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**SPATIAL TRANSFORMATION AND ITS IMPACT ON SOCIAL
VULNERABILITIES IN TRADITIONAL CITY CORE**

(A Case of Asan)

By

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A THESIS

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I hereby declare that the thesis entitled “**Spatial Transformation and its Impact on Social Vulnerabilities in Traditional City Core (A Case of Asan)**” submitted to the Department of Architecture in partial fulfillment of the requirement for the degree of Masters of Science in Urban Planning, is a record of an original work done under the guidance of Asst. Prof. Dr. Inu Pradhan Salike, Institute of Engineering, Pulchowk Campus. This thesis contains only work completed by me except for the consulted material which has been duly referenced and acknowledged.

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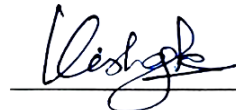


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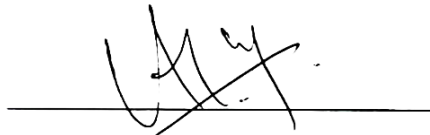


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ABSTRACT

Urban spaces are constantly evolving, shaped by socio-economic, cultural, and political influences explores the impact of spatial transformations on social vulnerabilities within traditional urban cores, with a specific focus on Asan. Asan, a historic and culturally significant marketplace, is experiencing rapid changes due to urbanization, commercialization, and modernization. These changes include the replacement of traditional architecture with concrete buildings, the conversion of residential homes into storage spaces, and the encroachment upon open and communal spaces. Asan, located along the Heritage Walk designated by Kathmandu Metropolitan City (KMC) and a site of major festivals and cultural processions, is in critical need of conservation to retain its traditional character. These transformations have disrupted social cohesion, displaced native communities, and led to the loss of cultural identity and public spaces.

The study uses a mixed-method approach combining spatial analysis, surveys, interviews, and historical comparisons to examine how physical changes in Asan, such as increased FAR, modern building types, and reduced open spaces, have led to rising social vulnerabilities. The major impacts include cultural erosion, weakened social cohesion, reduced public safety, and the decline of traditional institutions like guthis. The shift from residential to commercial use and a lack of community involvement have further disrupted the area's social fabric.

By assessing the relationship between spatial transformations and social dynamics, this research provides insights into the challenges faced by historic urban cores. It underscores the need for strategic interventions such as transfer development rights (TDR), incentives, mandatory rule to maintain traditional façade in jatra by local authorities and communities to balance modernization with heritage conservation. The study proposes actionable recommendations for local governments and communities to manage spatial transformations in a manner that preserves Asan's historical identity and strengthens its social resilience.

Keywords: Spatial transformation, social vulnerability, traditional city core, urbanization, transfer development rights (TDR), Asan

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LIST OF ACRONYMS

FAR	Floor Area Ratio
KII	Key Informant Interview
KMC	Kathmandu Metropolitan City
KVDA	Kathmandu Valley Development Authority
NSDF	National Spatial Development Framework
SoCR	State of Cities Report
TAPZ	Traditional Architecture Preservation Zone
TDR	Transfer Development Rights
UN-ISDR	United Nations International Strategy for Disaster Reduction
VDC	Village Development Committee

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1 INTRODUCTION

1.1 Background

Urban change is a global phenomenon with widespread consequences on urban form and life across geographical regions. The changing pattern of urban growth has transformed how public spaces are developed and used in the new neighborhoods of modern cities. Cities have been in a continual state of transition since their evolution. However, significant transformations in urban form and lifestyle have taken place over the past centuries, largely driven by widespread industrialization and modernization in the Western world (Chitrakar et al., 2017). Urban growth is understood as both physical and functional transformation resulting from the conversion of rural landscapes into urban environments (Thapa & Murayama, 2010). In Nepal, this demographic shift is marked by a rapid rise in population density, particularly in major cities, areas along key highways, and regions near the Indian border. By 2021, the urban population had surged to 66.2%, a significant increase from just 17.1% recorded in 2011. In contrast to this, the rural population has decreased to 33.8% in 2021 in comparison to 82.9% in 2011 (NSO, 2021). The rapid growth in population has led to mismanaged urbanization as more people are migrating to cities like Kathmandu, Bhaktapur and Butwal making it more populous.

According to Bobic (1990), “When there is notable incompatibility between the rhythm of activities and the form of the space, when it is not possible to adjust the existing with the new, then there is the spatial transformation”. Traditional urban neighborhoods across the globe have undergone significant transitions from conventional to modern planning and design, influencing functionality, social behavior, economics, and the environment. The rapid pace of technological and functional advancements has often compelled these spaces to adapt faster than their natural evolution allows. While well-managed transformations can bring positive benefits, unregulated changes have led to the erosion of cultural values, the fragmentation of local identities, and the creation of inefficient urban environments (Hassan, 2018). This has sparked concerns about whether such spaces can genuinely fulfill the needs and aspirations of the people.

Likewise, Unregulated densification, demolition, and changes in occupancy have deteriorated the streetscape in historic city core. The proportion between street width

and building height falls outside the ideal range, resulting in a lack of spatial enclosure and weak street definition (B. K. Shrestha, 2011). Existing bylaws are insufficient to manage these issues and fail to ensure street definition or visual harmony. Weak enforcement by KMC, especially on height limits, further aggravates the situation. In historic cores, such unchecked spatial changes contribute to social vulnerabilities, impacting migration, cultural preservation, cohesion, and safety.

Traditional neighborhoods, including historic cores like Asan, are increasingly repurposed to accommodate economic functions such as trade, storage (godowns), and rental use, replacing their earlier residential and communal roles. This shift has economic motivations where property owners capitalize on rising land values and rental income from commercial tenants, often at the cost of cultural continuity and social cohesion. Traditional homes are converted into godowns and retail spaces to meet market demands, drastically altering the spatial configuration and use of these historically significant areas. Rising property prices have pushed native residents out, while commercial investors and renters, with little cultural stake, move in. This disrupts traditional institutions like guthis and communal rituals, threatening the intangible heritage that defines Asan's identity. As a result, the continuity of cultural practices and rituals is at risk, with younger generations becoming disconnected from their heritage.

Furthermore, economic activities have outpaced regulatory capacities, leading to unauthorized vertical expansion, façade alterations, and the encroachment of open spaces for commercial or vehicular use. These developments not only degrade the visual and functional integrity of the heritage streetscape but also intensify social vulnerabilities by fragmenting long-standing community ties.

Asan lies under the route of Heritage Walk drawn by KMC as many festivals, jatra is performed here, there is immense need of conservation of traditional character. Jatra route is meaningful when there are people viewing and enjoying the moment to make it feel livelier but now during jatra also many houses in Asan are vacant due to migration of local which has automatically degraded the cultural values creating loss in culture and tradition. Also, modern houses over the traditional one has exacerbated the conditions. Not only the buildings but open spaces use has also been changes from a gathering space where people celebrate social and cultural activities is now used for

parking creating a social vulnerability by a weakening of social cohesion and the erosion of local traditions.

While spatial transformations are inevitable in any growing urban environment, the challenge lies in managing these changes in a way that preserves cultural identity and social structures. Unplanned and unchecked transformations risk fragmenting communities, diminishing traditional networks, and creating social vulnerabilities. Thus, it is essential to examine how these spatial changes influence social vulnerabilities and what measures can be taken to ensure that the transformations align with the preservation of heritage and community well-being.

1.2 Need of Research

Spatial physical transformations are due to alteration in urban functions. To plan effectively for the future and guide the transformation of historic city cores undergoing rapid change, it is crucial to understand and evaluate their existing urban fabric in a more thoughtful and innovative way (Kapoor et al., 2022). Urban built and social environment characteristics, such as densely concentrated populations and activities, complex socio-economic systems, and bases of major political and economic institutions, make the urban space a crucial center of analysis for vulnerability studies as increasing and concentrated vulnerabilities lead to greater disaster risk (Wamsler et al., 2013).

Shrestha, (2015) discuss about the uses of the square, but it lacks a comprehensive examination of the spatial transformation over time. Beside this Anil Nepal, Ankit Kr. Shah, Praveen Maharjan, Sanjaya Maharjan, (2018) a seminar report regarding the surface study of urban space and its social perspectives has been prepared about Asan. There has been lack of study in Asan about the spatial transformation of then and now setting explaining how physical setting has caused social vulnerability. It highlights the importance of studying social vulnerabilities by exploring physical aspects such as the layout of homes, building heights with street width, population density, road and vehicle congestion, and availability of open spaces.

As Asan Bazar represents a significant part of Kathmandu's historical and cultural identity, research here is fundamental to preserving its unique character amidst the

pressures of modernization. Asan Bazar, a blend of commercial activity and religious significance, is transforming from a traditional marketplace to a diverse commercial hub. Due to commercialization, traditional character of Asan area is diminishing with the rise of concrete buildings. Commercialization has led to demand of more storage area due to which there has occurred change in spatial function from residential space to more storage space leading to migration, cultural erosion, weakened social cohesion, and safety concerns. Native residents are relocating, disrupting traditional guthi networks and diminishing communal interactions. Without proper urban planning and heritage conservation measures, there is a risk that Asan's unique traditions and cultural vibrancy will fade, replaced by a purely commercial landscape that prioritizes economic activities over social and cultural well-being. Asan lies under the route of Heritage Walk drawn by KMC as many festivals, jatra is performed here, there is immense need of conservation of traditional character. So, there is need of this research to provide the overview of such traditional city core and gives valuable recommendation needed to solve the existing issues in local and community level.

1.3 Importance of Research

The study aims to assist the Government, the private sector, civil society and the development partners - in framing policies and interventions for addressing the challenges, and seizing the benefits of rapid urbanization. By identifying and analyzing the spatial transformation of traditional market, the research can offer valuable insights into how changes in the use and design of urban spaces, and buildings affect local communities. As urban spaces like Asan Bazar are a tourist attraction, understanding their transformation is crucial for developing tourism in a way preserving its traditional identity. As urban areas expand and evolve, documenting spatial changes becomes critical for future urban planning and preservation efforts. Asan Square, with its rich history and ongoing transformation, serves as an ideal case study for understanding the broader patterns of spatial change in Kathmandu and similar cities. The research findings are expected to inform policy-making, particularly in urban planning and heritage conservation.

1.4 Problem Statement

Kathmandu valley has been facing rapid urbanization, causing high rural urban migration trends, real state growth in new emerging cities, poverty and inequality, crime and insecurity, resource crisis, loss of culture, traffic problems, increasing slums and garbage, indecisive political structure, unstable local bodies, lack of clear urban policy and so forth are the major challenges in urban centers of Nepal. (Devkota, 2012)

As Bobic (1990, p.82) explains, spatial transformation occurs when there is an incompatibility between the rhythm of activities and the form of the space, requiring a physical restructuring of the environment. In Asan Square, spatial transformation is evident through the replacement of traditional character of core area with modern concrete buildings. Tendency to erect new taller buildings violating the bye laws with entirely new functions is very prominent to be seen. The process of spatial transformation, driven by urbanization and modernization, has significantly changed people's lifestyles. Modern living now prioritizes contemporary demands over traditional ideas of contentment with a simple livelihood. Local people choose to rent out their houses at high prices, taking advantage of the increasing demand for housing in the city. The transition of activity to trade and commerce has made the city core an economic center which has created demand for more storage area to store their stocks so the space rented are more utilized for godown purpose creating a change in social structure, dynamics and mobility.

With native residents migrating to suburban areas, the traditional guthis, community groups formed by people of the same caste have become dispersed. Since Asan lies in the Heritage Walk route as many processions route passes through, it has high cultural value. But due to migration of locals, the buildings are in vulnerable conditions not being able to reconstruct due to various reasons like financial crisis, family disputes, etc. This has impacted the cultural value of this place as jatra route is meaningful when there are people viewing and enjoying the moment to make it feel livelier but now during jatra also many houses are dead. When Jatras are performed in the street surrounded by the modern building, the cultural values automatically degrade. This shall get even worse which will further degrade in future times. Open spaces like courtyards are now used as parking space rather than the social gathering. Traditional

community practices and gatherings have diminished, replaced by a focus on trade and modern livelihoods. This dispersion has made it challenging to maintain the smooth functioning of guthis, posing a significant threat to the preservation of traditional culture and rituals.

These transformations of Asan Square have reshaped its physical, social, and cultural fabric, posing significant challenges to its traditional identity, community cohesion, and heritage preservation amidst rapid urbanization and modernization. The challenge lies in balancing modernization with heritage conservation to ensure that Asan retains its cultural integrity while adapting to contemporary urban needs.

1.5 Research Objectives

Urban areas worldwide are experiencing rapid transformations, driven by urbanization, modernization, and demographic shifts. These transformations bring significant changes to physical space, often resulting in vulnerabilities. The research objectives are:

Main objectives

To analyze spatial transformations and assess their implications on social vulnerabilities.

Specific objectives

1. To understand spatial transformation and evaluate change in physical space.
2. To analyze the impact of spatial transformation on social vulnerabilities.
3. To develop strategy for local government/community interventions to manage spatial transformation and reduce social vulnerabilities.

1.6 Limitations

The study is limited to the buildings aligned to the street (way to Bhotahity, Bangemuda, and Balkumari) to evaluate changes in built forms, public spaces, and urban functions caused by spatial transformations in Asan. It focuses exclusively on Asan, which, while rich in historical and cultural significance, may limit the generalizability of findings to other urban areas with differing contexts and challenges. While the research

acknowledges the economic dimension, particularly in relation to commercialization, rental practices, and property value escalation, it does not provide an in-depth economic analysis of the financial impact of spatial transformation on businesses and property values. Instead, the economic aspect is considered as an influencing factor in the broader understanding of social vulnerabilities and spatial transformation. Study only deals with social vulnerability concerning migration, culture and tradition, social cohesion without extensively quantifying the economic consequences.

1.7 Topic Validity

The study of spatial transformation and social vulnerabilities in Asan Square is critical due to its historic and cultural prominence. Asan has undergone rapid changes, including the loss of traditional Newar architecture, commercialization-driven, building use changes, and shrinking social spaces. Tall concrete buildings replace heritage structures, violating building by-laws. Commercialization has shifted residential spaces to storage use, reducing community interactions and disrupting traditional social practices. Native residents are displaced to suburban areas, weakening traditional community structures like guthis. Cultural vulnerabilities stem from the erosion of historic identity and rituals. Asan Square is an ideal case study to understand the complexities of urbanization and propose strategies.

1.8 Expected Outputs

This research aims to analyze the spatial transformations of Asan Square, a historic hub in Kathmandu, to identify social vulnerabilities and propose strategies for resilient urban development. It examines the physical evolution from traditional architecture to modern concrete structures, assessing the associated risks, including loss of cultural identity, social capital, social security. The study also explores socio-cultural dynamics, highlighting the diminishing role of community structures and traditional practices due to commercialization and urban migration. Using a mixed-method approach, including survey, the research seeks to document changes, understand their impact, and offer policy recommendations. The findings will provide a model for addressing urban challenges in other historic cores, emphasizing the integration of heritage conservation and community resilience in urban planning.

2 LITERATURE REVIEW

2.1 Spatial Transformation

Spatial transformation is process of the changing land use, expanding built up areas and changing of urban forms. According to Bourne (1976) there are 4 main processes in urban land use change:

- The extension of the urban edge or sub urbanization
- The renewal of the central area
- The expansion of the infrastructures especially transport
- Growth & decline of nucleation's e.g. Industry, Institutions, etc.

Angela Million describes spatial transformation as the intrinsic link between space and time, emphasizing how spatial constructions evolve over time, human interactions occur within spatial and temporal contexts, and movement through space inherently involves time.

The National Spatial Development Framework (NSDF) describes spatial transformation as the restructuring and reorganization of settlements and economic activities, moving away from the segregated spatial patterns shaped by colonial and apartheid eras. This shift aims to correct the resulting inefficiencies, injustices, and unequal access to opportunities. The 2016 State of Cities Report (SoCR) by SACN illustrated spatial transformation in metropolitan areas by analyzing changes in urban footprints, built form, and density.

According to Bobic (1990), "When there is notable incompatibility between the rhythm of activities and the form of the space, when it is not possible to adjust the existing with the new, then there is the spatial transformation". He defines rhythms as the main stay of the spatial structure's development and the cause of transformation, determining character and meaning. Changes in the size of activities, communication routes, general changes in the physical relationship between the space's dimensions and form are characteristic of this type of transformation.

Spatial transformations of form arise more slowly as they are linked to certain activities that determine and build onto space, but also because space by its basic properties space

almost always has a certain degree of adaptability and plasticity that amortizes changes, adapting itself to new demands. Understanding spatial transformation is key to guiding social transformation, as it reveals how physical space, cultural practices, and societal structures are interconnected and influence one another.

Spatial transformation is a dynamic socio-spatial process shaped by the interaction of space, need, idea, order, shape, and meaning. It is not random but driven by specific contextual needs that lead to the creation of structured forms, which evolve over time. Spaces carry meaning shaped by human emotions and experiences, influencing behavior and the built environment. This creates a continuous cycle where social dynamics generate new demands, leading to further modifications. Shaped by various stakeholders, this process highlights the interconnectedness of space and place (Planning et al., 2021).

The physical change of urban settings has been the focus of several disciplines concerned mainly with the morphological characteristics of settings. Urban morphology is the field concerned with the study of physical forms of urban contexts and their formation and transformation through time. It focuses on analyzing the connections between the individual components of urban form and how these elements relate to the overall structure as a whole (Kropf, 2014).

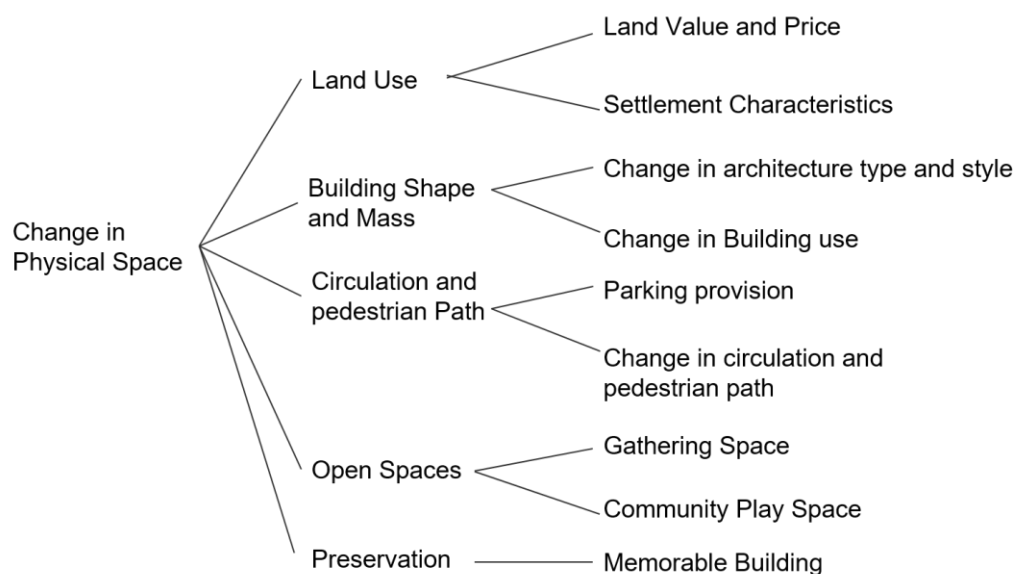


Figure 1: Elements of spatial transformation of urban architecture

Land utilization and land value transformation are a core phenomenon in urban architectural elements transformation. This phenomenon is influenced by changes in

circulation, pedestrian ways and parking areas. Changes in characteristics can be seen in the transformation of housing from emergency to permanent, with an increase in the intensity of land use in the Building Coverage Ratio (BCR), Floor Area Ratio (FAR) and Green Area Ratio (GAR) as required (Suriandjo et al., 2023). When land uses change, it will have an impact on changes in the type and architectural style of the area. The transformation of land use and value occurs as a result in changes in the meaning of open space in the area.

Nepal's demographic transformation is marked by rapid urbanization, with population density rising in major cities, highways, and border areas. Urban growth has continued at 3.4% annually (2001–2011), driven by rural-to-urban migration due to poverty, limited education, and job opportunities in rural areas. Districts like Ramechhap, Khotang, and Manang face population decline, while Bhaktapur, Rupandehi, and Chitwan experience growth due to new urban centers. Political decisions like reclassifying VDCs as municipalities and road construction have fueled urbanization. The Kathmandu Valley, home to one-third of Nepal's urban population, is transforming into a fast-growing metropolitan hub with 4.3% annual growth, integrating urban cores with suburban and satellite areas while grappling with urban sprawl (Muzzini & Aparicio, 2013).

2.2 Principles of Spatial Transformation

Spatial Transformation refers to a process that is both spatially defined and socially integrated. It involves a series of interconnected practices motivated by material factors, aimed at deliberately modifying the form, substance, and dimensions of urban spaces to align with the principles of a fairer social order (Williams, 2000: 169). At a fundamental level, Williams (2000) proposed that meaningful transformation requires:

- a change in power imbalances;
- the restructuring of space to achieve increased efficiency, spatial justice and equity;
- institutional transformation;
- developing organizational and managerial capacity; and
- a focused vision and plan to achieve a transformative goal.

2.3 Drivers of Spatial Transformation

The drivers of spatial transformation are created and shaped by a combination of internal and external factors that influence urban development processes over time. These drivers are made through the interaction of various forces across different scales i.e local, regional, national, and global (Dadashpoor & Malekzadeh, 2020).

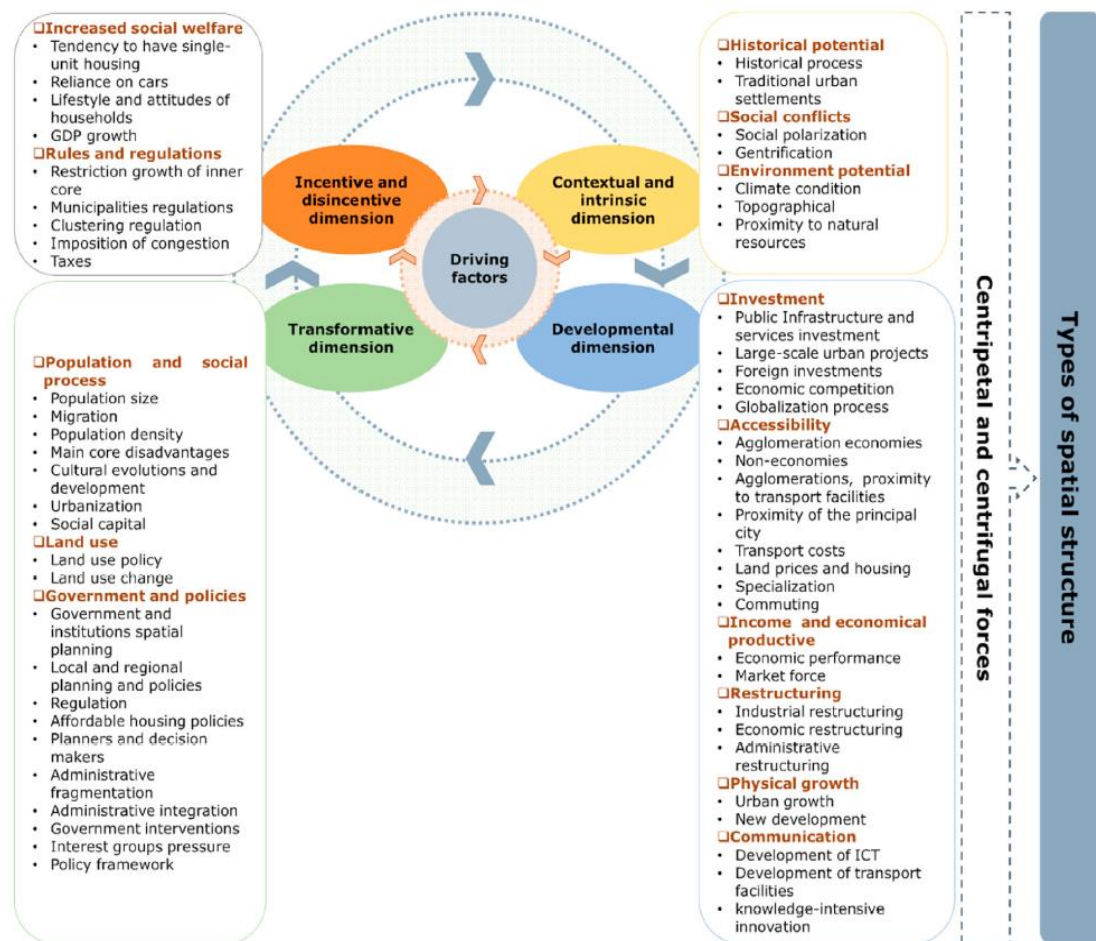


Figure 2: Driving factors the formation, development and change of spatial structure

- Developmental Dimension**

The developmental dimension shapes metropolitan spatial transformation through economic and physical growth. Rising incomes, job opportunities, and economic productivity drive urban expansion. Infrastructure development, including transport and public services, enhances connectivity and attracts investment. Large-scale public and private projects, such as residential complexes and commercial hubs, influence settlement patterns. Urbanization, marked by population influx, increases housing and

service demand, fostering further growth and reshaping urban landscapes through continuous spatial and economic transformation.

- **Transformative Dimension**

The transformative dimension drives major changes in metropolitan spatial structures. Demographic shifts, including population growth and migration, reshape housing, jobs, and services. Government policies, such as zoning laws and urban plans, guide growth and sustainability. Economic shifts, like the transition to service and digital economies, redistribute industries and employment. Technological advancements in transport and digital connectivity enable remote work and e-commerce, reducing reliance on central business districts and promoting decentralized urban expansion.

- **Incentive and Disincentive Dimension**

The incentive and disincentive dimension shapes population and activity distribution in metropolitan areas. Social welfare improvements, like healthcare and education, attract people, while high living costs and congestion drive them away. Regulatory policies, including tax incentives and land-use rules, influence investment and development. Transportation accessibility encourages suburbanization, while high costs and congestion deter movement. These factors lead to population and economic redistribution, with some areas thriving while others face decline.

- **Contextual and Intrinsic Dimension**

The contextual and intrinsic dimension shapes spatial transformation through historical, cultural, geographical, and social factors. Heritage sites and cultural institutions influence urban identity and renewal. Natural features like rivers, mountains, and climate conditions guide city expansion and development feasibility. Social dynamics, including community preferences and ethnic compositions, affect space utilization. These stable factors provide a framework within which economic, political, and technological forces drive urban change, shaping long-term metropolitan development patterns.

2.4 Spatial Transformation as a determinant of Social Change

According to (Surya et al., 2018), Rapid spatial and physical transformations serve as key factors influencing shifts in social structures, initiated by the emergence of building functions characterized by contemporary architectural styles. Spatial transformation alters social structures, shifting from a single formation to multiple coexisting systems, including capitalist and non-capitalist modes. This creates inequalities in spatial control, changes urban and suburban lifestyles, and reshapes development patterns. It also affects landscapes, building proportions, and architectural styles, particularly in suburban areas, often leading to environmental issues and unbalanced spatial growth. As native populations adapt to urban environments, traditional cultural practices may either evolve or disappear under the influence of modernization. New town developments introduce modern architectural designs and facilities that may overshadow indigenous styles, causing a gradual erosion of local cultural heritage. The influx of migrants can create cultural assimilation or conflicts, influencing community dynamics and leading to shifts in social norms and values.

No	Spatial Physical Transformation Process	Construction Activities	Direction of Social Change and Impacts
1	Characteristics of Land Use Forms & Area Morphology Changes	<ul style="list-style-type: none"> • Development of economic activities (economic activities functions of the new town area Moncongloe-Pattallassang • Development of social activities of new town area Moncongloe-Pattallassang • Construction of new and large scale settlement areas 	<ul style="list-style-type: none"> • The ability in spatial articulation process and control of reproduction of space • Changes in Social Formation • Changes in social interaction and social adaptation
2	Characteristics of Building	<ul style="list-style-type: none"> • Changes in the building composition of building coverage ratio(BCR), floor area ratio(FAR), height of the building. • Building materials • Building architecture • Layout of the building • Status of the building • Function of the building • Building density • Orientation of buildings utilization 	<ul style="list-style-type: none"> • Relation and patterns of labor relation • Changes in social structure (strata, status and social class of communities) • Social change process • Social segregation
3	Characteristics of Settlement	<ul style="list-style-type: none"> • Building style and architecture • Settlement infrastructure service • Design pattern of settlement area 	<ul style="list-style-type: none"> • Social dynamic • Changes in the social order • Changes in social systems • Changes in environmental characteristics • Changes in cultural patterns
4	Characteristics of Circulation	<ul style="list-style-type: none"> • Population mobility • Transportation facilities and infrastructures 	<ul style="list-style-type: none"> • Changes in social mobility • Change the orientation of production activities

Figure 3: Spatial Physical Transformation and Direction of Social Change of Local Community

2.5 Vulnerabilities

According to UN-ISDR terminology, vulnerability is “The condition determined by physical, social, economic and environmental factors or process which increases the susceptibility of a community to the impact of hazards” (Anon 2009b). Vulnerability can also be defined as the degree of damage to a specific element or group of elements at risk caused by the occurrence of a natural event of a particular magnitude (Anon, n.d.).

Cutter (1996) identified vulnerability as the potential exposure of a place or people to hazards and the social conditions of these places and people. Therefore, it is a complex concept encompassing both spatial and non-spatial dimensions, indicating the degree to which individuals, communities, environmental systems, or physical structures are prone to damage or harm (Cutter 1996).

2.5.1 Different types of Vulnerabilities

According to the different types of losses, the vulnerability can be defined as physical vulnerability, economic vulnerability, social vulnerability and environmental vulnerability.

2.5.1.1 Physical Vulnerabilities

Physical vulnerability refers to the capacity of the built environment, including houses, roads, bridges, hospitals, schools, and government facilities, to resist damage from external impacts. It is commonly measured by the financial value of these physical assets situated in areas exposed to hazards.

2.5.1.2 Economic vulnerability

Economic vulnerability refers to the possible effects of hazards on economic resources and activities, such as disruptions to businesses and indirect consequences like rising poverty or unemployment. It includes the susceptibility of various economic sectors and households, particularly in terms of income, assets, and consumption, with these effects often assessed at the population level and recognized as either temporary or long-term.

2.5.1.3 Environmental vulnerability

Environmental vulnerability is the potential impacts of events on the environment (flora, fauna, ecosystems, biodiversity). The Hyogo Framework recognizes that environmental degradation contributes to disaster risk, and that disasters occur when hazards interact with, among other things, environmental vulnerability.

2.5.1.4 Social vulnerability

It is defined as the susceptibility of social groups to the impacts of hazards, as well as their ability to adequately recover from them (Cutter & Emrich, 2006). Social vulnerability assessments often prioritize socioeconomic factors, including age, race, and income, as these elements can significantly affect a community's capacity to prepare for and respond to hazardous events (Kashem et al., 2016). Social vulnerability is multidimensional; it is difficult to represent the concept in one model. Some factors are tangible and can be measured quantitatively, while others are intangible and cannot be measured by a quantitative indicator.

Social vulnerability is a critical aspect of the broader concept of vulnerability to a range of stressors and shocks, including instances of abuse, social exclusion, and environmental hazards. It describes the challenges faced by individuals, organizations, and societies in coping with the detrimental effects of multiple stressors. These challenges are partly rooted in the fundamental traits of social relationships, institutional structures, and cultural norms.

2.5.1.4.1 Factors of Social Vulnerability

Social Vulnerability is influenced by various factors, including demographics, economic conditions, individual circumstances, the built environment, and social capital (Turesson et al., 2024). Understanding these factors helps in developing effective strategies to reduce risks and enhance resilience in vulnerable populations.

Demography

Demographic factors significantly affect social vulnerability by shaping individuals' capacity to cope with disasters. Age is crucial, as elderly individuals may face mobility challenges, while children lack awareness and self-protection abilities. Education enhances preparedness, but lower levels limit access to vital information. Gender

differences can make women more susceptible to risks. Minority groups and immigrants face barriers such as language and cultural differences, while population changes can strain or deplete community resources and services.

