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Assessment of Residential Neighbourhood of Kathmandu Valley for Social Sustainability

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Abstract
Kathmandu valley has witnessed the growth of planned residential development by both public and formal private sectors in past several decades of the urban development. The aim of predominant mode of planning of such development is based mostly on land readjustment technique and housing development. They either provide the service plot or ready to move in housing stock. Though Kathmandu is the most preferred place to reside in due to abundant facilities and job opportunities, it has been lacking a proper planned neighborhood. There aren't enough studies that measure context specificity sustainability at neighbourhood level. The cities all across is facing serious challenges of the climate change effects. With all this the need for climate action – model to assess the neighbourhood is required.
The purpose of this thesis is to the study is to know the interrelationship between infrastructure, services and social development through comparative case study of planned and spontaneous settlement and accessing the perception of the residents towards sustainable aspects more of societies and neighbourhood infrastructures. The study tries to go through inter linkage between urban neighbourhood infrastructure and social sustainability. While it is obvious that situations of an old traditional local environment plainly dissimilar to those of a new settlement with high socio-cultural aspect with influence to the surrounding new settlements. Context-specificity is alarmed with the consideration of local characteristics, as characteristics of each new development has different climatic, social, and economic settings. This requires taking acceptable account of the differences between various localities with expansion require different approaches.The contextual variations discovered in this study provide specific references for the corresponding government departments to addressing the importance of local level sustainability and the need for integrating bottom-up participatory neighbourhood planning in policy makings and implementations by incorporating local residents' perceived sustainability.

Keywords
Urban Neighbourhood, Social Sustainability, Assessment of Social Sustainability, Sustainable Social Development

1. Introduction

In the development of cities, urban communities play a unique role. Furthermore, the notion of sustainable development developed as a key component of the urban design and planning literature study. The neighborhood scale is the smallest size that takes into account social factors. A neighborhood is expected to be the smallest size at which economies of scale may be effectively realized and concerns like employment and job-housing closeness can be taken into account. It is also at this level that community-based interventions may be planned and citizens can participate in decision-making. A variety of National Security Agency (NSA) tools are now in use across the world.

The valley's quickly developing and modernizing towns have severe sustainability challenges on all fronts: economic, social, environmental, and ecological. Whereas in Nepal, environmental and economic sustainability were implicit in ancient planning methods, the fast expansion and modernization of the valley's major cities, particularly Kathmandu, is making them increasingly unsustainable. Kathmandu is the most preferred place to reside in due to abundant facilities and job opportunities, is has been lacking a proper planned neighborhood. Obviously planning tools have been implemented such as land pooling, guided land development and site and services. But they focus on

land development that only partially donates in neighborhood development. To present, little research shows that sustainable communities have a substantial positive impact; more significantly, the availability of an NSA tool aids authorities in focusing development toward long-term goals.[1]

Climate change, pandemics, infrastructure aging, and other factors have increased the necessity of recognizing contextual differences within neighborhoods. The severity of this public health crisis, for example, necessitates additional contextual study on creating sustainable, healthy, and resilient communities. In general, all contextual features may be divided into two categories: the built and natural environment, and the human component. These cover different aspects, including physical, operational, socio-economic, environmental and institutional aspects [1]. In reality, various cities, and even different neighborhoods within the same city, have diverse contextual features. Although there are several studies that examine the differences in urban setting in different nations, very few, notably in Nepal, have thoroughly assessed sustainability performance using an empirical research.

As a result, using an empirical research in Kathmandu Valley town planning, this study intends to investigate the contextual differences in perceived sustainability performance. The perspective of residents on the specified components of sustainability is referred to as neighborhood sustainability performance in this study. To determine the contextual variation in the valley, two selected examples were compared. It particularly asks, ”To what degree do people’s individual perspectives of sustainability concerns differ from one another within distinct contextual neighbourhoods?” in order to explore the contextual differences among different neighborhoods in Kathmandu. It should be emphasized that because there are so many differences across cities, this study does not attempt to give a generic model for Nepal.[2]

The level of neighborhood has major consequences for long-term development. Planning for sustainability at the neighborhood level and developing assessment frameworks to assess the extent to which the plans are successful in achieving their goals is an effective measure to complement the more well-practiced and institutionalized sustainability assessment at the building scale. Other urban features, such as spaces and elements between buildings, humans and other living organisms, and interactions between these elements, can be taken into consideration through neighborhood sustainability assessments. Moreover, neighborhood is a level at which socio-economic impacts can be better analyzed and citizen involvement can be easier and more meaningfully facilitated.

