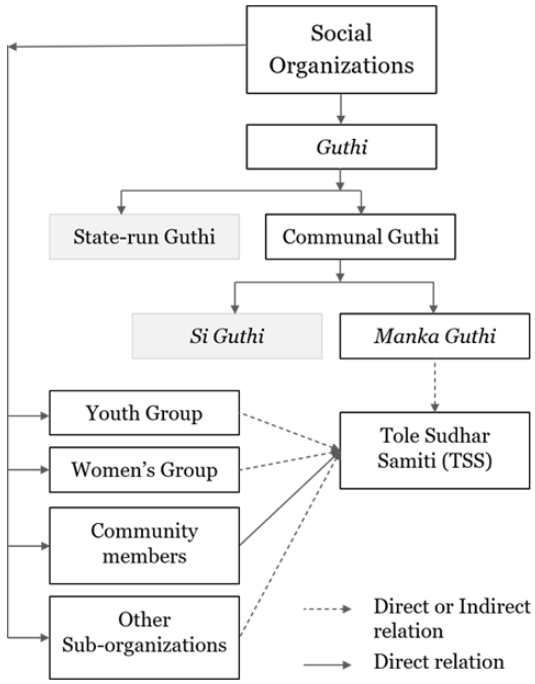
(fig. 15)—Nagbahal (One of the studied Communities)
Source: Asianart.com

(fig. 16)—Open Space in Nagbahal
Source: Author

(fig. 17)—Community Temple
Source: Author

(fig. 18)—Stone Water Spout
(Drinking water Source)
Source: Author

these organizations are typically grassroots-level, they are better positioned to identify and address the needs and aspirations of local communities (Mulyasari and Shaw 2014). By leveraging their diverse skills, expertise, and networks, civil society groups can play an essential role in driving meaningful social change and building resilient communities.



(fig. 19)—Structure of Social Organizations in Newar Community
Source: Author

2.3.1 Guthi

Guthi is a long-standing social system in Nepal and a vital part of the Newar civilization (Magee et al. 2016). The term *Gurthi* was found mentioned in an inscription in the Changu Narayan Temple of Bhaktapur dating back to 464 AD, making it one of the oldest living social systems in Nepal. It is believed that Guthi systems flourished well in the Licchavi periods and gained maturity in the Malla periods (Dangol 2010). The primary objective of Guthi is the up-keeping, construction, renovation, effective operation, and management of community properties such as water conduits, temples, pati, and organization of routine rituals, among others (Marahatta 2013). Guthi serves as a means for fulfilling socio-religious obligations through engaging in groups of the community, collective responsibility for funerals, worship of specific deities, and upkeep of shrines, among other communal activities (Won 2018). It also plays an essential role in preserving and practicing traditional culture, which includes indigenous

knowledge that is used to maintain social hierarchy, structure, and harmony, passed down from generation to generation (Dangol 2010).

Guthi as a traditional cultural practice has enabled the individual Newar to fulfill its socio-religious obligations by engaging in community groups united by a common objective (Won 2018). As per tradition, only the eldest male member of a family can be a part of Guthi, and he is referred to as Guthiyaar. Among the Guthiyaars, the oldest one holds the title of Thakali and is considered the most knowledgeable and experienced. As a result, all the decisions regarding the Guthi are taken by the Thakali (Dangol 2010).

The rituals performed by the Guthi are related to the life stages from prenatal, birth, rice feeding, childhood, puberty, marriage, and seniority, to death. Hence the saying "A Newar is born in Guthi, lives his life in Guthi, and dies in Guthi".

There are various types of Guthi classified by functions to cater to the various needs of the community (Dangol 2010; Won 2018). Two of the most prominent Guthi that hold relevance in the present day are the Sana Guthi for the dead and Manka Guthi for the living. Sana Guthi was established primarily to assist the funeral rituals, whereas Manka Guthi supports various socio-religious services such as maintaining religious sites and installing idols of various deities within the respective communities. These activities have helped maintain cultural traditions and social harmony in the Newar communities even in the modern state.

2.3.2 Tole Sudhar Samiti (TSS)

Tole Sudhar Samiti (TSS), which translates to "*Community Improvement Association*," is a social organization responsible for the management of community infrastructure, organizing various community activities, and fostering social cohesion within the community. In traditional settlements, TSS is often an extension of the traditional Manka Guthi. The number of committee members in TSS depends on the size of the community. The registration of TSS can vary, with some being registered in the local ward office or the CDO office, while others may not be registered at all.

The main objective of TSS is to enhance the social, economic, and physical conditions of their respective communities. It serves as a platform for community members to come together, discuss issues, and identify areas that require im-

provement. They actively engage with government authorities to voice community concerns and advocate for necessary resources and support. They collaborate closely with municipal authorities to identify community needs, prioritize development activities, and implement localized solutions.

TSS is also responsible for the management and maintenance of community infrastructure such as the temple, community building, water sources, and others. It plays a role in organizing various festivals and events, working in coordination with other groups such as youth or women's groups within the community. Through these collaborative efforts, TSS aims to foster community development, improve the overall well-being of community members, and create a sense of belonging and unity.

2.3.3 Women's Group

In many communities in Patan, Nepal, there are women's groups, which have surfaced in recent years, that are predominantly comprised of mothers or married women within the community. Typically referred to as *Aama Samuha* or *Mahila Samuha* (translated into Mother's group and Women's group respectively) the groups work towards the socio-economic empowerment of women within the community. Although typically one in each community, in larger communities that span across multiple wards, there may be more than one of these groups.

The government acknowledges the importance of empowering women and organizes skill development programs, such as vocational training for baking, shoe-making, candle-making, and cultural music and dance activities. These programs aim to improve women's economic opportunities and enable them to become financially independent. Through active participation in these groups, women not only acquire valuable knowledge and skills but also build essential networks and social capital.

In recent years, there have been legal changes to promote gender equality and women's representation in governance. According to the new law, TSS must now include 33% of women. Although these women may or may not be exclusively from Aama Samuha, the majority of the representatives often come from these groups. This legal requirement ensures that women have a stronger voice in decision-making processes at the community level and allows women

to actively contribute to the development and management of their respective communities.

2.3.4 Youth Group

Similar to women's groups, *Yuwa samuha* or youth groups are also prevalent in many communities in Patan. These groups typically consist of young people between the ages of 16 to 25 who come together to learn and share skills, support one another, and contribute to community development. Similar to women's groups, youth groups play a vital role in fostering a sense of solidarity and collective action among young people. They provide a safe space for individuals to come together, share their experiences, and support each other.

Youth groups often engage in activities such as volunteering, community service, and skill-building training programs organized by the community and government and non-government organizations. These activities provide opportunities for youth to develop leadership skills, enhance their capacities, and experience personal growth. By participating in these programs, young individuals gain valuable experiences, build social connections, and develop a sense of responsibility towards their community. Additionally, youth groups also play a crucial role in promoting civic engagement and encouraging young people's active participation in community development and decision-making processes. By providing a forum for early engagement with government institutions and community development programs, these groups empower young people to take ownership of community issues and advocate for their beliefs.

2.4 Disaster Plans and Policies in Nepal

Nepal is a country that has faced political turmoil, hindering its ability to implement disaster risk management plans effectively. Over the last decade, Nepal has witnessed a major political transformation. After 60 years of political struggle, including an armed conflict and the abolishment of a constitutional monarch, (Sharma et al. 2022) the country shifted from a centralized monarchial system to a federal republic. In 2015, a new constitution was enacted that changed its administrative structure to seven provinces, 77 districts, and 753 local governments consisting of six metropolises, 11 sub-metropolises, 460 "*Gaunpalikas*" rural municipalities, and 276 "*Nagarpalikas*" urban municipalities (Lohani 2021). The new Constitution of Nepal serves as the cornerstone of governance, laying out laws and policies that govern the country. According to Article 56, the federal democratic republic of Ne-

pal comprises three levels: the Federation, the State, and the Local level. In contrast to decades-old unitary and centralized institutions, these levels have been allocated financial and administrative powers (Bhandari et al. 2020; Sharma et al. 2022) .

2.4.1 Overview of the disaster plans and Policies in Nepal

Nepal has a rich history of community-based disaster risk reduction and management practices. However, it was only with the implementation of the Natural Calamity (Relief) Act in 1982 that the Government of Nepal (GoN) began to play a more prominent role in disaster management. Initially, the focus was primarily on post-disaster activities such as rescue operations and relief distribution (Pandey 2019). To align with the goals of the Sendai Framework for Disaster Risk Reduction (SFDRR) (2015-2030), which emphasizes expanding the scope of disaster response beyond relief and rescue to include disaster risk reduction, the GoN has introduced various acts and policies (Pandey 2019), which aim to enhance disaster risk reduction efforts and shift the focus towards long-term strategies for reducing vulnerabilities and building resilience in Nepal.

i. Disaster Risk Reduction and Management (DRRM) Act, 2017

The Disaster Risk Reduction and Management Act of 2017 replaced the existing Natural Calamity Relief Act of 1982, which previously controlled the management and relief operations for disasters in Nepal (Pradhan and Chauhan). The Act addresses disaster risk management in a comprehensive manner, emphasizing various stages of the disaster management cycle, including preparedness, mitigation, response, and rehabilitation. The Act prioritizes risk reduction initiatives over response efforts and emphasizes involving both public and private entities, as well as communities, in disaster awareness, capacity building, and voluntary mobilization during disaster response (Sharma et al. 2022).

ii. Local Government Operation Act, 2017

The Local Government Operation Act of 2017, which is based on the Constitution, provides a replacement for the earlier Local Governance Act of 1999. The Act is responsible for all aspects of disaster risk reduction, outlining the duties, responsibilities, and rights of rural and urban municipalities. The Act also covers activities such as granting permission for building construction, monitoring, and evaluation as per the National Building Code and Standards, policy planning, program formulation, implementation, monitoring, regulation, and evaluation related to disaster risk reduction efforts with the aim of developing safer communities (MoHA 2019).

iii. National Policy for Disaster Risk Reduction, 2018
The National Policy for Disaster Risk Reduction (DRR) in 2018 was developed and approved with the goal of building a safer, adaptable, and more resilient nation by addressing current risks and preventing future risks. The policy takes into account both national needs and international agreements and obligations, with a particular focus on meeting targets and commitments outlined in the Sendai Framework for Disaster Risk Reduction (SFDRR), the Sustainable Development Goals, and the Paris Convention on Climate Change. To achieve this goal, the policy has defined 59 activities that cover all sectors and has designated specific roles and responsibilities to sector ministries to execute sector-specific activities (MoHA 2019).

iv. Disaster Risk Reduction National Strategic Plan of Action 2018-2030
The GoN has developed and approved the Disaster Risk Reduction National Strategic Plan of Action (2018-2030) as a roadmap for implementing the key provisions of the SFDRR in the country. The plan has four priority areas: understanding disaster risk through a comprehensive information management system, strengthening disaster risk governance at all levels, promoting risk-informed investments, and enhancing disaster preparedness, recovery, and reconstruction efforts. Stakeholder engagement, the inclusion of vulnerable groups, and the principle of "Build Back Better" are key components of the plan, which focuses on creating resilient settlements and protecting cultural heritage sites (Bhandari et al. 2020).

2.4.2 Roles and responsibilities of government bodies

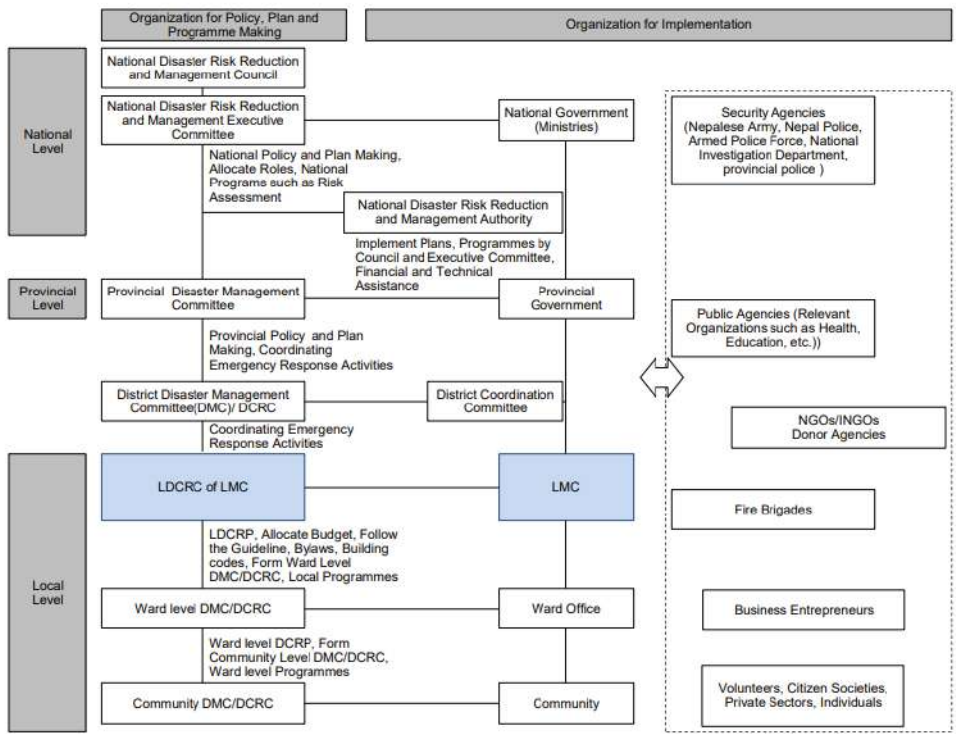
In 2018, Nepal introduced the National Disaster Risk Reduction (DRR) Policy and endorsed the DRR Strategic Plan of Action 2018-2030 to localize its commitment to the Sendai Framework for Disaster Risk Reduction (SFDRR). Efforts are underway to strengthen and promote cohesion in DRR policies and practices through global, national, and sub-national Disaster Risk Management (DRM) initiatives (MoHA 2019). Prior to the introduction of the Disaster Risk Reduction and Management Act (DRRMA) in 2017, the Ministry of Home Affairs (MoHA) held the primary responsibility for coordinating disaster management activities, while other ministries had limited roles focused mainly on relief and rescue responses (Pandey 2019).

The DRRMA-2017 aligns with the Sendai Framework for Action (2015-2030) and establishes various levels of institutions for disaster management. At the national level, there is the National Disaster Risk Reduction and Management Council, chaired by the Prime Minister. Its key role is to approve and enforce disaster-relat-

ed rules, regulations, and policies proposed by other institutions. Additionally, the National Disaster Risk Reduction and Management Executive Committee, led by the MoHA, is responsible for national policy and plan-making, allocating roles, and implementing national programs such as risk assessment.

The National Disaster Risk Reduction and Management Authority, led by a politically appointed Chief Executive Officer, operates under the direction of the Council and the Executive Committee. Its responsibilities include implementing plans, providing financial and technical assistance. However, its role in relation to provincial and local governments is not clearly defined, which may lead to conflicts in institutional power and authority sharing (Pandey 2019).

At the provincial level, the Provincial Disaster Management Committee is responsible for coordinating emergency response activities along with the District Disaster Management Committee. At the local level, the Local Disaster and Climate Resilience Committee (LDCRC) of the Local Municipal Committee primarily handles budget allocation, ensures proper implementation of bylaws and building codes,



(fig. 20)—Framework of organizations related to DRM in Nepal
Source: LMC

and organizes local programs. The ward office has the following responsibilities: disseminating disaster risk information to residents with the support of the LMC, formulating community DRRM plans, and organizing ward-level programs.

2.4.3 Community participation and engagement

Community engagement, including partnership, participation, empowerment, and local ownership, is an essential component of sustainable disaster management (Pandey and Okazaki, 2005). There is growing recognition that traditional top-down approaches to development may not be effective in driving real progress and sustainable change for beneficiaries over the long term (Bealt and Mansouri, 2018). By decentralizing decision-making processes and promoting greater community participation, local communities are better positioned to identify and prioritize their own needs and to develop localized solutions that reflect their specific context and resources. This approach recognizes the importance of collaboration and partnership between community members and local authorities and empowers communities to take ownership of their development and shape their own future.

The disaster policies of Nepal acknowledge community involvement in disaster management, but only in limited capacities such as “volunteerism bureau,” “local stakeholders,” or an “additional element”. Despite the limited recognition of community involvement in disaster policy, there are efforts by community organizations like TSS, mother’s group, youth group, and self-motivated individuals who demonstrate leadership and engage in disaster management activities (Pandey 2019). It is important to acknowledge that effective disaster management requires the active participation and ownership of communities, and also to include communities as equal partners in disaster risk reduction and management.