Economy

Economic conditions heavily influence social vulnerability, determining individuals' and communities' ability to prepare for and recover from disasters. Financially strong municipalities can invest in protective infrastructure and emergency response, while economically weak areas may lack resources. Employment stability allows individuals to take preventive measures, whereas unemployment increases financial stress. Income disparities force low-income households into hazard-prone areas with inadequate housing and fewer recovery resources, exacerbating the impact of climate-related disasters.

The Individual

Personal factors, such as health status and risk perception, significantly impact social vulnerability. Individuals with chronic illnesses, disabilities, or mental health conditions require specialized assistance that may be limited during disasters. Risk perception affects preparedness; experienced individuals take proactive steps, while those unaware may underestimate risks. Access to information is crucial, yet socially marginalized individuals often face challenges in obtaining timely updates and support, increasing their vulnerability to hazards and limiting their response capabilities.

The Built Environment

The built environment plays a crucial role in determining exposure to risks and the ability to recover from disasters. Poor infrastructure, such as aging housing, weak drainage, and limited transportation networks, increases vulnerability. Low-income communities often live in structurally weak homes, making them more susceptible to damage. Accessibility to essential services like healthcare and emergency shelters is critical.

Social Capital

Social capital, including community cohesion and social networks, is vital in reducing social vulnerability. Strong social ties within a community foster mutual aid, information sharing, and emotional support, enhancing resilience during crises. Communities with high levels of social cohesion can better respond collectively to disasters, while isolated individuals face greater risks. Encouraging community engagement and strengthening support systems can reduce vulnerability by ensuring individuals receive timely assistance and resources when disasters occur.

Table 1: Factors of Social Vulnerability

Category	Demography	Economy	The individual	The Built Environment	Social Capital
Sub Category	Age Education Gender Marginalized groups Demographics change	The financial situation of municipalities Types of employment and unemployment Income and Wealth	Health status Risk Perception, Knowledge and information	Reliance in vulnerable infrastructure Infrastructure	Social cohesion on community level Social relations and networks

2.5.1.4.2 Drivers of Social Vulnerability

Social vulnerability is influenced by a combination of physical, social, economic, and environmental elements or processes that heighten the likelihood of individuals, communities, assets, or systems being affected by hazards (Stolte et al., 2024). Social vulnerability specifically relates to the social conditions that influence a community's or individual's susceptibility to harm. The study categorizes social vulnerability into several sub-dimensions, such as:

Table 2: Dimensions and its subdimensions of Social Vulnerability

Dimensions	Sub dimensions	Sub dimension Definition
Social	Awareness & Information	This involves an individual's awareness of hazards and the communication of information related to these risks, which includes the collection and transmission of data, perception of risk, and measures for preparedness.
	Crime and Conflicts	Unlawful actions and conflicts of varying magnitudes in urban areas, including concerns about crime, associations with gangs, and violations of regulations.
	Cultural and Traditions	Cultural beliefs, practices, and behavior influence how individuals and communities engage with their surroundings, social structures, and urban spaces. Rooted in historical traditions and religious values, these cultural aspects shape daily life and play a vital role in determining spatial organization and interaction within urban settings.
	Demography	This refers to the demographic characteristics of the citizens in a city such as age, education, and minorities. Migration cause change in the demographic status.
	Economic	Relate to the economy and economic system of a city that deals with poverty, occupation, and insurance.
	Governance	Organization - but not the execution - of urban development which includes planning, empowerment, and (stakeholder) collaboration.
	Health	This refers to health, patients, and medical support in cities which includes pre-existing medical conditions, medical equipment, and water treatment.
	Institutions	The practical execution by institutions of what is determined by the urban authorities such as knowledge & expertise, resource allocation, and aid & intervention.

Social vulnerability is the potential for loss and is a complex interaction among risk, mitigation, and the social fabric of a place. Cutter et al. (2003) provided generally accepted factors affecting social vulnerability. These include:

- lack of access to resources such as information, knowledge, and technology,
- limited access to political power and representation,
- social capital including social networks and connections,
- beliefs and customs,
- building stock and age,
- frail and physically limited individuals,
- type and density of infrastructure and lifelines.

2.5.1.4.3 Social vulnerability access to culture as a determinant

Social vulnerability refers to the degree of exposure and susceptibility individuals experience when confronted with various threats. This vulnerability is shaped by a range of socioeconomic, institutional, psychological, and cultural influences. Among these cultural factors, access to cultural resources is particularly crucial, as it facilitates the assimilation of both tangible and intangible values generated throughout human history. This access ultimately influences individuals' capacity to prepare for, respond to, and recover from adverse events across different situations. Social vulnerability is related to some potential risk that has multiple content associated with security, health, migration, natural disasters and the inability to respond to such threats due to a deficit of cultural values.

According to (Jesus & Tamayo, 2023) “Culture serves as a foundation for identity, social integration, and resilience”. Access to cultural resources enables individuals to acquire knowledge, develop critical thinking, and strengthen their sense of belonging. It influences their ability to respond to crises, participate in society, and pursue opportunities for social mobility. However, when cultural access is limited, individuals face greater difficulties in developing the skills and knowledge needed to navigate risks. Marginalized communities often experience cultural exclusion, leading to weakened social networks, reduced decision-making power, and increased economic instability. The lack of cultural participation can further reinforce cycles of poverty, discrimination, and exclusion.

Barriers to Cultural Access

- Financial constraints limit access to education, arts, literature, and heritage sites, preventing individuals from fully engaging in cultural experiences.
- A lack of access to quality education and cultural literacy programs hinders individuals from developing knowledge and creativity.
- Discriminatory policies, urban segregation, and the unequal distribution of cultural institutions prevent marginalized groups from participating in cultural activities.

Cultural Policies as a Tool to Reduce Vulnerability

- Expanding cultural institutions, libraries, and community centers to provide free and inclusive cultural programs.
- Integrating cultural literacy and creative learning into school curriculums to enhance students' engagement with cultural heritage and critical thinking.
- Ensuring equitable access to online cultural content and digital education resources, particularly for disadvantaged groups.
- Encouraging local participation in arts, music, and heritage preservation to strengthen social cohesion and identity.

2.5.1.4.4 Social Cohesion as a factor of Social Vulnerability

Sense of community, Social Capital, Social participation, Place of Attachment and Safety are the variables of social Cohesion (Okunola & Amole, 2012). Gamble & Well (1995, as cited in Ohmer & Beck, 2006) describe social participation as the proactive and voluntary engagement of individuals and groups in addressing challenges within disadvantaged communities, as well as in shaping policies and programs related to crime, safety, and urban deterioration. Similarly, Wandersmann & Florin (2001, as cited in Ohmer & Beck, 2006) recognize resident participation as a crucial resource for small voluntary organizations, such as neighborhood groups. This participation typically entails the dedication of both time and resources. Active participation fosters a sense of ownership, strengthens social networks, and improves collective efficacy, thereby influencing crime prevention and safety perception.

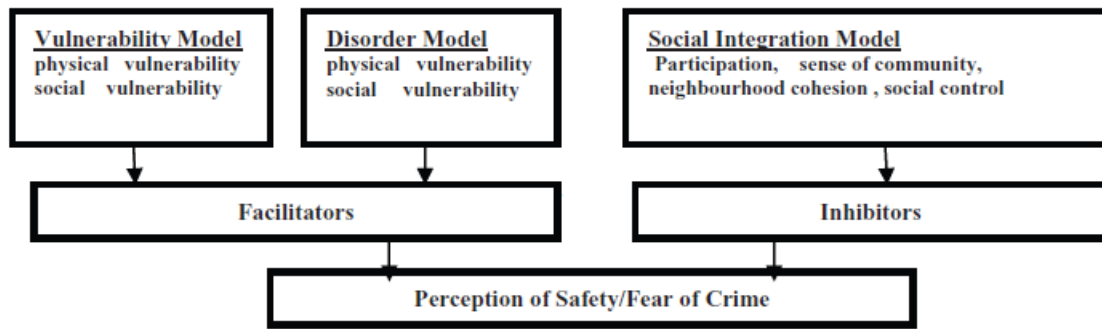


Figure 4: Explanatory Models of Perception of Safety/Fear of Crime

Long & Perkins (2007) argue that social capital is closely tied to a sense of community and often emerges as a result of social participation. This sense of community influences informal neighborly interactions and citizen engagement at both individual and community levels. A strong sense of community is characterized by mutual trust, social bonding, and shared responsibility among residents. It enhances neighborhood stability, promotes informal social control, and reduces fear of crime.

Sarason (1971, as cited in Mannarini & Tedi, 2009) defines it as feeling part of a supportive network, which contributes to life satisfaction, well-being, and perceptions of safety. Jane Jacobs' view, supported by Delone (2008), suggests that when residents lose this sense of belonging, neighborhoods become more vulnerable to crime and fear of crime. So, safety is a crucial component of community well-being, influencing residents' quality of life, mobility, and social interactions.

2.6 Historical perspective of Spatial Transformation of Kathmandu Valley

Spatial transformations in the Kathmandu Valley are based on the changes in urban form, land use, and settlement patterns influenced by political shifts, economic factors, and cultural developments. Different period has different contribution towards the spatial transformations which as follows:

Lichchhavi Period (2nd-8th century)

- Establishment of towns and capital cities based on Vedic urban planning principles.

- Introduction of tiered temples and sculptural art, shaping the city's architectural identity.

Malla Period (12th-18th century)

- Growth of Kathmandu as a trade and administrative center.
- Development of an organized urban structure with historic temples, monasteries, and socio-cultural institutions.
- Expansion of the city, enhancing its spatial and cultural landscape.

Shah and Rana Periods (18th-20th century)

- Shah Unification (1769) led to Kathmandu's designation as the capital of unified Nepal.
- Rana Rule (1845-1951) brought the first major transformation with the construction of neo-classical palaces at the city fringes, triggering:
- Suburbanization as new settlements emerged around the palaces.
- Encroachment on agricultural land due to expansion beyond traditional city.

Post-1951 & Republic Era (20th-21st century)

- Unplanned urban expansion due to limited infrastructure development.
- Octopus growth pattern, where settlements expanded along road networks linking towns and villages.
- Increasing spatial fragmentation and loss of traditional urban coherence.

2.6.1 The planning and design of traditional town

Our traditional towns have developed organically over many generations, resulting in their unique form. However, they are characterized by a higher degree of organization, efficiency, and cultural vitality than most modern settlements in the valley. These towns have successfully adapted to their environmental conditions, economic influences, and social interactions. The design of these traditional towns was underpinned by a unifying planning concept that centered on human beings and their inherent mode of transportation i.e walking. The town's configuration gave precedence to sites dedicated to gods and ritual festivals, thereby enhancing circulation.

The most remarkable planning concepts implemented in Kathmandu's traditional towns can be described as 'zoning by jaat.' However, the term 'jaat' is frequently misinterpreted as relating solely to religion or notions of touchability and untouchability. The structure of Jaat is fundamentally shaped by an occupation-based societal division, with 'jaat' primarily functioning as a job identifier. The principle of 'zoning by jaat' played a crucial role in preserving professions, limiting intra-town mobility (by promoting the concept of home-based work), and enabling the formation of localized, homogeneous communities. The historical practice of co-locating small domestic industries in towns is now theorized in modern planning as vital for the sustainability of small enterprises, achieving what is known as the 'scale effect.' In this way, traditional towns effectively combined social, cultural, and economic zoning through the framework of 'jaat.'

A notable characteristic of traditional towns was the integration of a cosmic image into their layout. Influenced by Vedic traditions and enriched by the Shakti cult, these towns were designed according to a planning framework grounded in ritualistic principles. The Malla town planners recognized that this ritualistic approach would align seamlessly with a society profoundly connected to religion. As a result, Durbar Square became the focal point for the principal deities from all the cults prevalent in the community. Likewise, peripheral gods such as the Matrikas instead of walls also defined the town peripheries. Private buildings could not be built higher than the nearby temple. Town planning and building regulations were shaped by religious rituals, and in a deeply religious society, these guidelines were strictly respected and rarely challenged. The town form and structure were never challenged until modern times when people did not feared gods (Tiwari, n.d.).

2.6.2 Streets

The street network was categorized into three types based on religious functions: (a) festival procession routes connecting Durbar Square to main town squares, (b) streets linking different neighborhoods for general use, and (c) funeral routes at the back of the town leading to major riverbanks. The first two types are non-axial, expanding and narrowing at different points, intersecting every 200–300 meters to form public squares of varying shapes and sizes, such as Kathmandu Durbar Square, market squares, and neighborhood squares. Courtyards and pedestrian alleys further connect individual houses to these non-axial streets (B. K. Shrestha, 2011).

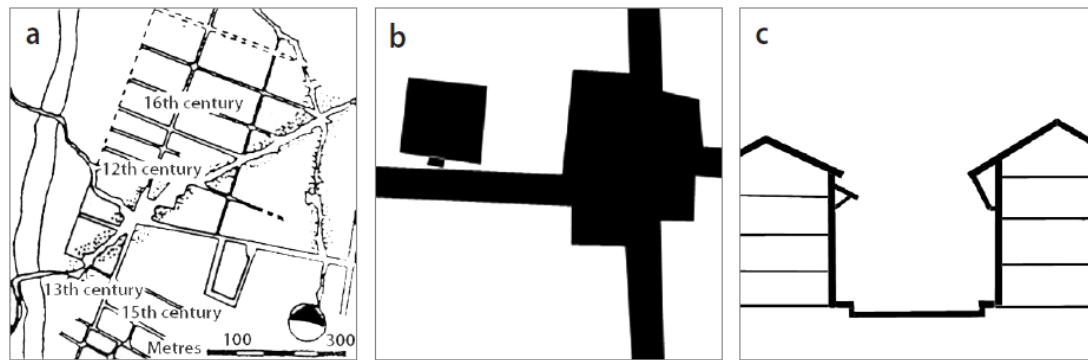


Figure 5: Characters of Street of Kathmandu Valley developed during Malla Period

According to (B. K. Shrestha, 2011) streets developed during the Malla period in the Kathmandu Valley were not only 'paths' for movement of pedestrian and goods, but also a 'shared community space' with symbolic, ceremonial, social and political significance. Developed before the advent of the automobile, they were short, of irregular shape and equipped with community amenities such as temples and shrine, public taps and rest places. The street and house were designed to interact visually as well as physically through the building elements like Dalan and windows that faced down to the street. Streets were also used for specialized movements, like the movements of gods during festivals. Streets were predominantly 4 to 6 meters wide, bordered by buildings that stood three to four stories tall, ranging from 6.5 to 8.5 meters in height. The ratio of street width to building height typically falls between 1:1 and 1:2, with an average of 1:1.5, which contributes to a sense of enclosure and a scale that is comfortable for human interaction.

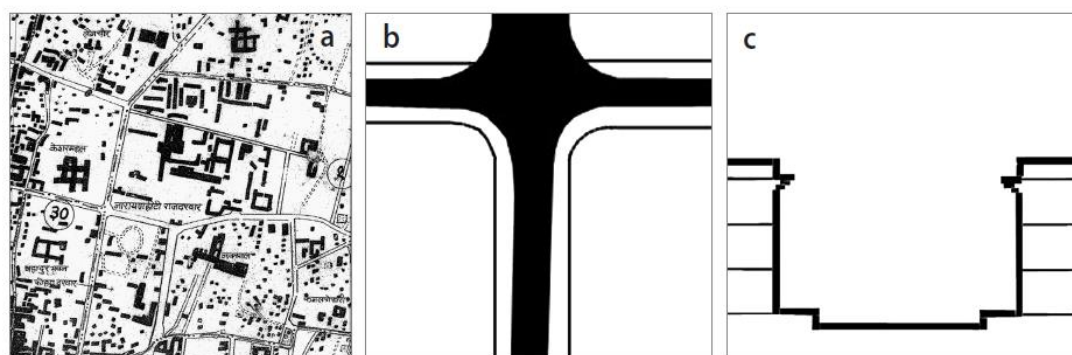


Figure 6: Characters of Street of Kathmandu Valley developed during Rana Period

The streets are broad and straight, featuring pedestrian pathways and exuding a monumental character oriented toward the palaces. Rather than demolishing the historic core, the Ranas expanded the city by introducing new urban fabrics guided by modern planning principles. With a street width of about 12 meters, including sidewalks, and a building height ratio of 1.5:1, a significant sense of enclosure has been established, reminiscent of an open-air room where the sky acts as the ceiling. The addition of new commercial activities through this route has not only enhanced existing trade corridor from Asan to Indra Chowk but has also increased pedestrian movement.

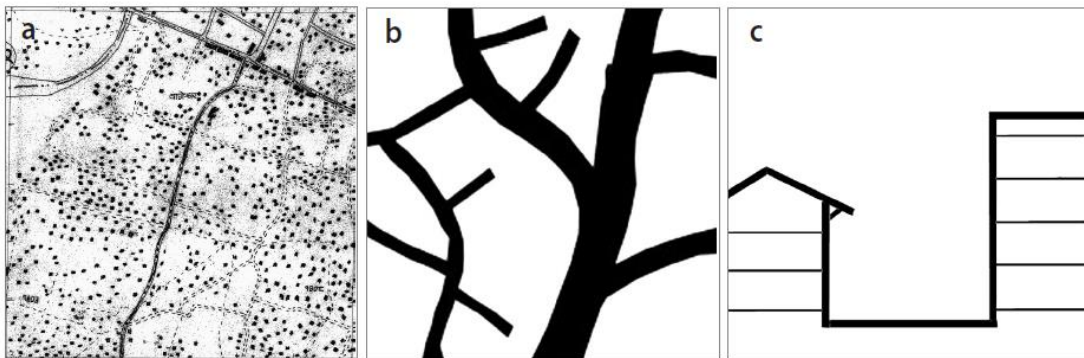


Figure 7: Characters of Street of Kathmandu Valley developed during Post-Rana Period , particularly in residential neighbourhoods

The third category of streets consists of narrow pedestrian alleys found in the peripheral areas. These pathways emerged organically through a fragmented, unplanned development process (Shrestha, 2010) and exhibit diverse shapes, sizes, and layouts without a distinct hierarchical order. Due to variations in architectural styles, building mass, volume, and heights along these streets, they lack a clear spatial definition and fail to create a sense of enclosure.

2.6.3 Buildings

A typical Newari house from the Malla period in Kathmandu is a simple rectangular structure (around 6m by 4–8m) with a vertical room arrangement based on function. The ground floor is used for storing farm products and housing cattle or poultry, the first designed for sleeping, the second for living and working, and the attic for the kitchen and prayer room. These houses reflect spiritual beliefs and a symbolic hierarchy, with each part holding religious significance of the foundations that illustrate the King of Snakes. windows as eyes, and bricks symbolizing stars (Barani, 1994).

Spatial Transformations and its Impact on Social Vulnerabilities in Traditional City Core (A Case of Asan)

The uniform lifestyle, use of local materials (brick, mud, wood), and similar construction techniques create a cohesive architectural composition with minimal variations in building mass, style, and rooflines. Characteristic features include exposed brick facades, cornice lines marking floor levels, and symmetrically placed windows varying by floor. While window designs have transformed over time, traditional roof treatments remain unchanged since ancient times (B. K. Shrestha & Shrestha, 2009).

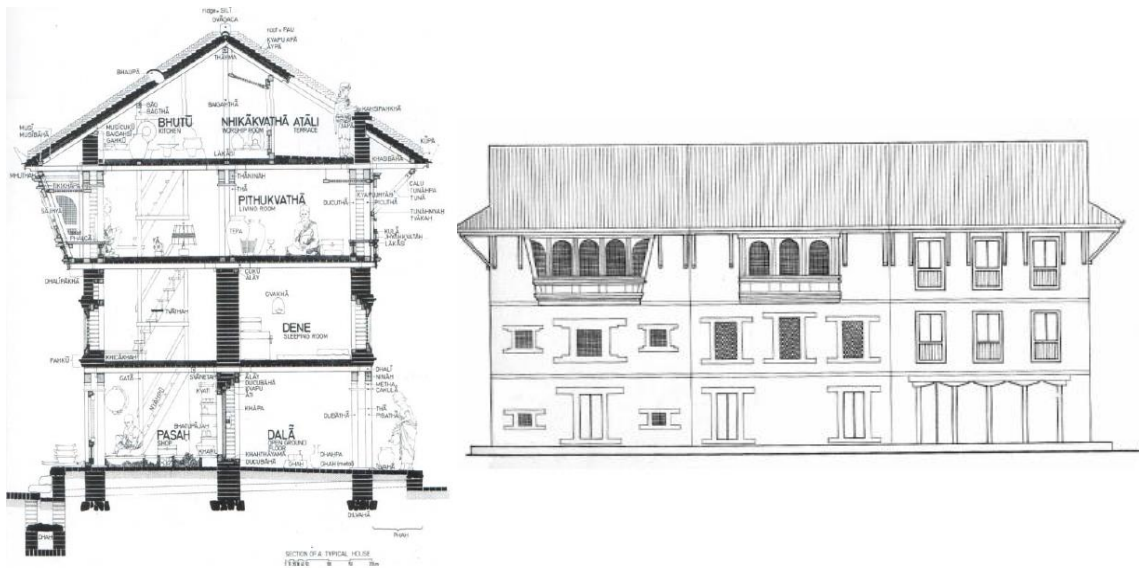


Figure 8: Characteristics of traditional buildings in the historic core of Kathmandu

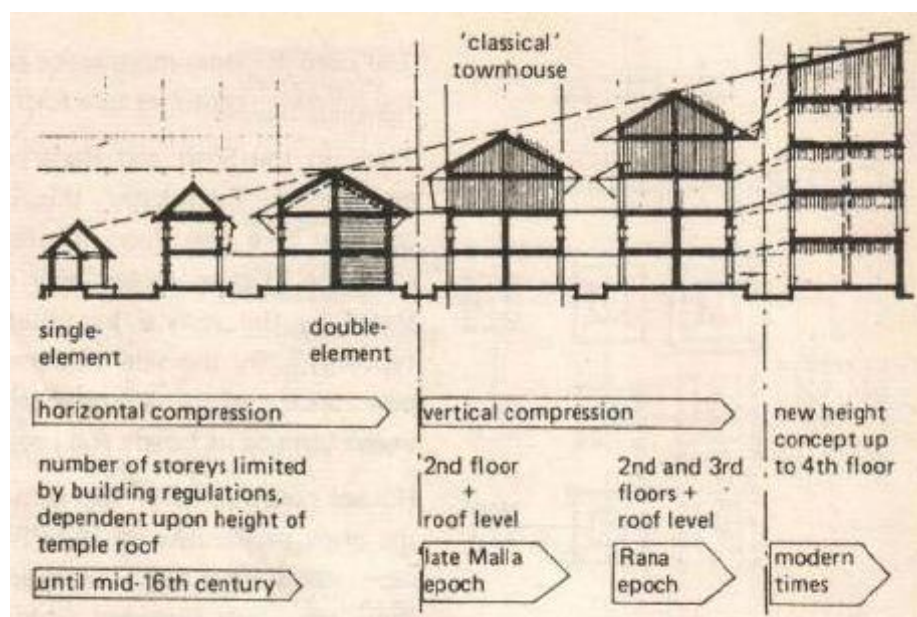


Figure 9: Development of building height (Scheibler, 1998)

The result is a consistent and unified streetscape, with minimal differences in building size, height, and rooflines. Since the streets were usually 4 to 6 meters wide and lined with buildings three to four stories high (around 6.5 to 8.5 meters), the typical ratio of width to height was about 1:1.5. This helped create a sense of enclosure and a scale that feels comfortable for people.

2.6.4 Open Space

Urban spaces of the traditional towns of the Kathmandu Valley have been organized in a very unique and innovative way. These towns boast a fine provision of public spaces in their neighborhoods, and exhibit “a distinct set of urban squares with a clear hierarchy of social and cultural activity” (Tiwari, 1989, p. 95). These include: a) the Durbar (palace) square, b) the Market square, c) the Residential Neighborhood square, and d) the Private Residential square. Such squares have played a vital role in shaping the structure and layout of urban neighborhoods. At the same time, they have functioned as communal spaces for everyday social interaction. During festivals and celebrations, the higher-order squares like the market and neighborhood squares become vibrant and heavily used. These public squares feature various elements that not only support social activities but also enhance the visual character of the urban environment.

Courtyards of varying hierarchy and sizes are distributed all around the town; extensive use of courtyard form makes urban fabric of traditional towns a honeycomb like structure. These courtyards vary in size, from just a few meters to over 75 meters, and are surrounded by residential blocks inhabited by families from different clans, built in close proximity to one another (Pant and Funo, 2018). Baha is the most dominant type of Buddhist courtyard; they are fairly larger sized enclosed spaces that are physically separated from the major streets. Bahas are private domains, which serve the various domestic as well as social purposes. In addition to these daily activities, Bahas also has special functions during periodic festivals and Jatras (Tiwari, n.d.). The uniform flooring materials (either stone or brick) in combination with fronting all the buildings towards the squares without large breaks or gaps in continuity give these squares and residential courtyards the feeling of “outdoor rooms”.

According to (B. K. Shrestha & Shrestha, 2009), “Residential neighborhoods featured community spaces covering about 10–12% of the total area, typically designed as

interconnected courtyards measuring around 20–24 meters in length and width.” These courtyards were surrounded by three to four houses with similar building heights and consistent architectural features such as exposed brick walls, intricately carved wooden windows, and sloped tiled roofs. This design not only ensured good sunlight access and protection from wind but also provided a shared space for social interaction and served as a strong expression of community identity.

2.7 Threats to historic towns

With the modernization of society, traditional values has been rejected more and more in urban areas. This has further led to difficulties in preserving cultural area. (Feilden & Jokilehto, 1998), the traditional and functional whole of historic towns is often threatened, especially in developing countries. Among the numerous causes of decay are:

- demographic growth and the worldwide drift of population from rural areas towards urban centres, leading to social changes and dilapidation in the historic centre, where palaces become commercialized and dwellings often overcrowded and unhealthy;
- increasing use of private motor transport with penetration of areas never meant to be used by such vehicles, which generate atmospheric pollution and destructive vibration;
- development of high-rise buildings, which suffocate historic urban centres by changing their microclimate;
- changes in the methods and scale of industrial and commercial operations, which affect the economic functions of historic areas;
- the drift from craft production to mass production, which demands larger buildings and consequent accumulation of traffic that historic areas cannot accommodate;
- introduction of modern functions and services to replace traditional infrastructures, causing redundancy; and
- lack of maintenance of old buildings and a failure to understand their cultural and functional values, increasing the dangers of decay and collapse.

Modern planners often fail to recognize the cultural significance of historic centers, leading to the unchecked prioritization of motor traffic. This has resulted in the construction of wide, straight roads that disrupt the human scale, traditional urban fabric, narrow streets, and the balance between public and private spaces. Likewise, the addition of modern buildings that lack cultural connection and environmental efficiency further deteriorates these areas. Revitalizing declining historic centers requires a diverse mix of residential, commercial, industrial, and leisure activities. Effective urban management should preserve architectural scale, cultural heritage, and functionality while ensuring balanced development through integrated conservation.

2.8 Strategies addressing Spatial Transformation

There are various strategies applied in addressing the spatial transformation of traditional city core areas in Asian Countries.

2.8.1 Zoning Regulations and Building Codes

2.8.1.1 Height Restriction

- **Beijing, China:** The Beijing Historical and Cultural City Protection Plan enforces a strict height restriction ($\leq 9\text{m}$ or 3 stories) in the old city area near the Forbidden City. In areas surrounding traditional hutongs (alleyway communities), building height is controlled to preserve the scale and human-scale streetscape.
- **Kyoto, Japan:** Kyoto's Traditional Architecture Preservation Zones (TAPZ) enforce a 15m height limit in key historic areas like Gion and Higashiyama.
- **Traditional Village (Desa Adat), Bali:** Each Desa Adat (traditional village council) regulates height restrictions, typically limiting buildings to below the height of coconut trees ($\sim 15\text{m}$).
- **Samara, Russia:** The historic block is divided into three parcels: Perimeter parcel (along the street) must match the height of existing historical buildings. First inner parcel (courtyard area) allows moderate height, ensuring sunlight and ventilation. Second inner parcel (deep inside the block) can have taller buildings since they are not visible from the street.

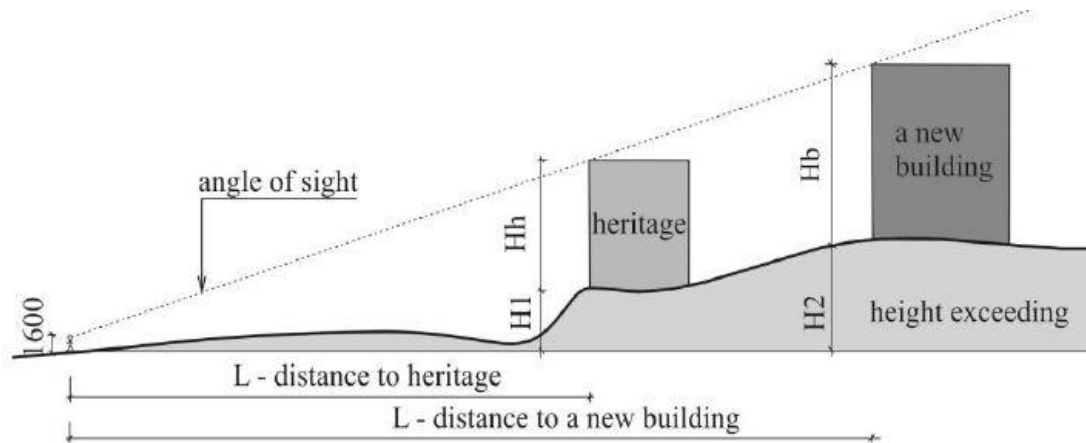


Figure 10: Permissible height of new housing development, considering the topography relief

2.8.1.2 Floor Area Ratio (FAR) and Setback Controls

- **Singapore:** Historic districts like Chinatown, Little India, and Kampong Glam have low FAR limits (~2.8-3.0). Setback requirements ensure uniform street frontages, maintaining traditional shop-house proportions.
- **Bangkok, Thailand:** In Rattanakosin Island (historic Bangkok core), the FAR is capped at 3.0. Buildings must be set back at least 6m from the street in heritage zones.
- **George Town, Penang, Malaysia:** Setback rules ensure that new constructions do not encroach on the narrow streets, preserving the historic streetscape.

2.8.2 Transfer Development Rights

- **Rincon Annex, San Francisco:** In 1985, San Francisco established its Transfer of Development Rights (TDR) program to encourage historic building preservation and allow new development to occur in the Downtown. It enables the transfer of unused development rights from a historically preserved property to a different site, allowing that site to exceed its normally permitted gross floor area for development.
- **Chhatrapati Shivaji Maharaj Terminus (CSMT), Mumbai:** The Mumbai Development Plan allows property owners in heritage zones to transfer unused development rights to developers in designated high-density zones.

- **Rattanakosin Island, Bangkok:** Developers in Bangkok’s high-rise zones can acquire additional height and FAR by purchasing TDR from properties in Rattanakosin Island, where height limits preserve Buddhist temples and palaces.

Article: Use of Transferable Development Rights (TDR) Method on Preservation of Historic Buildings in Turkey

TDR allows property owners to transfer their unused development rights from preserved properties to other areas. This method, used in countries like the USA, Italy, and South Korea, enables compensation through market-based instruments rather than direct public expenditure.

TDR Mechanism:

- The owner of a restricted (preserved) property receives a TDR certificate equivalent to the unrealized development potential.
- This certificate can be used by the owner on another property (if owned) and sold to a third party who can use it elsewhere.
- The development right is shifted to a “receiving zone” where additional development is permitted beyond standard zoning limits.