The importance of assessment findings in the decision-making process for sustainable development emphasizes the need for assessment methods that offer the most accurate picture of current and future circumstances to decision-makers. This necessitates a more thorough examination of the evaluation framework, its components, and the qualitative and quantitative techniques employed. Comparative case study analysis is a possible way for improving assessment methodology and practice.

The main objective of this research is to a method to assess the sustainability of Neighbourhoods. This method should combine an assessment of the economic, environmental and social performance of neighbourhoods, together with an assessment of the neighbourhood qualities.

2. Research Objectives

Main:

- To study, how is the social development and urban social infrastructure interrelated to each other in the contextual case area of Kathmandu in urban neighbourhood.
- To study the interrelationship between social infrastructure, Open spaces, social services and social development through comparative case study of planned settlement.

Specific:

- Accessing the perception of the residents towards sustainable aspects more of societies and neighbourhood infrastructures.

3. Limitation

This research has contributed to a better understanding of NSA.Because people are worried about the pandemic, the research will only provide a broad summary of the case area. Due to the pandemics, the response to the survey was poor. The

study relied heavily on secondary and observational data as primary sources. Online survey had its own pros and cons. The research considers developing strategies for diffusion of neighbourhood sustainability assessment of social aspects. The economic, environmental and cultural indicators are taken that are directly linked to social indicators. Infrastructural and institutional aspects of linkages, such as administrative and service delivery system will be lightly discussed.

The area of boundary of neighbourhood is taken as specified by the local stakeholders. A combination of quantitative and qualitative studies would be used in this case. The major approach for critical examination of the chosen assessment tools would be content analysis.

4. Methodology

To examine the pragmatic aspects of neighborhood sustainability assess study approach is adopted. This research would be based on the pragmatic paradigm as it demands a methodology that would be suitable particularly to get a comprehensive understanding of the issue related to extensive information from literature reviews and the determination of factors of residential neighbourhood sustainability which is the theme of the research is based on a realist view of reality.

The study's ontology is that there have been growing worries about the contextual features of neighborhoods and the need of adopting coherent sustainability concepts to build sustainable neighborhoods. A methodology was developed to find the epistemological reasoning through a thorough review of published articles, meticulous observation, and interviews. When it comes to recognizing various local sustainability concerns and establishing sustainable neighborhood planning, the importance of individuals' perceptions of their neighborhoods is essential. Identification of data sources, survey design and execution, field work implementation, sample size determination, and data management were all part of this study's methodology.Questions on the four parameters are also posed to locals and stakeholders. Strengths and weaknesses on the scale of rating from 1-7 was scored and identified through interviews and observation.

5. Literature Review

A systematic and scientific sustainability evaluation is important for defining a sustainable neighborhood prototype in order to build a sustainable neighborhood. However, others critique the absence of context-specificity and question the use of the Neighbourhood Sustainability Assessment (NSA) in evaluating sustainable neighborhood development across the world. Along with its beneficial effects, urbanization has resulted in a slew of environmental, social, and economic issues.The research framework will look after the following design parameters.

Gro Harlem Brundtland, former prime minister of Norway, this commission was asked to design a framework for better management of environment land statement defined sustainable development as "development that encounters the need of the present without compromising the ability of future generations to meet their own needs"-World Commission on Environment and Development, 1987.

The goal of a sustainable neighborhood is to improve the community's well-being through enhancing the built and natural environments [3]. Since the turn of the century, there has been a movement towards sustainable community planning. These NSA tools may be used to evaluate the success of communities at several stages of development, including planning, building, and post-occupation. Researchers are increasingly recognizing the need to move away from constructing environmental assessments and toward NSA.[4].