2.4.4 Implementation challenges and gaps

Inadequate institutional coordination, both within and between government and non-governmental organizations, has been identified as a significant challenge in disaster response efforts, as highlighted by ((Pandey 2019)in Pandey (2017). This lack of coordination has led to gaps, duplication of efforts, and redundancy in the disaster management process. It has hindered effective planning and implementation of preparedness and mitigation measures, resulting in a primarily reactive approach to addressing post-disaster needs. Consequently, the focus has been on immediate relief and recovery, with limited emphasis on proactive disaster mitigation and preparedness.

Disaster mitigation and preparedness activities have not received sufficient priority in disaster risk reduction and management initiatives. This is largely due to a prevailing reactive mindset within the sector, where resources and attention are predominantly directed towards addressing the aftermath of disasters rather than investing in preventative measures (Pandey 2019). The lack of proactive planning and preparedness exacerbates the vulnerability of communities and hinders long-term resilience-building efforts.

To address these challenges, there is a need for enhanced institutional coordination and a shift towards a more proactive approach to disaster risk reduction and management. This requires strengthening collaboration between grass-root organizations, government agencies, non-governmental organizations, and other stakeholders to ensure effective coordination, avoid duplication of efforts, and promote comprehensive disaster preparedness and mitigation strategies.

3| Understanding the concept of Community Resilience

3.1 Community, Disaster, and Resilience

3.1.1 Community

The word "community" derives from the Latin word "*communitas*," which refers to a group of individuals who share a common bond, such as a social, political, or religious affiliation. In its early usage, "community" referred to "a group of people who share a common location or territory, and who interact with each other regularly to meet their basic physical and social needs."

Over time, however, the traditional view of the community as a fixed entity defined solely by shared location or territory has been challenged by scholars who argue that community is a dynamic process that emerges from social interactions and relationships among its members. For instance, (Follett 1919) disputes the traditional view of a community as a static entity defined by shared attributes or characteristics. Instead, she argues that community should be viewed as a dynamic process that encompasses the interactions and relationships among its members. She further asserts that a genuine community arises from the creative interplay of its members, rather than being imposed from external sources. Similarly, (Buckle 1998) defines community as a set of relationships and institutions that contribute to social resilience.

In this sense, community is an ongoing process of dialogue, collaboration, and mutual discovery, where the needs and desires of individuals are balanced with the needs of the collective whole. This also reinforces (Norris et al. 2008)'s

notion that “communities are composed of built, natural, social, and economic environments that influence one another in complex”. A community can, thus, be seen as an evolving entity that is shaped and defined by the interactions, relationships, and institutions that make it up.

For this research, the following understanding of community has been adopted, “Community as a group of people with diverse characteristics who are linked by social ties, share common perspectives, and engage in joint action in geographical locations or setting” (Taghizadeh et al. 2015). Understanding the complexities of communities is crucial, as they are not monolithic entities but rather composed of knowledgeable, experienced, and skillful individuals operating within power structures and various caste and class systems (Rose and Jayawickrama 2016). This diversity and layered dynamics can be observed and experienced, particularly in the Newar communities. Dor Bahadur Bista, a Nepalese anthropologist, has argued that Nepalese villagers hold a “localized” notion of community where people prioritize their local conditions and mutual responsibilities and regard the outside world as rather “abstract” (Rolsted and Raju 2020). This view aligns with the findings of (Bhandari 2014)‘s study on social capital mobilization after the 1934 Kathmandu Valley earthquake, emphasizing the strong sense of community in Nepal. Notably, the practice of Guthi among Newar communities serves as evidence of the importance of community-driven approaches.

3.1.2 Disaster

Disasters are the result of dynamic interactions among hazards, pre-existing local vulnerability, and exposure. They disrupt normal life and the functioning of social systems, resulting in physical damage, economic losses, social disruption, and psychological trauma (UNDRR 2022).

According to (UNDRR 2022);
A hazard is a “process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation.”
Hazards can arise from various sources and encompass a diverse array of environmental, technological, and biological factors. These hazards can be natural, originating from meteorological, hydrological, geological, and extra-terrestrial events, as well as human-made, stemming from environmental, chemical, bio-

logical, and technological factors. They encompass a wide range of occurrences, including common events like storms and floods, as well as infrequent events such as pandemics and chemical accidents.

Vulnerability describes “the conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards”

Exposure is the “situation of people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas”.

The term disaster has multiple definitions and is often used interchangeably with words such as “crisis” and “emergency”. The United Nations Office for Disaster Risk Reduction (UNDRR) defines; A disaster as a “serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability, and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts”. Disasters have wide-ranging consequences that extend to multiple dimensions of human existence, including damages to physical infrastructure and natural ecosystems (Pandey 2019). These events occur quickly, with little warning, and affect everyone without discrimination (Laura Vasilescu, Asmatullah Khan, Himayatullah Khan 2008). Hence, vulnerable groups, particularly women, children, and minorities, bear a disproportionate burden of the adverse effects.

Disaster Risk Management (DRM) is one of the major approaches to minimize the impact of various disasters. DRM constitutes of a comprehensive range of actions, initiatives, and strategies implemented prior to, during, and after a disaster to prevent its occurrence, minimize its effects, and facilitate recovery from the damages it causes (Laura Vasilescu, Asmatullah Khan, Himayatullah Khan 2008).

3.1.3 Resilience

itiat Scholars and practitioners from various disciplines and contexts have developed different conceptualizations of resilience, which have become widely used across multiple sectors, including disaster management, development, economics, climate change adaptation, and conflict management. In the con-

text of disaster studies and hazard management, resilience refers to a society or place's ability to cope with and prepare for both expected and unexpected hazards and disaster events (Cretney 2016).

The definitions of resilience within the disaster studies and hazards management discipline are diverse, and they often conflict with each other. Some see resilience as an inherent, ontological feature of communities that is catalyzed by crisis, while others view resilience as a process that is built over time through phenomenological experiences (Mori et al. 2019). As mentioned by (Mayunga 2007), Holling (1973) is recognized for being among the first to define and use the concept of resilience in the field of ecology in his article "Resilience and Stability of the Ecological Systems." He defined resilience as an ecosystem's measure of its ability to absorb changes and persist despite them. Additionally, he distinguished between resilience and stability, with stability being the ability of an ecosystem to return to its equilibrium after temporary disturbances. Holling concluded that both resilience and stability are two important properties of ecological systems. Twenty years later, Holling revisited his definition of resilience, redefining it as a buffer capacity or an ecosystem's ability to absorb perturbations. This includes the magnitude of the disturbance that can be absorbed before a system changes its structure by altering its variables ((Mayunga 2007) in Holling et al., 1995).

While resilience is a multidisciplinary concept that has evolved, there is still an ongoing debate and no universally accepted definition. It extends beyond mere survival and includes the capacity to thrive amid change. The concept of disaster resilience should be understood as "bouncing back better" or "bouncing forward" through inclusive growth and participatory processes, rather than returning to the previous state (Tamang 2020). Similarly, other definitions describe Resilience as:

"The ability of a social system to respond and recover from disasters and includes those inherent conditions that allow the system to absorb impacts and cope with an event, as well as post-event, adaptive processes that facilitate the ability of the social system to re-organize, change, and learn in response to a threat."- (Cutter et al. 2008)

"The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions." - United Nations Office for Disaster Risk Reduction (UNDRR, 2009)

"The ability of individuals, communities, organizations, and societies to plan for and respond to, resist, and recover from adverse events." - (Fuller & Paton, 2012)

(Norris et al. 2008) analyzed several definitions of resilience across various dimensions and proposed a general consensus that resilience is better conceptualized as "an ability or process than as an outcome" and "adaptability than as stability". Similarly, (Bhandari et al. 2010) argues that rather than focusing solely on preventing loss, resilience emphasizes the development of healthy communities capable of sustaining and rebounding from hazard events.

3.2 Community Disaster Resilience

The notion of 'community resilience' is as complex as the concept of resilience itself, but is compounded by the differing interpretations of what constitutes a "community" (Norris et al. 2008). In the context of disaster risk, the community functions as a basic unit of social organization and is crucial in preventing and reducing the impact of disasters (Deng et al. 2022). Communities possess critical local resources, practical skills, and traditional knowledge and support structures crucial for disaster preparedness, mitigation, and post-disaster response (Pandey 2019). They are often the first responders in times of crisis and have the potential to function effectively and adapt to the aftermath of disaster events (Norris et al. 2008). The response of communities to adversity can vary greatly, just as individuals react to stress in different ways. It is important to understand that this process is not solely the result of individual responses, but rather it is shaped by the unique capacities that a community possesses prior to encountering a hazard (Sherrieb et al. 2010). These capacities may include various resources, social networks, and institutional structures that allow a community to mobilize effectively in the face of crises.

Hence, resilient communities can be considered as those that take deliberate action to reduce hazard risks, prepare for adverse hazard impacts, and to accel-

erate recovery from damaging hazard events when they occur. These communities possess the ability to manage and endure the effects of harmful hazard events by implementing mitigation strategies, utilizing coping mechanisms, and responding effectively. Additionally, they can build upon post-event opportunities for reorganization, transformation, and learning to better prepare for future threats (Khazai et al. 2018).

Community resilience can be seen as a valuable asset during all stages of a disaster, from the immediate response (Cretney 2016) to long-term recovery and rebuilding efforts. To enhance the resilience of the community, it is necessary to address the disparities in resources and risk, involve local residents in taking steps to prevent and mitigate disasters, establish connections between organizations, strengthen and safeguard social networks, and be prepared to adapt to changing circumstances. This involves being flexible, having the ability to make decisions, and relying on trustworthy sources of information even when the situation is uncertain (Norris et al. 2008).

This study adopts a collective perspective of community resilience, emphasizing the community's capacity to engage in effective collective action in response to various disasters. Rather than focusing solely on individual resilience, the study recognizes the significance of collaborative efforts within the community through social organizations. It acknowledges that individual resilience may not necessarily contribute to the overall resilience of the community as a whole (Norris et al., 2007).

3.3 Theoretical Frameworks for analyzing community disaster resilience

The field of community disaster resilience has developed numerous frameworks and models that offer a structured and comprehensive approach to understanding and evaluating the factors that contribute to community resilience. These frameworks are valuable resources, providing insights into the dimensions, indicators, and factors that contribute to community resilience. However, a standard mechanism for the assessment or evaluation is still controversial (Mayunga 2007).

This research aims to identify the most relevant and applicable elements of established frameworks by reviewing and critically analyzing them. These ele-

ments will be incorporated into the proposed conceptual framework for assessing community resilience, which will capture the multidimensional nature of community resilience, tailored to the specific context and characteristics of the study area.

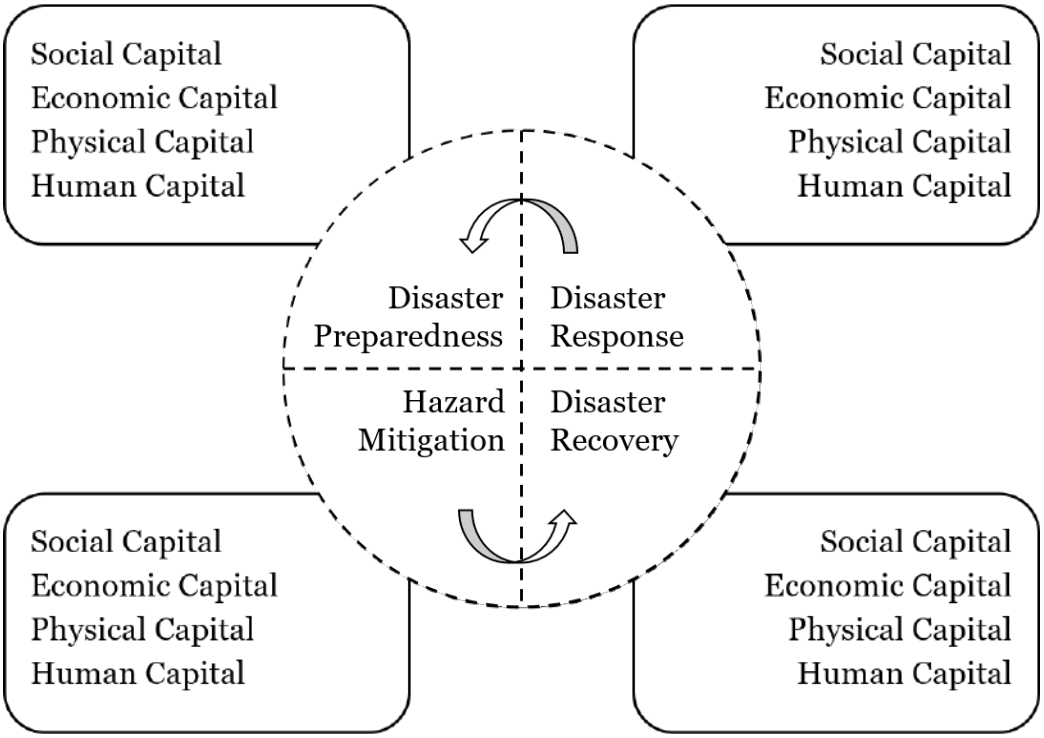
Table 2—Inclusion and Exclusion criteria for Community Disaster Resilience Framework Selection

Inclusion Criteria	Exclusion Criteria
Focus specifically on community resilience	Focus on individual or household-level resilience
Context and applicability relatable to Nepal	Indicators not relatable and cannot be adapted to the context of Nepal
Addresses multiple dimensions of resilience for a holistic approach	Narrowly focuses on a single dimension of resilience

3.3.1 Community disaster resilience framework (CDRF)

According to (Mayunga 2007), assessing the resilience of a community is a complex process that requires an understanding of the dynamic interactions between people, the community, societies, and the environment. (Mayunga 2007) emphasizes that the success and sustainability of community development theory are reliant on a community's ability to access and utilize various forms of capital, making capital a critical concept in understanding and assessing community disaster resilience. To address this, a proposed CDRF framework, a capital-based approach that aims to provide a comprehensive understanding of community disaster resilience. It examines the five major forms of human, social, natural, physical, and financial capital, and how they can reduce vulnerability and enhance community resilience. The CDRF has been used as a tool to evaluate and enhance community resilience to disasters in several countries, particularly in the Asia-Pacific region.

Social Capital as defined by Putnam (1995) mentioned in (Mayunga 2007), refers to the features of social organization such as networks, norms, and social trust that enable coordination and cooperation for mutual benefit. In the con text of community disaster resilience, social capital represents social cooperation and community connectedness, which serve as an informal safety net during disasters and facilitate access to resources (Walter, 2004; (Mayunga 2007)). The presence of strong community ties and networks is crucial for building dis-



(fig. 21)—Community Disaster Resilience Framework (CDRF)
Source: (Mayunga 2007)

aster resilience as they allow individuals to leverage the social resources within their communities, increasing the community's ability to effectively address their disaster-related concerns.

Economic Capital refers to the financial resources individuals have for their livelihoods, such as savings, income, investments, and credit. In terms of building community resilience, economic capital plays a clear role by enhancing the ability and capacity of individuals, groups, and communities to withstand the impacts of disasters and recover more quickly.

Physical Capital refers to the constructed elements of the environment, which include residential houses, public buildings, and shelters. It also encompasses vital services such as electricity, water, and telephone, as well as critical facilities like hospitals, schools, fire and police stations, and nursing homes. Physical capital plays a crucial role in enhancing the community's ability to cope with disasters and build resilience. For instance, infrastructure such as roads and communication systems are essential for the smooth functioning of the commu-

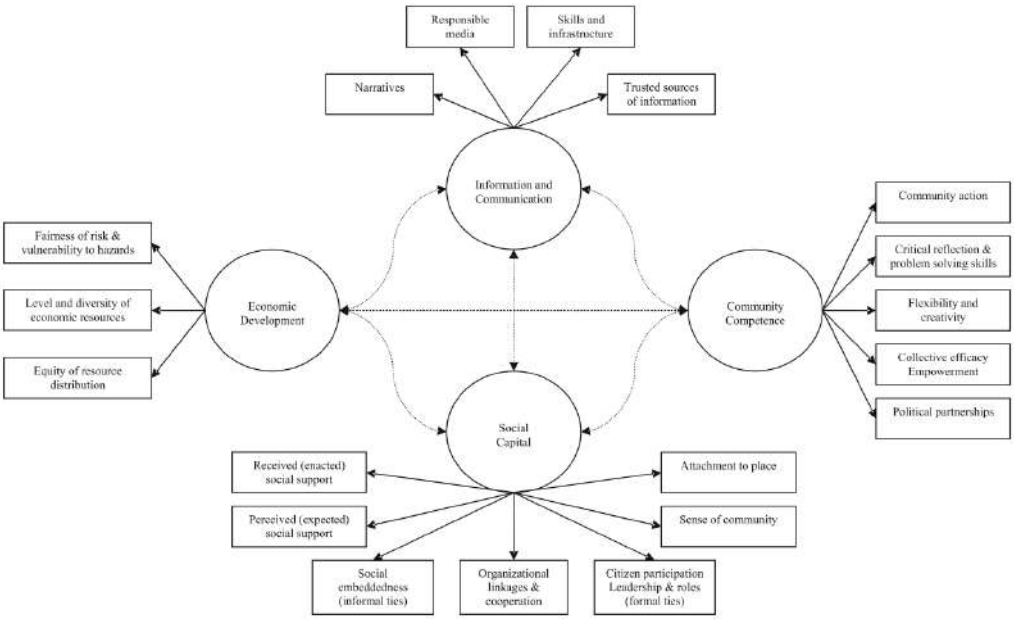
nity, particularly during evacuation efforts. In general, the presence of adequate physical infrastructure and critical facilities is vital for the community's capacity to effectively handle disasters.