Implementation Strategies to compensate the loss of owner for the restricted historic building:

- a) Expropriation (government buying private property)
- b) Giving other unused public lands (lands that belong to the State) to the owner, as a compensation
- c) The TDR owner can use his/her development right on another land parcel which belongs to him/her- If the owner is restricted by a preservation decision on one parcel, he can transfer that “unusable development right” on his second land parcel as an addition to the existing development right.
- d) The owner can sell the TDR to a third person to be used on another land parcel- If the owner has no other land, the right can be sold to another party, allowing the owner to earn money and the buyer to gain extra building rights.

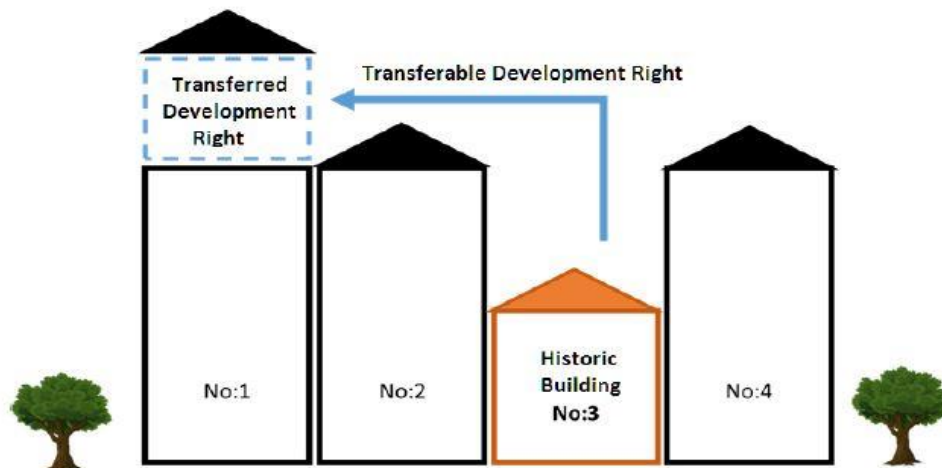


Figure 11: Transferring the restricted development right on another land parcel/selling to the third person

Benefits of TDR:

- Historic building is preserved.
- Owner can still use his/her development right
- Owner can turn his restricted development right into money.
- The new buyer of TDR gets a larger or taller building permission.
- The State did not pay anything.

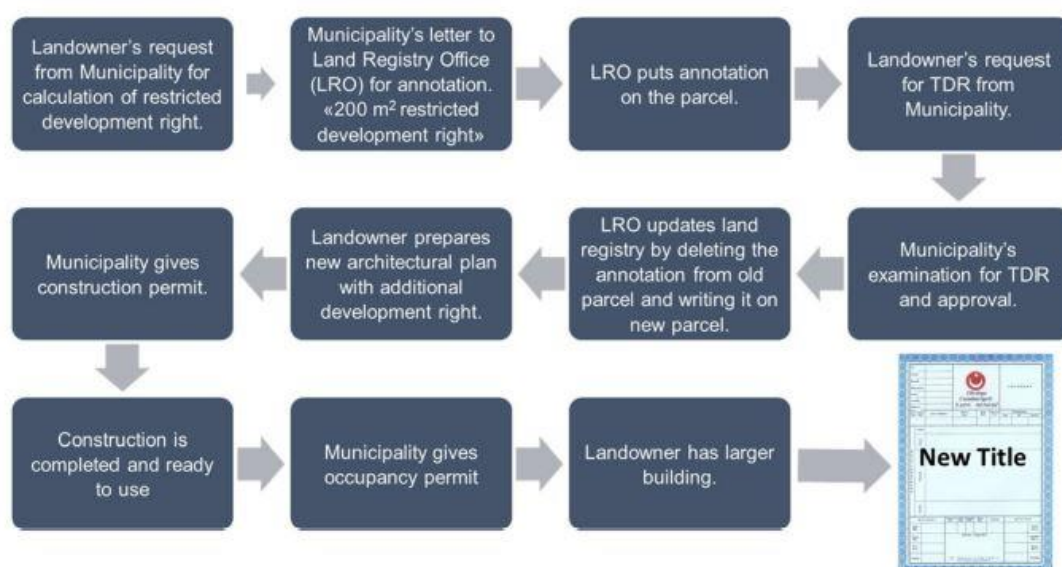


Figure 12: TDR Process

If an urban area has potential to expand towards its peripheries, new areas can be opened to urbanization by additional development plans. Modern urbanization in Turkey focuses on city expansion by developing new areas along the outskirts

2.8.3 Heritage Conservation and Preservation

- **Kyoto, Japan:** Roof designs and facades must follow traditional wooden and tiled structures to maintain aesthetic harmony.
- **Seoul, South Korea – Hanok Conservation Guidelines:** In Bukchon Hanok Village, new structures must adhere to traditional hanok-style architecture, including wooden columns and tiled roofs.
- **Varanasi, India:** Along the ghats of the Ganges River, new buildings must incorporate traditional architectural elements like arched windows and stone facades to blend with the historic environment.

2.8.4 Incentive-Based Policies (Tax Benefits)

- **Hanoi, Vietnam – Heritage Conservation Grants:** Property owners in Hanoi's Old Quarter receive subsidies for maintaining historic facades rather than demolishing them.
- **Tokyo, Japan:** In historic districts, developers who adhere to traditional design guidelines may receive tax incentives or density bonuses.
- **Ahmedabad, India:** The city offers financial grants to homeowners who restore traditional pol houses (cluster housing with shared courtyards) in the old city.

2.8.5 Adaptive Reuse and Infill Development

- **Beijing, China:** Traditional siheyuan courtyard houses have been adaptively reused as boutique hotels, cafes, and cultural spaces, preserving their scale and character.
- **Albert Dock, Liverpool:** Once a bustling dock for trade, Albert Dock fell into disuse in the mid-20th century. It has since been revitalized through adaptive reuse, transforming old warehouses into museums, galleries, restaurants, and shops.
- **Jodhpur, India:** Vacant plots within the historic blue-painted city are developed with low-rise buildings that match the traditional architectural style.

2.9 20 Years Strategic Development Master Plan (2015 - 2035) for KTM Valley

Major Issues:

- Need to preserve historic and socio-cultural assets of Historic city core areas and Heritage sites.
- Structural problems, high occupancy and lack of access to critical facilities in historic settlements (KVDA, 2015)

Table 3 Objectives and Action Plans for Strategy 5: Urban Regeneration of Historic City Core

Objectives	Action Plans	Lead Agencies	Supporting Agencies	Regime
Obj. 44. Rejuvenating the core historic cities through the preservation of the historical, cultural and social assets	Develop Plans to pedestrianism historic core areas	KVDA	MoTCA, DoA, Municipalities	O,P,E
	Construction of by-pass road around such sites	DoR	KVDA, DoR, Municipalities	O
	Develop Projects on Conservations and revitalization of historic core area (refer 6.5.1)	KVDA, Municipalities	Academia	O,E
	Urban Regeneration of Heritage Core of Kathmandu Valley and old Settlement	KVDA, Municipalities		O,E
Obj. 45. Prohibit vertical subdivision of buildings in city core areas	Develop poliy, bye laws and incentive mechanisms to prohibit vertical division of buildings mainly in city core area	KVDA	NLHDA, RUPSON	O,E
Obj. 46. Support the DoA to undertake reconstruction of heritage areas	Partner with Department of Archaeology to improve cultural context of heritage areas as part of reconstruction efforts.	DoA	KVDA	O,P,E

The unique Nepalese architecture and artifacts are found in the old settlements or the temples. Considering the immense need to preserve the rich sociocultural and architectural assets of the historic city core areas, Urban regeneration is being highly emphasized as a major tool to redevelop the specific areas by effectively utilizing the urban space, provide opportunity for economic activities and develop earthquake resistant neighborhood, while preserving the rich socio-cultural identity of the areas. Vertical Replotting in the core city area may be instrumental in creating economically vibrant environment.

2.10 Building Byelaws

2.10.1 Building Byelaws 2064

Lies in Preservation Sub Zone and Mixed old residential Zone

Preservation Sub Zone: (Kathmandu Metropolitan City,2064)

- FAR=3.75 for new building, 4.5 for reconstruction of old building
Maximum floors without staircase=5
Maximum height with staircase=45'
Maximum floor height=8'
- If the height of the house affects the surrounding environment, the height of the front face on the road side should match the line of other traditional Nepali style houses. But in doing so, the maximum height will not exceed 45 feet (13.7 meters). In places that are important from the point of view of art, architecture and religion, the first row of houses around the monument or the compound of the monument should be built in such a way that it is lower than the monument.
- In the case of finishing of the façade, building facing the road shouldn't apply cement plaster i.e the Fair Face Brickwork should be applied clearly. But dry lime and plaster can be done in the houses around the stupa.
- No other type of truss, wall, etc. can be constructed except for the protection and promotion of the old chowk. Cantilever, Balcony, Room, etc. cannot be taken out above the chowk. Chowk Peti will be considered a part of the chowk itself.
- There should be a sloped roof on the part where the road or chowk is visible.

- If it is to be built up to the maximum height, then 33 percent of the roof area on the last floor can be made terrace and it should have two- or one-way slope roof.
- Wooden balcony can be built on the third floor above one's own land.
- Traditional Nepali style and shape of wooden fences should be kept.
- Traditional Nepali style and size of wooden panel should be made at the door or shop door. Those who want to keep rolling shutters should keep no part of the rolling shutters visible or the rolling shutters can be covered with wooden slats.
- In this subzone, permission can be given to build a basement, semi-basement without affecting other people's houses and without adversely affecting the surrounding monuments, Dhungedhara, etc.
- To demolish the old houses in this sub-area, the approval of the local body should be taken.

Mixed old residential Zone:

- FAR=4 for new building, 4.5 for reconstruction of old building
Maximum floors without staircase=5
Maximum height with staircase=45'
- If a building in the area has artistic or architectural significance and is marked for preservation by the ward office, its traditional façade cannot be demolished or replaced. It can only be repaired or rebuilt as it is. If preserving it causes a loss to the owner, the municipality may compensate by purchasing the building.

2.10.2 Building Byelaws 2080

Preservation Sub Zone: (Kathmandu Metropolitan City,2080)

- Only one floor semibasement or basement provision
- Maximum floors without staircase=6
- Maximum height without staircase=65'

Mixed old residential Zone:

- Only one floor semibasement or basement provision
- Maximum floors without staircase=7
- Maximum height with staircase=75'

2.11 Classification of Buildings according to Sampada Bhawan Sangrakshyan Awam Nirman Mapdanda Tatha Sahuliyat Karyabidhi 2078

A class building: It include buildings constructed in traditional style without being fully demolished. If the important historical, archeological and architectural buildings such as doors, cornices, tundals. are dilapidated, lost must be renovated or reinforced and preserved in its original form. Even if the internal form is changed according to the purpose and requirements of the building in this category, the external form should be the same.

B class building: It includes the reconstruction of the buildings built in traditional style under category A buildings, using the same construction materials or new construction materials of the same nature. Although the mechanical form is changed according to the purpose and needs of the building, the external form can be made more artistic and traditional. But the windows in the building should be restored to their original place.

C class buildings: It includes buildings already constructed with load-bearing or frame structures, the facade of which will be demolished and changed to match the Rana or Malla period style.

D class buildings: It includes newly constructed RCC frame structure buildings whose facades are to be built in original form. It includes buildings that are constructed in a traditional manner using new construction materials that should be in harmony and balance with the original style.

Construction arrangements will be as per Kathmandu Metropolitan City Building Construction Standards, 2075. But according to this standard, the height of the building cannot be more than **51 feet (6 floors of 8 feet 6 inches)** which is eligible to get the incentives from the KMC for construction of building with traditional characters. (Kathmandu Metropolitan City, 2078)

2.12 Direct Incentives

According to Sampada Bhawan Sangrakshyan Awam Nirman Mapdanda Tatha Sahuliyat Karyabidhi 2078, Incentives are provided as per Frontage (Kathmandu Metropolitan City, 2078)

Table 4: Incentives Per Sq.ft according to Building Class

Building Class	Incentives Per Sq. Ft. (As per Frontage)/ Maximum Incentives Amount			
	Preserved Monument Sub-Zone	Preserved Sub-Zone	Mixed Old Residential Sub-Zone	Other Sub-Zone
Class A	4000/ 32 Lakhs	4000/ 32 Lakhs	4000/ 32 Lakhs	4000/ 32 Lakhs
Class B	2500/ 20 Lakhs	2500/ 20 Lakhs	2250/ 18 Lakhs	2000/ 16 Lakhs
Class C	1600/ 16 Lakhs	1600/ 16 Lakhs	1400/ 14 Lakhs	1200/ 12 Lakhs
Class D	1200/ 12 Lakhs	1200/ 12 Lakhs	1000/ 10 Lakhs	1000/ 10 Lakhs

Installment of Incentives

(1) The installment by KMC are as follows: -

- First Installment is based on based on the percentage of completion of construction work of the approved and selected building, the committee will provide a maximum of 50% of the incentives amount for the first installment after the field inspection and recommendation is submitted.
- The final installment of the remaining incentives money will be provided to the beneficiaries after the completion of the construction work and after the field inspection by the committee and the submission of a report with recommendations.

(2) If the incentives provided by the Metropolitan Municipality is not used in the construction work, if the construction work is not completed, if the construction is not done according to the approved design or if other conditions of the contract agreement are violated, the amount paid will be charged as government debt.

(3) According to this procedure, if a floor is added to a building that has been constructed as a heritage building by obtaining a concession, the municipal corporation

will demolish such structure at any time and withdraw the concession provided by the government office.

2.12.1 Arrangements related to concessional loans

- Beneficiary can apply to designated banks for subsidized loans. After submitting the necessary documents to the bank, the eligible beneficiaries can get the loan at the agreed period and interest rate between the Municipal Corporation and Banks.
- The concerned bank has to send the quarterly statement of the monthly EMI paid by the beneficiaries who have received the concessional loan to the Metropolitan Corporation. Based on the details received from the bank, the Metropolitan Corporation can arrange to return 50% of the interest paid by the beneficiary to the beneficiary's account through the bank.

3 CASE STUDIES

3.1 Chandni Chowk Redevelopment at Old Delhi, India

Chandni Chowk, originally designed by Jahanara Begum, was a planned marketplace with a canal, administrative buildings, and a serai. Over time, it became a dense commercial hub with colonial additions like the clock tower and Town Hall. Today, it is a dynamic center of trade, religion, and daily life, featuring street vending, residential spaces, and cultural activities. However, it struggles with issues such as congestion, pollution, and poor infrastructure (Arif Kamal et al., 2024).

Issues and Challenges

Chandni Chowk faces significant urban challenges, including:

- **Traffic congestion:** Over 20,000 vehicles pass through daily.
- **Safety concerns:** Fire hazards, crime, and lack of emergency preparedness.
- **Pollution:** Poor waste management and environmental degradation.
- **Chaotic market layout:** Unregulated street vending and informal activities.
- **Limited transport solutions:** Absence of last-mile connectivity and pedestrian-unfriendly infrastructure.

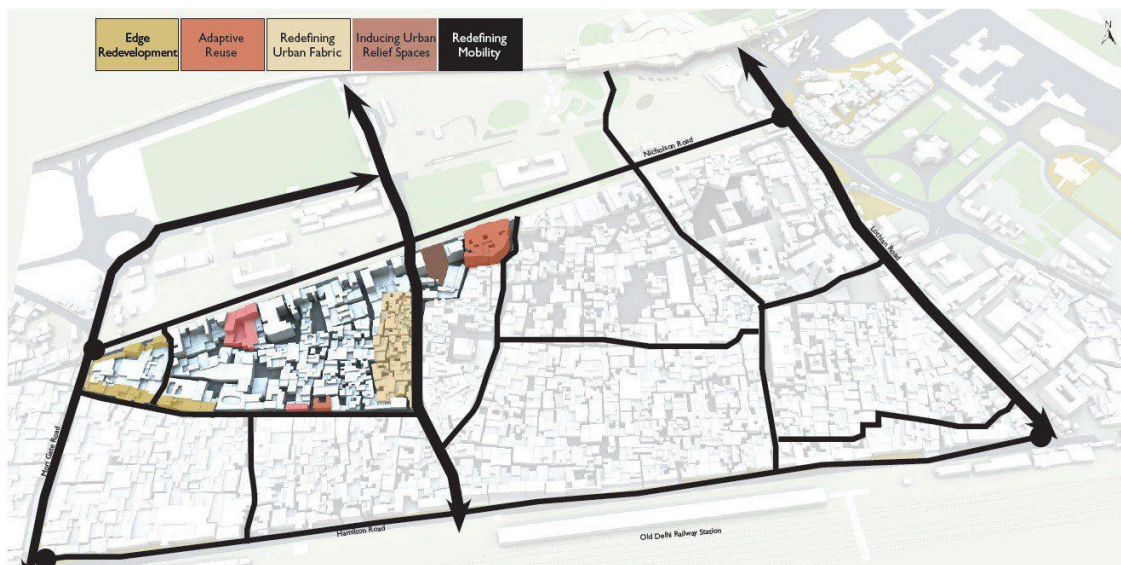


Figure 13: Redevelopment Strategy of Chandani Chowk

Redevelopment Strategies

To address these challenges, the redevelopment of Chandni Chowk focused on Hybrid Pedestrianization, Integrated Utilities, Public Amenities, Inclusive Design, and Comprehensive Implementation:

Hybrid Pedestrianization - Vehicle restrictions from 9 AM to 9 PM, except for emergency services and designated loading/unloading times to reduce congestion.

Integrated Utilities - Consolidated networks for drainage, water supply, electricity, waste management, and security surveillance.

Public Amenities - Addition of rest areas, sanitation facilities, and wayfinding systems.

Inclusive Design - Prioritizing pedestrian access and mobility for differently-abled individuals.

Comprehensive Implementation - A structured traffic management plan with phased execution and adequate parking solutions.

Inferences

- The integration of pedestrian-friendly infrastructure significantly enhances urban mobility and accessibility.
- Heritage preservation and modernization can coexist when urban renewal is planned strategically.
- Efficient urban management through integrated utilities and public amenities ensures long-term sustainability.
- Stakeholder involvement is crucial in balancing economic growth with cultural preservation.
- Similar redevelopment models can be applied to other historic city centers, serving as a benchmark for sustainable urban transformation.

3.2 Transformation and Modification of Historical Building Use, and Owner Motivation for Urban Conservation in the Nineizaka and Sanneizaka, Kyoto, Japan

Nineizaka and Sanneizaka, located along the historic pilgrim route to Kiyomizudera Temple in Kyoto, have undergone significant spatial and socio-cultural transformation since their designation as a preservation district in 1976. Originally comprising traditional Machiya shop-houses and residences, these areas have become emblematic of Kyoto's cultural identity. However, the surge in tourism and commercialization has reshaped the urban fabric and local lifestyle (Suebsuk & Nakagawa, 2015).

- The growth of sustainable tourism and Kyoto's heritage branding has resulted in a shift from residential and mixed-use buildings to souvenir shops, cafes, and restaurants. Though traditional façades are preserved, interiors are often completely modernized for commercial use.
- Urban policy and conservation regulations have focused on façade control and landscape guidelines, which successfully retain a visual sense of Kyoto's past. However, deeper functional transformations and ownership transitions have diluted the authenticity of lived experiences.

- The transfer of ownership rights, from generational inheritance to rental or sale, due to aging populations, economic shifts, and lifestyle changes has created a transient user base, disconnecting the area from its cultural roots.



Figure 14: Machiya with Mushiko or Insect-Cage Windows

Impact of Spatial Transformation

- **Change in Urban Morphology**

The Machiya buildings have retained their historic facades, contributing to a cohesive townscape image. However, the interior transformations have shifted toward tourist-centric commercial use, undermining the traditional mixed-use living arrangements. Public spaces have become more performative, catering to tourist aesthetics rather than community function.

- **Social and Environmental Challenges**

The rapid commercialization has displaced traditional residents and led to the erosion of community networks. Waste generation and crowding have become persistent issues due to tourism. Cultural activities and neighborhood festivals have diminished in frequency and authenticity. The physical presence of Machiya remains, but their role in community life is largely symbolic.

Strategies Applied

Urban Conservation Strategies

- Designation of the area under Japan's Group of Historic Buildings Preservation Districts Law (1976).
- Implementation of façade regulation and visual design guidelines supported by municipal subsidies and consultations.
- Use of adaptive reuse to promote functionality while retaining outward historic character.

Economic and Social Strategies

- Establishment of the Machiya Machizukuri Fund (2004) to financially support building restoration and cultural preservation.
- Promotion of “Kyotoishness (Kyoto Rashii)” as a local branding strategy to reinforce traditional aesthetics in tourism.
- Encouragement of owner participation in restoration through city consultation programs and design incentives.

Inferences

- The preservation of heritage townscapes in tourist zones must go beyond visual aesthetics and address functional and social authenticity.
- Community displacement due to rising property values and commercialization leads to a disconnect between the cultural landscape and its original inhabitants.
- Balanced conservation frameworks are necessary, ones that regulate not just architectural forms but also land use, tenancy, and economic participation.
- Tourism should be regulated to avoid saturation, protect infrastructure, and preserve the cultural atmosphere.
- There is a need to integrate sustainability, local livelihoods, and tourism economies within the framework of urban heritage conservation.

3.3 Transformation and Urban Heritage Conservation: Insights from Surat, India

The city of Surat, located in the western Indian state of Gujarat, is one of the fastest-growing urban centers in the country, with a rich historical legacy dating back to 300 BC. As a historical trading port, Surat's cultural identity is deeply embedded in its tangible heritage i.e monuments, traditional housing, colonial façades and intangible heritage i.e crafts, religious practices, and community life. Key heritage areas such as Gopi Surat Central Zone and Rander Gamtal exemplify this intertwined legacy of built form and socio-cultural practices (Udeaja et al., 2020).

Impact of Spatial Transformation

- **Loss of Heritage and Identity**

Rapid urbanization and real estate pressures have led to the demolition of historic structures, including traditional housing and culturally significant spaces. This is eroding the historic identity and aesthetic value of Surat's urban core.



Figure 15: House façades in Rander and Gopipura showing colonial style influences



Figure 16: Dilapidated heritage buildings in Rander Gamta

- **Neglect of Intangible Heritage**

Transformation often focuses on physical infrastructure, neglecting intangible cultural aspects like traditional practices, crafts, and community memories that are crucial to place identity.

- **Gentrification and Displacement**

As new, denser constructions replace old buildings, traditional communities are displaced, weakening social cohesion and detaching residents from their heritage.

Strategies Applied

- The drafting of the “Rules & Regulations for Heritage Buildings & Precincts in Surat” by the Surat Municipal Corporation.
- Pilot restoration projects, such as the Chowk Bazar heritage precinct, and partial rehabilitation of Surat Fort.
- A GIS-based heritage mapping project by the Urban Management Centre (2011).
- Efforts to involve local experts, stakeholders, and communities through interviews and focus groups to understand and promote local heritage awareness.
- Integration of heritage into broader frameworks like the Surat Resilience Strategy, developed under the Rockefeller Foundation’s 100 Resilient Cities initiative.

Inferences

- Urban heritage (both tangible and intangible) must be embedded in local planning policies and regulations, not treated as peripheral.
- Create policies that incentivize conservation and discourage indiscriminate redevelopment.
- Raise local community awareness through inclusive education, storytelling, and public events highlighting heritage values.
- Involve residents as active stakeholders in decision-making processes.

3.4 Transfer development Rights, San Francisco

San Francisco, a city known for its rich architectural legacy and dense urban fabric, has implemented one of the most successful Transfer of Development Rights (TDR) programs in the United States. Initiated in 1985 as part of the Downtown Plan, the TDR program was a strategic response to the threats posed by rapid downtown development including the potential demolition of historic buildings (Seifel Consulting Inc. & C.H. Elliott & Associates, 2013).

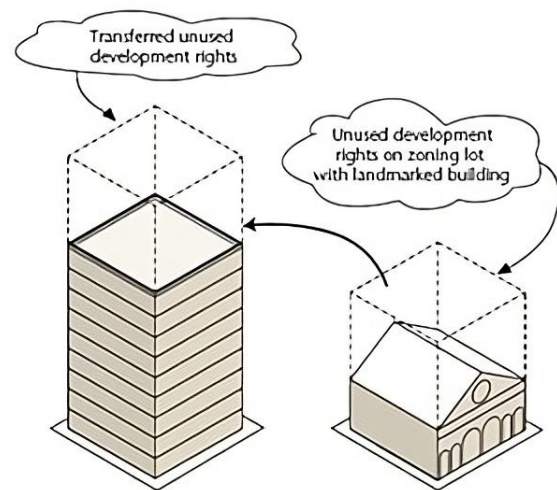


Figure 17: TDR program in San Francisco

Goals and Framework

The central goal of the TDR program was to preserve architecturally and historically significant structures while maintaining downtown's development potential. The TDR mechanism allowed owners of historic buildings often constrained by regulations limiting alterations or demolition to monetize unused development potential by selling it to developers of other downtown properties.

Program Structure

San Francisco's program identifies "sending sites" (Transfer Lots) and "receiving sites" (Development Lots) primarily in the city's C-3 Downtown Commercial zoning districts. Transfer Lots must include buildings designated as Significant or Contributory under Articles 10 and 11 of the Planning Code.

The transferable development rights are calculated based on the unused floor area ratio (FAR) of a sending site relative to the maximum permitted by zoning. On receiving sites, developers can increase FAR beyond the baseline (e.g., from 9 to 18 in C-3-O zones) using TDRs but must still adhere to height and bulk controls, preserving the city's urban design integrity.

Heritage Conservation Impact

TDR has proven highly effective in conserving San Francisco's architectural heritage. As of 2013, the program had preserved 112 landmark buildings, including the Rincon Annex and the Old Mint, by enabling them to sell over 5.3 million square feet of unused development rights. This provided a financial incentive for private and public property owners to maintain and restore historic structures. Iconic projects like the Millennium Tower utilized large volumes of TDR, directly linking private high-rise development to historic preservation efforts. Key conservation benefits include:

- Incentivizing seismic retrofitting and façade restoration through TDR-funded preservation plans.
- Permanent restrictions against demolition or alteration once TDRs are sold.
- Use of proceeds (especially from public buildings) to fund essential restoration work, as seen in the War Memorial Complex.

Market Dynamics and Success Factors

San Francisco's TDR program works well due to strong developer demand, limited alternatives to gain extra FAR, and strict preservation rules that encourage participation. A flexible, market-driven system and fast approval process make it efficient and attractive for both property owners and developers. Compared to cities like New York (with pricing up to \$450 per square foot) or Los Angeles (where TDR is taxed and tied to other public benefits), San Francisco's simpler, incentive-focused approach has made it both flexible and market-responsive.

Inferences

San Francisco's TDR program illustrates how planning tools can effectively embed conservation priorities into the urban growth framework. It shows that:

- Policy and zoning can protect heritage without freezing urban development.
- Economic instruments like TDR can incentivize preservation in a market-friendly way.
- Strong institutional frameworks are vital for monitoring and enforcement.

4 RESEARCH PARADIGM

Research paradigm represents the researcher's perspective on how studies should be designed and carried out, both broadly and in relation to the specific goals of the study. Pragmatism as a research paradigm avoids engaging in complex metaphysical debates about truth and reality. Rather, it acknowledges the existence of one or multiple realities that can be explored through empirical investigation (Creswell and Plano Clark 2011). This research adopts a pragmatic paradigm to address the complex issue of urban spatial transformations and vulnerabilities in Asan Square, combining quantitative and qualitative methods for a comprehensive understanding. It bridges the gap between positivism, which emphasizes measurable and objective data, and interpretivism, which explores subjective experiences and cultural nuances. In this study, quantitative methods such as surveys are used to analyze measurable physical changes. These methods provide empirical data on the spatial and functional transformations in Asan. On the other hand, qualitative methods, including interviews, focus group discussions, and participant observation, capture community perceptions, cultural impacts, and social dynamics that cannot be quantified.

4.1 Ontology

Ontology is the study of 'being' and is concerned with 'what is', i.e., the nature of existence and structure of reality as such (Crotty, 1998) or what it is possible to know about the world (Snape, D., & Spencer, 2003).

This research is based on the idea that reality isn't just one fixed thing, it's shaped by people, their cultures, histories, and the spaces they live in. At the heart of the study is the belief that changes in physical spaces, like streets, buildings, and public squares, deeply affect the social lives of communities. Asan Square isn't just a marketplace; it's a living, breathing space where culture, traditions, and daily life come together. But with the rise of modern buildings, commercialization, and population growth, this traditional square is rapidly changing. These changes impact how people interact, celebrate, and even feel connected to their community.

The research looks at Asan as more than just a location, but a complex system where physical spaces and social relationships are tightly woven together. When the space

changes, so do the community bonds, cultural practices, and social support systems. This study aims to understand these connections, exploring how we can protect the essence of places like Asan while adapting to modern needs.

4.2 Epistemology

For Crotty (1998), epistemology is the study of how we perceive and interpret the world. It concerns the nature of knowledge and includes an understanding of what constitutes knowledge, what can be known or explored, and the extent and validity of that knowledge.

This research is grounded in the belief that knowledge comes from both measurable facts and lived experiences. To understand how Asan Square's spatial transformations affect its community, the study blends quantitative data (such as maps, building layouts, and historical records) with qualitative insights from the people who live, work, and interact there daily.

Knowledge is constructed through direct observations, interviews, focus group discussions, and community engagement, capturing how physical changes influence social dynamics, cultural identity, and everyday life. This approach values not only the visible shifts in the urban landscape but also the invisible emotional and cultural impacts on the community. By combining objective analysis with personal narratives, the research seeks to uncover the complex relationship between Asan's changing physical environment and the social vulnerabilities it creates. This helps provide a more holistic understanding of how urban spaces shape and are shaped by human experiences.

4.3 Methodology

The research will employ a mixed-methods approach to gather both quantitative and qualitative data. The central belief of this research approach is that integrating both qualitative and quantitative methods offers a more comprehensive understanding of the research problem than using either method independently (Creswell, 2013, p. 41). This methodology aims to capture diverse perspectives and empirical data, allowing for a comprehensive understanding of urban vulnerabilities due to spatial transition and urban growth.

4.3.1 Sampling Frame

Kothari's equation for sample size determination is based on statistical inference principles, ensuring that the selected sample accurately represents the population. A sample is selected, and its characteristics are used to make inferences about the whole population.

$$\text{Sample size} = \frac{z^2 pqN}{e^2(N - 1) + z^2 pq}$$

Population Size =	560
Confidence Level =	95%
For 95% Confidence, z =	1.96
Margin of Error, e=	10.0%
p=	0.5
q=	0.5

Study area consists of 155 buildings for which average household size was taken as 3.61. That gives population size of the study area as 560. Through this Kothari equation, sample size was calculated and resulted as 83.

4.3.2 Methods

The study employs a mixed method approach. A mixed methods research design involves combining both quantitative and qualitative approaches within a single study to collect, analyze, and integrate data, providing a more comprehensive understanding of the research problem. The method used for this research includes:

4.3.2.1 Quantitative Methods

- **Surveys and Questionnaires:** Surveys and questionnaires were conducted to validate the selected indicators for assessing the impact of spatial transformation on social vulnerabilities. This study employs both closed-ended and open-ended questionnaires. The structured, closed-ended questionnaire targets owners, renters, and shopkeepers, while the open-ended questionnaire is directed towards the members of Guthi.
- **Policy and Planning Documents Review:** A review of shaping Asan's development, providing insights into the policy planning context and the impact of these policies on its spatial transformations. A comparison of change in FAR, incentive provision to maintain traditional architecture is studied.

- **Archival research:** It helped to analyze historical records and studies to understand Asan Square's evolution and historical context. It established a baseline for comparing past and present scenarios, highlighting how its history has shaped its current state. Historical photographs and sketches of the region provided valuable insights into the physical transformations and alterations in the utilization of the spaces.

4.3.2.2 Qualitative Methods

- **Literature review:** A literature review is conducted to determine relevant dimensions and indicators used or recommended in similar studies. It aids in constructing a theoretical framework, examining the historical context of Asan Square, identifying existing knowledge gaps, and guiding subsequent research.
- **Expert Consultation (KII):** KII is conducted with Guthi members to understand their role in cultural conservation and changes in practices, and with KMC officials, the Heritage and Tourism Department's Assistant Director, and the Ward 27 Chairperson to learn about current policies and future plans for the traditional city core.
- **Site Visits and Observation:** It enables the direct evaluation of buildings' physical characteristics based on typology, façade, and height. By observing daily activities, interactions, and the overall dynamics of the space, the research gained insights into how the space is utilized, the social structures present, and the rhythms of daily life.

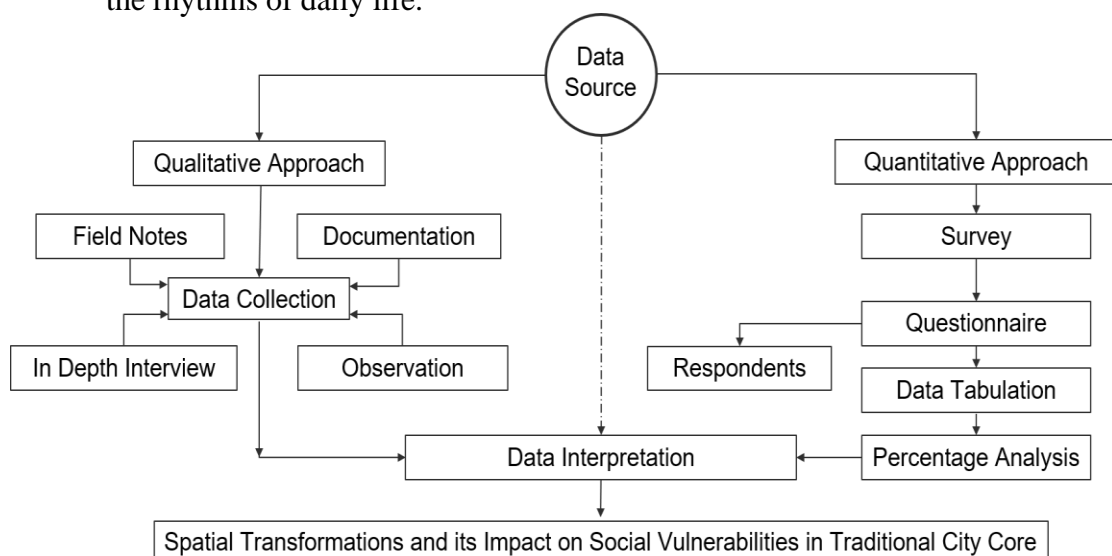


Figure 18: Methodology

5 CONCEPTUAL FRAMEWORK

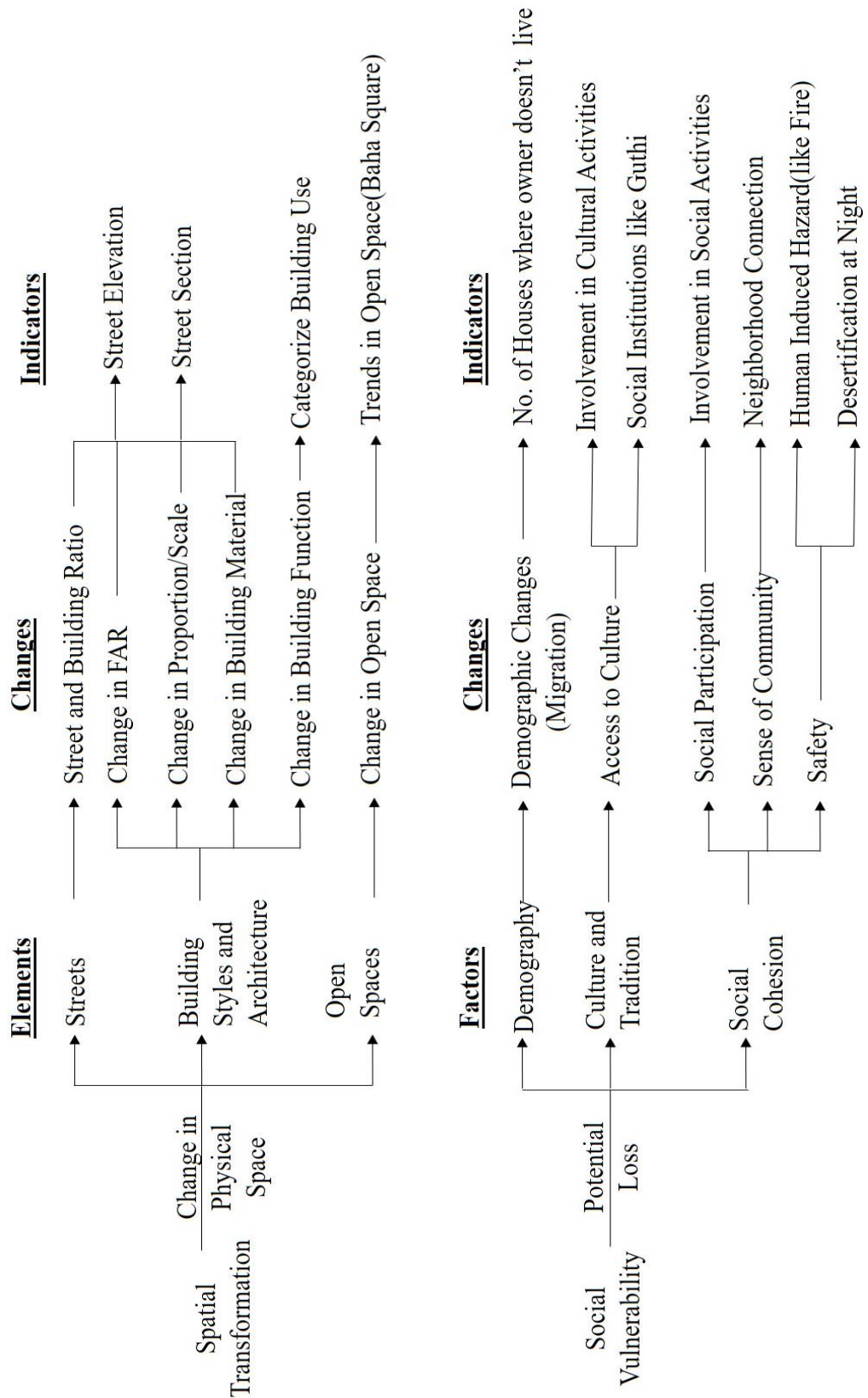


Figure 19: Conceptual Framework showing Changes and its Indicators

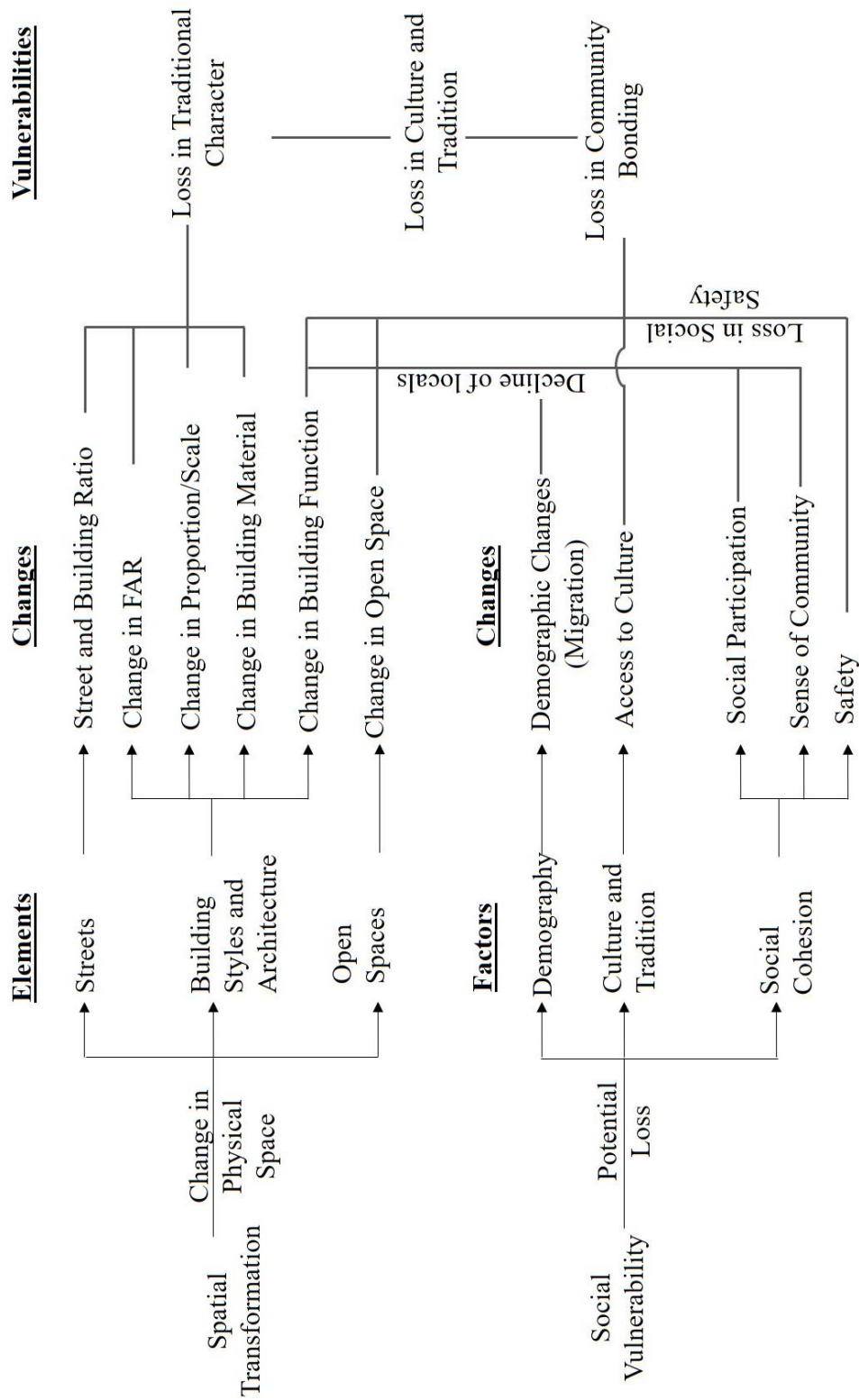


Figure 20: Conceptual Framework showing linkages between Spatial Transformation and Social Vulnerability

6 SITE STUDY

The market square, while serving as a community space, is strategically located at street intersections and functions as an important focal point within the town. It exhibits a “heightened urban space sense and has many elements of urban interest” (Tiwari, 1989, p. 96). Asan is a ceremonial market place, a meeting place and residential square with numerous temples and shrines, Asan, situated along one of the two historic India-Tibet trade routes passing through Kathmandu, has long been a central marketplace in the city. This historic trade path of Asan is the junction of six narrow streets, which connects it to various city centers within a close proximity such as ‘New Road’, Hanuman Dhoka Durbar Square’, Thamel and the public transportation junctions ‘Ratna Park’ and City bus park. Asan seems to be the most important because of its location on the ancient route of the valley and the ongoing social-economic and socio-cultural activities distinct from the other parts. Asan's market is renowned throughout Kathmandu for its vast array of goods, including food, spices, fabrics, electronic items, and precious metals.



Figure 21: Study Area Covering Asan Square, Streets and Baha

6.1 Historical Background

Kathmandu emerged along key trade routes in the tenth century, connecting Kirtipur to Sankhu and linking India with Tibet. In the succeeding centuries, the city grew following a mandala layout with a grid pattern slightly tilted 12 to 15 degrees eastward. This expansion divided the city into three sections: the central area (Nep. dathuwa) developed between the 10th and 12th centuries, the southern section (Nep. kotwa) between the 12th and 15th centuries, and the upper area (Nep. thatwa) between the 15th and 17th centuries. During the Malla period (12th–18th century), Asan Chowk became one of the most important trade centers in the Kathmandu Valley. Due to its strategic location at the intersection of trade routes connecting Tibet, India, and various parts of Nepal, Asan thrived as a commercial hub. Merchants from Nuwakot, Sankhu, and Thankot gather here to buy and sell goods, as Asan was one of the only significant markets at the time.

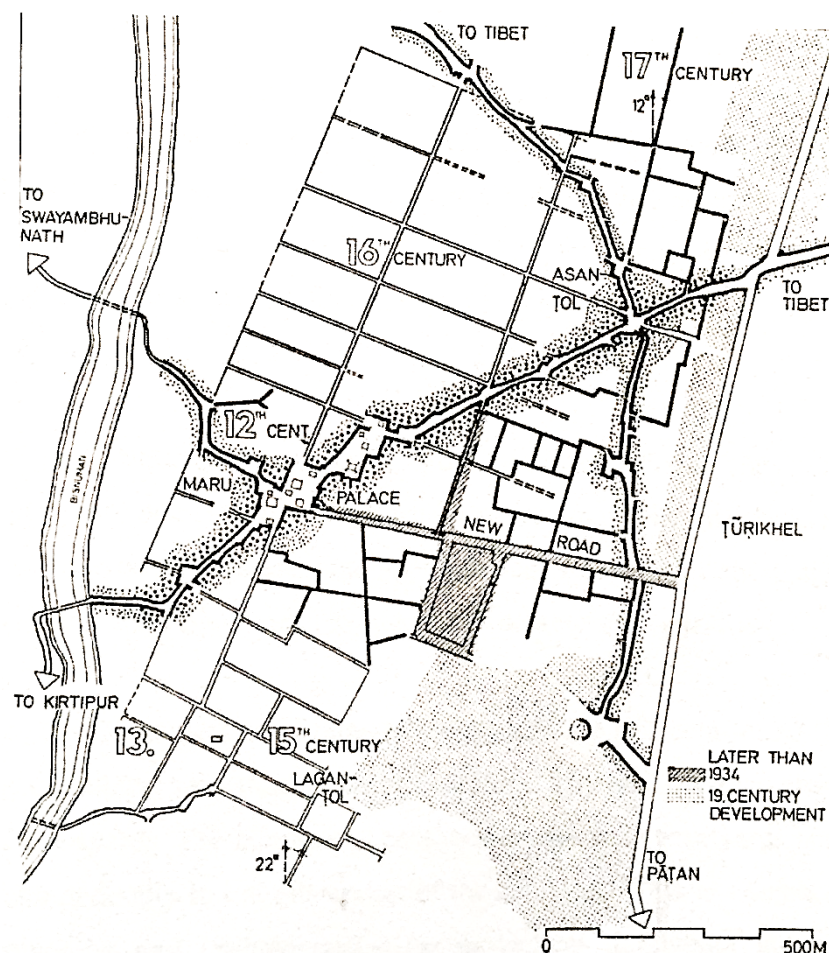


Figure 22: Spatial Development during 13th century to 17th century

According to legend, a renowned *Jyotish* (fortune teller) in Kathmandu predicted that a fish would fall from the sky at a specific location. To everyone's amazement, it happened exactly as foretold. People began calling the place *Ann Saa* in Newari, meaning "the place where the fish rained," which later evolved into *Asan*. A stone fish figurine, known as *Nyālon* (Fish Stone), still stands at the center of Asan Bazaar, marking the believed spot of this event and symbolizing the fish once sold in the market.

6.2 Main elements of Asan

In the early 20th century, Asan Chowk was a modest market square, but it rose to prominence following the construction of the Annapurna Temple during the Malla period. Dedicated to the goddess of abundance and prosperity, the temple significantly contributed to establishing Asan as an important center for both commerce and religion. Some of the other temples in Asan are Lord Ganesh, Stone Fish, Lord Narayan, Shree Kumari, Lord Uma-Maheshwore, and Chawoso Ajima.



Figure 23: Main Elements of Asan (Annapurna, Ganesh, Shiv-Parbati Temple)

6.2.1 Cultural Elements

Annapurna Temple: The Annapurna Temple is associated with the deity of paddy, Annapurna. Legend has it that a man carrying the Annapurna kalash on his back rested at Asan. After his break, he couldn't lift the kalash and left it there. He performed a ritual puja before leaving. The kalash remained, leading to the creation of the Annapurna Temple. Locals at Asan create the shape of the Annapurna kalash using food items during full moon days.

Ganesh Temple: A two-storey temple of Ganesh stands at the northern side of the square. Every traditional Newar neighborhood has a Ganesh shrine. The stone statue of Ganesh sits surrounded by glided arch.

Asan Dabu: Immediately in front of Annapurna temple is a stone platform where chariots of the gods are kept, sacred dances and musical performances are held during festivals. Daba thayeu is performed during whole month of Kartik of Asan Bajan Guthi at the evening in this Dabu. There was a time when one had to exchange money, he/she would have visited the dabali.

Yita Chhen: Yita Chhen, a historic quarantine facility in Asan during Malla Period, reflects the long-standing global practice of isolating newcomers to prevent the spread of diseases. Before modern medicine, traders, particularly from Lhasa and India, were required to stay in quarantine for at least two weeks before engaging in commerce. One such quarantine building, now over 200 years old, still stands and houses several shops. Within the building, there is a prayer space known as *Annapurna Gyan Mala Bhajan Khala*, preserving its cultural significance.

6.2.2 Festivals

Asan is a cultural and religious center and is the venue for a number of festivals.

- Asan Chalan is one of the most significant festivals in Asan, marking the main day of Dashain for the Newar community of the area. On this occasion, they perform the Tika ceremony and conduct the KUMA NAKIGU ritual, where a chosen child from the Maharjan community is worshipped as the child of Annapurna Ajima.
- Annapurna Jatra is the festival where an Idol of the goddess Annapurna, the patron deity of Asan, is placed on a palanquin and carried around town accompanied by Newar musical bands for a whole day. Then it returns where it belongs (Asan).
- Dyah Lwakegu is one of the most important festivals of Asan. On the second day of the Pahan Charhe festival in April, three portable shrines bearing the images of goddesses from Wotu, Tebahal, and Kanga are brought to Asan for a ceremonial celebration.

- Jana Baha Dyah Jatra is a chariot procession dedicated to the Buddhist deity Aryavalokitesvara, commonly known as Jana Baha Dyah or White Machhendranath. The chariot stays overnight at Asan before being pulled toward its next destination, Durbar Square. Devotees illuminate the entire square with butter lamps as a tribute to the deity.
- On the second day of the Kumāri Jātrā chariot festival, three chariots carrying the living representations of Ganesh, Bhairava, and Kumari pass through Asan. This procession is a key event within the larger Indra Jatra celebration.

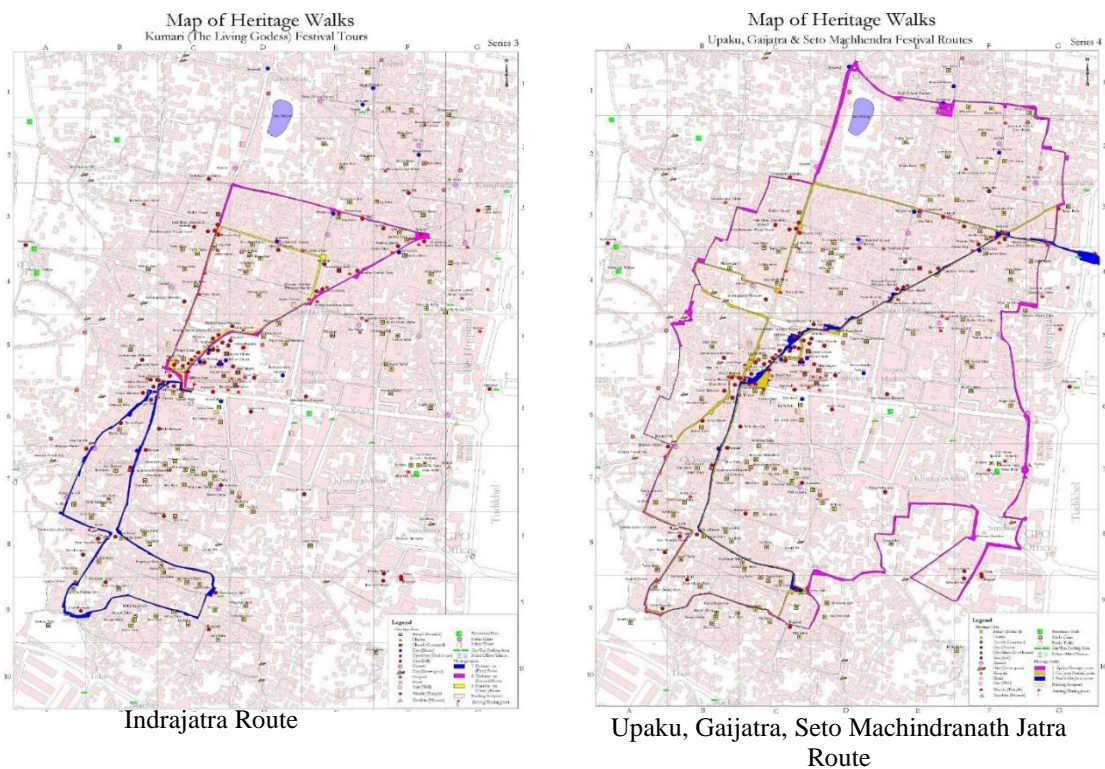


Figure 24: Jatra Route drawn by KMC



Figure 25: Different Jatras Celebrated in Asan

As Asan Square is the ceremonial place of most of the Jatra, so Asan Square is taken for the study. Also, main Jatra Seto Machindranath passes through Bhotahity and BalKumari road. On second day route of Indrajatra, Kumari chariot passes through Bangemuda and BalKumari road. Since these streets are culturally important, study of the physical aspects is important to know the impacts on socio-cultural aspects. So, the study area has been strategically selected keeping the Jatra Route in consideration. Baha also has the cultural importance so Baha connecting to the streets has been considered.

6.3 Location of survey

Survey was conducted in the streets, Baha and the main square of Asan which consist of 63% of Asan Street, 20% of Asan Square and 17% of Asan Street. Data have been collected from 83 buildings to obtain a comprehensive understanding of spatial transformations and their impact on social vulnerabilities across different urban spaces, including streets, Bahas, and the main square.

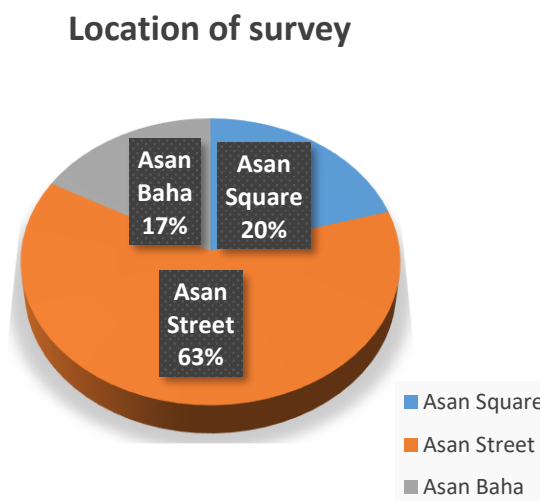


Figure 26: Location of survey

6.4 Demographic data of Interviewer

6.4.1 Interviewer Status in Building

It shows that 40% are building owners, indicating long-term investment in the area. 36% are associated with shops or godowns, emphasizing Asan's strong commercial nature. 24% are renters, representing a more transient population, likely for residential or business use.

Interviewer Status in Building

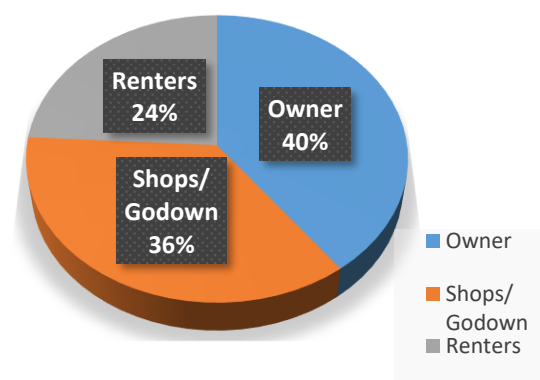


Figure 27: Interviewer Status in Building

This distribution suggests that a significant portion of the population in Asan is engaged in commerce, either as property-owning business operators or as tenants renting spaces for trade and residence. The relatively high proportion of shop and godown users implies a strong commercial character, reinforcing Asan’s historical role as a market hub. However, the presence of renters (24%) indicates an element of transience, which could contribute to social vulnerabilities such as limited access to long-term community networks, weaker political influence, and susceptibility to displacement due to rent fluctuations or redevelopment pressures.

6.4.2 Gender

Majority of the respondent were male which is 72 % and only 28% were females. This gender disparity is due to the workforce composition where male is more involved in commercial activities like owning a shop and in cultural activities as most of the guthi members are male.

Gender	Frequency	Percentage
Male	60	72%
Female	23	28%
Total	83	100%

Table 5: Gender Distribution

6.4.3 Age

Majority of the respondent were people of 40-60 years which is 51 %, then 20-40 which is 29% and >60 years is 17. This shows that middle age group were more interested in answering the interviews.

Age	Frequency	Percentage
20-40	24	29%
40-60	42	51%
>60	17	20%
Total	83	100%

Table 6: Age Distribution

6.4.4 Ethnicity

Majority of the respondent were Newar’s who were the owners and also owns a shop which is 46% where as others are mainly the renter who either lives in the building temporarily or rent a shop.

Ethnicity	Frequency	Percentage
Newar	46	55%
Others	37	45%
Total	83	100%

Table 7: Ethnicity Distribution

7 FINDINGS AND RESULTS

7.1 Spatial Transformation of Asan

Asan falls within the historic core of Kathmandu located. This core area, being a traditional settlement is very rich in its conventional planning patterns and its cultural heritage physically as well as socially. It consists of a Newari townscape with clustered houses and courtyards with Main Street and Squares whereas secondary streets and inter-communication paths connecting various levels of courtyards. Traditionally, the Asan bazaar symbolized the market of fruits, vegetables, spices, flowers and ritual materials that covered the square colorfully. And that, almost all the narrow frontage shop directly onto the street with displaying items.

The transformation of Asan Square over the years highlights the profound impact of urbanization, commercialization, and changing social structures. In 1920, Asan was a vibrant cultural and communal space, characterized by traditional Newar architecture, strong social bonds, and active participation in festivals. The square served as a gathering place where cultural traditions thrived. By 2009, modernization started to alter the landscape, with concrete buildings replacing traditional structures though remaining traditional buildings were in good state, an increase in street vendor and the encroachment of vehicles creating congestion in the road. By 2025, extensive reconstruction and vulnerable traditional buildings after 2015 Gorkha Earthquake, modern infrastructure, and commercial dominance further transformed Asan, with new structures overshadowing its historical charm. The migration of native property owners and declining cultural participation have weakened the traditional governance system. Asan remains a key economic and heritage site, its cultural vibrancy has diminished, raising concerns about the loss of identity and heritage preservation in the face of rapid urban change.

Spatial Transformations and its Impact on Social Vulnerabilities in Traditional City Core (A Case of Asan)



Figure 28: Photo of Asan Square in 1920 A.D.

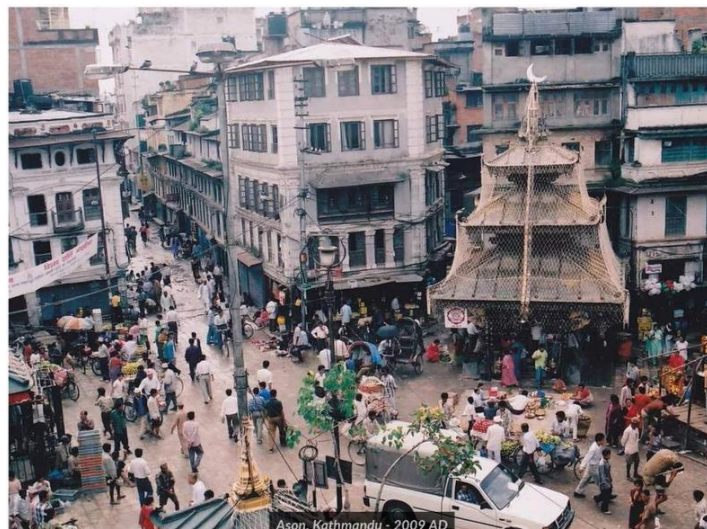


Figure 29: Photo of Asan Square in 2009A.D.



Figure 30: Photo of Asan Square in 2025 A.D.

7.1.1 Physical Aspect

Physical Aspect of the study area deals with various parameters such as building typology, building façade, building storey, etc of Streets, Baha and Square of Asan.

7.1.1.1 Building

In the past, shared lifestyles and the use of locally sourced construction materials such as brick, mud, and timber, along with common building methods, created architectural uniformity. Buildings typically had three to four stories with symmetrical facades, providing continuity with neighboring structures. Buildings facing streets and courtyards formed continuous walls unified by common design elements, despite minor variations in mass, façade treatments, and rooflines. This consistency enhanced visual harmony and strengthened the sense of spatial enclosure and definition.

However, rapid urbanization and intensified commercial activity placed significant pressure on traditional buildings. To accommodate commercial needs, structures were expanded vertically, introducing commercial spaces primarily on lower floors. Today, almost all street-adjacent buildings include commercial functions at ground levels, and commercial activities have even encroached upon inner courtyards in some areas. Also, previously open spaces, such as kitchen gardens and setbacks, have been replaced by taller structures, leading to environments lacking sufficient sunlight and ventilation.



Figure 31: Different typologies of buildings

7.1.1.1.1 Building Typology

Study area consists of 155 buildings which is divided on the basis of construction technology as load bearing and frame structure. Load bearing structure are the type of building construction where the walls, columns, and other structural elements directly support the loads. Frame Structure refers to the type of building construction where a skeletal framework of beams and columns supports the loads, rather than relying on load-bearing walls.

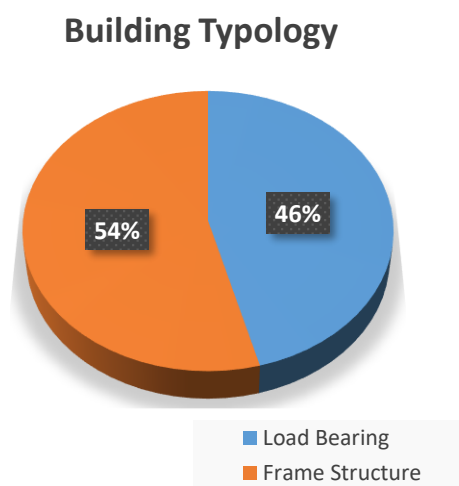


Figure 32: Building Typology

It was observed that 46% of buildings were load bearing and 54% of buildings were frame structure. This indicates a shift towards modern construction techniques in the historic urban fabric of Asan. The higher proportion of frame structures suggests an ongoing transformation in building technology, likely driven by factors such as safety, durability, and changing urban needs.

7.1.1.1.2 Building Façade

Traditional old building characterized by historic architectural styles and indigenous construction techniques made using locally available materials brick, mud, wood, with traditional wooden windows, struts, etc. Modern Building indicates structure designed with contemporary architectural principles, utilizing construction materials and technologies such as reinforced concrete, steel, and glass. A mixed building refers to a hybrid construction style that combines elements of both traditional and modern architecture. Modern with brick façade and traditional building implies that

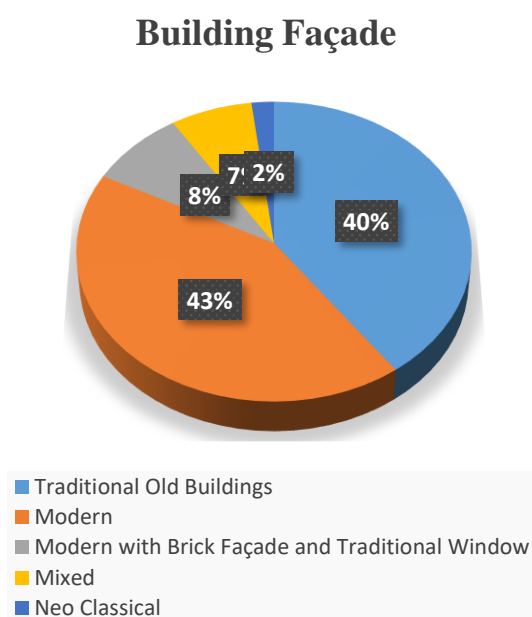


Figure 33: Building Façade

structural framework is typically made of reinforced concrete or steel, the exterior facade incorporates brickwork along with traditional wooden frames to retain a sense of historical continuity. A neoclassical building follows the architectural principles of classical antiquity, that often feature symmetrical facades, columns, pediments, and decorative moldings, emphasizing grandeur and elegance.