Human Capital refers to education and encompasses the knowledge and skills acquired through various forms of education, training, and personal experiences. It also includes other advantages individuals possess, such as previous disaster experiences, which enable them to effectively cope with, adapt to, and recover from disasters. For example, individuals' knowledge and skills regarding hazards, the history of disasters, and the risks in their community can be valuable resources in building community resilience.

3.3.2 Community resilience as a set of networked adaptive capacities

Community resilience as a set of networked adaptive capacities was first proposed by (Norris et al. 2008). The concept of community resilience is based on the notion that communities have the ability to prepare for, respond to, and recover from a range of disruptive events, including natural hazards, public health crises, and social or economic upheavals. This resilience is built through a set of networked adaptive capacities that allow communities to respond effectively to these events and to adapt and recover from them over time. As stated by (Sherrieb et al. 2010), these adaptive capacities are not specific strategies for emergency preparedness, but an integral part of the social and economic fabric of the community.

The framework comprises four interdependent sets of resources or capacities as proposed by (Norris et al. 2008) Economic Development, Social Capital, Information and Communication, and Community Competence. These capacities are interrelated and together form a roadmap for enhancing community resilience to disasters. Economic Development refers to the ability of a community to generate and distribute resources, create jobs and businesses, and manage economic risks. Social Capital refers to the networks of trust, reciprocity, and solidarity among individuals, groups, and organizations that enable collective action and social support. Information and Communication refer to the availability, accessibility, and reliability of information and communication technologies and systems that enable timely and accurate communication, decision-making, and coordination. Community Competence refers to the knowledge, skills, and attitudes of individuals, groups, and organizations that enable them to identify,



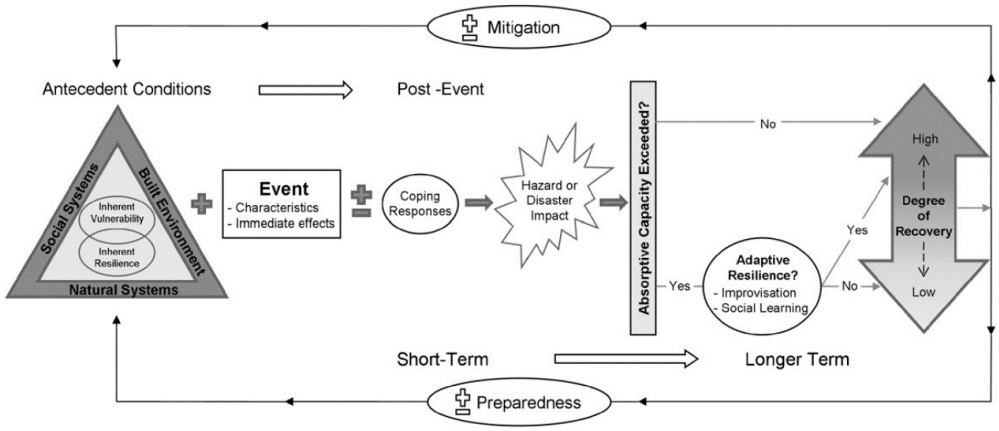
(fig. 22)—lCommunity resilience as a set of networked adaptive capacities
Source: (Norris et al. 2008)

assess, and respond to risks and opportunities.

3.3.3 DROP (Disaster Resilience of Place) Model

The Disaster Resilience of Place (DROP) model, developed by (Cutter et al. 2008), is a framework that aims to assess and enhance community resilience to disasters through a place-based analysis. It offers a comprehensive approach to assess community disaster resilience and identify key factors that can improve or hinder it. It also provides a way to understand disaster resilience patterns across different geographic locations and compare communities (Aksha and Emrich 2020). The model recognizes that resilience can change over time and is influenced by the success of recovery after a disaster and the ability of the community to learn from and adapt to past events (Cutter et al. 2008).

The DROP Model utilizes several key indicators of community resilience, including physical vulnerability, social vulnerability, economic vulnerability, community capital, and hazard exposure. These indicators are used to assess a community's level of resilience across multiple dimensions, including physical, social, and economic resilience.



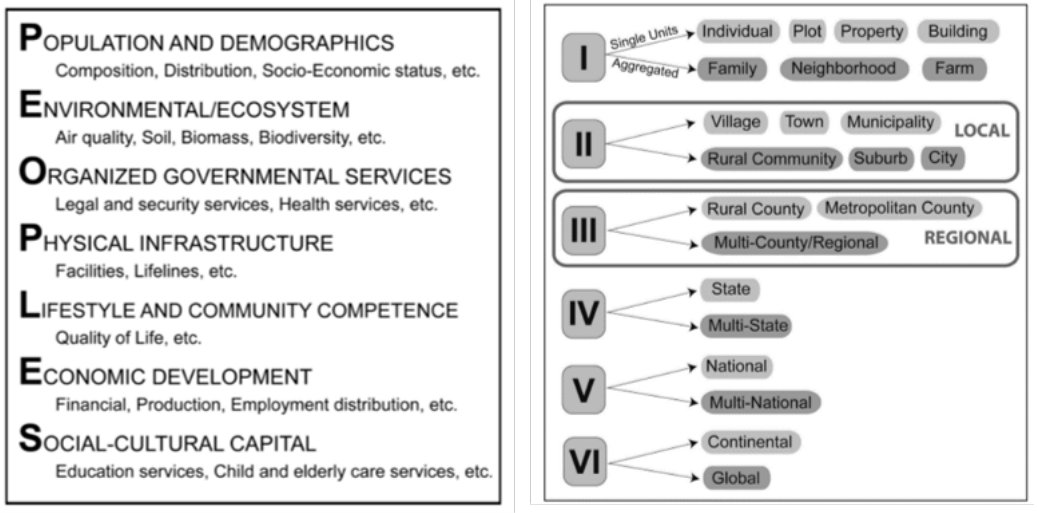
(fig. 23)—lSchematic representation of the disaster resilience of place (DROP) Model
Source: (Cutter et al. 2008)

Physical vulnerability refers to a community's exposure to natural hazards such as floods, tsunamis, and earthquakes, while social vulnerability refers to the exposure of individuals and communities to social and economic stressors. Economic vulnerability focuses on the ability of a community to withstand financial shocks and economic disruptions, while community capital encompasses the physical, human, social, and financial resources available to a community to deal with disasters. Hazard exposure, on the other hand, refers to the geographic location and characteristics of a community that makes it more or less likely to experience a disaster.

The model emphasizes the need to consider the unique characteristics of a specific place, including its physical characteristics and composition of the community, as social, and economic factors that shape its ability to cope with and adapt to disasters. By using indicators of resilience across these multiple dimensions, the DROP Model can provide a comprehensive assessment of a community's overall disaster resilience.

3.3.4 P.E.O.P.L.E.S. Resilience Framework

The P.E.O.P.L.E.S Resilience framework, proposed by (Renschler et al. 2011), is a holistic framework designed for defining and measuring disaster resilience for a community at various scales. The framework identifies seven dimensions of community resilience, represented by the acronym PEOPLES, which includes Population and Demographics, Environmental/Ecosystem, Organized Governmental Services, Physical Infrastructure, Lifestyle and Community Competence,



(fig. 24)—Dimensions and Scale of P.E.O.P.L.E.S. Resilience
Source: (Renschler et al. 2011)

Economic Development, and Social-Cultural Capital.

Population and Demographics dimension recognizes social vulnerability as a pre-existing condition of the community that affects the society's ability to prepare for and recover from a disruptive event.
Environment/Ecosystem dimension considers environmental and ecosystem resources as indicators of the ecological system's ability to return to or near its pre-event state.

Organized Governmental Services dimension includes traditional legal and security services such as police, emergency and fire departments, and public health and hygiene departments, which play a key role in sustaining communities both before and after extreme events.

Physical Infrastructure dimension incorporates both facilities and lifelines, such as housing, commercial facilities, food supply, health care, utilities, transportation, and communication networks.

Lifestyle and Community Competence dimension capture both the raw abilities of the community and the community's perceptions of its ability to effect positive change. Communities that collectively believe that they can rebuild, restructure, and revive themselves are more likely to be persistent in the face of environmental, governmental, and other obstacles.

Economic Development dimension incorporates industry production, industry-employment distribution, and financial services
Socio-cultural capital dimension recognizes communities with high degrees of social-cultural capital, creating "friction to exit" for their members, encouraging people to invest in activities and organizations that make the community a "good place to live."

The framework emphasizes the interconnectivity of physical and social systems and highlights the importance of considering social, economic, and governance factors in disaster risk reduction strategies. It recognizes that resilience is not only about the ability to recover from disasters but also the capacity to learn from and adapt to challenges posed by disasters.

3.4 Development of Conceptual Framework

A wide range of indicators have been proposed to analyze and evaluate community disaster resilience, however, the applicability of these indicators in the context of Nepal is yet to be fully understood. Studies on factors that impact resilience have recognized the significance of diverse variables that can differ based on cultural context. Some of these variables include religion, place attachment, spirituality, ethnicity, culture, social trust, community education, empowerment, practices, social networks, familiarity with local services, physical and economic security, economic development, social capital, information and communication, and community competence. These elements play a crucial role in enhancing disaster resilience within communities (Taghizadeh et al. 2015).

Form the definition of community disaster resilience, it can be understood as "The ability of a community to prepare for, respond to, and recover from hazards and associated risks in a comprehensive and integrated manner" (UNDP, 2020). Based on the studied frameworks, the following domains have been selected; Social Capital, Community Competence, Physical Infrastructure, and Institutional Capacity that contribute to a community's ability to respond before, during, and after a disaster and the subsequent indicators based on their relevance to the traditional communities in Patan, Nepal.

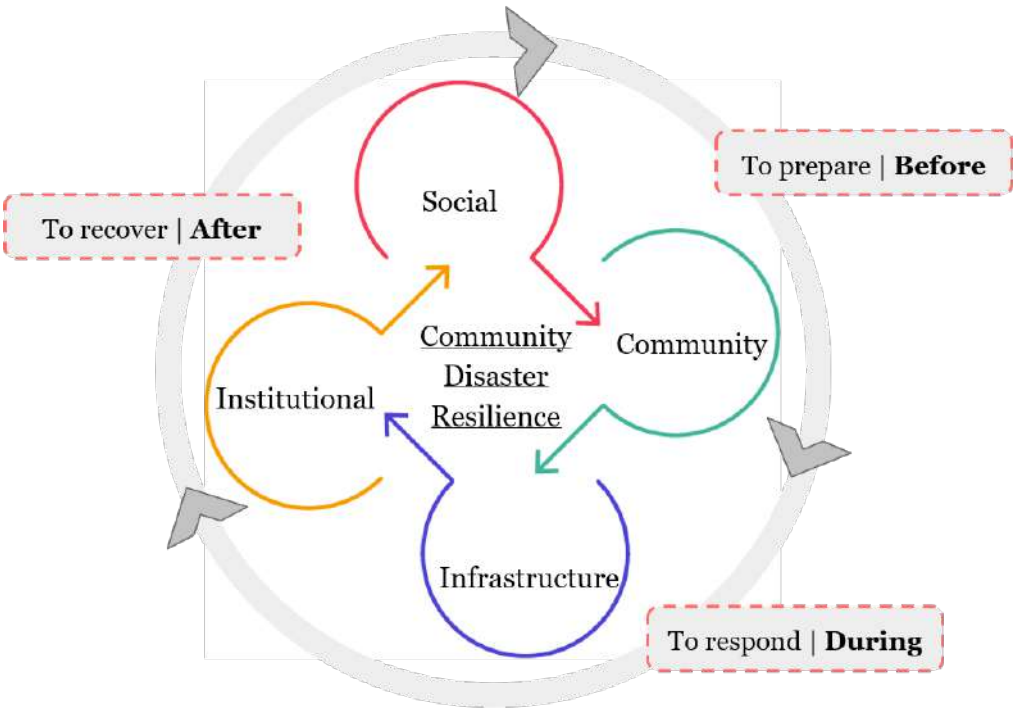
3.4.1 Social capital

(Panday et al. 2021) define social capital as "being about social relationships, and as the ability of actors (individuals, groups or communities) to use these

relationships to access financial, emotional, physical or other resources to fulfill survival and recovery needs." Communities rich in social-cultural capital create "friction to exit" their members, encouraging people to participate in activities and organizations that make a community a "good place to live." This sense of belonging and investment creates a positive environment that encourages individuals to choose to remain in the community, and also to return and reinvest in their communities after an extreme event (Renschler et al. 2011).

3.4.2 Community Competence

According to (Norris et al. 2008), community competence refers to collective action and decision-making, which arises from factors such as collective efficacy and empowerment. This dimension recognizes that community resilience is not simply a passive "bouncing back" to pre-disaster conditions but rather entails a concerted and active effort that relies on peoples' ability to creatively envision a new future and then take the necessary steps to achieve that desired future. It captures community's ability to develop multifaceted solutions to complex problems, engage in meaningful social and political networks and perceive its ability to effect positive change (Renschler et al. 2011).



(fig. 25)—Development of conceptual framework based on literature
Source: Author

3.4.3 Physical Infrastructure

The physical infrastructure domain involves facilities and lifelines that sustain a community. It includes built environment such as residential housing, public buildings, business/industry, essential services like electricity, water, telephone, and critical infrastructure such as hospitals, schools, fire and police stations, and nursing homes (Mayunga 2007; Renschler et al. 2011) . These facilities and services play a vital role in ensuring that communities can function properly and recover effectively from disasters.

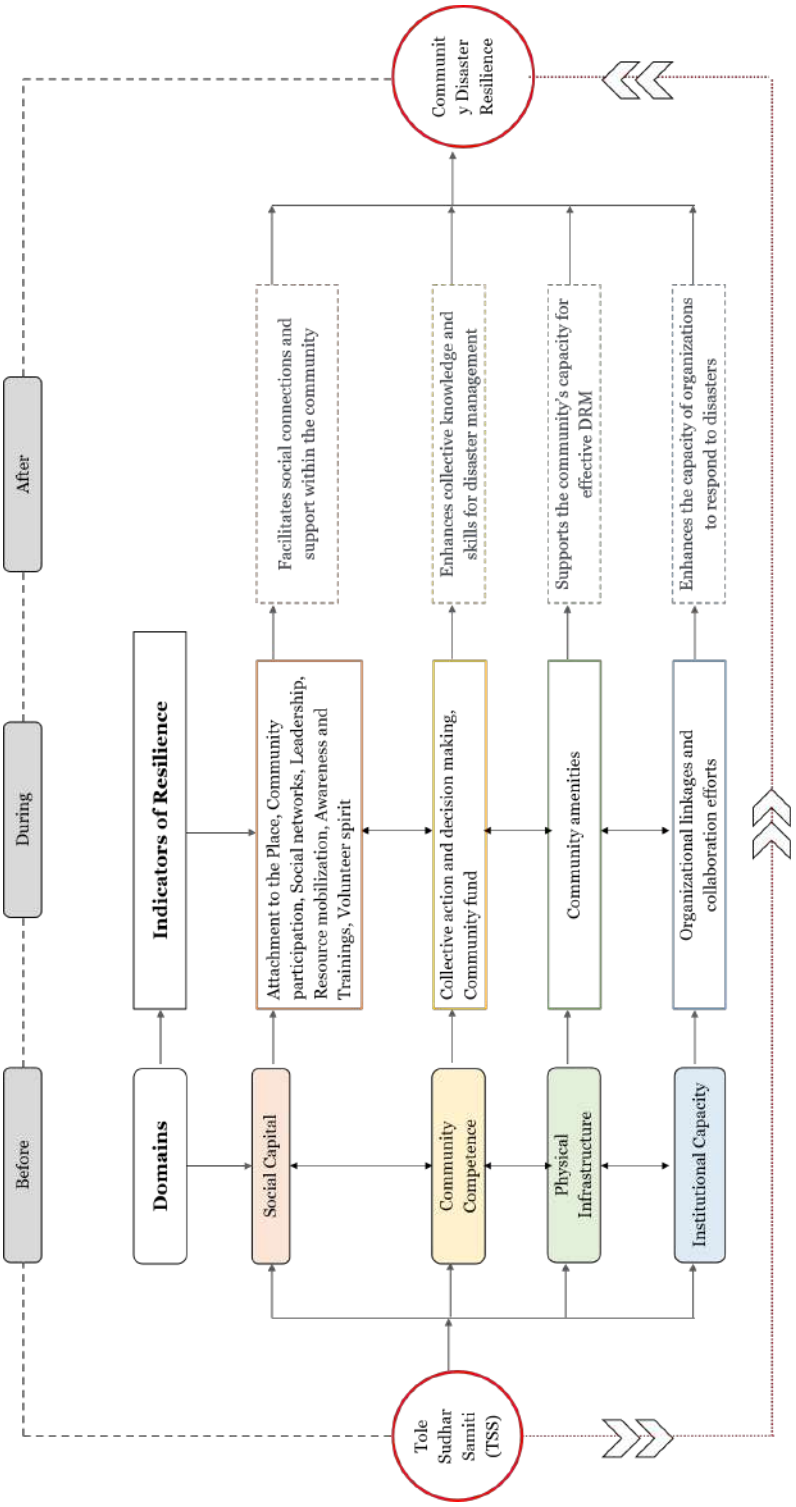
3.4.4 Institutional Capacity

Institutional capacity refers to the abilities and resources of both governmental and non-governmental institutions and organizations to effectively respond to and manage disasters. It encompasses elements like organizational structure, leadership, training, and experience, which determine how well an organization can adapt and respond to changing conditions (Cutter et al. 2008).