Most of the building had traditional and modern façade which is 40% and 43% respectively. This indicated that the urban fabric of traditional city is losing its identity. Only 8% of the modern building is maintaining the traditional aesthetic (brick façade and traditional windows) of the Asan. 7% is the mixed building with combination of traditional and modern elements indesign whereas only 2% of neoclassical buildings were observed.

7.1.1.1.3 Building Use

Most of the building in the street side and main Asan square are for commercial purpose covering 65%. For example, a building of 6 floor has ground floor and first floor as shop, second and third floor as godowns, forth and fifth floor lives the owner or renters. This is the typical use of building in the street area and Asan Square. Also 8% of the floors are vacant in this area without being used for any purpose. Only 15% of owners live in Asan which is mainly in the Asan Square and Baha not majorly from street. Owners of houses in BalKumari side has mostly migrated from Asan. As per respondent, the floor is getting vacant as rent is high for the working-class people and unavailability of parking facilities for loading and unloading goods.

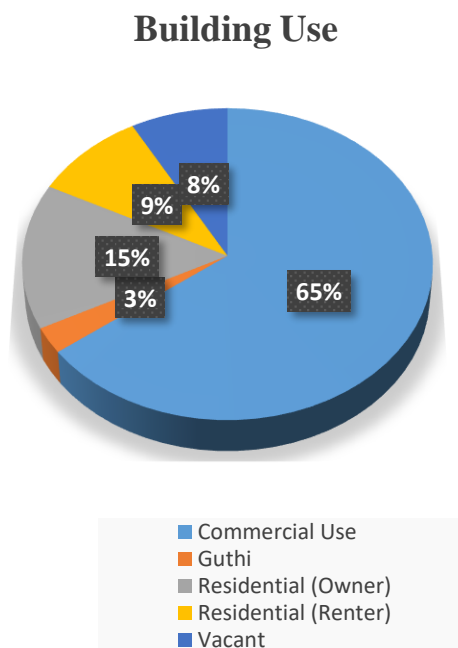


Figure 34: Building Use

In the Baha area there are mixed group of people i.e native people and renters. It is also given for godown purpose. Only 3-4 building ground floor are used for shops. As plinth

area of houses in the Baha are small, ground floors of most of the buildings are used as service areas such as toilets, tap or motorcycle parking etc.

7.1.1.1.4 Building Storey

The distribution of buildings by story height shows a dominance of mid-rise structures, with 5-story buildings being the most common (32%), followed by 6-story (23%) and 4-story (21%), reflecting the presence of traditional buildings. Low-rise structures (below 4 stories) are scarce (12%), while high-rise buildings (above 7 stories) account for 5%, indicating non-compliance with Building Byelaws.

Number of Building Storey

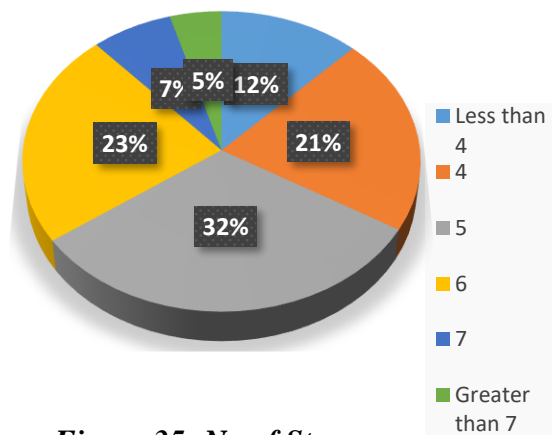


Figure 35: No of Storey

Four storey buildings with tile roof presenting a uniform skyline used to be the identity of the core. Prevalence of various height building indicates the disturbance in the skyline of Asan which degrades its aesthetic value. 4 storey buildings are usually the traditional buildings remaining which are waiting for reconstruction as many have been damaged during earthquake. Commercialization and increase in family members have created a demand for more space. Since the plot area is small so the buildings height is increasing day by day.

7.1.1.1.5 Change in FAR

Building byelaws are set of rules and regulations made by the government regarding the construction of any building. It basically deals with FAR, Building height, openings, open spaces, width of staircase etc. Asan street and square lies in Preserved Sub Zone while Asan Baha lies in Mixed Old Residential zone. FAR has changed from 3.5/4.5 to no FAR that shows no longer restriction by a floor area limit. From above data 11% of buildings have completely violated the Building Byelaws exceeding height of 65' and 75'. This indicates the lack of effective implementation or enforcement of the byelaws by the government.

Table 8: Change in FAR from 2064 to 2080

Area of Study	2064	2080
Preservation Sub-Zone (Asan Streets and Asan Square)	FAR=3.75 for new building, 4.5 for reconstruction of old building Maximum floors without staircase=5 Maximum height with staircase=45' Maximum floor height=8'	No FAR Maximum floors without staircase=6 Maximum height without staircase=65'
Mixed Old Residential Subzones (Asan Baha)	FAR=4 for new building, 4.5 for reconstruction of old building Maximum floors without staircase=5 Maximum height with staircase=45'	No FAR Maximum floors without staircase=7 Maximum height with staircase=75'

The height limit rose from 45 ft to 65 ft in the Preserved Sub-Zone and 75 ft in the Mixed Old Residential Zone, reflecting a shift toward vertical growth. About 11% of buildings have fully violated the byelaws. No FAR implies that the building height is determined by the height restriction rather than restriction due to FAR.

Buildings following Bye laws

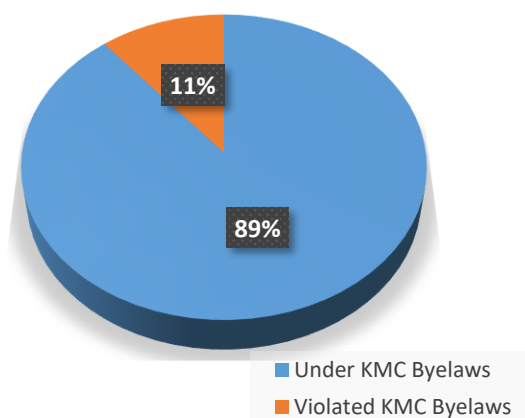


Figure 36: Building Following KMC Byelaws

Taller buildings alter the traditional scale of urban spaces, especially in areas with cultural heritage. In historic areas, regulations need to consider local architecture and scale compatibility to maintain urban harmony.

7.1.1.2 Street

Two prominent features define the design of traditional towns: their pedestrian-friendly scale and the well-distributed communal spaces throughout the settlement. These elements ensured that the towns catered to the collective needs of the community rather than individual preferences. Traditional towns in the valley reflect a strong sense of scale crafted not only to fit human proportions but specifically tailored for pedestrian movement. This slower pace allowed people to appreciate architectural details, which is why buildings featured plain surfaces adorned with intricately crafted windows. The streets narrowed and widened, a great design feature, breaking monotony and bringing personality into the place.



Figure 37: Street Elevation of Asan-Bhotahity Road



Figure 38: Street Elevation of Asan-Bangemuda Road

The unregulated expansion of urbanization, unplanned urban growth, transformation of buildings, and rising volume of vehicles present in Kathmandu have significantly shaped the characteristics and functions of diverse street typologies. The vertical subdivision of traditional buildings, along with unplanned renovations and reconstructions resulting in inconsistencies in building setbacks and plinth levels has disrupted the original proportion between street width and building height. This development has caused the once-cohesive formation of continuous street walls to break apart, altered volumetric definitions, and diminished the overall cohesion of the streetscape. Also, the introduction of buildings with varying shapes, sizes, masses, and

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heights, often incorporating diverse architectural styles and materials that fail to harmonize with their surroundings, has contributed to a visually disordered streetscape, devoid of a distinct sense of place.



Figure 39: Section of Asan-Bhotahity Road(Past)



Figure 40: Section at Asan Bhotahity Road (Present)

According to (B. K. Shrestha, 2011), the ratio of street width to building height typically falls between 1:1 and 1:2, with an average of 1:1.5, which contributes to a sense of enclosure and a scale that is comfortable for human interaction. It was also suitable for the climate of Kathmandu to ensure penetration of sunlight in the streets and buildings.. But at present context, due to pressure of commercialization, increase in demand for space has distorted with the ratio of street width to building height from (1:3.5 -1:4). This disproportionate growth has altered the city's skyline, diminished the sense of enclosure, reduced sunlight exposure, and impacted the visual harmony and spatial experience of the streetscape.

7.1.1.3 Open Space

The central Asan Square serves as a public marketplace, with streets and alleys extending from it that lead to various shrines and sacred courtyards. Surrounding the square are Buddhist courtyards such as Takse Baha, Kwathu Baha, Haku Baha, Dhalasikwa Baha, Dagu Baha, Asan Baha, and Hwakha Baha. Each courtyard features an ornate shrine housing a Buddha image, along with several stupas.

7.1.1.3.1 Asan Square

Asan Chowk has historically been a bustling marketplace offering a wide range of goods. In ancient times, it was renowned as a major rice market, especially near the Annapurna Temple, where different varieties of rice, lentils, beans, and beaten rice were sold. Asan is not just a marketplace but also a center of religious and social activities. The square is home to numerous temples and shrines, including the Annapurna Temple, Ganesh Temple, and Krishna Temple, each with its own historical and cultural importance. Asan has always been a center for social gatherings and performances.

The social structure of Asan was characterized by two essential elements: tightly grouped three to four-story houses that encircled courtyards and Buddhist monasteries (termed bahal and bahil in Nepali), alongside a series of narrow, non-linear streets and pedestrian paths that connected public squares and courtyards among these clusters. These elements served as figure and ground, creating a dynamic interplay between them.



Figure 41: Asan Square with its surroundings

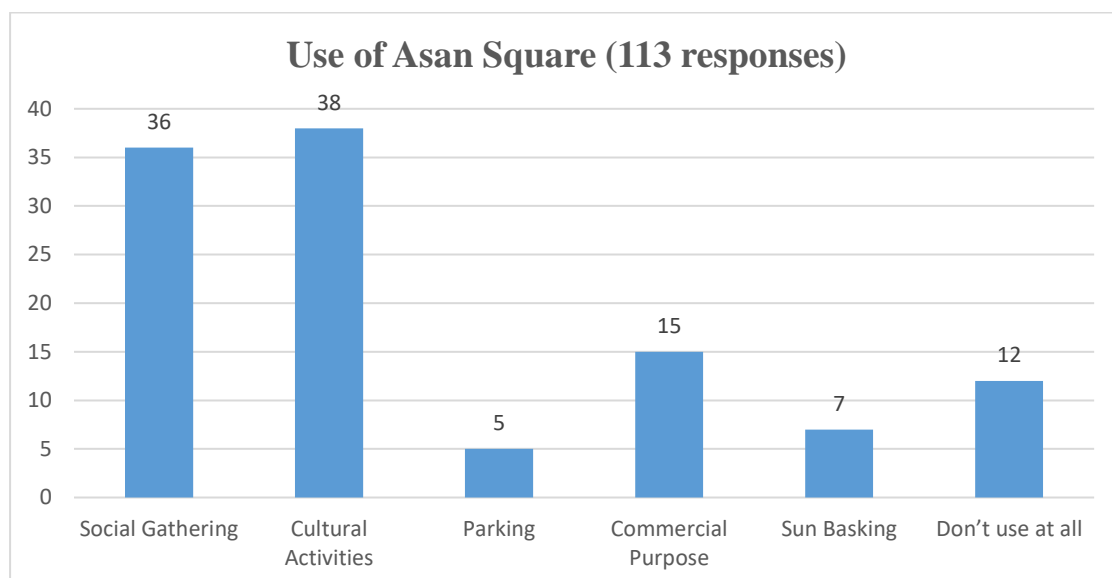


Figure 42: Use of Asan Square

Even today, Asan remains a focal point for major festivals such as Indra Jatra and other religious celebrations, where the streets come alive with chariots, masked dances, and vibrant processions. Its strategic location and deep-rooted cultural heritage make it an indispensable part of Kathmandu's urban landscape. So, among 106 responses, majority of respondent indicates that Asan Square is mainly used for social activities (36 responses) and cultural activities (38 responses) like Jatras, festivals, etc. Social Activities like blood Donation program is conducted twice in a week in this public Square. Still 12 responses say they don't use Asan Square at all.

Since Kathmandu Metropolitan City (KMC), under Mayor Balen Shah's leadership, intensified efforts to remove street vendors from areas like Asan, citing legal and urban management concerns, the Asan Square is used less for commercial purpose. Parking and sun basking are minor activities, indicating a lack of designated spaces for leisure and vehicular needs.

7.1.1.3.2 Baha of Asan

The streets and alleys extending from the square are lined with shrines and sacred courtyards. Buddhist courtyards such as Takse Baha, Kwathu Baha, Haku Baha, Dhalasikwa Baha, Dagu Baha, Asan Baha, and Hwakha Baha are located around the edges of the square. Each courtyard features an ornate shrine housing a Buddha image along with various stupas.

- **Haku Baha**

The facade of this shrine is quite characteristic. The entrance is guarded by a pair of lions and the door-frame is elaborately carved. The first storey has carved window-frames, and the second storey has a projecting window-balcony supported by six small carved struts. The top storey is obviously a modern addition yet it uses four struts depicting leaping griffins which must have come from another part of the original structure. The finial is made up of a small chaitya inside a triangular metal abrana. Around the courtyard are images of Maitreya, Jambhala, Manjusri, Baruna, and Padmapani. The torana was dedicated in 1651. The priest is a Bajracharya.



Figure 43: Haku Baha

Now, the building has been distorted after the earthquake. Houses in the Baha are in vulnerable condition after earthquake 2072. These 4 storey load bearing structure are supported by the wooden dalin which shows the owner has no intention of reconstructing of the building rather leaving it vacant. Also Baha has a mix group of people in the community as renters can be seen residing the neighbourhood. This illustrates the connection between tangible and intangible heritage, highlighting how the loss of one can result in the diminishing of the other. Open Space has been completely occupied by the bikes for parking's, This Baha is kept closed at night time with the chain gate for security reasons.

- **Dagu Baha**

Although this monastery has been greatly altered by the modern buildings around it, the six votive chaityas in the courtyard help it to retain a monastic character. The torana over the doorway depicts Ganesh, Saraswati, Sariputra, Maudgalyayana, and Matrakala. The shrine is worshipped by the Shakyas.



Figure 44: Dagu Baha

Houses in Dagu Baha has a mixed combination of modern and traditional building with is either load bearing or modern frame structure. This gives no uniformity in the façade. Although, in this Baha wooden craving windows, brick façade, in the modern building can be seen which shows that efforts of locals to maintain the traditional looks. Earlier elderly used to come for sunbasking here and communicate with each other but now its completely filled with bikes for parking's which has decreased its importance of cultural and social value.

- **Tachhen Baha**

The features on the shrine of this bahal are quite complete. The brickwork is in fair condition. There is a metal door and torana, and the usual pattern of a quintuple window flanked by two smaller windows on the first storey. The projecting balcony on the second storey is carved and supported by carved struts. There are a few sculptures of the various Lokeswaras and Prajyanpara- mita in the shrine. The inscriptions date the donation of the finial in 1640, some land and a house for the Agan deity in 1720, and the consecration of a metal chaitya finial in 1941. The monastery founder, Surata Bajra,

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earned great fame in Lhasa by his understanding of the scriptures and by outclassing the Dalai Lama in argument.

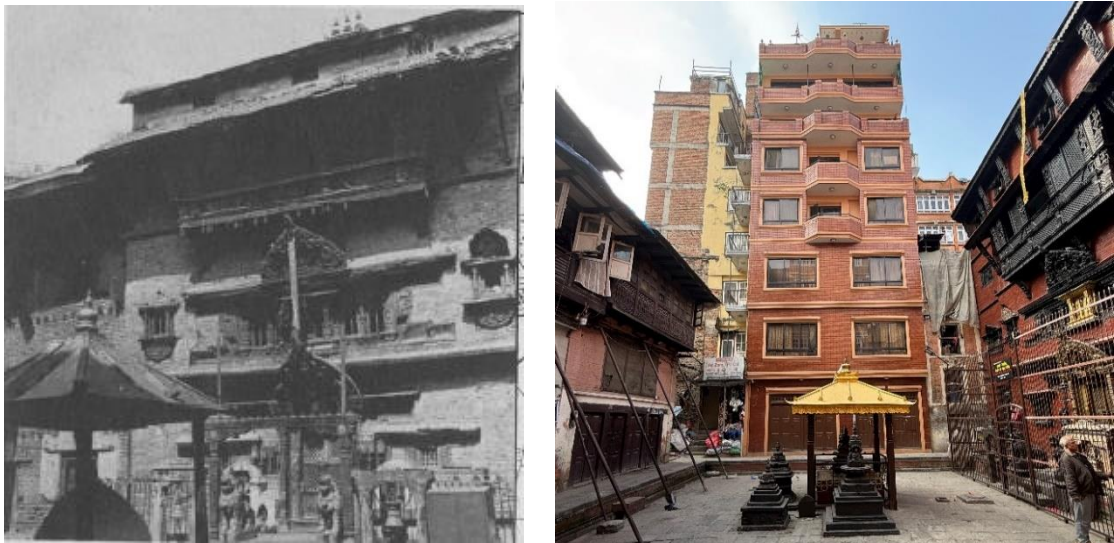


Figure 45: Tachhe Baha



Figure 46: Section of Courtyard of Tachhe Baha(Past)

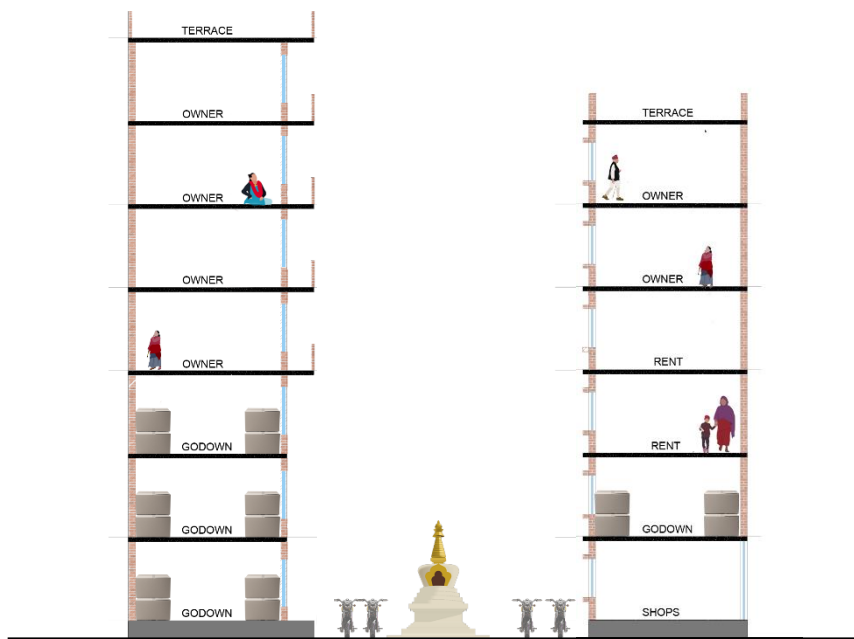


Figure 47: Section of Courtyard of Tachhe Baha(Present)

Above section shows the spatial transformation of Baha through a period of time. The buildings were proportional to the stupa, maintaining a sense of spatial balance. Whereas at this present context, the taller structures alter the visual hierarchy, making the stupa look less significant in comparison. The proportion of built mass to open space is balanced, with the stupa given breathing room before but now the increased height of the buildings reduces the sense of openness, making the space feel more confined.

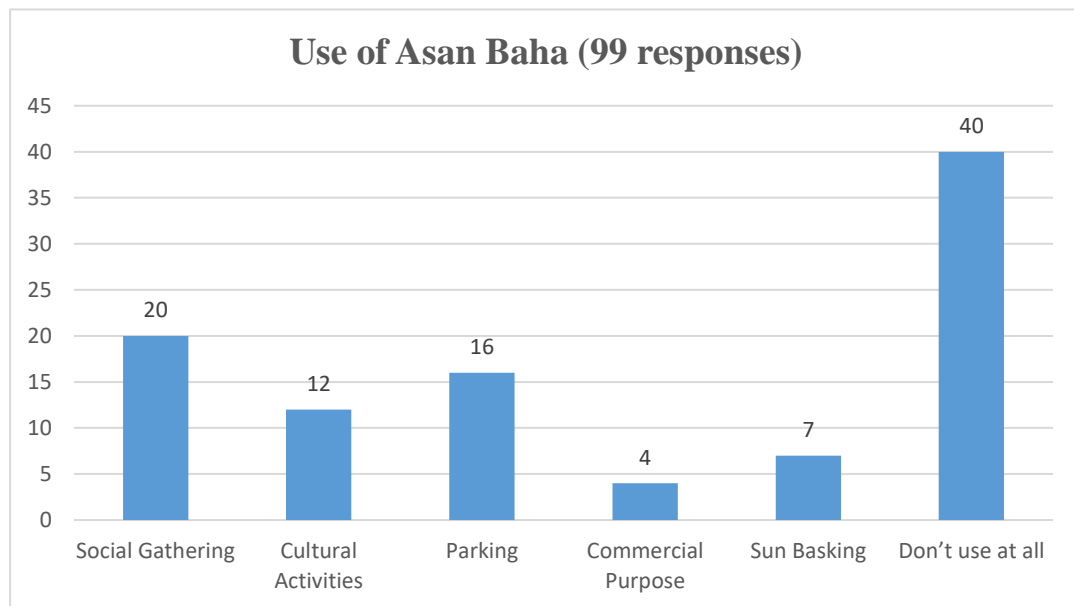


Figure 48: Use of Asan Baha

Based on 99 responses, a significant number of respondents (40) indicated that they do not use Asan Baha at all, suggesting a decline in local participation and weakening of traditional social and cultural engagement. Among those who do utilize the space, most are nearby residents who use it for various purposes primarily for parking (16 responses), followed by social gatherings (20) and cultural activities (12). A few also use it for sun basking and commercial purposes. However, the growing use of Bahas for parking has altered their original character as inclusive semi-public spaces. This transformation into semi-private or restricted zones limits access, reduces opportunities for informal interaction, and gradually diminishes the collective value of these courtyards. Traditionally, Bahas served as vital community spaces fostering cohesion, cultural continuity, and social bonding. The shift in their usage reflects not only changing urban needs but also a concerning erosion of shared community life and cultural identity.

7.1.2 Physical Changes

Physical Changes are categorized into five major issues: new tall buildings, congestion, change in the use of open space, emergence of godowns, and loss of traditional character.

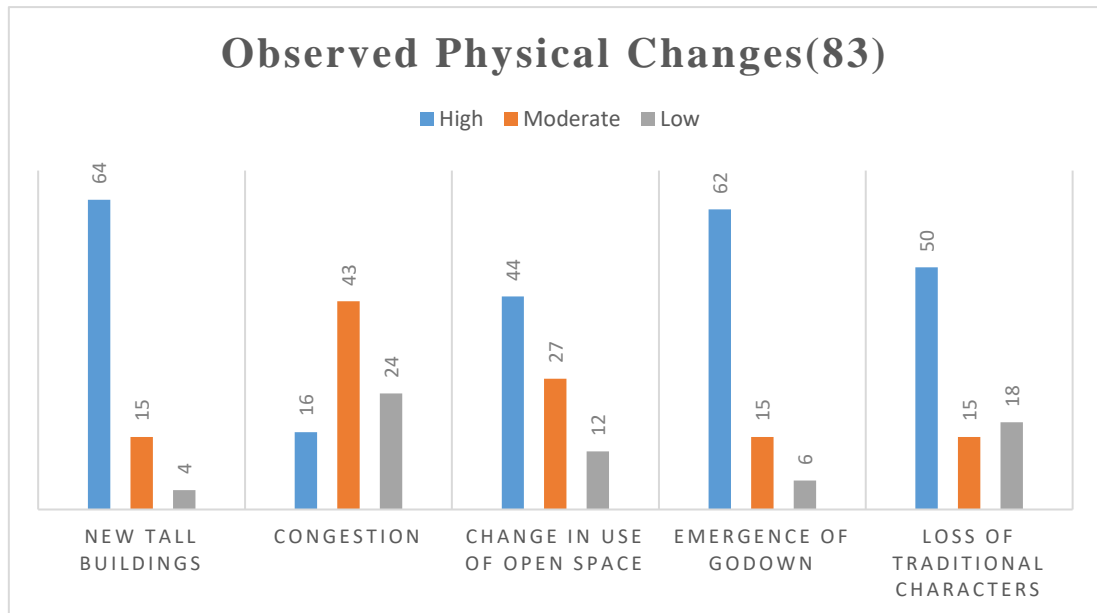


Figure 49: Observed Physical Change

- New tall buildings and the emergence of godowns are the most significant changes as majority of respondents 64 people and 62 people respectively rated this change as high, indicating a shift towards vertical expansion and commercial storage over traditional mixed-use spaces.
- Congestion is a moderate issue with 43 responses, with varying levels of concern among respondents, likely influenced by specific street conditions and urban mobility patterns. After the removal of the street vendors and no parking in Asan premises strategy, respondents feel less congested as space has become open for circulation.
- Open Spaces is rated high with 44 respondents, reflecting the increasing conversion of public or communal spaces into commercial or other urban uses.
- Loss of Traditional Characters with 50 respondents rating it as high, highlighting the ongoing shift away from historical architectural and cultural identities.

7.1.3 Drivers of Physical Changes

The transformation of the built environment in traditional urban cores is influenced by multiple interrelated factors. To better understand these dynamics, respondents were asked to identify key drivers contributing to physical changes in the area.

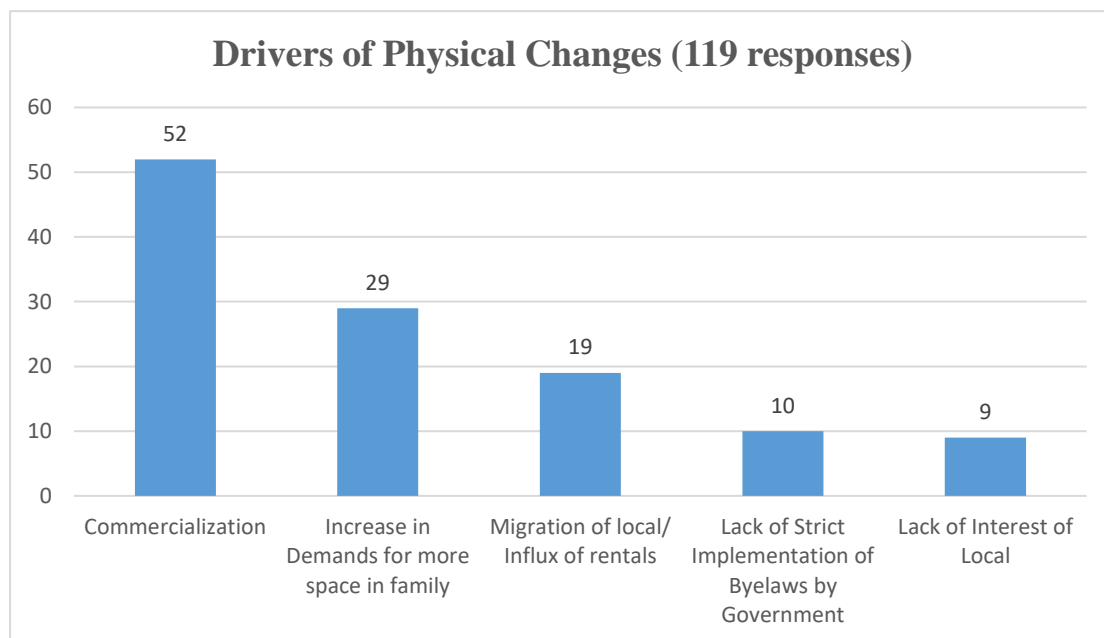


Figure 50: Drivers of Physical Changes

According to Commercialization (52 responses) stands out as the most dominant factor, emphasizing how market-driven developments, increasing business activities, and economic incentives are reshaping land use patterns, driving property modifications, and altering traditional urban functions. Increased family space demands (29 responses) also contribute s expanding households require additional living areas, often leading to vertical expansion, space reconfigurations, or even displacement. Migration and rental influx (19 responses) indicate a demographic transformation, where traditional long-term residents may be moving out while renters, businesses, and new populations move in, potentially weakening social ties and community cohesion. Weak bylaw enforcement (10 responses) suggests that the absence of strict urban regulations allows uncontrolled modifications, unauthorized constructions, and unregulated commercial expansions, accelerating spatial transformation. Meanwhile, lack of local interest (9 responses) highlights declining community engagement in urban management.

7.2 Impact of Spatial Transformation on Social Vulnerability of Asan

7.2.1 Demography

Under Demography, major factor migration has been studied of the study area

7.2.1.1 Migration

Migration from Asan has increased maximum due to various reason. In the survey of 83 buildings, respondent responds as 63 % of native owner of the building has migrated from the native house. The houses in which owners are not living is either vacant or rented for godowns/shops or rented by migrants. This data shows that 63 % of owner are not living in their native homes which shall affect the social and cultural value

Migration of Native Owners

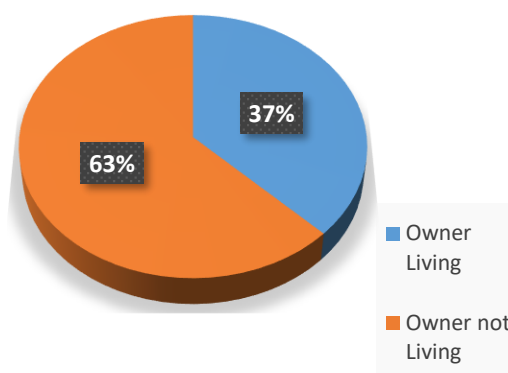


Figure 51: Migration of Native Owners

the traditional city. Since Asan lies in the Heritage Walk route as many processions route passes through, it has high cultural value. But due to migration of locals, the buildings are in vulnerable conditions not being able to reconstruct due to various reasons like financial crisis, family disputes, etc This has impacted the cultural value of this place as jatra route is meaningful when there are people viewing and enjoying the moment to make it feel livelier but now during jatra also many houses are dead. This shall get even worse which will further degrade in future times.

7.2.1.2 Ownership

Majority of the buildings were owned by multiple owners i.e 52% and 40% were under single ownership. Only 8% of the buildings were owned by guthi. This indicates that there is prevalence of guthi chhen in the study area. Multiple ownership indicates 2 types i.e the

Ownership	Frequency	Percentage
Single	33	40%
Multiple	43	52%
Guthi	7	8%
Total	83	100%

horizontal division of the house with separate ownership as well as combined ownership.

7.2.1.3 Reason for migration of owners

To explore the underlying causes behind the outmigration of native residents from Asan, respondents were asked to share their reasons for leaving the area.