The following indicators were examined in this research under the four domains, to evaluate and gain a comprehensive understanding of the overall resilience of communities during various disaster events.

Table 3—Indicators selected to evaluate community disaster resilience in Patan, Nepal

Indicators	Description
Social Capital	
Attachment to the Place	The emotional investment of individuals in their community which motivates them to protect and improve it
Community Participation	The engagement of individuals in community groups and events, contributing to social networks and connections
Social networks	The relationships, connections, and interactions between individuals or groups within a community or society.
Leadership roles	The presence of individuals and or social organizations who assume leadership positions within the community



(fig. 26)—Conceptual framework adopted for the research developed based on literature
Source: Author (Referred (Mayunga 2007))

Resource mobilization	The community's capability to prepare for and quickly gather and coordinate resources in response to a disaster
Awareness and Training	The level of knowledge and preparedness of community members through awareness campaigns and training programs
Volunteer spirit	The willingness of community residents to support each other and contribute to disaster management efforts
Physical Infrastructure	
Community amenities	Facilities and services that support community functions such as health facilities, community buildings, and other critical infrastructure and utilities
Institutional Capacity	
Organizational Linkages and Cooperation	Connections and collaboration between different organizations to enhance disaster management efforts
Community Competence	
Community fund	Financial resources allocated by the community to support emergency situations
Collective Action	Collective efforts of a community to address issues and achieve common goals

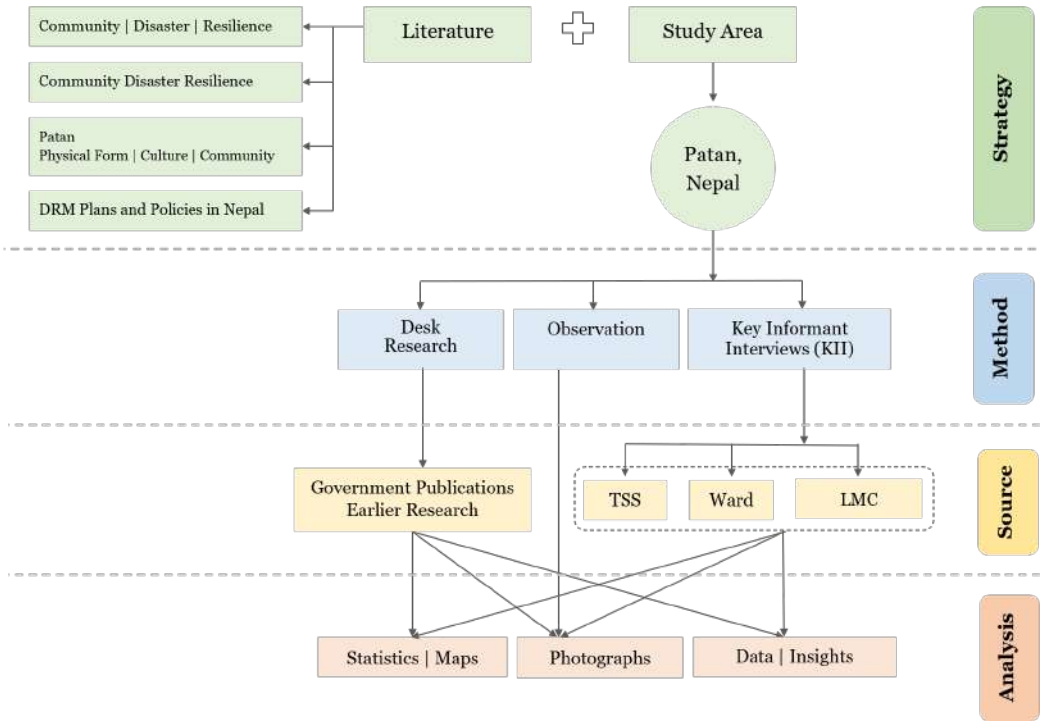
4| Research Paradigm

4.1 Outline of Research design and approach

For this study on the role of TSS in strengthening community disaster resilience in Patan, Nepal, a mixed-methods research design was employed. The research aimed to evaluate the effectiveness of the social organization in enhancing disaster resilience. The data collection methods included a literature review, key informant interviews, observations, and secondary data analysis. This combination of methods allowed for a comprehensive exploration of the topic, capturing both numerical data and descriptive information. The research design was designed to be emergent, meaning it allowed for flexibility and adaptability in response to changes in research questions or methods as needed. The choice of the mixed-methods approach was influenced by the researchers' own training and experiences (Creswell and Creswell 2018).

Literature Review

The literature review was an integral part of developing the theoretical framework for this research, particularly in gaining a comprehensive understanding of the various meanings associated with the term "resilience." To achieve this, publications on disaster studies and planning and environment change journals, focusing on key concepts such as disaster, vulnerability, resilience, social resilience, and urban resilience were reviewed. Given the cultural context of Patan, literature on the social aspects of resilience, including the traditional urban form of Patan, its history, sustainability, and disaster preparedness and responsiveness were also explored. Through this process, a set of characteristics and variables related to resilient communities were identified. These insights



(fig. 27)—Methodological Framework for the research
Source: Author

from the literature served as a foundation for data interpretation and analysis and helped identify key themes that informed the development of a framework for analyzing community disaster resilience.

4.2 Data Collection Methods

Multiple methods of data collection were used to gather the necessary information for the research. These methods include secondary data desk research, observation, and key informant interviews.

Observations

According to (Kumar 2011) “Observation is a purposeful, systematic and selective way of watching and listening to an interaction or phenomenon as it takes place”. In this context, the author upon site visit to the 17 communities made critical observations of the physical environment and social characteristics. Data was collected in the form of short notes, photographs, and videos. The author also had brief interactions with community members to gain additional insights and perspectives. This enabled the author to obtain a better understanding of the communities and their present contexts. Furthermore, a content

analysis of ethnographic evidence from secondary sources such as reports, articles, and books was conducted and reviewed together with the findings.

Key Informant Interviews

The author conducted key informant interviews with members of the TSS as well as ward and municipality office personnel. A total of 31 people were interviewed over the month of March which included 28 personnel from 17 communities, 2 personnel from ward offices 9 and 12 respectively, and 1 person from the LMC office (Annex 1). These interviews were conducted in a semi-structured format, allowing for flexibility to probe deeper into certain areas of interest while still following a predefined set of questions. Informed consent was required, and all participants were made aware that the interviews would involve questions related to their experiences within the community and TSS. The interviews were conducted in Nepali and Nepal Bhasa language and audio recorded. The time of the interviews ranged between 30 mins to 1 hour. The recordings were then translated and transcribed as needed into English for the purpose of analysis. These interviews were crucial in gathering data regarding the current practices and challenges faced by the community and TSS in building disaster resilience that has not been documented. The TSS members provided valuable insights into the social and cultural aspects of the communities, the management and evolution of the TSS body, and its role and responsibilities in the community. The ward and municipality officers helped understand the institutional and governance framework for disaster management in the area and their relationship with the community and community organizations such as Guthi, TSS, and Women's Group. The qualitative and quantitative data collected from these interviews were then analyzed to identify key themes and patterns, which were later used to support the research findings and recommendations.

To ensure the confidentiality and anonymity of the research participants, no personal names were recorded during the data collection process. Consequently, no names will be used in the thesis to preserve the privacy of the respondents.

Questionnaire Structure

Part A of the Questionnaire was designed to collect general information about the community and its TSS. The section included questions pertaining to basic community statistics, the status and history, and the main activities of TSS.

Part B focused on disaster preparedness and aimed to gather detailed information about the community's vulnerability to disasters. It explored the role of TSS in enhancing community preparedness through training programs and initiatives and assessed the availability and accessibility of resources such as shelters and tools.

Part C addressed questions related to the response and recovery of the community and challenges faced by TSS during disaster management events. It examined the community's adaptive capacity and measures taken during various disasters, as well as future plans. This section aimed to gain insights into the relevance and potential of TSS in present-day communities.

Secondary Data

Secondary data collection for this research involved gathering information from existing sources such as reports, publications, databases, and records. These secondary data sources provided valuable insights into various aspects related to community disaster resilience. The collected secondary data encompassed a wide range of topics, including historical records of disasters, government policies and guidelines, community profiles, infrastructure data, and previous research studies on disaster resilience and community development.

The data collection process involved conducting a comprehensive review of relevant literature, reports, and documents related to community disaster resilience in the local context. Various sources were consulted, including academic journals, government publications, non-governmental organization reports, and online databases.

4.3 Findings and Analysis

In conducting the analysis for this research, a comprehensive approach was employed to explore and interpret the findings. The primary source of data collection was through interviews, which allowed for in-depth insights and perspectives from the respondents. To structure the analysis and interpretation of the data, the conceptual framework with four domains was utilized. These domains, namely social capital, community competence, physical infrastructure, and institutional capacity, provided a comprehensive structure to organize and present the research findings. Within each domain, specific indicators were identified to assess the corresponding dimensions of resilience.

These indicators were derived from existing literature, theoretical frameworks, and the unique context of the study area. By utilizing this framework, the analysis was able to capture the multifaceted nature of community resilience and provide a structured approach to interpreting the findings. The analysis also involved examining the interplay between the different domains and indicators, and identifying patterns, strengths, and weaknesses within each community. By assigning rates and utilizing the conceptual framework, the analysis was able to provide a structured representation of the findings, highlighting the various aspects of community resilience and the role of TSS within it.

It is important to acknowledge that the analysis process had inherent limitations. The rating system and interpretation of the findings relied on the researcher's judgment and expertise, introducing a degree of subjectivity. Moreover, the findings were limited to the information gathered through interviews, which may have inherent biases or limitations in capturing the full scope of community resilience.

4.4 Ethical considerations

Informed consent was obtained from all study participants after providing them with information about the purpose and nature of the study, and their rights as participants. Participants were informed that their participation was voluntary and that they had the right to withdraw from the study at any point without any negative consequences. Confidentiality and anonymity were maintained throughout the study, and all data collected were kept securely and accessible only to the researcher. The researcher followed the cultural norms and practices of the study community and was respectful of local customs and beliefs. The study also recognized the importance of community engagement and participation. The researcher also ensured that the topic was communicated to the participants in a language that was understandable and comfortable to them. Finally, the study was conducted with integrity and transparency. The researcher adhered to ethical principles and practices in all aspects of the study, including data collection, analysis, and reporting. Any potential conflicts of interest were disclosed and managed appropriately.

5| Findings and Analysis

The four domains of community disaster resilience as derived from the literature and presented in the conceptual framework; Social capital, community competence, physical infrastructure, and institutional capacity are used as the framework for the analysis. The findings presented in this chapter are derived from the evaluations provided by the respondents regarding their respective communities and TSS.

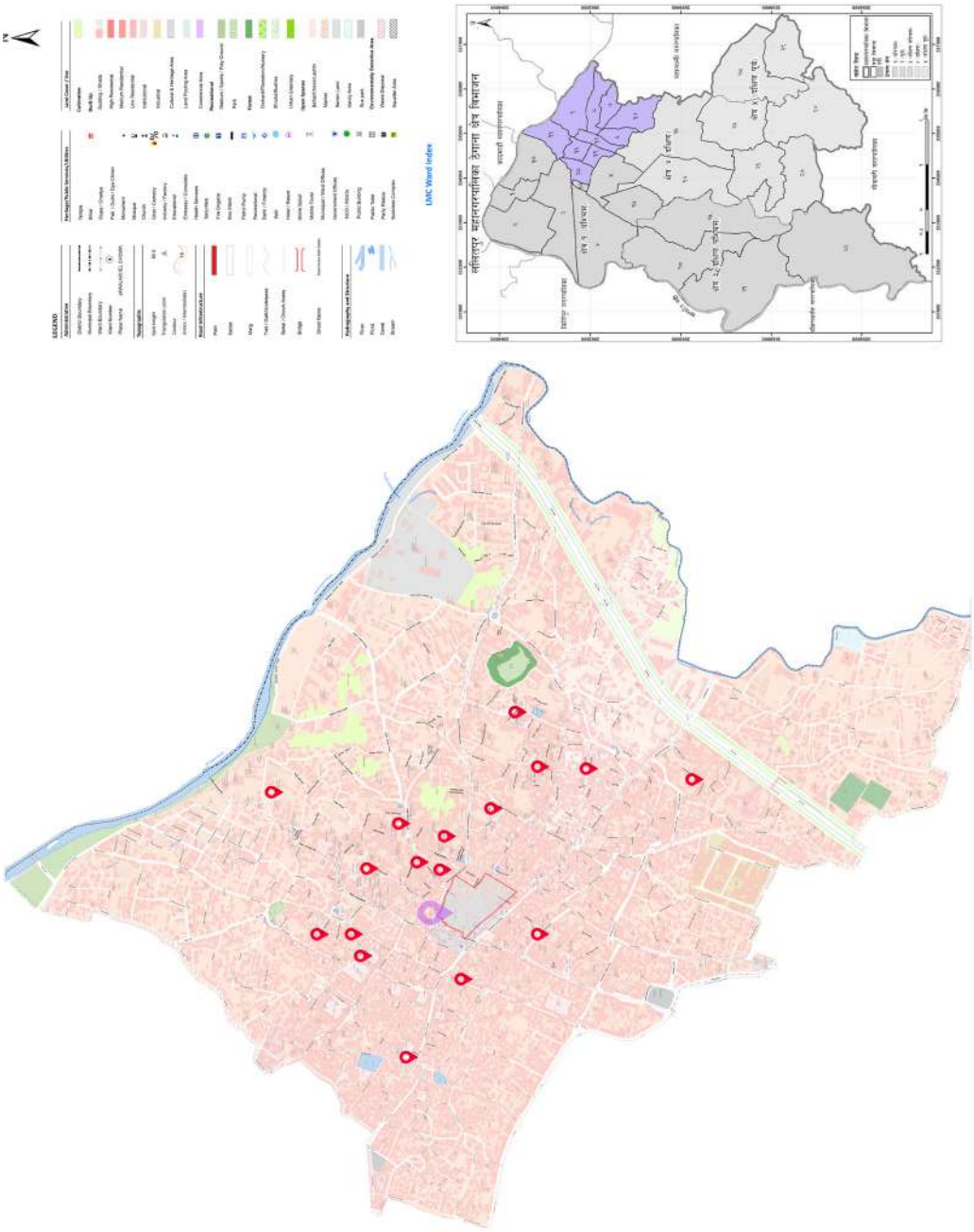
5.1 Social capital

5.1.1 Main activities of TSS

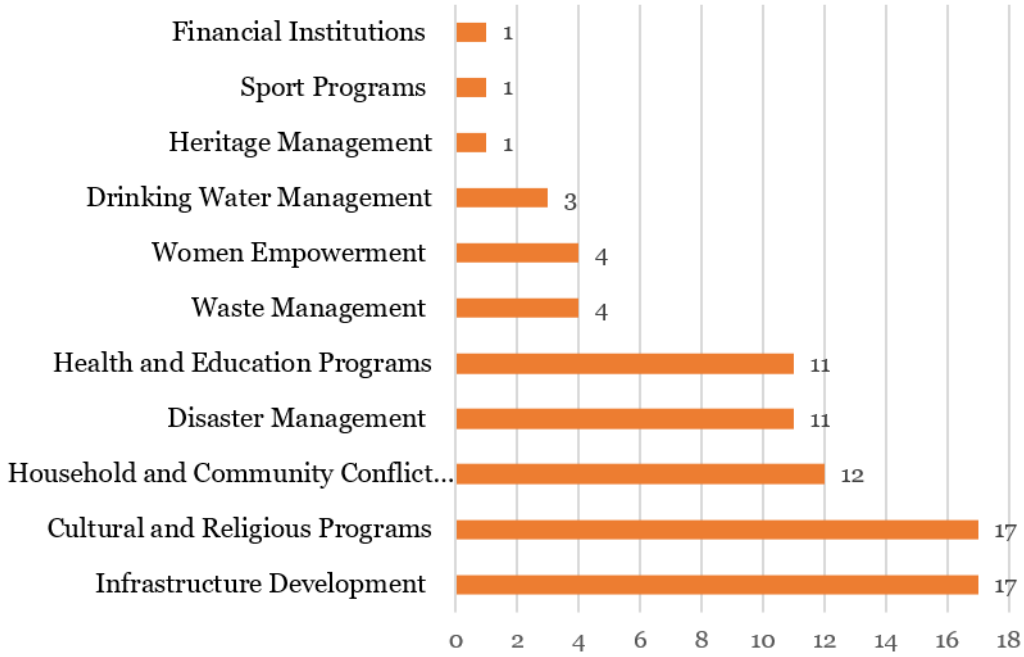
During the study, an open-ended question was posed to gather information about the primary activities of each TSS in the respective communities. Among the 17 communities examined, TSS demonstrated a diverse range of activities aimed at addressing the multifaceted needs of their communities. The top five activities consistently undertaken by the TSS across all 17 communities are:

Community infrastructure development involves the identification, planning, and implementation of projects aimed at improving the physical infrastructure within the community. Examples of such initiatives include the construction or renovation of community buildings, temples, and water supply systems.