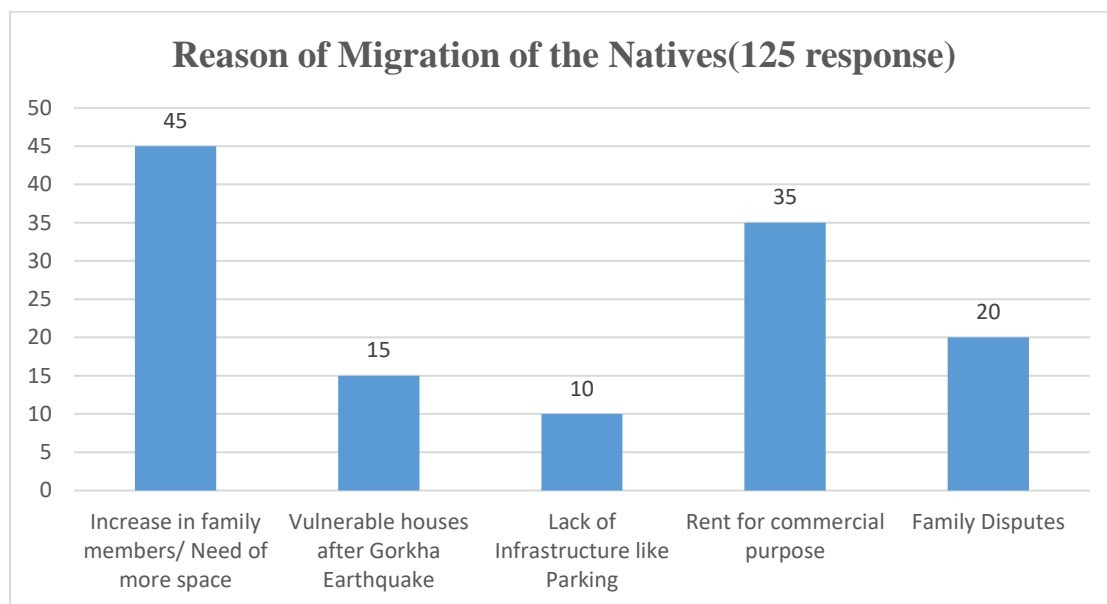


Figure 52: Reason of Migration of the Natives

Based on 119 responses from 83 interviewees, several key factors have been identified behind the migration of native residents from Asan. The most common reason (45 responses) is the increase in family size due to changes in family structure. With limited plot sizes, families are either forced to build vertically or move elsewhere for more spacious living conditions. Commercialization is another major factor (35 responses), as Asan’s transformation into a commercial hub has led many property owners to rent out their houses for business or rental income instead of living in them. Family disputes and the transition from joint to nuclear families (20 responses) have also contributed to relocation. Additionally, 15 responses cite post-earthquake damage and financial challenges as reasons for being unable to rebuild, prompting migration. Lastly, 10 responses mention the growing inconvenience caused by a lack of parking, further intensified by recent efforts of Kathmandu Metropolitan City to remove parking facilities around Asan.

7.2.2 Culture and Tradition

The traditional town embodied a cosmic image, with private buildings restricted from exceeding the height of nearby temples. Consequently, religious rituals governed town planning and building bylaws, and a deeply religious society strictly adhered to these regulations. According to (Tiwari, n.d.) “The town form and structure were never challenged until modern times when people did not feared gods”.

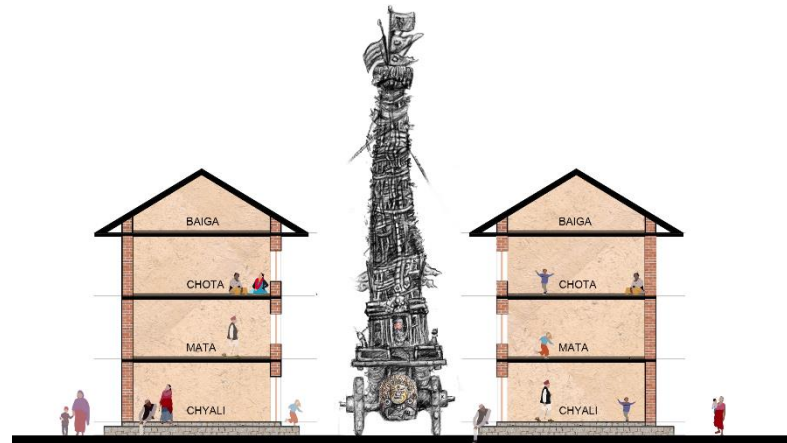


Figure 53: Section of Asan-Bhotahity Road showing Seto Machindranath Jatra(Past)

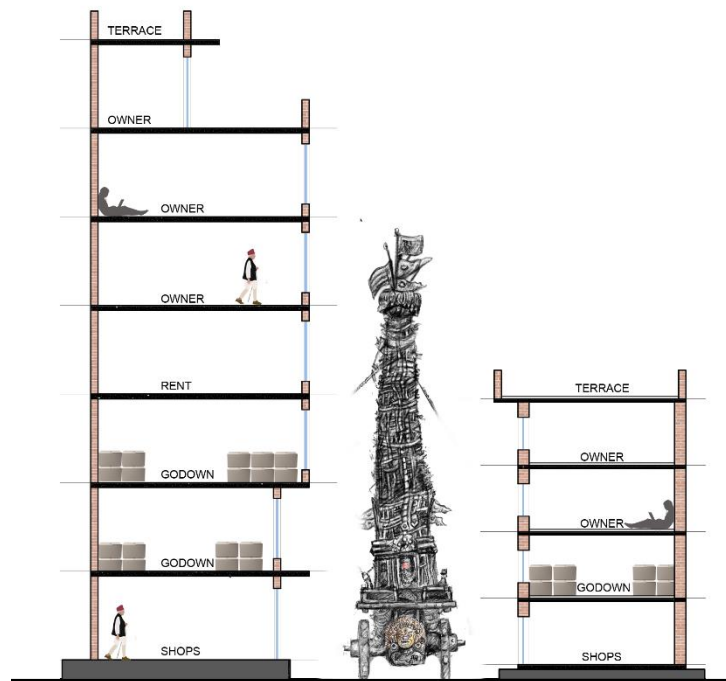


Figure 54: Section of Asan-Bhotahity Road showing Seto Machindranath Jatra(Present)

A balanced urban landscape where traditional mid-rise buildings (3–4 stories) coexist with cultural elements like the chariot of Seto Machindranath or similar religious structures in Malla Period. The festival of Seto Machindranath, which relies heavily on its symbolic and visual prominence, is now dominated by the vertical expansion of buildings. This creates a diminished perception of the chariot's significance within the urban fabric. The shift from human-scaled architecture to high-rise developments reflects a prioritization of modern construction over cultural heritage. The architectural transformation shall lead to reduced sense of community and place attachment to people living.

7.2.2.1 Social Institutions of Asan

7.2.2.1.1 Asan Sewa Samiti

It was established on 2045 B.S. There are total of 60 members which has decrease from 70-72 members consisting of 11 board members. It basically manages Asan Bazaar area such as collection of rents from street vendors, parking management, lightings, cleanliness, safety and security management. It collects Rs 1800 monthly from the street vendors as the cost of selling their product in the Asan Bazaar.

7.2.2.1.2 Vintuna guthi

There is total 25 members which has decrease from 30 members after the death of the members. Majority of the members are Tuladhar, Shrestha, Tamrakar, Shakya, Sthapit among which Chaudhary is an exception. It manages various festival rituals such as Indrajatra, Seto Machindranath jatra, During Indrajatra, Samebaji is displayed in the main Dabali of Asan Square for which ingredient is funded by the locals. One of the most remarkable festivities at this temple is known as 'Taya Ma' in Newari, and is the special ceremony held once every eighty years. On such special occasions, the whole temple is covered with a net made of rice grains (puffed up) which is conducted by this guthi. During Indrajatra, beautiful Samebaji is showcased in the dabali area which is distributed to the public after the God Kumari visits the Annapurna Temple and puja is performed.

7.2.2.1.3 Leo Club

There is more than 50+ members. It conducts different social programs such as blood donation programs twice a week, various volunteer services during disasters, festivals etc. Youth are actively participating in this program

7.2.2.1.4 Asan Bajan Guthi

This guthi has a member of 450 member which has increase from 70 members as youngster are getting involved in this guthi. This guthi is made to conserve the music of Gunla Bajan and Dapha Thayau. During Gunla, for one month the members go to Swayambhu playing the musical instrument early morning and then return back to Dagu Baha where people gather and share the social bonding and return back to their places. The main days during the holy month (Gunla) are Bahidyah Swahwanegu, when devotees playing Gunla music visit sacred courtyards to view the images of Bahidyah (Dipankara Buddha). Bajan is also played

This guthi provides training related to musical instruments like Dhaa and Nyakhin. But the main problem faced by this guthi is the lack of cultural musical instruments. For 350 members there are only 34 big Dhaa, 4 small Nyakhin, due to which for learning these instruments, people have to wait for their shifts. This shortage can lead to weakening the cultural continuity of Asan's musical heritage. As per KII Lalit Ratna Tuladhar, KMC provides 2 lakhs per year to this guthi for its functioning but it is not enough as this guthi has large number of members.

Challenges:

- Less funding has caused difficulty in functioning of guthi still managing by the support of guthi members.
- Lack of musical instruments.
- During Halimali Punhi when Dapha is played for 1 month in the evening at 8-9pm is now conducted and finished at 6pm as people reside far from the core area. So this function has become a compulsion only not by interest.
- Lack of skilled man power such as Guru who knows music of Dapha so they have to hire Guru from other clan in order to continue these functions.
- Busy schedule of youngster to have trainings.

7.2.2.1.5 Annapurna Gyan Mala Bhajan Khala

This guthis performed Rastriya Gyan Mala Bhajan which played both Hindu and Buddhist music every day in Yita Chhen ground floor but now changed to Gyan Mala Bhajan which played only Buddhist music is performed every Tuesday and Friday due to migration of native people, there is lack of manpower and enthusiasm in people.

7.2.2.1.6 Annapurna Guthi

There are currently 32 members which has decreased from 35. It organizes different rituals such as Nasa Puja (Chait Dashain), Asan Annapurna Jatra (Mohni), Asan Nitya Puja. It conducts 14-16 different types of Bwe such as Samebaji, Nasa Puja Bwe, Depuja Bwe, Holy Punhi Bwe, etc. Sacrifice of animals is only done during Mohni (10th Day of Dashain).



Figure 55: Annapurna Dyochhen

After Guthi Sansthan Act, 2033 B,S, a legal framework introduced by the Government of Nepal to regulate, manage, and control guthis. The Sansthan took charge of revenue collection, land leasing, and using proceeds for religious and social activities. As per the KII Ramesh Maharjan this Guthi Sansthan gives only 8% of the revenue to this Asan Annpurna Guthi. For example: Guthi Sansthan provides only Rs 3000 per 6 months to conduct Asan Nitya Puja, which is very less to run the rituals of this Guthi. So for the running of this guthi lower floor of guthis is used for commercial purpose i.e consists of 6 shops.

Challenges:

- No proper records of ownership of Guthi due to which guthi get diminish.
- No documentation of the activities performed by the guthi due to which there is lack of knowledge sharing.
- Lack of traditional materials like organic rice, flowers, fish,etc
- Negligence of members, not able to manage time during their busy schedule.

- Less involvement of youths.

5.6.2.1.6 Hapaa Guthi

This guthi served as a helping hand which is the meaning of Hapaa. This guthi was formed by 20 members which collapsed as it all members got old and couldn't give continuity, also the youngsters were not interested to continue due to lack of time. This guthi was formed for the promotion of cultural activities through various media like cassettes, newspapers, music videos and also promoted Nepal Bhasa.

7.2.2.2 Involvement of Owner and Renters in Guthi and Cultural activities

To understand the social dynamics within traditional city core of Asan, respondents were asked about their involvement in Guthi and cultural activities.

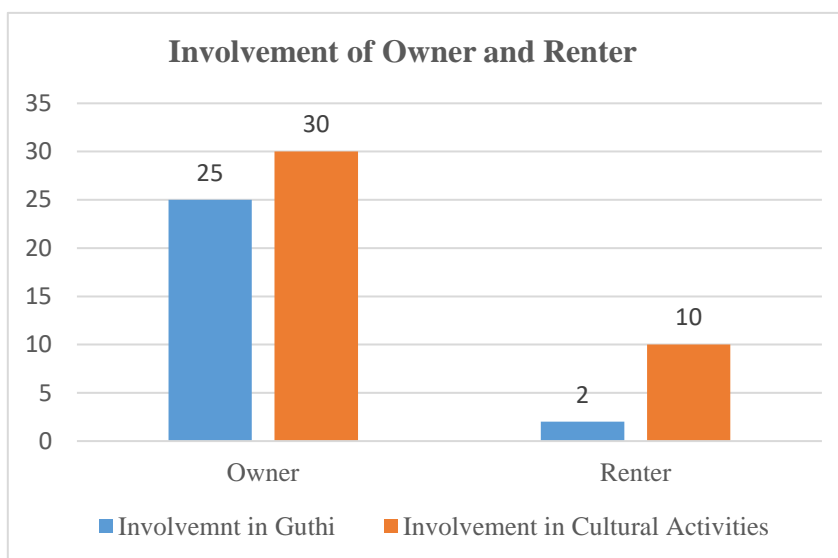


Figure 56: Involvement of Owners and Renters in Guthi and Cultural Activities

It shows a clear disparity between owners and renters in terms of involvement in traditional institutions and cultural activities. Among owners, 25 individuals are involved in Guthi and 30 participate in cultural events, reflecting a strong connection to local heritage. In contrast, only 2 renters are engaged in Guthi and 10 in cultural activities, indicating a much lower level of participation. This limited engagement suggests that renters are less integrated into the social and cultural fabric, which poses a threat to the preservation of communal practices and intangible heritage. As ownership appears closely tied to active participation, the growing number of renters in traditional urban areas may further weaken community bonds and traditional governance structures.

Asan has undergone rapid commercialization, leading to increased renters and the displacement of many original residents. Many Guthi-affiliated families, once central to organizing festivals and maintaining public spaces, have moved out, and their places are increasingly taken by renters who are often business operators with limited interest in local traditions. This shift has led to a decline in cultural continuity and weakened the influence of traditional institutions. Rising non-membership is eroding Asan's socio-cultural identity, stressing the need for inclusive strategies to engage renters in local traditions to maintain community spirit and preserve community heritage.

7.2.2.3 Involvement in Cultural Activities

To assess the current level of cultural engagement in Asan Square, respondents were asked about their participation in traditional activities and festivals.

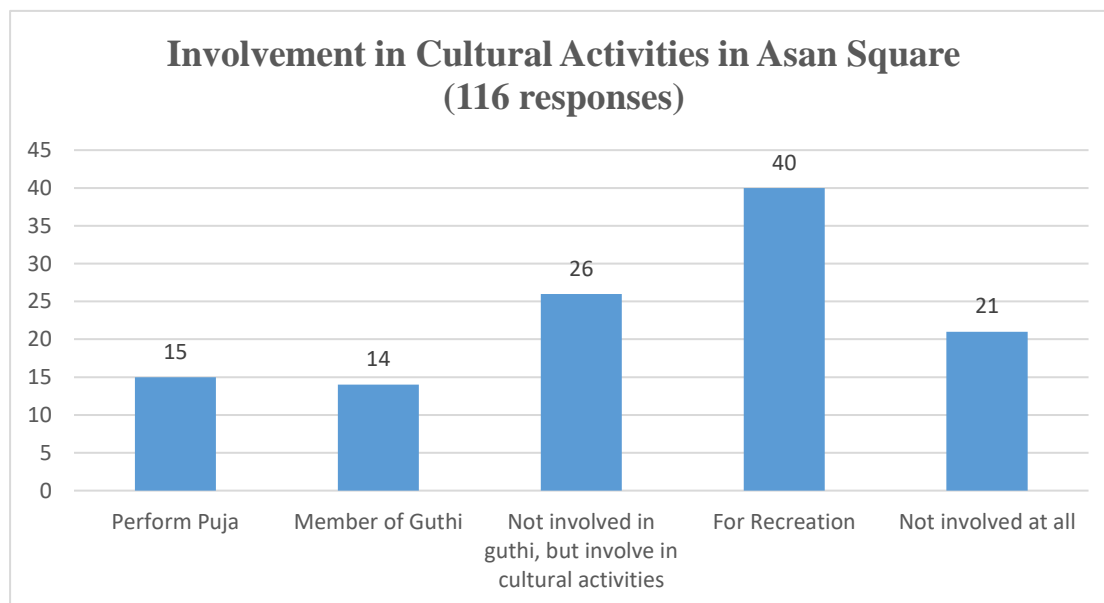


Figure 57: Involvement in Cultural Activities in Asan Square

The Asan Square itself has derived its strong character from the various festivals and processions that moves through this space in its predefined route at pre-determined time intervals. The study area especially the central Asan square is used for various Jatras and procession routes. Many rituals and festivals and procession routes take within the study area as Indrajatra, Seto Machchindra jatra, Gai jatra, panchare Deo Lyakegu, upako path, etc.

Since Asan Square is mainly used for the commercial use, most responses (40) states jatra as the recreational activities due to migration of local people living in the area.

Also native people (26) residing there are majorly participating only in cultural activities like pulling chariots, displaying samebaji, Bhajan in dabali, Gunla bajan, provide offerings, etc but not are actively involved in guthi that directly linked to the Jatras. 21 responses are not involved in these cultural activities at all as people are not interested.

As per KII (Dr Gyanendra Tuladhar), it's been 30 years since Kumo Naach was performed whereas every Dashain on Saptami it used to be performed by the Kumars of (Tuladhar clan). Kumho Pyakhan is a ritual dance where the performer represents Ratnaketu Bodhisattva, the guardian of Goddess Taleju against celestial threats. The tradition has declined over time due to the strict rules and regulations required for its performance.



Figure 58: Kumo Naach

Since on these modern times when children are not able to maintain the rules and regulations, it started to get diminish completely. During Indraajatra, at the last day, Mahankal naach used to be performed in the dabali but now due to the busy schedule of guthi members, loss of interest of people and lack of funding this Naach has been stopped to be performed in Asan. Yita Chhen used to be the place where every evening there used to be Bhajan but now Bhajan is played on during 1 month of Kartik at the time of Dapa-Thayeu.



Figure 59: Mahankal Naach

To assess the current level of cultural engagement in Asan Baha, respondents were asked about their participation in traditional activities and festivals

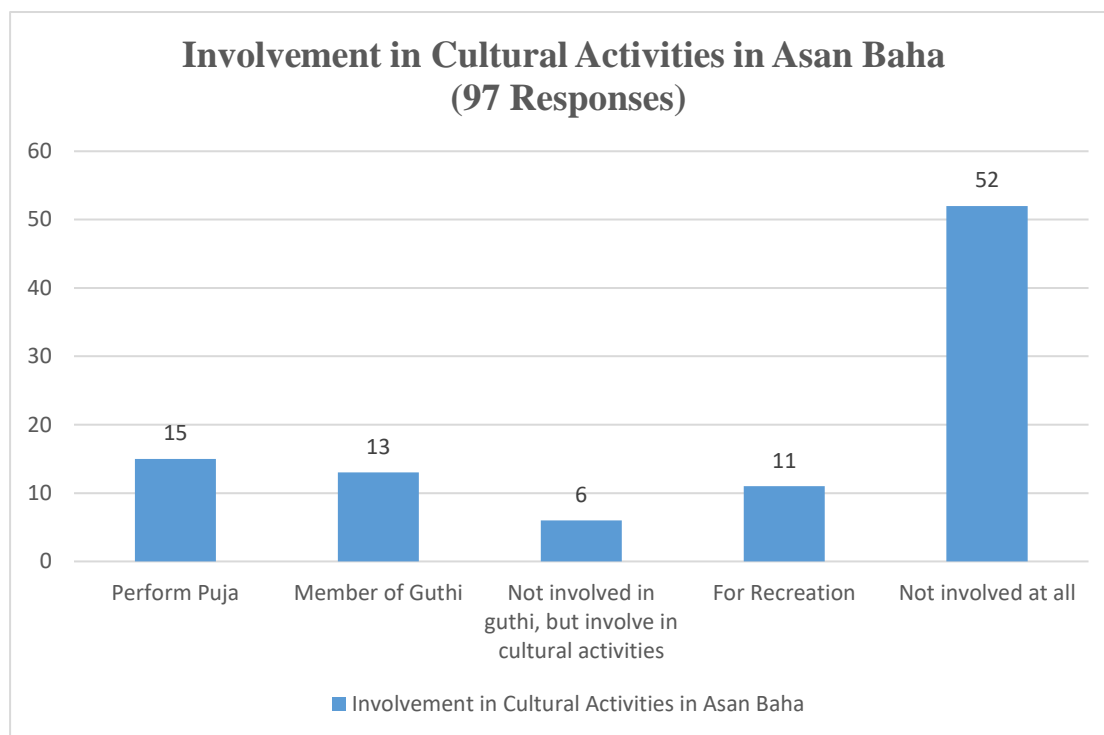


Figure 60: Involvement in Cultural Activities in Asan Baha

Above Bar chart represent the responses of people of Asan Street, Asan Square and Asan Baha. It can be observed that 52 responses are not involved in cultural activities of Asan baha at all as people are unaware of the cultural activities of Baha. Apart from these responses, most of the responses have come from the residents of Baha. As Baha area is resided by the mixture of local and renters in which locals belongs to the clan of Bajracharya, Shakya and Tuladhars, they are involved in guthi and perform cultural activities like Panchadhan, Gunla Bajan, Maha Bu, Nitya Puja, Sakha-Ti-Tunkeu etc. The response for recreation is given by the renters residing there and people living nearby.

As per KII (Mr. Looza Bajracharya), the Buddhist Baha engages in a daily religious practice referred to as Nitya puja. A significant aspect of this ritual is Buddha puja, which involves the worship of the principal Buddha image housed within the Baha. In the past, the Nitya puja was performed by all the household around but now only 2 household performed. During gunla, Tu:Ta (Boudha Stawatra Paath) is done for 1 month but now it is done only on Buddha Jayanti. During Dashain, Paya used to be

conducted but not performed due to some family disputes in the Kawa. Also during Silachare(Shivaratri), fire used to be born in the Bahal to enjoy the occasion but now this type of social activities has been slowly diminishing. In the bahal, Sakimali Punhi is celebrated by Halimali Boyeu (Kalash of Annapurna is made with the help of tya,grains,beans) on the Dabu. In Baisakh Purnima, Sarsafai programme would be held and every household bring their flower pots in Baha to make it look beautiful but now this has been completely vanished.

In Haku Baha, the persistence of this tradition in modern times has been adversely affected by several factors, including a deficiency of knowledge and interest among the younger initiated members, limited financial resources for the Guthi, and the demanding schedules of those involved. The main image of Buddha enshrined in the Baha is only worshiped by the members of guthi everyday who has already migrated from this place. Continuity to keep culture going has started to become difficult as per the member of Guthi of this Baha.

In Tachhe Baha, Maha Bu Puja used to be performed for 15 days in a year but now its is performed in one year where numbers of Gurju perform Puja for lord Buddha and grand fest is prepared for the Gurju and locals on that day. Despuja is performed on the Dashami in the month Poush where all the core members gather and Kul Puja is performed. Panchadan is a festival of offerings celebrated on the fourteenth day of the waning phase of the sacred month of Gunla. On this day, Buddhist families present five distinct offerings rice grains, wheat grains, salt, money, and fruits while showcasing traditional artifacts and Buddha images in the Bahas. Members of the Shakya and Bajracharya clans visit throughout the day to receive their share. The ceremony concludes when the Phu Bare touches the remaining offerings with a Bajra, signifying the ritual's completion (Shresthacharya, 2020). Panchadan is done in Tachhe Baha by the Bajracharya Club and Mayan club.

7.2.3 Social Cohesion

Social cohesion variables (Sense of community, Social participation, and Safety) are considered in the study

7.2.3.1 Sense of Community

Historically, the Newar people, who are the native inhabitants of the Kathmandu Valley, resided in extended family units and exhibited a strong sense of community and neighborly interaction, reflecting a philosophy centered on communal living (Tiwari, 1989). Social interaction and networking have consistently played a crucial role in the lives of individuals, resulting in a substantial utilization of public spaces and structures. Children engage in play and develop relationships in local squares (Shokoohy 1994) while adults

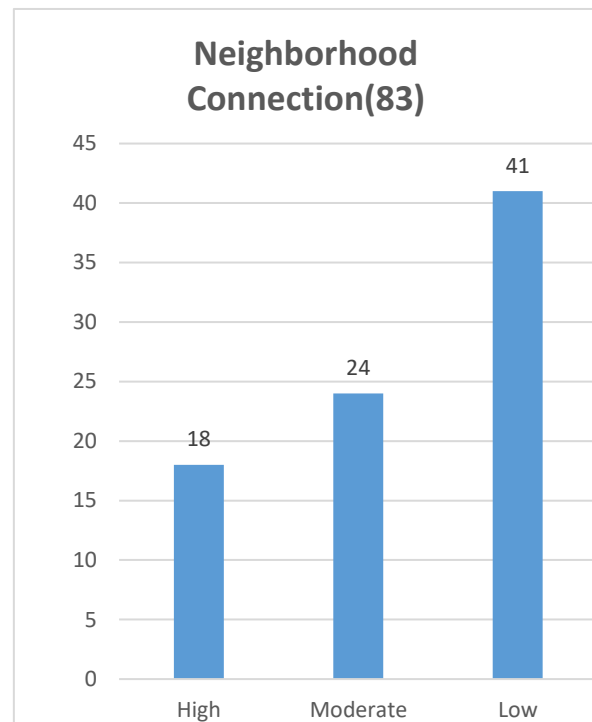


Figure 61: Neighborhood Connections

and seniors often gather to converse with their neighbors. The Newar community demonstrates active involvement in public life, both in daily activities and during festivals and religious events, with their neighborhoods and public areas serving as focal points for social organization.

Asan, a historic market square in Kathmandu, has traditionally been a close-knit community where native families engaged in shared cultural practices and economic activities. However, according to the survey, 41 respondents stated that social connections among residents are now very low, 24 rated them as moderate, and only 18 considered them high. This decline is largely due to the migration of native residents, which has weakened traditional social bonds. Asan's transformation into a commercial hub has led to an influx of migrants and the departure of long-time residents, many of whom have rented out their ancestral homes. Unlike in the past, when strong neighborhood ties fostered communal harmony, the presence of temporary residents has

diminished interpersonal connections. This shift reflects the impact of urbanization, where economic priorities have altered the social fabric. While Asan remains a vital commercial and cultural center, its traditional sense of community is gradually eroding.

7.2.3.2 Social Participation

Engaging actively in community activities enhances a sense of responsibility, reinforces social connections, and boosts collective effectiveness, ultimately impacting perceptions of safety. The survey results indicate that only 19 respondents are actively engaged in community activities, such as social gatherings, decision-making programs, blood donation drives, and cleanliness initiatives, while 37 respondents show low participation with 27 respondent showing moderate participation.

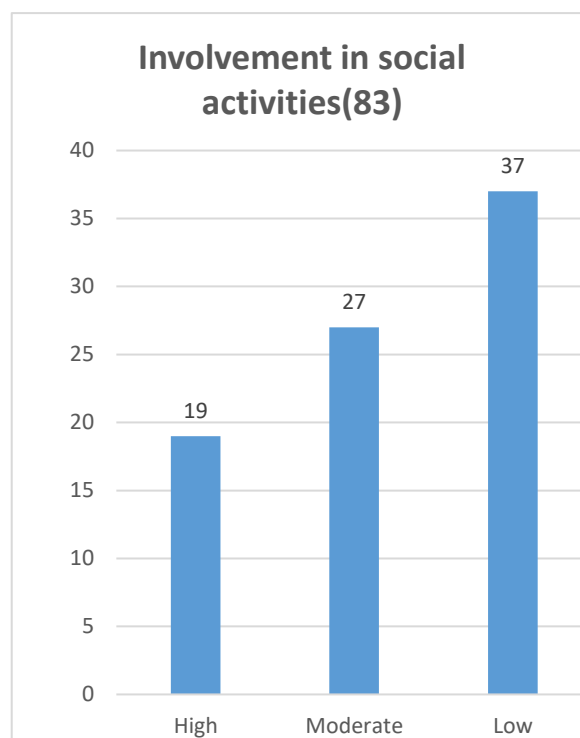


Figure 62: Involvement in social activities

Every Saturday, fest like in Hadigaun used to be conducted for prompting the traditional cuisines like Yomari, Sambaji, traditional handicrafts but it has been removed since when KMC evacuated the street vendors. Such social activities created social bonding among local and migrants but it has broken the bridge. This suggests a significant gap in community involvement, which may impact the overall sense of responsibility, social cohesion, and collective efficacy. Low participation can weaken community ties, reduce trust among residents, and limit collective action against issues like urban disorder or crime.

7.2.3.3 Safety

The data shows that most respondents (45) feel unsafe, while only 16 perceive high safety. Owners and renters fear potential fires, especially after a recent incident where a godown storing religious materials caught fire, causing property loss. The presence of godowns storing combustible materials intensifies the risk, making the area vulnerable to fire outbreaks. The survey highlights growing concerns over fire safety in Asan due to increasing godowns from commercialization and reflects the need for fire safety measures and stricter regulations.

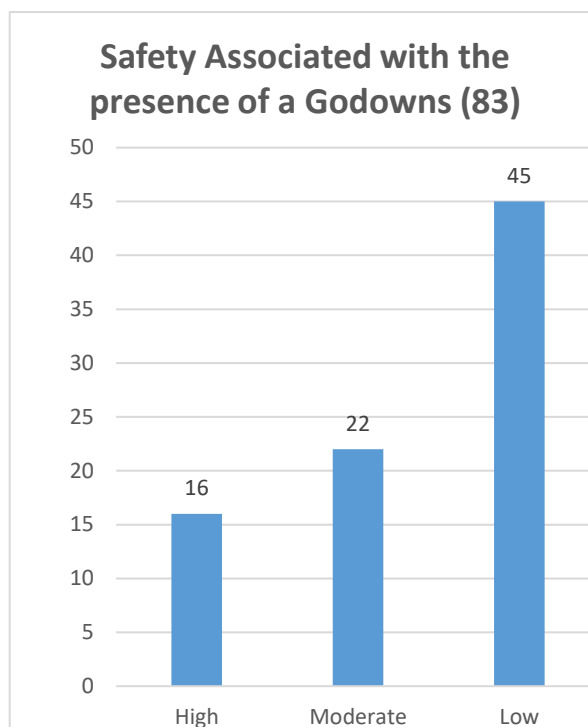


Figure 63: Safety Associated with the presence of a Godowns

The data indicates a significant decline in perceived safety in Asan’s streets at night. A majority (48 respondents) feel unsafe, while only 14 perceive high safety. This reflects changes in Asan’s social fabric, where native residents have migrated, leading to an increase in godowns. As a result, the once-vibrant traditional streets become empty after 8 PM, making them feel deserted. Despite CCTV installations, people still feel less safe due to the decline in local community presence. The transformation of Asan from a bustling

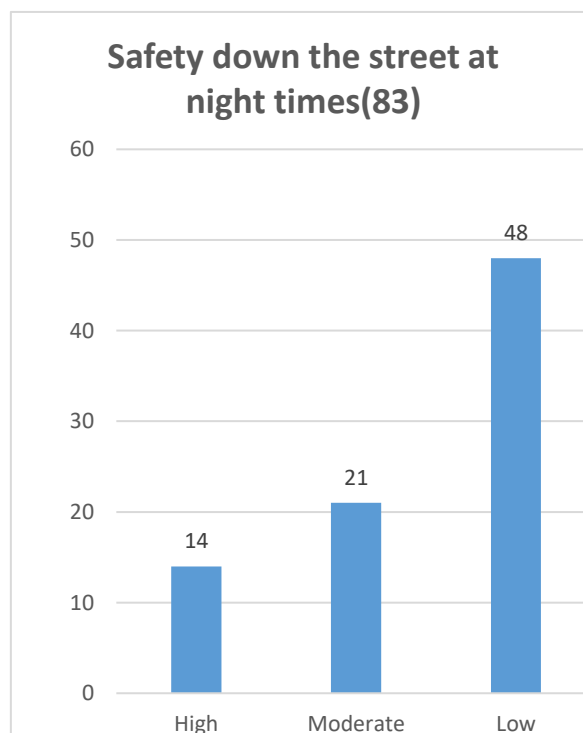


Figure 64: Safety down the street at night

residential-commercial hub to a godown dominated area has directly impacted nighttime security and social interactions.

7.2.4 Perception of Interviewers on Social Vulnerabilities

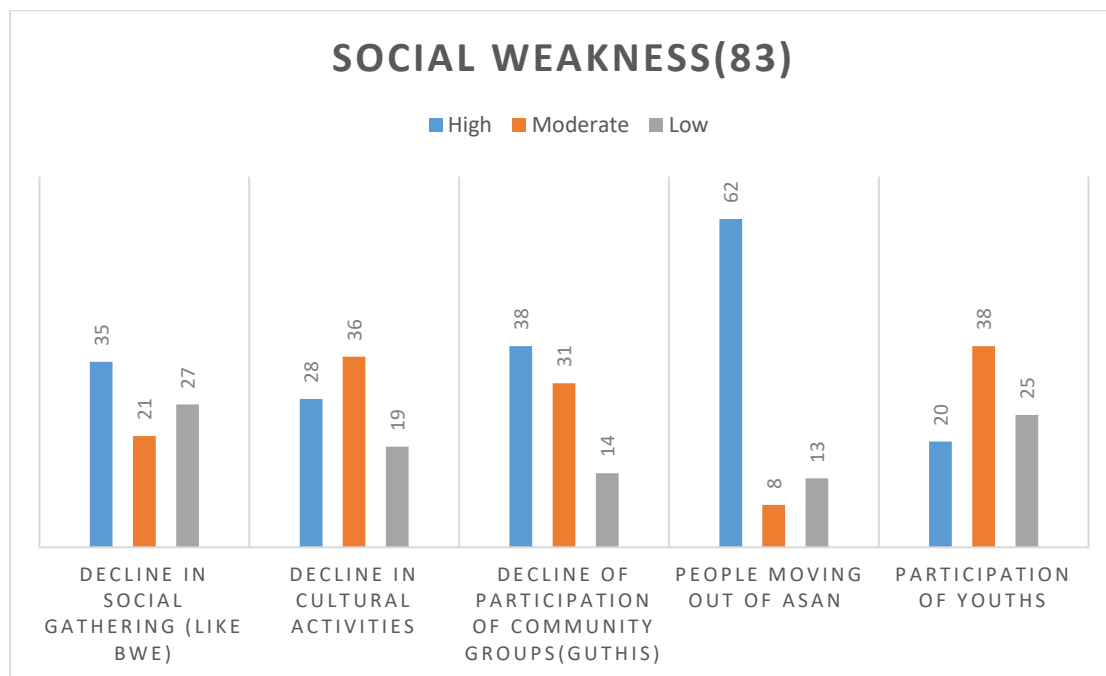


Figure 65: Perception of Interviewers on Social Vulnerabilities

The data suggests a significant transformation in Asan’s social and cultural fabric, driven by out-migration, declining participation in traditional institutions, and reduced communal engagement. The high number of people moving out (62 High) indicates a shift in demographics, likely influenced by commercialization and changing lifestyles. The decline in participation in Guthi and community groups (38 High, 31 Moderate) weakens traditional governance and social cohesion, further distancing residents from their cultural heritage. A noticeable reduction in social gatherings (35 High, 21 Moderate), such as *bwe*, highlights the erosion of communal interactions that once reinforced Asan’s collective identity. The mixed perspectives on the decline in cultural activities suggest that while some residents perceive a weakening of traditions, others believe cultural engagement remains resilient. This disparity indicates that main festivals like Indrajatra, Seto Machindranath, Dyo Lwakegu are performed in Asan Square properly as these festivals are performed by the collaboration of many guthis of many clans from other places as well like Janabahal, Nardevi, Kilagal, etc, though there is difficulty in functioning of Guthis as social capital is getting lost from the community.

Also, culture performed in Baha are getting vanished due to migration of locals creating less social participation. While youth participation (38 Moderate) remains moderate, it signals a gradual detachment from traditional practices, which could further accelerate the loss of cultural continuity.

7.3 Results from Key Informant Interviews

Key Informant Interviews (KIIs) were conducted with representatives from Kathmandu Metropolitan City (KMC), the Heritage and Tourism Department and Ward No. 27 to understand the ongoing efforts, challenges, and perspectives related to the preservation of traditional urban cores, cultural heritage, and urban development tools such as TDR.

7.3.1 KII with Experts of City Planning Commission, KMC

Urban planning experts from the Kathmandu Metropolitan City highlighted various ongoing initiatives, regulatory challenges, and policy perspectives regarding the preservation of traditional urban cores. Buildings are categorized into four classes—A, B, C, and D based on the Sampada Bhawan Sangrakshyan Awam Nirman Mapdanda Tatha Sahuliyat Karyabidhi 2078. KMC has initiated pilot projects in areas such as Jaya Bageshwori, Hadigaun, Kilagal, and the Swoyambhu–Basantapur corridor to promote the maintenance of traditional façades. Additionally, future plans include revitalizing culturally significant areas like Thamel and Asan.

“Preservation of traditional façades is not legally mandatory but should be made mandatory” says Associate Expert of City Planning Commission.



Figure 66: KII with Experts of City Planning Commission, KMC



Figure 67: Reconstruction of Yita Chhen of Asan Square by KMC in its original state

Challenges/Issues

- Constitutional rights on property prevents KMC to intervene with individuals' property.
- Building Byelaws do not mandate the necessity of maintaining traditional façade.

Views on Concept of TDR

- Difficult to implement in Nepal still can be a good tool for traditional core areas
- Requirement of Well-equipped system.
- Dense/Occupied Urban Area.

Views on Concept of House pooling

- Legal Hassle
- Difficulty in Property Acquisition and distribution to family members
- Conflict occurs between stakeholders.
- Mentality of People (Feeling of ownership)

Migration

- CBD, Living Standard is the main reason of Migration;

- Not possible to control migration but can be reduced if public transportation is reliable.

Recommendation

“Heritage revival is the main concern and it is important to maintain the traditional façade of traditional city cores. For this Naksa Pass Process easy, reliable and not time consuming in order to motivate locals.” says Associate Expert of City Planning Commission.

- Rethinking from federal level
- Promote Cultural Tourism
- Social Awareness about culture and tradition
- Knowledge Sharing
- Build Sense of Ownership in the Natives through building traditional characters in the Jatra routes.

7.3.2 KII with Assistant Director of Heritage and Tourism Department



Figure 68: KII with Assistant Director of Heritage and Tourism Department

As per KII Dharma Munikar, Before Democracy, the government didn't contribute for the cultural activities but now 63 toles of the city is provided grant of Rs 2lakhs per tole as well as 25 Gunla Bajan Khala and 47 Nyakhin Bajan Khala is provided grant of same amount. Recently KMC is actively engaged towards the preservation of culture, Jatras, traditional musical instruments, cultural dances, etc. Altogether 84 Guru are awarded with Guru Bhatta of Rs 30000 to Dapha Bajan Guru, Nyakhin Guru every year. Likewise, Rs 20 lakh budget is allocated in budget plan of 80-81 for Seto Machinadranath jatra and Rs 10 lakhs for Dyo Lwakeu.

“People’s perception to conservation of heritage needs to be changed from the base (childhood)” says Mr Dharma Munikar

Challenges faced by Guthi

- Financial crisis aroused as Guthi land is being sold by the Guthi members.
- Lack of resources.
- Lack of time investment by the locals.

Recommendation

“Courses related to Nepal Bhasa, traditional musical instruments, importance of Jatras and festivals should be introduced in academic curriculum to build the sense of spirit of place from childhood” says Mr Dharma Munikar

- Budget should be used properly.
- Process for receiving grant should be easier.
- Awareness program related to importance of culture and tradition.
- Transfer of Knowledge among heterogeneous society.

7.3.3 KII with Ward Chairperson of Ward 27

The Ward Chairperson of Ward No. 27 highlighted that buildings within the ward are classified into four categories A, B, C, and D according to the Sampada Bhawan Sangrakshyan Awam Nirman Mapdanda Tatha Sahuliyat Karyabidhi 2078.

“People are not willing to take the incentives and maintain the height of 51’ as they are willing to get extra floor for commercial purpose which is given by the recent byelaws where height is 65feet in Preserved Sub-Zone and 75feet” says Ward Chairperson.

The ward falls under the Preserved Monument Zone in Asan Street and Square and Mixed Old Residential Zone in Asan Baha. Several pilot projects have been launched in areas like Jaya Bageshwori, Hadigaun, and Kilagal to promote traditional façade preservation. The ward is also actively engaged in heritage revitalization projects such as pati construction in Bhotahity and Jamal, the establishment of Annapurna Kalash, and support for local businesses like homestays. Other various activities are as follows:

Spatial Transformations and its Impact on Social Vulnerabilities in Traditional City Core (A Case of Asan)

- Saturday Fest shall be restarted for cultural tourism which authentic foods, traditional crafts, etc (Business for Locals)
- Financial grants are provided by the KMC to the registered guthi for buying of new musical instruments, training musical instruments, felicitating Gurus, providing traditional customs for cultural programs
- Organize various concerts like Kutumba, Echoes, etc
- Revitalization of Paltan Ghar in its own state by the approval of owner and ward level.
- 24hr CCTV surveillance in streets and Baha
- 80% of the underground fire hydrant pipelines distributions.



Figure 69: KII with Ward Chairperson of Ward 27



Figure 71: Construction of Pati in Bhotahity



Figure 70: Installation of Fire Hydrant

Challenges/Issues

- Migrants has increased leading to decrease in locals.
- Lack of coordination between federal and local authorities
- Lack of awareness about the cultural importance
- Negligence by the owners

Views on Concept of TDR

- It can be done if proper plan and policies are made.
- Difficult to implement in Nepal.
- Misuse of rights.
- No strong authority to monitor.

Recommendation

“Migration is mainly affected by economic opportunities and living conditions of the area so to only way to reduce migration is creation of economic opportunities.” Says the Ward Chairperson.

“TDR can be done only if proper plan and policies are made but difficult to implement in Nepal as there can be misuse of rights. It needs strong authority to monitor this system” says Er Gaurav Shrestha

- Multistoried Parking Required/Tudikhel Underground parking
- Transfer of Knowledge to the young generations
- Sense of Ownership should be developed
- Owner shall not be allowed to sell their property in order to avoid migrations but it shall not be possible as buying and selling property is the basic constitutional right of the individuals.
- Migration is mainly affected by economic opportunities and living conditions of the area so to only way to reduce migration is creation of economic opportunities

8 DISCUSSION AND CONCLUSION

8.1 Discussion

8.1.1 Effect due change in FAR, Proportion, Scale

The change in FAR (see table 8), building proportion, and scale in Asan has triggered significant spatial and social disruption (see fig. 53 and 54). From 2064 to 2080 after the Gorkha Earthquake the height has increased from 45' to 65' in Preserved Sub Zone and 75' in Mixed Old Residential which shows change in urban policy in favor of commercialization. As per discussion with Ward Chairperson, people are not willing to take the incentives and maintain the height of 51' as they are willing to get extra floor for commercial purpose which is given by the recent byelaws. The emergence of high-rise buildings within the historic urban grain distorts the skyline, leading to a visible loss of traditional character and spirit of place. This visual and symbolic disconnection decreases residents' sense of ownership and belonging, often prompting them to migrate.

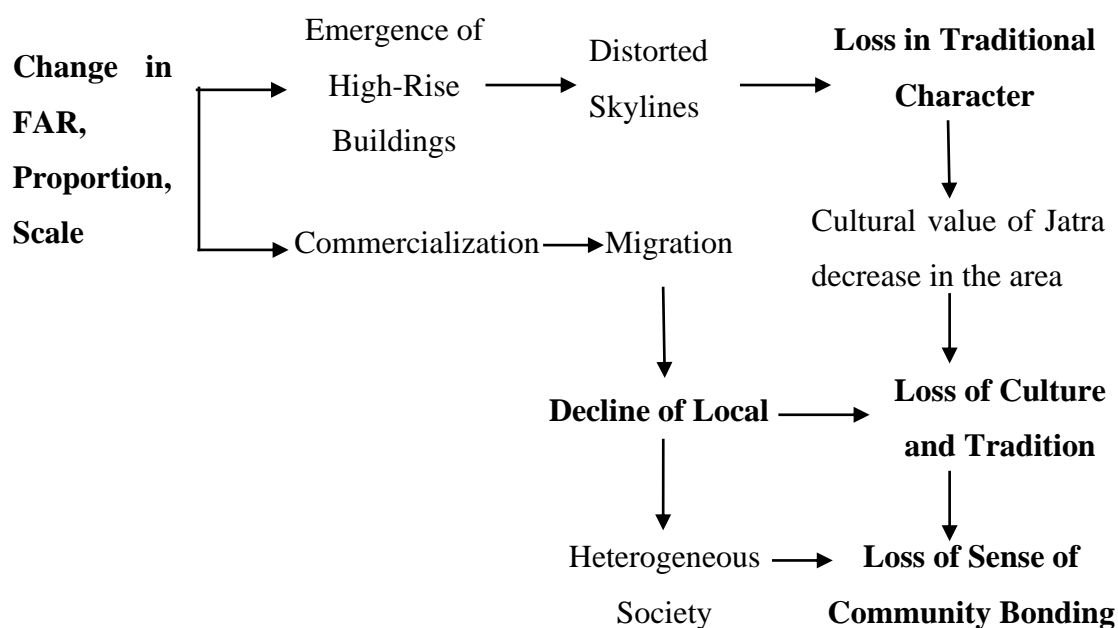


Figure 72: Linkage of change in FAR, Proportion, Scale with social vulnerabilities

Due to migration of locals, the buildings are in vulnerable conditions not being able to reconstruct due to various reasons like financial crisis, family disputes, etc. Simultaneously, commercialization driven by these spatial changes results in the migration of original residents creating a heterogeneous society. 63 % of native owner

of the building has migrated from the native house. This shift contributes to the erosion of traditional practices of Baha due to lack of sharing of knowledge between migrants and local. This creates less community bonding among each other. Ultimately resulting in a loss of culture, heritage, and the deep sense of community bonding that once defined the area.

8.1.2 Effect due change in Building Material

The emergence of modern buildings (see fig, 37 and 38) along Jatra routes of Asan which is in heritage has led to a visible loss of historic aesthetics and identity. As concrete and glass replace traditional brick and timber, the architectural harmony that once connected built form with cultural expression deteriorates. This visual and symbolic disconnection decreases residents' sense of ownership and belonging, often prompting them to migrate. As per discussion with Associate Expert of City Planning Commission, heritage revival is the main concern and it is important to maintain the traditional façade of traditional city cores.

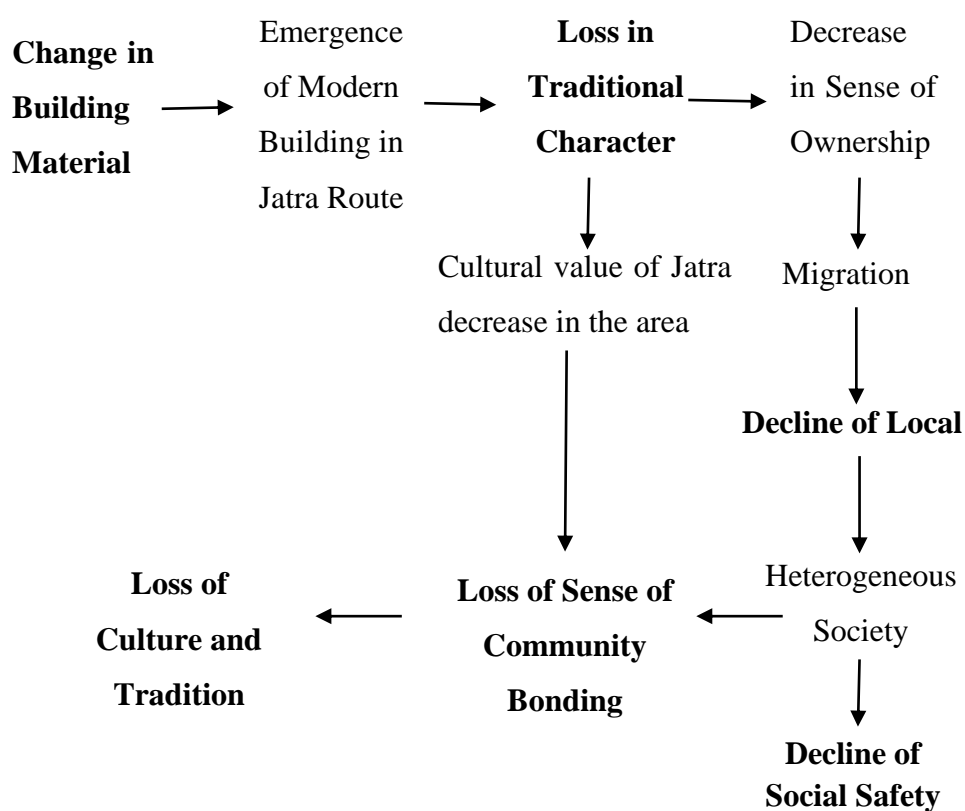


Figure 73: Linkage of change in Building Material with social vulnerabilities

As jatra route is meaningful when there are people viewing and enjoying the moment to make it feel livelier but now during jatra also many houses are dead. When Jatras are performed in the street surrounded by the modern building, the cultural values automatically degrade creating loss in culture and traditions. As locals leave, a heterogeneous population moves in, accelerating the decline of local traditional practices of Baha due to lack of sharing of knowledge between migrants and local. This creates less community bonding among each other. Ultimately, the shift in materiality undermines both the physical and emotional landscape, leading to a breakdown of cultural continuity and community spirit.

8.1.3 Effect due change in Building Functions

The transition of activity to trade and commerce has made the city core an economic center which has created demand for more storage area to store their stocks so the space rented are more utilized for godown purpose. This has resulted in the desertification of once lively neighborhoods. Vacant homes lead to inactive zones, especially at night, while godowns pose fire hazards due to poor safety standards. These transformations compromise the social safety of the area, making it less livable for remaining residents.

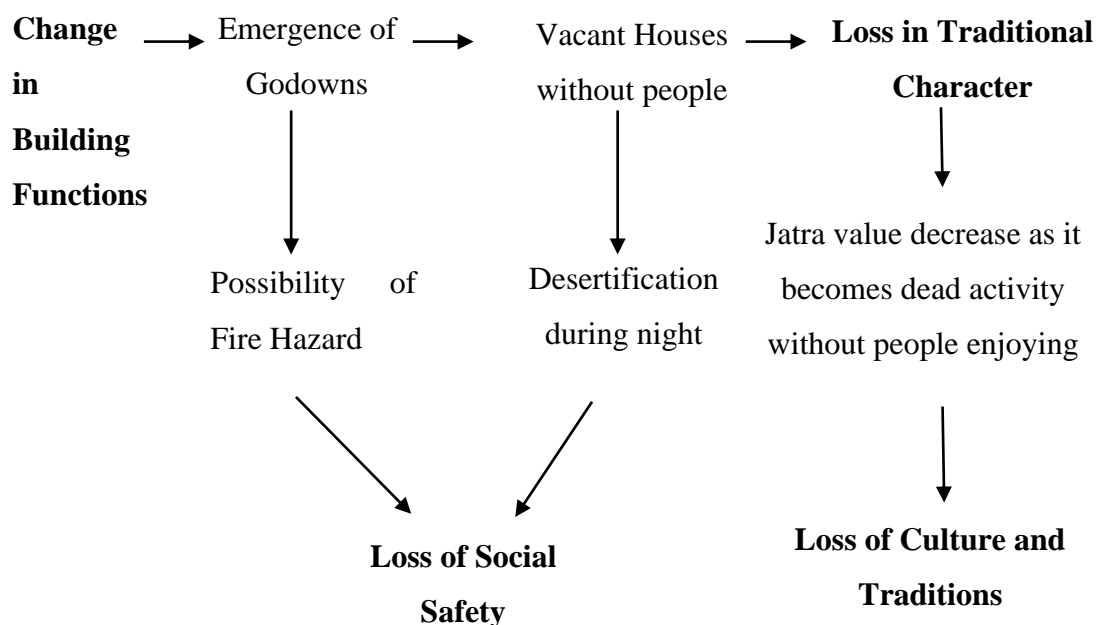


Figure 74: Linkage of change in Building functions with social vulnerabilities

Presence of unmanaged wiring in the electric poles has caused short-circuit many times in past as per interviews. Problem of Godowns and this unmanaged wire together can create lead to urban that can cause huge loss of property and lives. As per discussion with Ward Chairperson, 80% of the underground fire hydrant pipelines distributions but the proper monitoring and maintenance is required of fire hydrant and every godowns should have compulsion of fire extinguisher.

Moreover, the decline in resident population and everyday social activity turns cultural events like Jatra into hollow performances, lacking local engagement. The disconnection between space and user accelerates the loss of tradition, rendering the area culturally stagnant despite its visually historic appearance.

8.1.4 Effect due change in Street to Building ratio

This illustrates the chain reaction caused by changes in the street-to-building ratio from 1:1.5 to 1:4 (see fig. 39 and 40), indicates taller buildings relative to street width, departure from the human-scale and visually cohesive environment typical of traditional city cores.

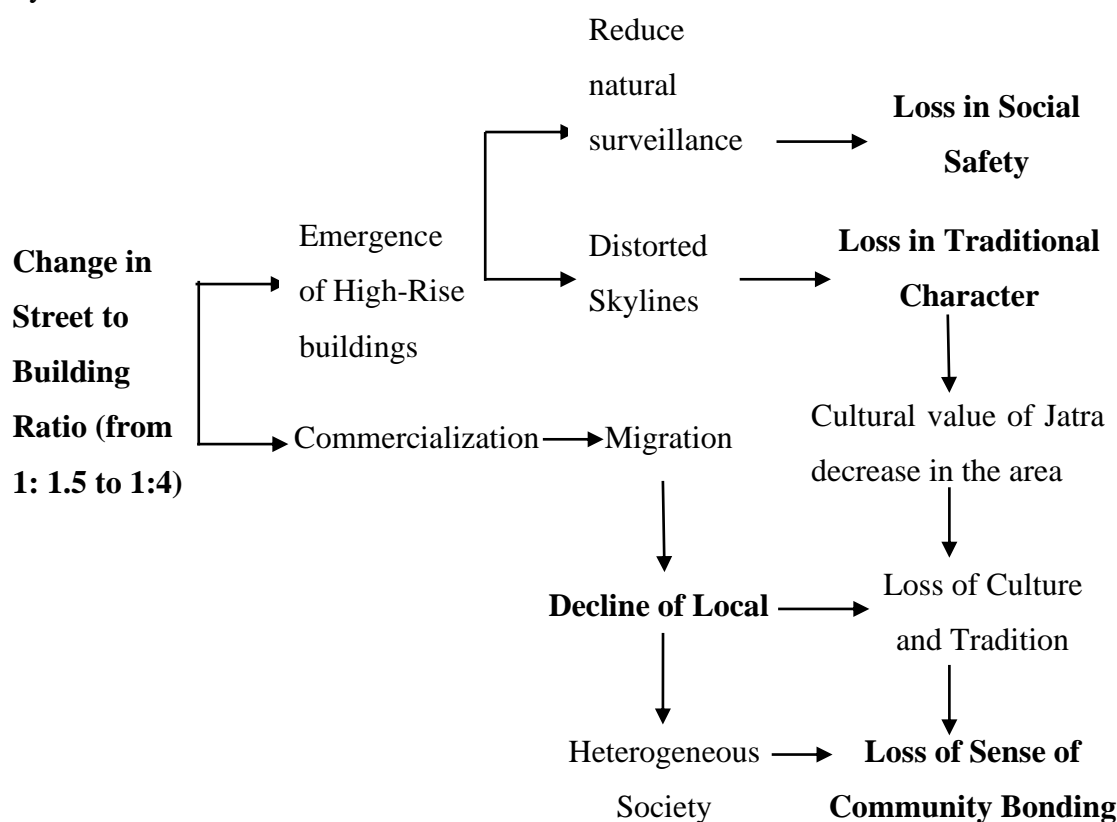


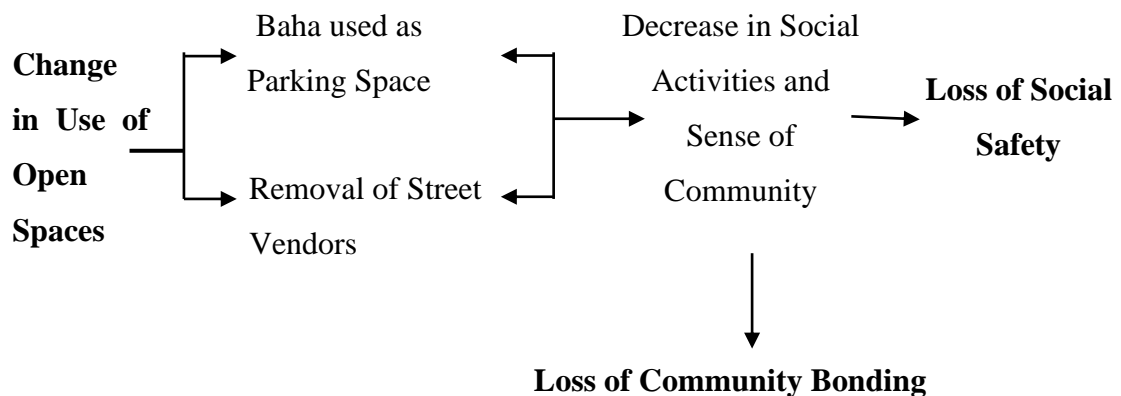
Figure 75: Linkage of change in Street to Building with social vulnerabilities

One immediate consequence of taller structures is the reduction of natural surveillance. Narrow streets flanked by high-rise buildings diminish visibility and passive oversight from surrounding buildings, contributing to a loss in perceived and actual social safety. At the same time, the traditional skyline becomes distorted, affecting the visual continuity and harmony of the streetscape. These changes undermine the historical character and cultural identity of the area, which are closely tied to scale, proportion, and architectural consistency.

Furthermore, the commercialization associated with these changes accelerates the decline of local communities. As original residents and community-based institutions are replaced by businesses and transient renters, the social fabric weakens. The loss of traditional character, combined with reduced safety and the decline of local engagement,

8.1.5 Effect due change in Use of Open Spaces

The transformation of open spaces in the traditional urban fabric such as bahas (courtyards) and street fronts has significantly affected the social life of the community.



Bahas are increasingly being use as parking spaces (see fig 43 and 44), while informal street vendors are being removed to make way for commercial or traffic-related uses. These changes have caused a sharp decline in spontaneous social interactions, festivals, and everyday community life. The diminishing sense of community not only affects the cultural vibrancy of the area but also reduces passive surveillance, leading to a tangible loss of social safety. The open spaces that once fostered communal belonging are now sterile and disconnected from the people they served.

8.2 Conclusion

The findings of the study reveal the important role of spatial transformations in Asan Square, Kathmandu, particularly regarding their impact on social vulnerabilities in the context of an evolving urban fabric. Over time, modernization and commercialization have altered the area's physical and social landscape, replacing traditional buildings with high-rise concrete structures and shifting residential spaces into commercial storage. This transition has weakened social cohesion, displaced native communities, and diminished traditional cultural practices such as guthi activities and communal gatherings. The spatial transformations in Asan Square have led to significant changes in its traditional character, cultural heritage, social safety, demographic composition, and community bonding.

- **Loss of Traditional Character**

The transformation of Asan Square has resulted in the loss of its traditional architectural identity distorting its character, function and proportion. The shift from traditional buildings to modern concrete structures has disrupted the historic streetscape and eroded the unique visual and spatial harmony of the area. The increase in building heights, often in violation of existing bylaws, has further distorted the human-scale proportions that once defined the square.

- **Loss of Culture and Tradition**

The commercialization of Asan has significantly impacted cultural and traditional practices. Many spaces previously used for cultural events and rituals have been repurposed for commercial activities, reducing opportunities for social and religious gatherings. Cultural activities like Kumo Naach, Mahankal Naach and performing Bhajan every day. Also, culture performed in Baha are getting vanished due to migration of locals creating less social participation. The weakening of traditional institutions like Guthis and the declining participation in cultural festivities indicate a disconnect between the community and its historical traditions. Asan lies under the route of Heritage Walk drawn by KMC as many festivals, jatra is performed here, there is immense need of conservation of traditional character.

- **Loss in Social Safety**

The study highlights a decline in social safety due to the changing urban dynamics of Asan. Increased commercialization has led to increase no of godowns, there has been risk of fire in the community. Unmanaged wire and godowns together can create huge urban fire resulting in loss of lives and property. The loss of open spaces, once used for social surveillance and communal gathering, has contributed to a diminished sense of safety, making the area more vulnerable to social issues.

- **Decline of Local Population**

A notable demographic shift has been observed, with native residents migrating to suburban areas due to rising property values and commercial pressures. Traditional family homes have been converted into storage spaces (godowns) and rental units, resulting in the displacement of long-term residents and a decrease in permanent local inhabitants. This migration has weakened local identity and cultural continuity, leaving Asan Square dominated by transient commercial activities.

- **Loss in Community Bonding**

The transformation of public and communal spaces into commercial areas has weakened the social fabric of Asan Square. The conversion of Baha and communal courtyards into parking lots and storage spaces has limited social interaction among community members. This reduction in shared social spaces has contributed to the weakening of traditional community ties, which once played a crucial role in fostering collective identity and resilience. As society is converting into heterogenous community with the mixture of local and migrant there is less neighborhood bonding due which there is difficulty and sharing and communication. On long run, it shall have major impact on the community.

9 RECOMMENDATIONS

These recommendations have been suggested on the basis of various literature, interviews with KII such as associate experts of KMC, Assistant director of Heritage and Tourism Department, Ward 27 chairperson to mitigate the adverse effects of spatial transformations and preserve Asan's cultural and social fabric.

9.1 For Managing Spatial Transformations

Classified as policy level, infrastructure development and activities.

9.1.1 Policy Level

- **Regulating Building Heights and Architecture**

Although buildings aligned to streets are in Preserved Sub Zone, they are following byelaws of Mixed Old Residential Zone as height restriction is 75' whereas Preserved Sub Zone has 65'. To maintain Asan's traditional character, strict zoning regulations should be enforced to prevent further high-rise concrete buildings that disrupt the historic streetscape. It should be made mandatory to maintain height of 51' in the jatra routes i.e street of Bangemuda, Bhotahity and Bangemuda so as to maintain the skyline and connectivity to the street, surrounding buildings and monuments.



Figure 76: Present condition of street (without with regulating building height)



Figure 77: Vision of Street elevation if the height is maintained to 51'

- **Transfer Developmental Rights**

Transfer of developmental right could be an effective tool. To maintain the traditional environment in the core area. Although this concept is new in Nepal yet it is not so complex to introduce and implement it. The buildings in the core area could be upon with the transfer of development in the other areas where the modernism is the concept of development. The owners could be facilitated with the extra development that they have, in the core area either to transfer it in their other areas of their own ownership, outside the periphery of the center or to sell it to another people who will construct dwellings in some other areas.

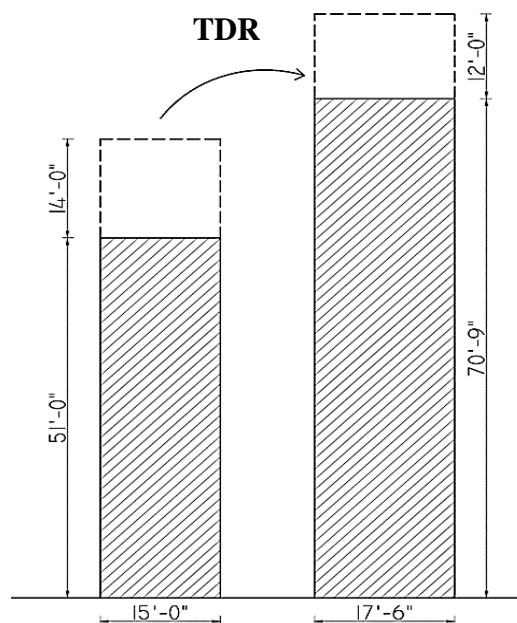


Figure 78: TDR application

As per Byelaws 2080 the height restriction in Asan street and Baha is 65' and 75' respectively. But as per Sampada Bhawan Sangrakshyan Awam Nirman Mapdanda Tatha Sahuliyat Karyabidhi 2078, incentive is provided for building height upto 51'. This height difference can be accommodated by the transfer of Development rights in order to maintain the streetscape of the city core Asan.