Socio-cultural and religious activities encompass a range of cultural events, festivals, and religious ceremonies that celebrated the community's traditions, heritage, and shared values.



(fig. 28)—Location of surveyed community TSS
Source: Author (Edited on Maps from LMC)



(fig. 29)—Main Activities of TSS
Source: Author

Household and community conflict resolution involves mediating and resolving conflicts that arose within households or between community members. TSS plays a crucial role in facilitating dialogue, promoting understanding, and finding mutually acceptable solutions to disputes. By addressing conflicts, the TSS plays aids in maintaining harmony within the community and promoting social cohesion.

Disaster-related activities include preparedness measures, response planning, and recovery efforts aimed at minimizing the impact of disasters on the community. TSS collaborates with relevant stakeholders, and governmental and non-governmental organizations, to implement disaster risk reduction strategies, raise awareness, and build the community's capacity to respond effectively to emergencies.

Health and education programs focus on providing and improving healthcare services, promoting hygiene practices, and enhancing educational opportunities for community members.

Based on the responses gathered from community members, it is evident that

there is a high level of trust in TSS to address and resolve household and community conflicts. This indicates the presence of social trust within the community. The activities and initiatives undertaken by TSS provide valuable insights into their role and engagement within the communities. Through their active participation in community affairs, TSS contributes to the social fabric by fostering collaboration, promoting inclusivity, and addressing community needs.

(fig. 30)—Community members clean community spaces in Chyasal Tole
Source: Chaysa Manka Khala Fb Page

5.1.2 Community Participation

Findings related to community participation indicated a high level of engagement among the surveyed communities. A majority of 11 out 17 respondents indicated a high level of "Community engagement" in various activities organized by the TSS, other social, and governmental and non-governmental organizations. These activities encompassed a wide range, including social, cultural, religious, health, and disaster management initiatives, among others. It was also observed by the author during the site visits of the active community involvement during social as well as cultural events where community members were working and celebrating together. This presents the vibrant and collaborative nature of community engagement within the studied communities.

(fig. 31)—Community members helping in the construction of destroyed Pati
Source: mohr-stiftung.de

Majority of the respondents also highlighted the significant participation of women's groups in community activities. One of the respondents acknowledged that women are the most active participants, attributing their involvement to their availability as housewives and their desire to actively contribute to the community. Regardless of the underlying reasons, encouraging and supporting the participation

(fig. 32)—Community members staying togther in a tent eating and sleeping together post the earthquake in 2015
Source: Dupat Tole Fb Page

(fig. 33)—Community members working together to prepare a feast in the community courtyard (Khapinchhen Tole)
Source: Author

of women in these activities is crucial, as it not only enhances their empowerment but also strengthens the social fabric of the community.

Furthermore, a significant majority of 14 out of 17 respondents reported the active participation of the younger generation in various community initiatives, including socio-cultural and community development initiatives. This positive trend signifies the active involvement and valuable contributions of community members, especially the youth, towards the overall development and resilience-building efforts of the community. Their active engagement reflects a sense of responsibility and commitment to their community.

The active engagement of community members, including women and younger generation, highlights their sense of ownership and commitment, which plays a crucial role in the long-term success and impact of TSS initiatives. This indicates that TSS has effectively cultivated an environment to support community participation and active involvement, creating a strong foundation for collective action and shared responsibility within the community.

5.1.3 Attachment to the Place

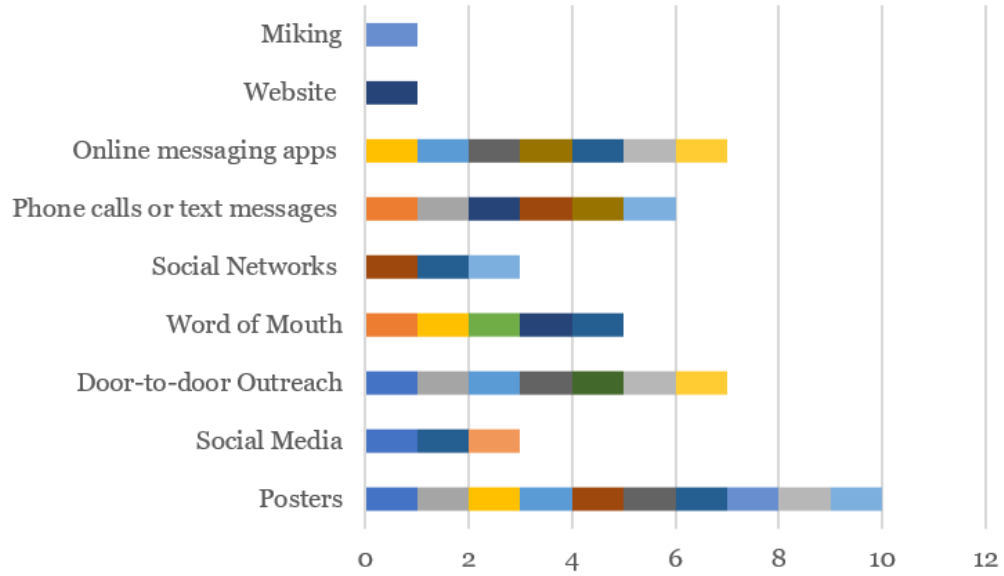
Majority of the respondents highlighted that families who have migrated or relocated outside the community still actively participate in community activities, particularly related to social, cultural, and political aspects. One respondent mentioned that the involvement in social and cultural aspects can be attributed to the mandatory obligations associated with the traditional Manka Guthi. However, this trend was more prevalent in larger communities where there were frequent social events and a higher number of individuals actively engaged in organizing various programs.

Smaller communities experienced a decline in community activities and engagement. It was observed that individuals who had relocated exhibited stronger attachment to their current location. It was also interesting to find that in some cases, individuals who had relocated had joined the TSS in their current communities while they belonged and participated in the Guthi of their native community. This suggests a certain level of adaptation and integration into the new community, while still maintaining ties to their ancestral community.

The findings also provide insights into the intricate dynamics of attachment to the place within traditional communities. It is evident that the concept of attachment goes beyond a simple association with a physical location. Instead, it is rather shaped by a multitude of factors, including ancestral roots, cultural ties, and social connections.

5.1.4 Information and Communication

Effective communication and information flow play a crucial role in DRM efforts. In the studied communities, various communication methods were used to share information within the community. Posters emerged as the most popular approach, adopted by 10 communities, providing visual and easily accessible information. Door-to-door outreach was also widely employed to directly engage with community members, ensuring information reached individuals without access to other communication channels. Online messaging also played a significant role, reflecting the growing use of digital platforms for communication. However, it was also observed that not everyone in the communities are tech-savvy, which underscored the importance of using traditional methods of communication alongside technological means to ensure that vital information reached majority of community members.



(fig. 34)—Information and communication channels adopted by TSS
Source: Author

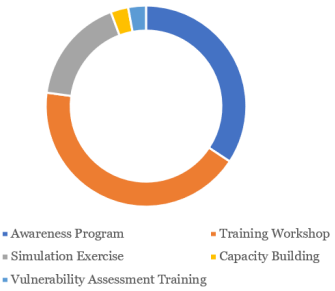
In one of the communities with a large spatial area and high population, a decentralized approach was adopted. The community was divided into several sections with a key person assigned to each section. This decentralized approach facilitated the efficient sharing of information throughout the community, enabling better communication and understanding among community members.

5.1.5 Awareness and Training

Awareness and training are crucial steps in effective DRM. The findings revealed that majority of the community members have participated in various DRM workshops organized by government and non-governmental organizations (NGOs) over the course of time. These encompassed a wide range of programs, including training workshops and awareness programs, focusing on various hazards such as earthquakes, fire safety, clean drinking water, first aid training, among others.

While many participants found the trainings to be highly effective and helpful in improving their disaster preparedness and response skills. Few noted that the some of the trainings were limited to theoretical knowledge, which was not always useful during real-life disaster events. Additionally, some highlighted lack of awareness among people regarding the importance of preparedness and response trainings and the challenge of time management, as individuals are

often occupied with their daily lives and unable to dedicate time to participate in these events. Also, there were significant misunderstandings regarding the acquired knowledge. For instance, during the occurrence of earthquake 2015, people were previously taught to seek safety by hiding under beds and tables. However, even those who were outside at the time of the earthquake rushed inside their homes, leading to unfortunate casualties. These concerns highlight the urgent necessity to adapt and improve the training methods to align with the current demands of society, address practical challenges, and effectively mitigate risks.



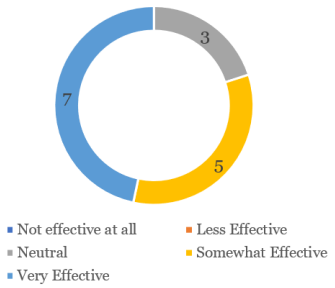
(fig. 35)—Variety of DRM related Programs attended by the community members
Source: Author

"Practical training is more important than theoretical. With just theoretical knowledge, it is difficult to act when the actual situation arises." - KII5

"Time management is difficult to participate in the programs and workshops." – KII28

"There is lack of awareness amongst people. They are reluctant to participate in training programs because they don't feel the need of it. However, at the same time, if people are paid to attend the training workshop, there are people who attend it. Hence, the approach should be changed." – KII11

Regarding organizing DRM programs, only a few TSS reported having conducted such programs for their communities, either as their own initiative or in collaboration with the government and non-governmental organizations. These initiatives include health camps, awareness programs, and some others. The findings reflect that while some TSS groups



(fig. 36)—Evaluated effectiveness of the attended programs as per the respondents
Source: Author

actively took the initiative to conduct DRM events, a majority did not organize such programs independently and also there was lack of transfer of the learned knowledge.

The study also found that the government and non-governmental organizations had initiated various preparedness activities before the devastating 2015 Gorkha earthquake in Nepal. These activities included awareness programs, first aid training, and simulation workshops. Some communities were equipped with the necessary tools and equipment for search and rescue and post-disaster response. However, post-earthquake, several respondents noted a lack of systematic efforts by the government in driving disaster preparedness works, including the absence of training and awareness programs. This highlights the need for sustained efforts in disaster preparedness beyond the immediate aftermath of a major disaster.

The study also revealed that many of the communities did not have preparedness or response plans in place to reduce and mitigate the impact of disasters. However, three communities were in the process of developing such plans, while three communities already had established plans. The content of these plans varied and included aspects such as basic knowledge of what to do during a disaster, access to emergency services, and availability of necessary resources. The absence of plans in most communities indicates a need for greater attention to comprehensive disaster preparedness strategies.

Hence, although the DRM related programs have played a significant role in enhancing the capacity of individuals and communities to cope with different types of disasters, there is a need for self-driven efforts to organize and contribute to DRM events, thereby facilitating the transfer of learned knowledge and skills.

5.1.6 Social networks

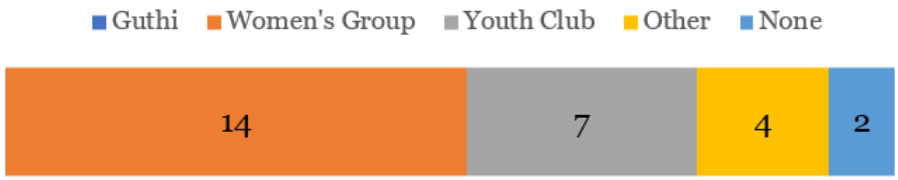
The findings from the study highlight the significance of social networks within communities. These networks encompass various social organizations, religious groups, and informal connections that facilitate interactions among individuals with shared interests, values, or affiliations. In the communities examined, social organizations such as the traditional Guthi, TSS, women's, youth, and cultural and religious groups were observed. TSS emerged as a key committee

with separate sub-committees catering to different purposes, ensuring coordination and collaboration among different social groups. However, even in communities with fewer active social groups, the research highlights the existence of social networks at the community level. Informal connections and interactions contribute to the social fabric, enabling individuals to rely on each other for support, cooperation, and shared resources.

> *"TSS serves as the main committee under which we have separate sub-committees that cater to different purposes such as Financial committee, cultural committee, Youth committee, . . ." – KII 2*

It is crucial to recognize that social networks are constantly evolving, and different gender and age groups within the community have unique needs and interests. The influence of Western culture on the younger generation was mentioned by one of the respondents as a factor resulting in their strained relationship with the community. Another responded highlighted the importance of youth groups which serve as platform for young individuals to actively engage in community activities, preparing them for future roles within TSS and other social organizations. However, it is worth noting that these youth groups tend to be male-centered. The lack of female representation in these groups was attributed to the belief that women typically get married and leave the communities. This gender disparity reflects existing gender dynamics that need be taken into account in order to ensure the inclusivity and diversity of social networks within the community.

> *"It seems like the younger generations, they don't need the community. They are more influenced by the western culture." – KII 12*



(fig. 37)—Social Organizations that take initiatives in DRM activities
Source: Author

> *"Our community is a new settlement. Unlike traditional settlement, where everyone knows everyone. It is different in newer settlements where we might not even know our neighbors. There are people who have settled here from other parts of Nepal. Hence, TSS becomes more relevant in newer communities, because in the traditional ones there's "Manka Guthi" if not TSS, to establish the relationship between community members." - KII 8*

The research also highlights the distinction between traditional settlements and emerging communities. In traditional settlements, people have close-knit relationships as they share common spaces such as community courtyards, drinking water sources, and actively participate in social and cultural activities. However, in newer settlements where people have migrated from other parts of Nepal, establishing these social networks becomes more challenging. In this context, social organizations like TSS play a vital role in bridging the gaps and establishing relationships among community members. The research suggests that in modern societies, where establishing social networks may be more difficult, social organizations can serve as important catalysts for connection and community-building.

The findings emphasize the importance of social networks in fostering social cohesion, cooperation, and resource sharing within communities. Formal social organizations, along with informal connections, contribute to the development and maintenance of these networks. Recognizing and adapting to the evolving dynamics of social networks, and addressing the needs and concerns of different age groups and gender representations are crucial for creating inclusive and diverse communities.

5.1.7 Leadership

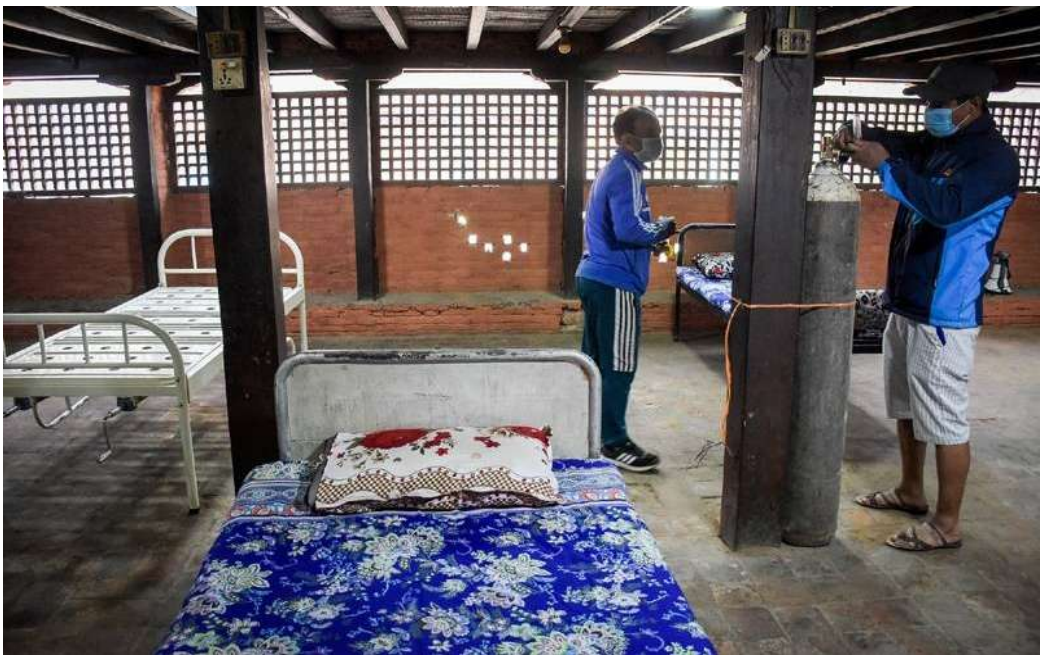
Leadership is a critical factor in effectively managing various disaster events. The findings highlight the significant role of leadership within TSS in effectively managing various disaster events. According to the respondents, TSS has taken proactive initiatives during crises such as the COVID-19 pandemic, dengue outbreaks, earthquakes, and fire hazards. For instance, TSS established isolation wards, holding centers, and provided essential health services to the community during the COVID-19 and dengue outbreaks. They also engaged in procuring and distributing relief materials in the after math of the 2015 Earthquake,

raising funds for affected families, and organizing awareness activities related to disaster management.

"We established the isolation ward in our community and later when the word got out, we received external help (both financial and materials) from NGO's and private organizations." – KII 5

"We leveraged our personal contacts with private institutions and made provisions for oxygen cylinders, wheel chairs, and so on during the time of covid pandemic. The help was extended to other communities as well as to the public hospital." – KII 25

"Leadership is of utmost importance, especially during critical situations. When the earthquake struck, I wasn't at home. Upon my return, I noticed that the people who had received training were not significantly different from those who hadn't received any training – they seemed just as unsure of how to respond effectively. I along with some other members quickly mobilized a team, bringing everyone together to coordinate our efforts and respond to the situation." - KII6



(fig. 38)—TSS initiative of isolation ward in their community building during Covid Pandemic and Dengue Outbreak (Chyasal Tole)
Source: The Himalayan Times

(fig. 39)—Holding center initiated by TSS in Dupat tole during Covid Pandemic and Dengue Outbreak
Source: Dupat Tole FB Page

(fig. 40)—Free health camp organized by TSS in Chyasal Tole
Source: Chyasal Manka Khala FB Page

(fig. 41)—Blood donation program organized by TSS in Talachhen Tole
Source: Talachhen TSS FB Page

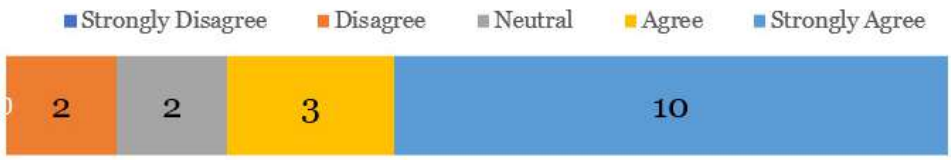
The responses indicate that TSS has actively collaborated with external organizations, government agencies, and community members to establish strong networks and promote multi-stakeholder collaboration. By leveraging personal contacts with private institutions, TSS was able to arrange crucial resources like oxygen cylinders and wheelchairs during the COVID-19 pandemic, benefiting not only their community but also extending support to other communities and even public hospitals. This demonstrates the leadership's ability to mobilize resources and establish partnerships to meet the community's needs during challenging times.

> *"Health and education is very important in this day and age. However, in Nepal, the health services are expensive. Hence, we are now working towards opening a community health lab which can offer services to the people at a more affordable rate." – KII 5*

Additionally, recognizing the importance of affordable health services, many communities have established community clinics and medical labs that offer services at more affordable rates. these findings underscore the crucial role of leadership in disaster management. The leadership within TSS empowers community members and fosters a sense of ownership in disaster management which cultivates a collective responsibility for disaster management, strengthening the community's overall resilience.

5.1.8 Volunteer spirit

The research findings shed light on the volunteer spirit and active engagement



(fig. 42)—Volunteer spirit demonstrated by community members during various disaster event
Source: Author

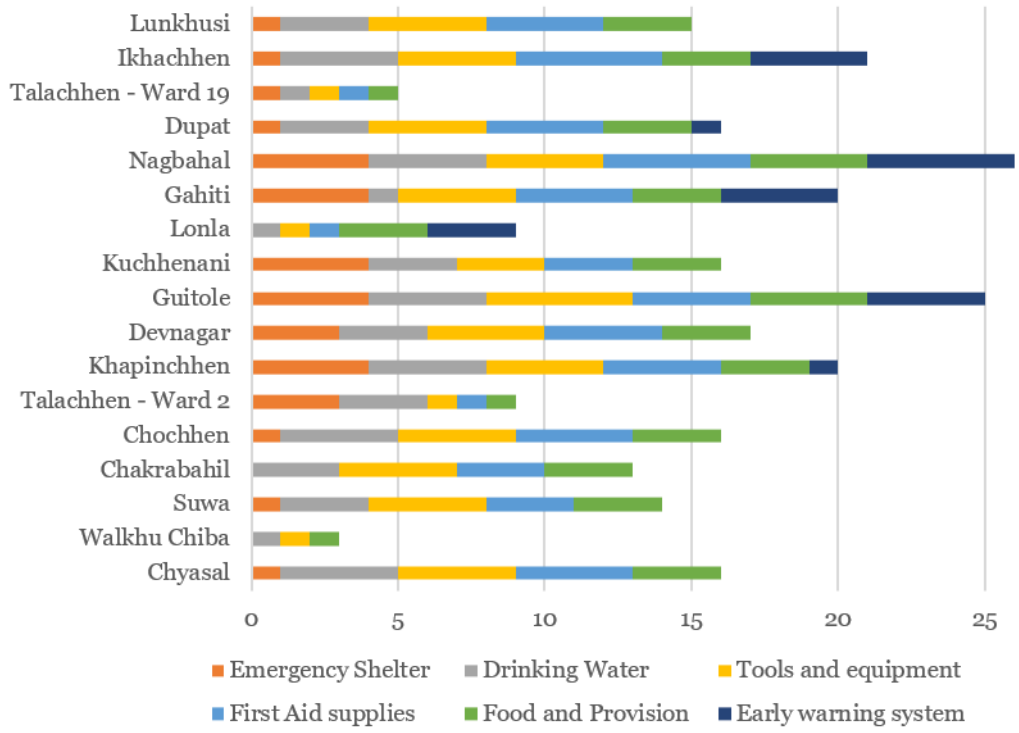
of the community members, especially in times of disaster events. Several respondents mentioned that during the earthquake in 2015, the local community spontaneously came together to address not just the local problems but also to assist in search and rescue operations and later to support the reconstruction. This immediate response demonstrated their willingness to actively participate in crisis situations and support community members. Similarly, during the COVID-19 pandemic and dengue outbreaks, volunteers played a crucial role in cleaning and sanitizing community spaces, distributing medicines and materials to households, and raising awareness among community members. Social organizations like TSS, youth group and women's group took leadership roles to mobilize volunteers who supported resource mobilization and relief distribution in collaboration with various governmental and non-governmental organizations.

> *"As soon as an emergency arises, TSS organizes a meeting about how to move forward. Also it is easy to accumulate people, people are very willing to participate and contribute." – KII 22*

Furthermore, volunteer involvement was not limited to disaster situations alone. Community members actively participated in various activities such as health camps and community infrastructure management and development. For example, volunteers engaged in the reconstruction of damaged infrastructure following the earthquake, as well as the maintenance of community temples and other essential facilities within the community. This also demonstrates the depth of community engagement and the collective effort towards building resilience.

5.1.9 Resource mobilization

Resource mobilization involves the process of gathering, organizing, and utiliz-



(fig. 43)—Resource Availability and accessibility of various communities
Source: Author

ing available resources to effectively respond to and recover from disasters. The findings of the study revealed disparities in resource availability and accessibility among different communities. A significant barrier observed in the study was the availability and storage of tools and equipment for immediate response to emergencies. Although the government supplied tools and equipment, some communities lacked adequate and accessible storage space for these resources. This issue emphasizes the need to not only provide necessary resources but also ensure the availability of proper storage facilities to support effective disaster response efforts.

> *"We have coordinated with various organizations to prepare approx. 30 different items that include tools such as shovels, machinery, hammer, first aid supplies, safety helmet and jackets, tents, and others by analyzing the need during various disasters. These items have been placed in certain central locations that could be accessible to the local communities during the disaster event." ~ Respondent 1 (Official)*

According to an official from the local government, coordination efforts made with various organizations to prepare a range of disaster response items. These items were strategically placed in central locations to ensure accessibility for local communities during disasters. The importance and impact of these resources were highlighted by several community members during the response to the 2015 earthquake. These measures demonstrate the importance of collaboration between TSS, government agencies, and other organizations in resource mobilization.

> *"With collaboration with the government we had received certain items such as tent, tools as a preparedness measure for earthquake. We distributed the materials to neighboring communities as well. Post earthquake 2015, the individuals and communities who had received the items brought it all out and it benefitted us all in terms of response." - KII 24*

Another challenge highlighted by the respondents is related to the availability of safe open spaces accessible to community members. During the earthquake, people had to take shelter on the highway road due to lack of accessible open spaces. Recognizing this, the government has taken various initiatives such as identification of open spaces in the city and also management and revitalization of deteriorating open spaces.

> *"Ward office has taken initiative regarding the management and revitalization of open spaces. We are focusing on developing parks and encouraging plantation in the existing open areas that could potentially aid in disaster management." ~ Respondent 1 (Official)*

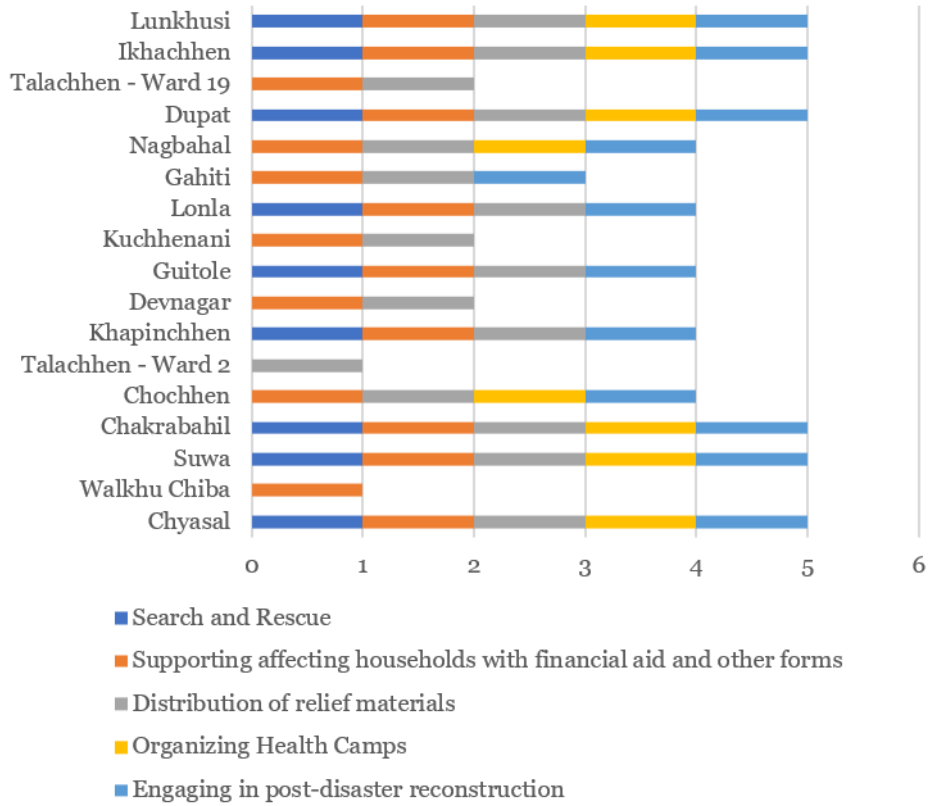
To promote equitable resource mobilization, it is crucial to address the disparities in resource availability and accessibility among communities. This calls for collaborative efforts and partnerships among communities, government agencies, non-governmental organizations, and other stakeholders. By working together, these stakeholders can identify and bridge the gaps in resource distribution, ensure adequate storage facilities, and implement comprehensive disaster preparedness programs. The active involvement of TSS can play a significant role in coordinating these efforts, as they possess a deep understanding of the community's needs and can effectively mobilize resources to enhance community disaster resilience.

5.2 Community Competence

5.2.1 Collective actions

The research analyzed various collective actions taken by the TSS in collaboration with the community, other social organizations, and governmental and non-governmental agencies which played a crucial role in supporting individuals, households, and communities during times of crisis.

All of the studied communities engaged in some sort of collective action ranging from organizing fundraising campaigns to support affected families and households, distributing relief materials like food items and medical supplies, to engaging in post-disaster reconstruction. One of the respondents mentioned that during covid pandemic when there was everything had closed down and people had limited access to essential food supplies, TSS members of several communities came together and worked with the government to procure food supplies at reduced prices to the community. In some of the cases, the TSS bore the cost



(fig. 44)—Collective action taken by various TSS during different disaster events
Source: Author

themselves for the food and health supplies.

These collective actions demonstrate a strong sense of community solidarity and resilience in the face of adversity. The active involvement of the TSS and their dedication to supporting affected community members underscore their crucial role as a vital community organization during times of crisis.

5.2.2 Community Fund

The research revealed that many of the communities had various sources of income contributing to the community fund. These income sources included rental spaces, health clinics, and other income-generating activities. The fund served multiple purposes, such as supporting emergency situations, organizing various social and cultural activities, and funding community projects.

> *"Recently, upon request from an external agency, we organized a cultural event in our community for which a sub-committee was established. We wore traditional Newari clothes and prepared Newari cuisine for a group of foreign visitors. The event was a success. It not only reflected our culture and traditions to the foreigners but also contributed to the community income as well." B- KII 2*

> *"When a household in our community had a fire hazard, we (TSS) immediately set up a fundraiser to help the affected family. We initially collected funds from within the community, and later received additional support from the government and another associated community organization. Because we took the initiative, it continued." - KII 23*

Interestingly, only one community had a specific fund dedicated to disaster management, while another community had an emergency fund that could also be utilized in case of disaster events. However, despite the limited presence of dedicated funds, it was observed that the communities displayed resilience and resourcefulness in raising funds when faced with uncertain events. This highlights the ability of communities to adapt and respond effectively. These findings emphasize the importance of recognizing and leveraging the existing strengths and capacities within communities when designing disaster resilience strategies.

5.3 Physical Infrastructure

Community amenities and critical infrastructure are important for the overall functioning and well-being of a community. They provide spaces where community members can come together for social, cultural, and religious activities, fostering a sense of belonging and unity.

(fig. 45)—Temporary exhbition in the community building in collaboration with PhotoKTM in Khapinchhen Tole
Source: insidehimalayas.com

> *"During covid pandemic and dengue outbreak the hospitals and clinics were at full capacity, hence we build a holding center in our community building to help the community members, especially the elderly population." – KII 5*

For instance, during the 2015 earthquake in Nepal, community buildings were transformed into emergency shelters to provide temporary housing for community members. Some communities repurposed these facilities as isolation wards or holding centers in response to the COVID-19 pandemic and dengue outbreak, providing much-needed support to those affected by the outbreak, especially when the public hospitals are at full capacity. Similarly, "Pati," which serves as a resting shelter and communication hub, has also been utilized as a storage space for disaster response tools and equipment provided by the government. This ensures that these resources are easily accessible during times of crisis, which greatly facilitates community response and recovery efforts.

However, not all communities have access to these infrastructures. This limitation negatively influences community response and recovery efforts during challenging times, as the limited facilities hinder the ability of the community to provide adequate support.

(fig. 46)—Community members using the resting place (Pati) as a performance space for traditional music
Source: thehimalayantimes.com

(fig. 47)—Areal view of the open space in Nagbahal
Source: Facebook (Photo Credit-Suman Ratna Dhakhwa)

Nevertheless, the ability of communities to effectively utilize available infrastructure during disasters is a testament to their resilience and resourcefulness. It highlights the importance of these community amenities in facilitating community response and recovery efforts during times of crisis and emphasizes the need for increased accessibility to these resources for all communities.

5.4 Institutional Capacity

Approximately 70% of the TSS in the studied communities have been registered as an organization either in the ward office or the Chief District Officer's (CDO) office. This formal registration signifies the official recognition and documentation of TSS within the local government system. There are certain legal benefits and status to these registered TSS groups, which can facilitate their access to government resources and programs.