- **Incentive Provision**

Providing tax incentives or heritage grants to property owners who preserve traditional Newar architecture can ensure traditional character. For instance, in Bhaktapur, it is mandatory to have traditional looks so incentives are provided in the wood and then bricks which are used for the construction of the traditional outlook but even though there is provision of incentives in KMC people are not willing to take due to delay in work process and also due to greed of people to have more floors for commercial use. But if it is made mandatory, similar kind of approach can be implemented in Asan as in Bhaktapur to promote in the construction of the traditional outlook. Process to get this

incentives and Naksa Pass should be easy and reliable so as to interest local and most important, awareness is required to make people aware about the need of conservation.

9.1.2 Infrastructure Development

- **Adaptative Reuse**

Adaptive reuse of heritage buildings should be encouraged to integrate modern functions without altering their architectural essence. Traditional building can be changes to libraries, museums, home stay area to promote the cultural tourism.

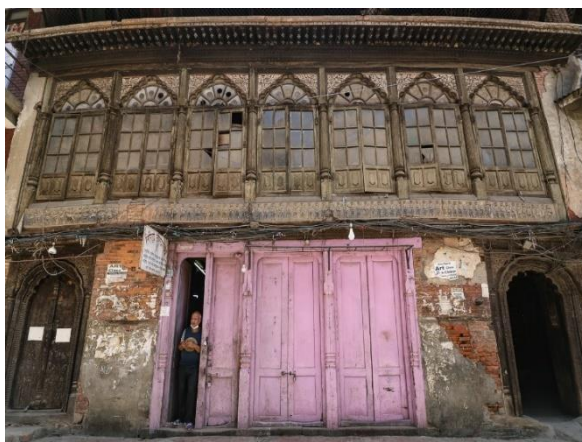


Figure 79: Paltan House in Balkumari road



Figure 80: Vacant house in Balkumari road

For example, this Paltan house, constructed by military commander Abhiman Singh Basnet, served as a residence for him and his soldiers. Its rich architectural heritage presents an opportunity for transformation into a museum or art gallery, showcasing an exquisite combination of Mughal and Newari architecture. The exterior is marked by large arched windows with tinted glass, a hallmark of Mughal design, while the interiors and courtyards are influenced by Newari architecture, particularly through the presence of Newari *akijhyaals*. Similarly, the vacant house in Balkumari road can be used as adaptive reuse. Its facade is filled with carved wooden windows and struts (*tundals*), showcasing the refined craftsmanship of Newar artisans. This building can be transformed to heritage café, traditional homestay or community center. These adaptive reuses of heritage building can be a good infrastructure development to boost the cultural economy.

- **Revitalize Public and Open Spaces**

Public spaces such as Baha should be reclaimed for social and cultural activities instead of being used for storage or parking. The introduction of green spaces and pedestrian-friendly infrastructure, similar to Chandni Chowk's pedestrianization model, would enhance urban resilience while making Asan more accessible and livable. Revitalizing traditional squares will allow them to function as vibrant communal areas that support heritage conservation and public interaction. Space should remain semi-open for children to play or youth to hang out or elders for sunbasking. Furthermore, many individuals do not recognize the existence of these inner courtyards and alleys. Therefore, it is essential to create and strategically position maps, accompanied by clear signage that indicates the pathways leading to these hidden areas.

- Utilize nearby spaces like Nach Ghar and Vishwojyoti Mall for parking.
- Assessment of space that can be used for construction of multi-storey parking can be conducted as there is provision of 100% ground coverage and not counted in FAR.

9.2 For Reducing Social Vulnerabilities

9.2.1 Activities

- **Strengthen Traditional Community Institutions**

Traditional governance systems such as Guthis should be strengthened to preserve social cohesion and cultural practices. There has been difficulty in functioning of guthi due to migration local but also due to lack of financial crisis. So, KMC should allocated budget according to the number of members and activities conducted by the guthi for ensuring continuity of these institutions in order to preserve our local traditions.

- Sharing of Knowledge through various media like libraries, social media to let people know the activities of various Guthis.
- Sharing of Knowledge of culture and tradition among migrants.
- Proper budget allocations according to the need of guthi and monitoring of their activities.
- Sense of ownership should be developed among the locals.

- Restoration of heritage buildings like Agan Chhen, Guthi Chhen, Harsha Chaitya Vihar as these buildings are in dilapidated state due to disputes among the members, financial crisis, negligence etc.



Figure 81: Harsha Chaitya Vihar in dilapidated condition in Haku Baha

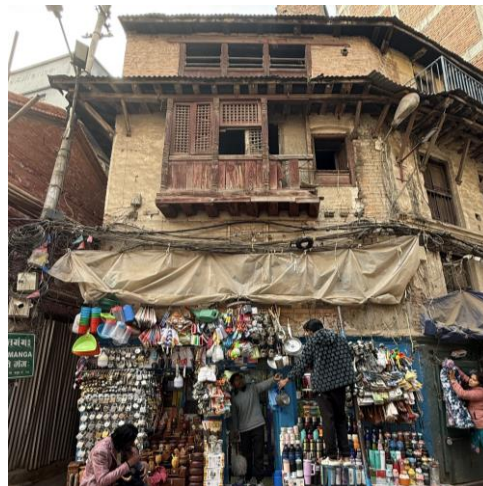


Figure 82: Agan Chhen

These initiatives would reinforce social bonds and reestablish Asan's identity as a cultural hub.

- **Community Awareness and Cultural Education**

Awareness in importance for locals and migrants to know the importance of culture and traditions and feel responsible to preserve it.

- Launch local awareness campaigns about the cultural importance of Asan's heritage and how residents can actively participate in its preservation.
- Integrate cultural literacy in schools and engage children in heritage walks, art, and documentation efforts.
- Courses related to Nepal Bhasa, traditional musical instruments, importance of Jatras and festivals should be introduced in academic curriculum to build the sense of



Figure 83: Udaaya Museum

spirit of place as recommended by Associate Director of Heritage and Tourism Department.

- Publicity of Udaya Museum (serving for preservation of culture and traditions) as local migrants are unaware of presence of Museum.

These initiatives would create awareness among youths so as to involved them in cultural activities as they are the future of nation.

- **Enhance Social Cohesion**

Social cohesion needs to be developed between migrants and locals so as build community bonding among each other's.

- Promotion of different cultural festivals, fests, musical events to make locals more active in the social activities.
- Revival of Bhajan in Yita Chhen as before so as to encourage our traditional music as well as people to meet and interact with each other.
- Strengthen traditional spaces like paati, sattal, chautari, and bahals as community anchors.

- **Promote Cultural Tourism**

Since Asan lies in the Heritage Walk route as many processions route passes through, it has high cultural value. A heritage-sensitive tourism model should be adopted, where guided tours, cultural storytelling, and experiential activities emphasize Asan's history and traditions.

Encouraging heritage-linked businesses, such as Newari handicrafts, traditional food stalls, and local cooperatives, would strengthen Asan's economic resilience while preserving its cultural essence. Public-private partnerships can also play a role in funding and sustaining economic initiatives that align with Asan's historic trade practices.



Figure 84: Dashain Mela

9.2.2 Infrastructure Development

- **Enhance Infrastructure for Safety due to presence of Godowns and desertification at night times**

Recently when fire occurred on 24th January due to short-circuit in Godown, but the fire hose installed in different places didn't function at the mean time. There seem to be the need of safety measure to take proper action on time to avoid major loss. Investments should be made to improve Asan's infrastructure, implementing fire safety measures, and regular monitoring should be done. Many courtyards, such as Dagu Baha, are accessible through passageways beneath private houses, some of which are deteriorating and highly vulnerable during disasters. Therefore, KMC should assess the condition of these courtyard connections and implement retrofitting and strengthening measures to guarantee safe access. Following measures can be applied:

- Every godowns should have compulsion of fire extinguisher.
- The unmanaged wire of the electric poles can be managed by the KMC by using underground wiring system as done in New Road.
- CCTV surveillance is only present in the main Asan Square, so there need to be installed in every street and Baha area.
- Use warm, low-height lighting that enhances safety but respects the heritage fabric.
- Use traditional crafts to make benches, shade elements, signage, etc.

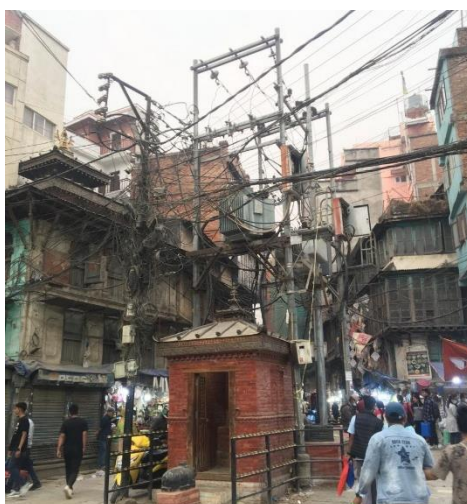


Figure 86: Existing condition of electric poles with unmanaged wiring



Figure 85: Installation of underground power cables

9.2.3 Policy

- **Development of Counter Poles**

Asan area is well known for the availability of traditional materials required for daily life of people as well as their cultural and religious behavior. Planning options of diverting the modern mercantile economic development to outside the heritage core area with creation of feasible economic development counter poles to reduce the commercialization pressure is also possible. With this the modern economic activities could be slowly diverted towards Bagbazaar and Putalisadak area which do not have any kind of traditional activity as such with the traditional economic activities still remaining intact within the city core. This can also help create a balanced condition between the modern activities and the traditional activities in Asan. Street Vending was a part of culture in Asan. Proper management of authentic street vendors by providing designated space and avoiding informal encroachers through systematic identification and verification.

- **Taxation**

Taxation on shops/Activity: The identified traditional skills and activities like selling of traditional tobacco called tambakhu, residual of the mustard after extracting oil called pina, traditional soap Dallo Sabun, traditional leaf materials such as paat and duna tapari, traditional Newari sweets such as pustakari, Lakhamari, gundpakh, handicrafts and tools must be attempted for conservation with the provision of associated workshops and market areas for them. There is the possibility of providing tax incentive to the local having these kinds of shops which will encourage others to establish such shops. If local people get opportunities to rise their local product, traditional characters then in some level migration can be reduced.

Taxation on Built Form: The present tax system is based on the area of land. This method of taxation can be based on charging more tax on the productive land earning high profit. This requires identifying the land parcels generating high economy than those having less economic benefit. Less tax can be implied to the buildings having traditional façade in compare to the modern façade which will encourage to maintain the aesthetic of the city core.

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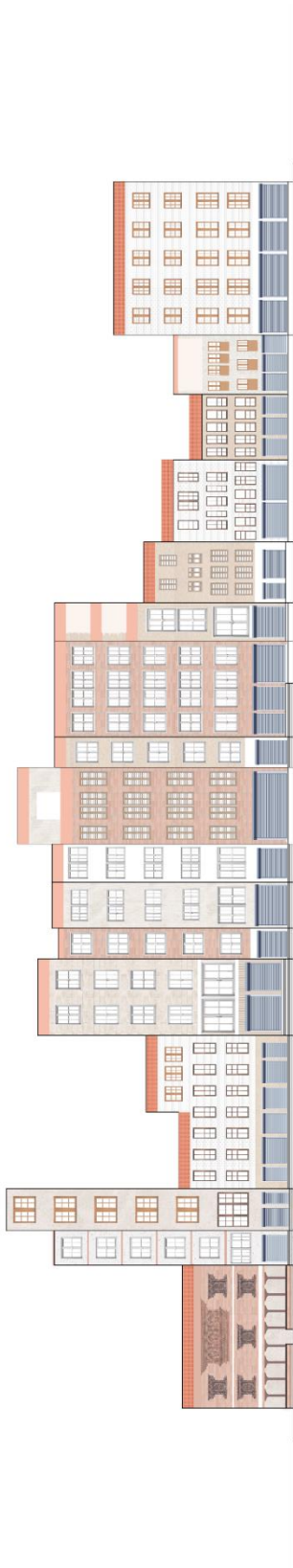
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Annex A: Drawings



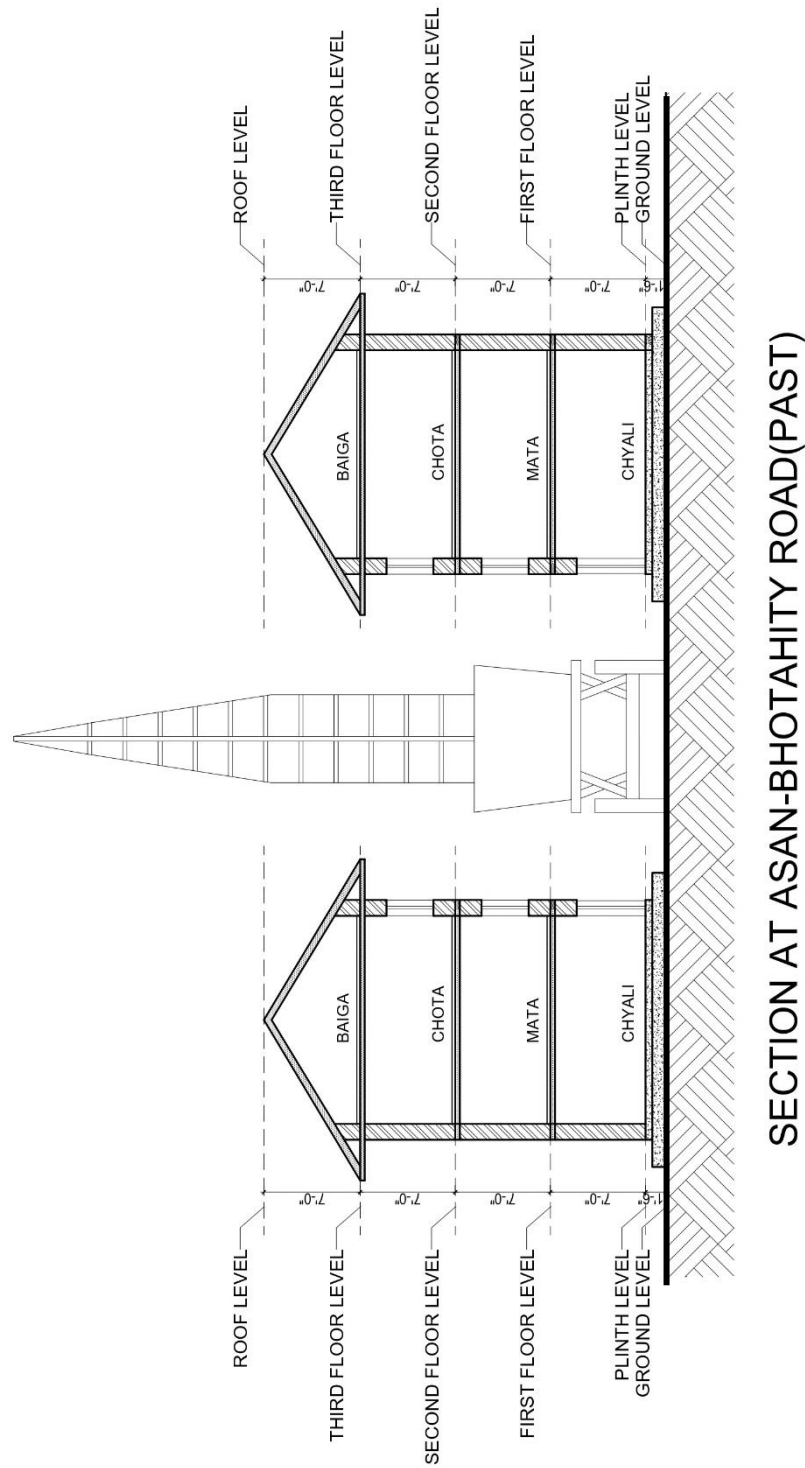
STREET ELEVATION (ASAN-BHOTAHTY)



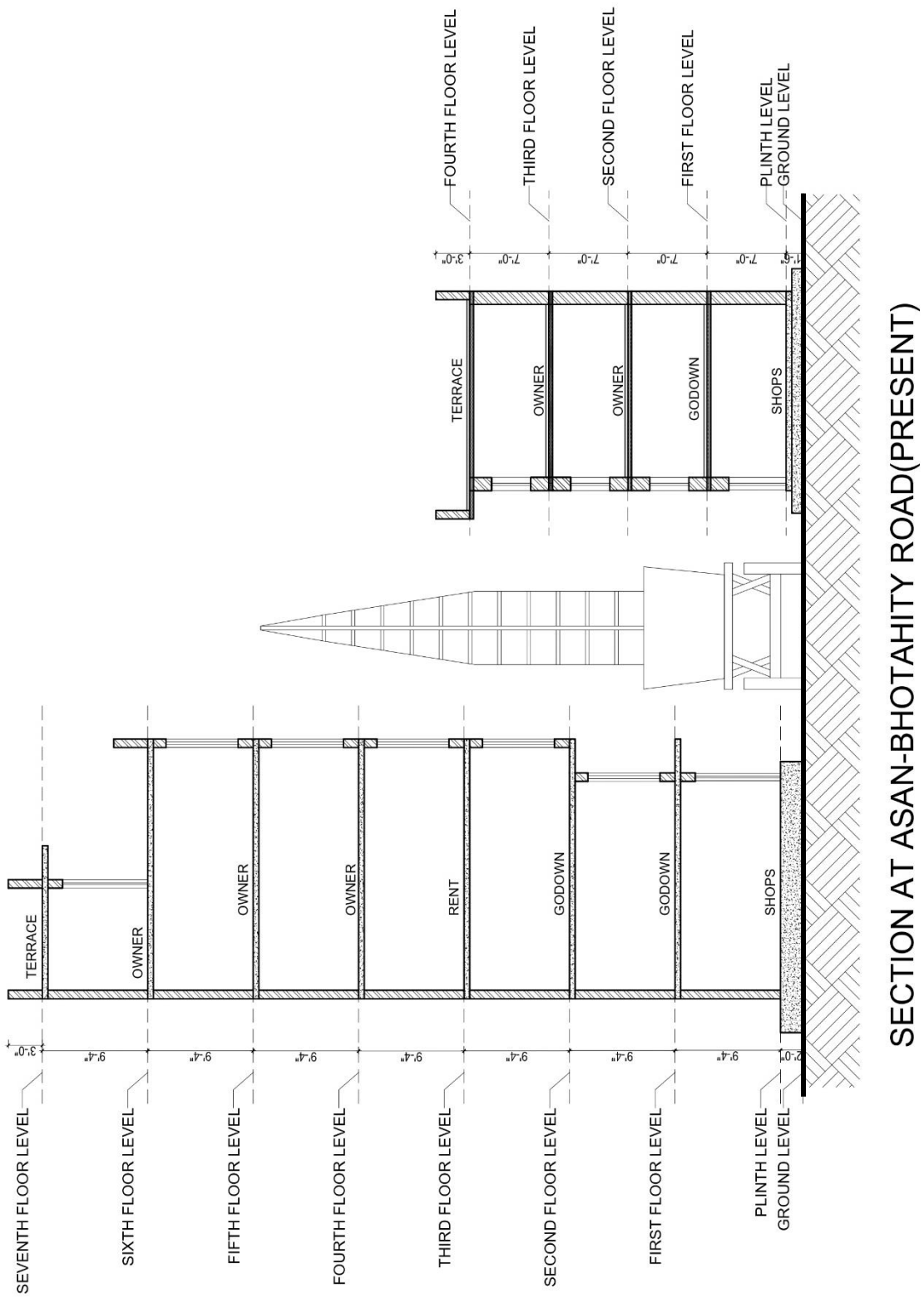
STREET ELEVATION (ASAN-BANGEMUDA)

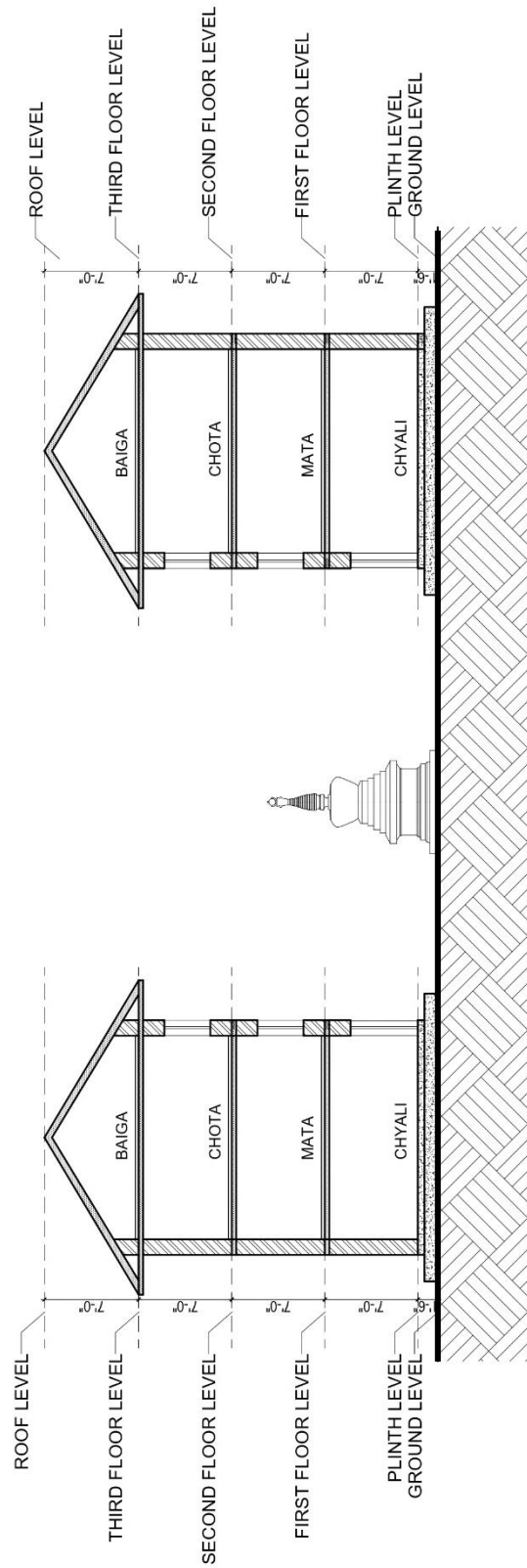


STREET ELEVATION (ASON -JANABAHA)

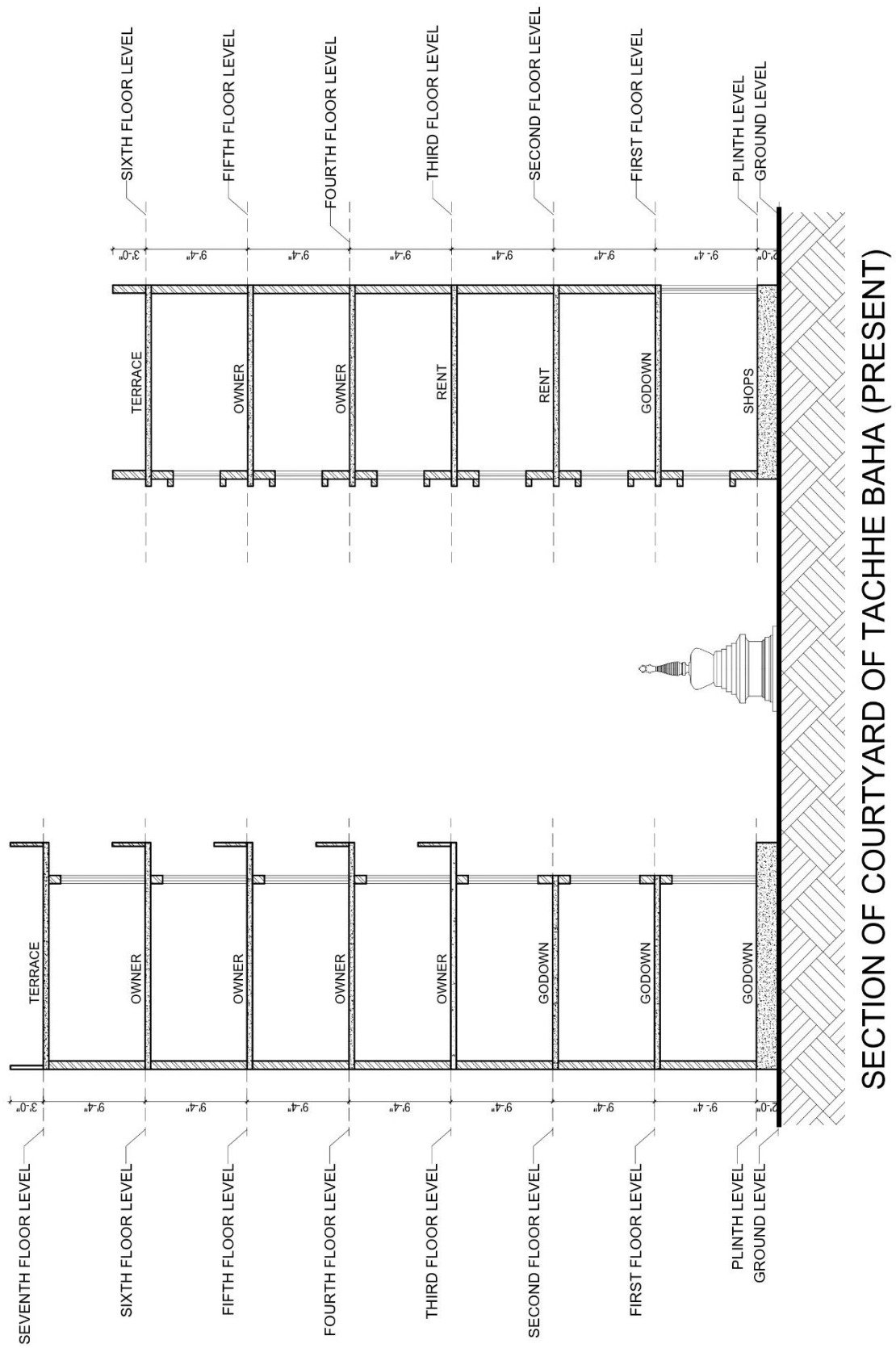


SECTION AT ASAN-BHOTAHITY ROAD(PAST)





SECTION OF COURTYARD OF TACHHE BAHA (PAST)





Spatial Transformations and its Impact on Social Vulnerabilities in Traditional City Core (A Case of Asan)



Spatial Transformations and its Impact on Social Vulnerabilities in Traditional City Core (A Case of Asan)



Annex B: Questionnaires for Survey

General

1. General Information (No. of house)		
1.1	Name of Respondent	
1.2	Gender	
1.3	Address	<ul style="list-style-type: none"> • Asan Square • Asan Street • Asan Baha
1.4	Age	
1.5	Occupation	
1.6	Renter/Owner/Shops	

Physical

1. Type of Construction: Traditional/ Modern Load Bearing/ Modern Frame/ Composite
2. Condition of Building: Good/ Fair/ Bad/ Worse
3. Major Façade: Traditional(Newari)/ Modern/Neoclassical/Other

4. No. of Storey (Past) _____
5. No. of Storey (Now) _____
6. Land Area: _____ approx.....
7. Floor Height: _____

7.1	Approx. Age of the Building		
7.2	Use of the Building	Past (before new construction)	Present
	Residential/ Commercial/ Office/ Rent/ Godown/ Guthi/ Other	Ground Floor First Floor	Ground Floor First Floor

Spatial Transformations and its Impact on Social Vulnerabilities in Traditional City Core (A Case of Asan)

	 Second Floor Third Floor Fourth Floor Fifth Floor Second Floor Third Floor Fourth Floor Fifth Floor
7.3	Ownership of the Building	<ul style="list-style-type: none"> • Guthi Chhen • Single Ownership • Multiple Ownership 	
	If multiple, no of ownership		

8. What types of physical changes have you observed?

Changes	Low	Moderate	High
New taller buildings			
Congestion			
Change in use of open space			
Emergence of Godowns			
Loss in traditional character			

9. What do you think are the primary drivers of physical change mentioned above in Asan?

- Lack of Strict implementation of byelaws by government
- Lack of interest of local
- Commercialization
- Migration of local/influx of rentals
- Increase in demands for more space in family
- Others(specify)

Social

1. Family: Joint/Nuclear _____ No. of People Living in the Whole House:

2. Migration: Yes/ No; If Yes, Origin/When _____ Cause of Migration _____

3. Why native people are migrating from Asan?

- High rent
- Increase in family members/ Need of More space
- Family disputes
- Vulnerable due to Gorkha Earthquake
- Lack of neighborhood bonding

4. For what purpose do you use the neighborhood public space?

Asan Square		Bahal	
<ul style="list-style-type: none"> • Social Gathering(like Bwe) • Cultural Activities • Sun basking • Parking • Commercial purpose • Don't use at all 		<ul style="list-style-type: none"> • Social Gathering • Cultural Activities • Sun basking • Parking • Commercial purpose • Don't use at all 	
Frequency of use of Bahal	Daily	Weekly	Rarely

Spatial Transformations and its Impact on Social Vulnerabilities in Traditional City Core (A Case of Asan)

5. How connected do you feel with your neighbors and local community?

Connection	Low	Moderate	High
Neighborhood relationship			
Involvement in social activities			

6. How safe and secure do you feel in your neighborhood as compared to past?

Safety	Low	Moderate	High
Safety Associated with the presence of a Godown (Fire)			
Safety down the street at night times			

Cultural

1. Are you associated with Guthi? Yes/ No. If yes, Names and Purpose.

2. No of members in guthi(before 30 years)_____ (now)_____

3. Which is major Cultural event/Jatras of Ason for you?

Indrajatra/ Seto Machindranath jatra/ Annapurna Jatra/ Panchare/ Dyo Iwakeu/ others(specify)

4. How are you involved in Jatra/cultural activities?

Ason Square (Indrajatra/ Seto Machindranath/Annapurna jatra)	Bahal(Kul Puja, Despuja, Panchadan)
1. Perform Puja	1. Perform Puja
2. Member of guthi	2. Member of guthi
3. Not involve in guthi but involve in cultural activities	3. Not involve in guthi but involve in cultural activities
4. For Recreation	4. For Recreation
5. Not involved at all	5. Not involved at all

Spatial Transformations and its Impact on Social Vulnerabilities in Traditional City Core (A Case of Asan)

6. What do you think about Jatra (Like Indrajatra/ Seto Machindranath jatra) and festival

Safety	Low	Moderate	High
Enjoy Jatra and festival			
Feel disturbance in neighborhood due to noise of Bajha(musical instrument)			

7. What types of social weakness have you observed?

Weakness	Low	Moderate	High
Decline in social gathering (like we)			
Decline in cultural activities			
Decline of participation of community groups(guthis)			
People moving out of Ason			
Less participation of youths			

8. How can these socio-cultural weakness can be minimized? What interventions can be done by government or local level in order to minimize the physical changes? Suggestions



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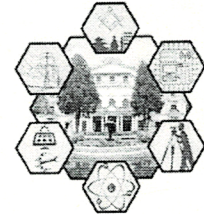
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To Whom It May Concern:


This is to certify that the paper titled “**SPATIAL TRANSFORMATION AND ITS IMPACT ON SOCIAL VULNERABILITIES IN TRADITIONAL CITY CORE (A Case of Asan)**” (Submission# 395) submitted by **Rodina Tuladhar** as the first author, which had been accepted for presentation after the peer-review process, has successfully been presented at the 16th IOE Graduate Conference held during April 18 - 20, 2025. Kindly note that the final revision of the papers and publication process of the conference proceedings is still underway and hence inclusion of the accepted manuscript in the conference proceedings is contingent upon timely response to further edits during the publication process.



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