"We had to register as TSS to access the public fund." ~ KII 15

"We have not registered yet and are reluctant to do it because we, the current committee members, are concerned that we might not be able to continue functioning effectively, as there is limited interest from new indi-

viduals to join the committee."~ KII 23

Interestingly, the study highlights that all of the studied TSS, irrespective of their registration status, maintain an active relationship with the government. This indicates that TSS, whether registered or unregistered, are engaged with the government in various capacities. They participate in government-led initiatives, collaborate on community development projects, and contribute to resilience-building efforts. This active engagement demonstrates the significance of TSS as valuable partners for the government in local development processes.

Hence, the reluctancy to register in some cases is not due to strained relationship with the government bodies but rather due to own perceptions and constraints. While registration brings some advantages, such as access to government funding and specific programs, it also entails administrative and bureaucratic obligations. The study findings suggest that some TSS groups have opted not to pursue official registration due to reasons such as desire to preserve cultural values embedded in the traditional form of Manka Guthi, a preference for maintaining a more flexible and autonomous approach to community initiatives, and also due to limited participation from the community.

"TSS plays an important role in problem identification of the community. It can then relay the information to the local government. With the data given by the TSS about the problems and issues within the community, the local government can properly analyze the issues and properly plan for the solutions of the relevant ones in appropriate time." - KII7

In terms of their relationship with non-governmental organizations (NGOs), respondents reported having previous engagements with organizations such as JICA and Red Cross, primarily for cultural activities, health programs, and disaster-related initiatives. Prior to the 2015 earthquake, Red Cross collaborated with the local government and conducted a range of training programs and awareness workshops specifically focused on disaster preparedness for the communities. However, as per the respondents, the programs have significantly decreased post the earthquake. Also, the dynamics have shifted since then, with the government now taking on a central role. Respondents noted that the government acts as an intermediary between the TSS and NGOs, facilitating their relationship and the organization of programs. This suggests that the govern-

ment has assumed a more active role in coordinating disaster-related initiatives and involving NGOs in community development efforts.

The past collaboration between the TSS and NGOs, particularly Red Cross, highlights the significance of external partnerships in enhancing community resilience. These collaborations have contributed to raising awareness, building capacity, and implementing targeted programs to address various aspects of disaster preparedness and response. The provision of first aid training further indicates the emphasis on equipping community members with essential skills and knowledge to effectively respond to emergencies. The shift towards government-led coordination implies a changing landscape in disaster management and community engagement. While the government now serves as the intermediary, it is important to assess the extent of its involvement and effectiveness in facilitating collaborations and delivering appropriate programs.

5.5 Summary of Key Findings

Table 4—Summary of Key Findings

Indicators	Key Findings
Community participation	Strong community engagement and active participation from women, younger generation, and other community members, indicating a strong sense of ownership, commitment, and share responsibility
Attachment to the place	Extends beyond physical location and is influenced by ancestral roots, cultural ties, and social connections
Information and Communication	TSS adopted traditional communication methods like posters, door-to-door outreach with technological communication channels such as online messaging to ensure information reaches all
Social networks	Women's groups could play a significant role in DRM activities, emphasizing the importance of inclusivity and diverse perspectives.

Leadership	TSS acts as a leading body in guiding community initiatives and coordinating DRM efforts. They provide direction, support decision-making processes, and mobilize community resources for effective
Resource Mobilization	TSS demonstrates resource mobilization skills by leveraging local networks, personal contributions, and support from external stakeholders to acquire necessary resources for DRM.
Awareness and Training	Necessity to adapt and improve the training methods to align with the current demands of society, address practical challenges, and effectively mitigate risks.
Volunteer spirit	Community members show a high level of volunteerism during emergencies, demonstrating solidarity and a commitment to collaborative disaster management.
Collective action and decision making	Collective actions demonstrate a strong sense of community solidarity and resilience in the face of adversity
Community fund	Despite the limited presence of dedicated funds, communities showcased resilience and resourcefulness in fund mobilization especially post-disaster
Community amenities	Community amenities are essential for daily life and serve as venues for sociocultural events and also support DRM related activities
Organizational linkages and collaboration	All communities maintain an active relationship with the government, participating in government-led initiatives and contributing to disaster management practices.
	Collaboration with non-governmental organizations, such as JICA and Red Cross, has been reported, emphasizing the importance of external partnerships in enhancing community resilience.

5.6 Determining the Resilience Performance of TSS

In order to evaluate the performance of each TSS and to determine the characteristics of better performing TSS, the resilience of each community based on their capacity to prepare for, respond to, and recover from disasters was assessed using a rating scale, with the categories of None (N = 0), Low (L = 0.25), Medium (M = 0.5), High (H = 0.75), and Full (F = 1). This was devised based on the author's perception and expertise drawn from the research findings.

Resilience (R)	None (N)	Low (L)	Medium (M)	High (H)	Full (F)
Score (S)	0	0.25	0.5	0.75	1

Table 5—Resilience rating of the studied community TSS

S.No	Community	Before	During	After
		Preparedness	Response	Recovery
1	Chyasal	M	H	H
2	Walkhu Chiba	N	L	L
3	Suwa	M	M	M
4	Chakrabhail	L	H	M
5	Chocchen	H	H	H
6	Talachhen - Ward 11	L	L	L
7	Khapinchhen	H	H	H
8	Devnagar	M	M	M
9	Guitole	M	H	H
10	Kuchhenani	L	M	M
11	Lonla	L	H	M
12	Gahiti	M	M	M
13	Nagbahal	H	H	H
14	Dupat	M	H	H
15	Talachhen - Ward 19	M	M	M
16	Ikhachhen	H	H	H
17	Lunkhusi	M	H	H

Table 6—Resilience Scoring of the studied community TSS

S.No	Community	Prepared-ness		Response		Recovery		Total
		R	S	R	S	R	S	T
1	Chyasal	M	0.5	H	0.75	H	0.75	2
2	Walkhu Chiba	N	0	L	0.25	L	0.25	0.5
3	Suwa	M	0.5	M	0.5	M	0.75	1.75
4	Chakrabhail	L	0.25	H	0.75	M	0.5	1.5
5	Chochhen	H	0.75	H	0.75	H	0.75	2.25
6	Talachhen - Ward 11	L	0.25	L	0.25	L	0.25	0.75
7	Khapinchhen	H	0.75	H	0.75	H	0.75	2.25
8	Devnagar	M	0.5	M	0.5	M	0.5	1.5
9	Guitole	M	0.5	H	0.75	H	0.75	2
10	Kuchhenani	L	0.25	M	0.5	M	0.5	1.25
11	Lonla	L	0.25	H	0.75	M	0.5	1.5
12	Gahiti	M	0.5	M	0.5	M	0.5	1.5
13	Nagbahal	H	0.75	H	0.75	H	0.75	2.25
14	Dupat	M	0.5	H	0.75	H	0.75	2
15	Talachhen - Ward 19	M	0.5	M	0.5	M	0.5	1.5
16	Ikhachhen	H	0.75	H	0.75	H	0.75	2.25
17	Lunkhusi	M	0.5	H	0.75	H	0.75	2

Similarly, the individual indicators were also evaluated using the same scoring system to measure their contribution to community resilience. This approach allowed for a comprehensive assessment of each community's strengths and weaknesses across multiple dimensions.

Table 7—Indicator Scores of the studied community TSS

Community/Tole	Attachment to the place	Community Participation	Social networks	Leadership	Resource mobilization	Awareness & Trainings	Volunteer spirit	Community Fund	Collective action & decision making	Community amenities	Organizational linkages and collaboration	Score
1	0.75	0.75	0.75	0.75	0.50	0.50	0.75	0.50	0.75	0.50	0.75	7.25
2	0.25	0.50	0.00	0.00	0.25	0.00	0.25	0.00	0.25	0.25	0.50	2.25
3	0.75	0.75	0.50	0.50	0.25	0.50	0.75	0.00	0.75	0.50	0.75	6.00
4	0.50	0.75	0.75	0.75	0.25	0.50	0.75	0.25	0.75	0.50	0.50	6.25
5	0.75	0.75	0.75	0.75	0.75	0.50	0.75	0.50	0.50	0.50	0.75	7.25
6	0.50	0.50	0.00	0.00	0.25	0.25	0.50	0.00	0.25	0.25	0.50	3.00
7	0.75	0.75	0.75	0.75	0.50	0.50	0.75	0.50	0.75	0.50	0.75	7.25
8	0.75	0.75	0.75	0.75	0.50	0.50	0.75	0.00	0.25	0.50	0.75	6.25
9	0.75	0.75	0.50	0.75	0.50	0.50	0.75	0.25	0.75	0.75	0.75	7.00
10	0.50	0.50	0.00	0.25	0.50	0.25	0.50	0.00	0.25	0.50	0.50	3.75
11	0.75	0.75	0.75	0.75	0.25	0.50	0.75	0.00	0.75	0.25	0.50	6.00
12	0.75	0.75	0.75	0.75	0.50	0.25	0.75	0.00	0.50	0.50	0.50	6.00
13	0.75	0.75	0.75	0.75	0.75	0.50	0.75	0.75	0.50	0.75	0.50	7.50
14	0.75	0.75	0.75	0.75	0.50	0.50	0.75	0.25	0.75	0.50	0.75	7.00
15	0.50	0.50	0.25	0.25	0.25	0.25	0.50	0.00	0.50	0.25	0.50	3.75
16	0.75	0.75	0.75	0.75	0.50	0.50	0.75	0.50	0.75	0.50	0.75	7.25
17	0.75	0.75	0.75	0.75	0.50	0.50	0.75	0.25	0.75	0.50	0.75	7.00

Subsequently, based on the above tables, four communities with the highest resilience ratings were identified as the best-performing, while three communities with the lowest ratings were designated as the worst-performing. The characteristics of these selected communities were then thoroughly analyzed to derive the factors that influenced their resilience levels.

From the above table, the top four better performing TSS are:

Table 8—Top four better performing TSS

S.No	Tole	Resilience Score	Indicator Score
1	Nagbahal	2.25	7.50
2	Khapinchhen	2.25	7.25
3	Chochhen	2.25	7.25
4	Ikhachhen	2.25	7.25

The community characteristics of these communities are:

Table 9—Characteristics of the better performing TSS

S.no	Community characteristics	Nagbahal	Khapinchhen	Chochhen	Ikhachhen
1	Community participation	0.75	0.75	0.75	0.75
2	Social networks	0.75	0.75	0.75	0.75
3	Resource Mobilization	0.75	0.5	0.75	0.5
4	Leadership	0.75	0.75	0.75	0.75

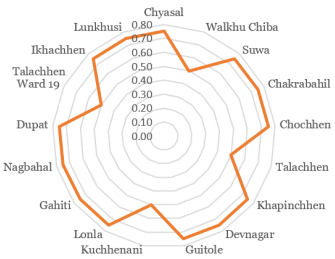
Based on the analysis, the bottom 3 TSS are:

Table 10—Top 3 Low performing TSS

S.No	Tole	Resilience Score	Indicator Score
1	Walkhu Chiba	0.5	2.25
2	Talachhen Ward 11	0.75	3
3	Kuchhenani	1.25	3.75

Community Participation

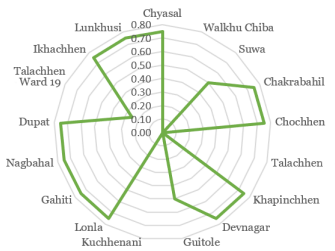
Community participation is a critical and important factor in determining the success of TSS initiatives in enhancing community disaster resilience. Communities that demonstrate active engagement of community members, including women and the younger generation, performed better during various disaster events. However, the parameter should be understood as a quality-driven process that ensures meaningful and inclusive engagement of community members. Merely achieving a high participation rate does not guarantee the success of TSS initiatives if the quality of participation is lacking. Therefore, the focus should be on fostering genuine and active involvement of community members, allowing them to have a voice, influence decision-making, and contribute to the planning and implementation of TSS activities.



(fig. 48)—Community Participation efforts by TSS
Source: Author

Social networks

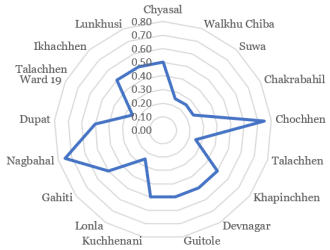
Social networks play a vital role in the success of TSS initiatives by facilitating coordination, collaboration, and collective action towards community development and disaster resilience. Effective coordination allows for better utilization of available resources, prevents duplication of efforts, and promotes synergy among different stakeholders. It is crucial for TSS to recognize the dynamic nature of social networks and the varying needs and interests of different gender and age groups. Inclusivity and diversity within these networks should be actively promoted to ensure that all community members are engaged and their perspectives and contributions are valued. By collaborating with sub-committees and other social organizations, TSS can also tap into the diverse skills, knowledge, and resources present within the community.



(fig. 49)—Relationship of TSS with other social organizations
Source: Author

Resource Mobilization

Strategic resource mobilization impacts the effectiveness of TSS initiatives. As communities often lack equal access to resources, resource mobilization becomes crucial during preparedness, immediate response, and short-term and long-term recovery process. The study highlighted the presence of resilient social networks within majority of communities where individuals leveraged their personal contacts and families came together to share support and mobilize resources based on their capacities when faced with disasters. This collective sharing of resources, both tangible and intangible, contributed to the overall effectiveness of TSS initiatives and strengthened the community's capacity to withstand and recover from disasters.

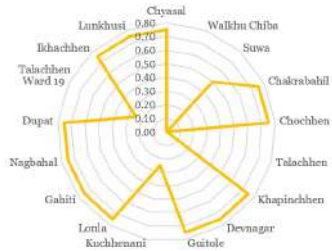


(fig. 50)—Resource mobilization capacity of various TSS
Source: Author

Leadership

The analysis highlights the significance of leadership within TSS and its contribution to better performance. The responses highlight instances where TSS leaders have taken independent initiatives to address community needs. Such independent actions demonstrate the leadership's ability to identify gaps, respond promptly, and adapt to the evolving needs of the community. Hence, leadership within TSS plays a vital role in mobilizing resources, motivating community members, and ensuring the organization's progress and effectiveness.

In terms of low performing TSS, the communities depicted certain similarities. These communities were characterized by smaller size and thus, a less active population to take initiatives within TSS. Respondents from these communities mentioned that majority of the families had relocated leading to a weakened sense of belonging and reduced com-



(fig. 51)—Leadership capacity of the TSS
Source: Author

munity engagement. The younger generation did not possess a strong sense of communal unity and showed little interest in community affairs. Additionally, a lack of effective leadership was observed in these communities. The absence proficient leaders hindered the coordination and direction of community efforts, further impacting the performance of the TSS.

6| Discussions

6.1 Social Capital: Community Solidarity and Engagement

"Disasters happen to entire communities. Members are exposed together and must recover together" (Norris et al. 2008). Especially in the context of Nepal, where communal living and social capital is predominant, it is important to understand that disasters can affect entire communities and that recovery efforts must be undertaken collectively in order to be effective. Hence, disaster readiness is not only about improving physical preparedness but also about fostering social change within communities.

In order to improve the resilience of communities, there needs to be a concerted effort to develop economic resources, reduce risk and resource inequities, and attend conscientiously to areas of greatest social vulnerability. This can involve engaging with local people at every stage of the DRM process, building organizational linkages and relationships well in advance of any disaster, and protecting and enhancing crucial social support structures. At the same time, effective disaster planning must involve not only creating plans but also planning for the possibility that plans may not be effective in every context. Community involvement is crucial in ensuring that projects align with local realities and address the specific needs of the community. By actively involving local individuals, particularly women, in decision-making processes, their participation and ownership of the projects are encouraged. Women have historically played a central role in Nepalese households, and it is important to recognize their valuable contributions. Given their responsibilities in caring for the young and the elderly, it is imperative that women are equipped with knowledge and awareness about

disaster management.

Fostering relationships and building social networks within a community can have significant benefits for building a strong and resilient community. When residents of a community have relationships with other members, participate in social organizations, and engage in community activities it can encourage a greater sense of attachment to the community itself. This can help to improve their access to both actual and perceived social support, strengthen feelings of trust, and establish norms of reciprocity that help to build a sense of social capital within the community. Additionally, such relationships can promote a greater sense of community, which can be defined as a shared sense of belonging, wherein members feel that they matter to one another, and have a shared faith in their ability to meet each other's needs by working together ((Chandra et al. 2010) in (McMillan & Chavis, 1986).

The research conducted by (Bhandari 2014) and (Bhandari et al. 2011) discuss social capital mobilization, urban rituals, and disaster risk coping in connection with the 1934 Kathmandu Valley earthquake. The studies highlight the enormous potential of social capital within local organizations such as Guthi, youth groups, mothers' groups, and other civic groups, as well as the crucial role of ritual activities that are embedded in a community. The studies argue that despite these strong capacities, they are not accorded enough recognition and support. Hence, to build more resilient communities in Nepal, it is necessary to better understand and appreciate the potential of these social resources and to actively engage and support them as meaningful partners in disaster preparedness and recovery.

However, "Strong social capital associated with ethnic groups can have a downside" (Bhandari 2014). In the case of the communities in Patan, the strong social capital associated with this ethnic group can have negative externalities for non-Newars or people from outside the community. For instance, they may face discrimination and exclusion from community programs and organizations. This can limit their opportunities for social and economic mobility and perpetuate inequalities. Additionally, the high level of social solidarity within the Newar community may limit individual members' freedom to break from the system, which could lead to further marginalization and ostracization of those who do not conform to the community's norms and values.

6.2 Tole Sudhar Samiti : Within the community, for the community

Local communities and the embedded social organizations have a unique understanding of the hazards that threaten their environment, often gained through personal experience with past disasters. This contextual knowledge is invaluable in comprehending the complex and constantly evolving risk landscape (Sharma et al. 2022). TSS within several communities, as an advocate of the community, has been successful in leveraging this contextual knowledge to develop tailored disaster risk reduction strategies and initiatives.

Acknowledging its significance, there has been a growing focus on the involvement of local actors in DRR. This approach recognizes that sustainable solutions can best be achieved by empowering local communities to take ownership of their own development, drawing on their own capacities and interests, while also working collaboratively with external partners (Rolsted and Raju 2020). By bringing individuals, groups, and organizations together in a comprehensive and cohesive manner, community resources can be developed to foster resilience in the face of disasters ((Chandra et al. 2010) in Morrow, 1999). The collaborative approach allows communities to work together to establish a strong foundation, enhancing their ability to respond effectively to crises and build long-term sustainability.

The findings of the study highlight the unique social and cultural context of Nepal, where communities, such as the Newar community, exhibit strong bonds and a sense of interconnectedness essential for fostering collective action. Practices that lack an appreciation for cultural heterogeneity and narrative of resilience can exacerbate existing vulnerabilities, rendering disaster response and management less effective in their goals. Hence, by integrating cultural diversity and inclusive narratives into disaster response and management, the complexities of disasters can be better address to create sustainable, equitable solutions (Mori et al., 2019).

Through its engagement with TSS, the community has taken a more holistic approach to disaster management in general. This not only includes the ad hoc response and short-term recovery phases but also focuses on pre-disaster risk reduction measures. These measures include risk assessments, preparedness planning, early warning systems, and community education and awareness

activities. TSS has been instrumental in facilitating this community empowerment, which has furthered the ability of disaster-affected populations to forge resilience, which may even help to mitigate disasters in the future. Through continuous efforts TSS has advocated that resilience can be cultivated and strengthened from within the community.

6.3 Towards Resilient Communities: Stakeholder Dynamics

Understanding and addressing changes in stakeholder dynamics, such as shifts in roles, responsibilities, and relationships is a key aspect in building community resilience that facilitates adaptive decision-making and promotes agility in the face of an uncertain risk landscape. To improve resilience across all levels of society, including individuals, groups, and institutions, it is critical to have a (adjective) framework in place that can guide efforts and (Pal et al. 2020) and foster collaboration among stakeholders. By working together under a shared direction, stakeholders can develop a comprehensive approach to disaster management that promotes preparedness, response, and recovery.

Shifting from the perspective of people and systems being simply interconnected, to the concepts of interdependence and interrelation, thinking and acting in systems is a crucial step towards building resilience. This shift involves recognizing that individuals and organizations are interconnected components of the same system (UNDRR 2022). Failure to involve grassroots organizations like TSS, women's group, among other stakeholders can lead to systemic risks and inequalities, compromising the long-term sustainability and development of communities in the modern state. By examining the dynamics and interactions between TSS and relevant stakeholders in the public and private sectors, opportunities for effective partnerships, knowledge sharing, and coordinated actions can be identified, contributing to enhanced DRM.

Although Nepal has made progress in developing policies and plans for DRM, there are still implementation gaps due to unclear roles and responsibilities at different levels of government. Inadequate institutional coordination, both within and between government and non-governmental organizations further leads to duplication of efforts, and redundancy in the disaster management process (Pandey 2019). These gaps hinder the effectiveness of DRM efforts emphasizing the need for improved coordination and utilization of available resources.

(Pandey 2019) suggests that GoN and existing disaster policies can be further developed with concrete provisions to facilitate, train and prepare local communities to be better responders and disaster resilient through effective preparedness, disaster risk reduction, and disaster management plans.

Although there have been some disaster preparedness efforts from the government and TSS in the local level, the focus of disaster management in Nepal predominantly revolves around post-disaster relief and recovery efforts, often carried out in an ad hoc manner and with insufficient resources. This reactive approach prioritizes addressing immediate needs while providing limited attention to disaster mitigation and better preparedness within broader DRM efforts ((Pandey 2019) in (ICIMOD, 2007)). By empowering community initiatives through social organizations like TSS and women's group among others, communities can develop sustainable solutions and enhance their resilience against disasters. Furthermore, partnerships with these entities can provide opportunities for resource sharing, capacity-building, and knowledge exchange, strengthening the overall disaster management ecosystem.

6.4 Plannig for Uncertainty: TSS in the modern state

As communities continue to grow and evolve in the modern state, the role of social organizations like TSS becomes increasingly crucial in ensuring effective DRM and strengthening community resilience amidst planning for uncertainty. To effectively address the challenges and changes brought about by urbanization, population growth, and climate change, TSS must adopt innovative strategies and approaches that align with the needs and dynamics of these growing communities.

The study emphasizes the vital role of community participation and collective efficacy, where individuals rely on their in-group, such as family, ethnic groups, and community, illustrating the cultural interdependency and social bonding within Nepalese communities. The shared norms and values within this framework significantly influence people's behavior (Adhikari et al., 2018). This is particularly prevalent in the studied communities where the success of TSS could be attributed to the strong social and cultural ties supported by traditional community practices like Guthi. Although in newly formed modern communities characterized by diverse ethnicities, cultures, traditions, and val-

ues, the dynamics are different, TSS holds immense potential to thrive in these growing environments. By actively fostering new social connections, TSS serves as a platform for cultural exchange, mutual understanding, and collaboration, thereby bridging gaps and uniting community members despite their diverse backgrounds.

As TSS adapts to the changing needs of the communities in the modern state, it remains essential to uphold the core values that underpin their work such as community ownership, participation, and inclusivity. Remarkably, it was observed that individuals and families who had migrated from other communities actively joined the TSS in their new locations, showcasing the organization's ability to integrate diverse members into the community fabric. Sharing success stories and highlighting the positive impact of TSS in communities can further cultivate a sense of appreciation and understanding among residents, reinforcing the role of TSS in strengthening community resilience and preparedness for an uncertain future.

6.5 Potentials and Limitations of TSS

Based on the study conducted, it is evident that TSS plays a significant role in enhancing community disaster resilience by enabling communities to adopt preparedness measures, respond promptly during crises, and contribute to long-term recovery process. The findings highlight the potential of TSS to serve as a reference model in growing communities. The success and effectiveness of TSS in promoting disaster resilience can be attributed to its community-driven approach, which fosters active participation, collaboration, and resource mobilization among community members.

Strengthen Social Capital: Through active engagement, coordination, and mobilization of community members, TSS fosters sense of belonging, social trust, and cooperation, thereby strengthening social ties and networks. By facilitating collective action, promoting community participation, and fostering a culture of mutual support and shared responsibility, TSS plays a vital role in enhancing social capital. However, to fully realize the potential of TSS in strengthening social capital, it is crucial to address challenges such as inclusivity, gender disparities, and the evolving dynamics of social networks.

Localized Disaster Planning: TSS can contribute to localized disaster planning efforts by incorporating community-specific knowledge and needs. By engaging community members in decision-making processes, TSS can ensure that disaster plans and strategies are tailored to the specific vulnerabilities and unique circumstances of the community.

Community Resource Mobilization: By identifying and leveraging local assets, such as human resources, traditional knowledge, and community networks, TSS can enhance the capacity of the community to respond and recover from disasters. This includes organizing volunteer networks, establishing community-based emergency response systems, and facilitating resource mobilization.

Collaborative Partnerships: TSS can actively engage with relevant stakeholders, including local government, non-governmental organizations, and private sector entities, to foster collaborative partnerships. By building strong relationships and networks, TSS can access additional resources, expertise, and support for community resilience initiatives. These partnerships can enhance the overall effectiveness and sustainability of disaster risk reduction and management efforts.

Limitations

Moving forward in the modern state, TSS encounters certain limitations that need to be addressed for its effective functioning and adaptation to the changing dynamics of communities.

Resistance to change: It was observed that the traditional communities may be reluctant to abandon their deeply rooted traditions and customs. The preservation of cultural identity and resistance to include non-natives or women can hinder the adoption of modern strategies that could enhance disaster resilience. Balancing the preservation of cultural heritage with the need for innovation and adaptation is an ongoing challenge for TSS in traditional communities.

Limited financial resources and infrastructure: TSS operates within the constraints of limited funding, which can restrict its capacity to implement comprehensive disaster preparedness and response initiatives. Insufficient community amenities and infrastructure, such as emergency shelters, can hinder TSS's ability to effectively respond to disasters. Overcoming financial and infrastruc-

tural limitations requires collaborative efforts between TSS, the government, and other stakeholders to secure adequate resources and develop the necessary infrastructure.

Capacity building and training: Limited access to training opportunities and lack of awareness about disaster management practices can hinder the capacity of TSS members to effectively carry out their responsibilities. Building the capacity of TSS members through training programs and knowledge-sharing initiatives is essential for their continuous development and adaptation to evolving challenges.

In the modern state, TSS also faces the challenge of engaging diverse and multicultural communities. As communities become more diverse, TSS needs to develop strategies to effectively engage and address the unique needs and perspectives of different cultural groups. Cultivating inclusivity, cultural sensitivity, and understanding is crucial for TSS to build trust and establish strong relationships with community members from various backgrounds.

7| Conclusion and Recommendations

The study extensively examined the role of Tole Sudhar Samiti (TSS) in strengthening community resilience across the four domains of community disaster resilience: social capital, community competence, physical infrastructure, and institutional capacity. The findings from the analysis of the data collected through interviews revealed several interesting insights on how TSS fosters social cohesion, facilitates collective action, and promotes a sense of ownership and responsibility among community members. The study highlights the aspect of strong social capital within these communities in the form of social and cultural ties and interactions that contribute to the social fabric, enabling individuals to rely on each other for support, cooperation, and shared resources.

Community participation and effective leadership emerged as crucial factors in strengthening community resilience. Through active engagement with TSS, local residents were able to address their specific vulnerabilities and enhance their risk management strategies in the uncertain risk landscape. TSS served as a platform for community members to collaborate, share knowledge, and collectively respond to challenges. The presence of strong leadership within TSS further facilitated effective coordination and direction of community efforts, reinforcing community resilience.

However, it is important to acknowledge that community-based approaches alone are not sufficient. Achieving effective disaster risk reduction requires collaboration at different governance levels and across various sectors. Establishing a supportive environment that encourages coordination and collabora-

tion between community-based initiatives, social organizations, government agencies, non-governmental organizations, and other relevant stakeholders is critical to strengthening community resilience. Additionally, capacity building is important to ensure that communities are aware of different types of disasters and possess the necessary skills to translate the gained knowledge into practical actions.

The effectiveness of TSS lies in its ability to mobilize local resources, encourage community participation, and cultivate the skills necessary to address disaster risks and vulnerabilities at the community level. The socio-cultural practices within the traditional communities provide a solid foundation for development of TSS, which can positively influence modern communities. Therefore, the findings of this study strongly support the relevance of TSS in the modern state and its potential as a practice model in growing communities to enhance resilience against disasters. By recognizing and embracing the role of TSS, communities can work towards building a more resilient future.

Recommendations

1. It is crucial for individuals to prioritize the collective well-being of the community over personal interests. To foster this communal mindset, social interactions and the development of a strong community culture are essential. In the context of traditional settlements in Kathmandu, it is important to sustain these cultural practices as they are already deeply ingrained. Additionally, the active involvement of the younger generation and new community members should be encouraged by revising outdated traditions in more effective ways.

2. Address the challenges stemming from inadequate disaster preparedness, limited public awareness, and insufficient financial and technical resources at the grassroots level. The capacity of the community members should be strengthened through periodic trainings and awareness programs that emphasize the importance and implementation of adaptive, coping, and participatory strategies. It is crucial to empower community members who often serve as the first responders during disasters by providing them with the essential knowledge and resources needed to effectively mitigate risks and manage potential emergencies.

3. Collaborate with women's organizations, representative entities, and civil society to facilitate capacity building and specialized training programs focused on women in the field of disaster risk management. According to feedback from respondents, women's organizations have exhibited higher levels of engagement in such initiatives, as they often have more flexible schedules as housewives, enabling their active participation in workshops and training sessions. It is worth noting that women's involvement in disaster risk management has historically been overlooked, making it crucial to address this disparity and provide tailored support and opportunities for their meaningful inclusion.

4. Foster continuous engagement and collaboration with stakeholders and private sector organizations to enhance effective partnerships for disaster management. By working together, sharing expertise, and pooling resources, the community can build stronger networks and improve disaster response and recovery efforts.

8| Future Research Directions

1. Conduct a longitudinal study to evaluate the long-term effectiveness of Tole Sudhar Samiti (TSS) initiatives in strengthening community disaster resilience in Patan, Nepal, tracking progress and analyzing impact over time.

2. Compare the role and effectiveness of TSS in different regions or settlements within Nepal to understand contextual factors that influence success and identify best practices for implementation.

3. Explore the gender dimensions of TSS and its impact on community resilience. Investigate how Women's group initiatives have empowered women and enhanced their participation in decision-making processes related to community development and disaster resilience. Examine the barriers and opportunities faced by women in engaging with these social organizations and identify strategies to further promote gender equality and inclusivity within them.

4. Evaluate the effectiveness of capacity-building programs conducted by TSS and other organizations in enhancing community members' knowledge, skills, and preparedness for disaster management, refining intervention design and delivery.

9| Annex

List of Key Informant Interviews (KII)

Disclaimer: To preserve anonymity and ensure confidentiality, it is important to clarify in the table or elsewhere in the document that the S.No in the table below is not indicative of the naming or identification of respondents.

S.No	Community/TSS	Ward No.	Number of Interviewee	Date of Interview
1.	Chyasal	9	1	21.03
2.	Walkhu Chiba	12	1	27.03
3.	Suwa	8	1	16.03
4.	Chakrabahil	12	1	27.03
5.	Chochhen	12	2	24.03
6.	Talachhen	11	2	13.03 | 16.03
7.	Khapinchhen	9	2	13.03 | 15.03
8.	Devnagar	9	2	14.03 | 19.03
9.	Guitole	8	1	27.03
10.	Kuchhenani	20	2	26.03
11.	Lonla	8	2	12.03 | 16.03
12.	Gahiti	9 and 11	2	24.03
13.	Nagbahal	16	1	30.03
14.	Dupat	7	2	26.03
15.	Talachhen	19	2	20.03
16.	Ikhachhen	11	2	16.03 | 17.03
17.	Lunkhusi	6	2	17.03
18.	Ward Office Personnel	9 and 12	2	15.03 | 27.03
19.	LMC Office Personnel		1	31.03
	Total	31		

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إقرار

هذه الرسالة مقدمة في جامعة عين شمس وجامعة شوتجارت للحصول على درجة العمران المتكامل والتصميم المستدام. إن العمل الذي تحويه هذه الرسالة قد تم إنجازه بمعرفة الباحث سنة ...

هذا ويقر الباحث أن العمل المقدم هو خلاصة بحثه الشخصي وأنه قد اتبع الإسلوب العلمي السليم في الإشارة إلى المواد المؤخوذه من المراجع العلمية كلٌ في مكانه في مختلف أجزاء الرسالة..

وهذا إقرار مني بذلك،،،

التوقيع:

الباحث: سامجانا مهرجان

التاريخ: ٢٠٢٣

التخطيط لعدم اليقين: تقييم دور (TSS) في تقوية قدرة المجتمع على الصمود في مواجهة الكوارث

مقدمة للحصول على درجة الماجستير في العمران المتكامل والتصميم المستدام

سامجانا مهرجان: أسم الطالب

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جامعه شتوتغارت

لجنة الحكم

التوقيع

أ.د. .....الممتحن الخارجي
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تاريخ المناقشة:.....

الدراسات العليا

ختم الإجازة
موافقة مجلس الكلية .../.../...

أجيزت الرسالة بتاريخ:.....
موافقة مجلس الجامعة .../.../...

جامعة عين شـــــمس

جامعة شتوتجارت

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جامعة عين شـــــمس

جامعة شتوتجارت

التخطيط لعدم اليقين: تقييم دور (TSS) في تقوية قدرة المجتمع على الصمود في مواجهة الكوارث

رسالة مقدمة للحصول على درجة الماجستير في العمران المتكامل والتصميم المستدام

إعداد

(سامجانا مهرجان)

المشرفون

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