The Five Principles promoted by UN-Habitat are meant to foster sustainable urban development by creating livable and efficient neighbourhoods. Sustainable cities are prosperous, convenient, livable, and safe. A sustainable city would possess the Principles like a vibrant street life, Walkability, affordability. Neighborhoods are the places where (in most cases) our first come across with the world outside home occur. In many communities, neighborhoods' role in the daily life of the population is evident throughout the different stages of life. The neighborhood is often used as a basic unit for research in social sciences. Social scientists have frequently conducted studies about important issues such as crime, satisfaction with life, social cohesion etc. [3]

In the neighborhood, it has been discovered connections between status in these sorts of topics and other forms of community problems. Social scientists

aren't the only ones who are interested in utilizing neighborhoods as a unit of study. "Sustainable neighborhood initiatives can be regarded as a continuation of urban planning and design trends which have sought to develop livable and environment-friendly neighborhoods from the early 20Th century on wards. Social sustainability blends traditional social policy areas and principles, such as equity and health, with emerging issues concerning participation, needs, social capital, the economy, the environment, and more recently, with the notions of happiness, well being and quality of life." [5].

As stated above, literature on broader notions surrounding ideas of social sustainability (such as social capital, social cohesiveness, and social exclusion) suggests that the following characteristics are also likely to be important in helping to maintain local communities and neighborhoods. Interaction with others in the community/social networks Community engagement, pride/sense of place, community stability, and security are all important factors to consider (crime). The literature on the parameters is well explored in research frameworks.[4]

6. Research Framework

A systematic and scientific sustainability evaluation is important for defining a sustainable neighborhood prototype in order to build a sustainable neighborhood.[6] However, others critique the absence of context-specificity and question the use of the Neighbourhood Sustainability Assessment (NSA) in evaluating sustainable neighborhood development across the world. Along with its beneficial effects, urbanization has resulted in a slew of environmental, social, and economic issues. [2]. The research framework will look after the following design parameters.

6.1 Residents data:

Demographic data are to be collected for the case area to understand circumstances.

6.2 Provision and location of open space

The importance of public space in fostering social inclusion and engagement in society cannot be overstated. Residents can also use open space for official and informal social gatherings and

Figure 1: Adapted from neighbourhood planning guidelines book

interactions. There is a compelling case to be made for the social inclusion of open space and urban vegetation. Green open space not only serves as the city's "lung," but it also enhances social interaction and aids in the promotion of both health and social inclusion. Good accessibility allows everyone, regardless of age, gender, or color, to connect and develop social networks within the community. Aesthetics, according to several researchers, is important not only for achieving a good physical environment but also for achieving social sustainability, because people respond to the aesthetics of their environment in terms of their sense of satisfaction, and this may improve people's satisfaction.[4]

6.3 Provision and location of social infrastructure

The availability and placement of social infrastructure are critical in the development of social networks and interactions. According to Rothenberg (1969), providing public amenities not only fulfills people's fundamental requirements, but also provides a venue for social and recreational activities. Social and cultural life, as well as living quality. The participation of people of all ages and ethnicities in the events demonstrates the harmony and generations that passed on beliefs and societal ideals. It is widely held that pedestrian-friendly construction fosters social interaction. The arrangement of streets and the visual representations of streets have an influence on the social sustainability of a location.[7]

6.4 Residents perception towards neighbourhood

People like to live in a safe and secure environment, as stated by Corbett 2000, thus security and crime prevention are vital aspects in any neighborhood. According to Elif Karacor (2016), a loss of feeling of community is linked to the majority of societal issues, and academics from many disciplines are interested in sense of community and are attempting to make theoretical or practical contributions to this subject.[7]

7. Case Area

The selection of case area is done such that it is at proximity distance both the site are influenced by Manohara River that divides Kathmandu and Bhaktapur. The site is located as a connecting point between the districts of Kathmandu, Bhaktapur and Lalitpur. One site is totally influenced by the cultural and historical background and other is untouched by any historical background but influenced by economically active society. Both are the land pooling site, used to be huge chunk of an agricultural and fertile land turned was turned into a settlement.

Descriptions	Old Sinamangal	Sintitar, Bode
Project started	2051 B.S	2054/2055 B.S
Project area	707 ropani (35.97 ha)	530 ropani(27 ha)
Location	kathmadu	Bhaktapur
Open space	3.40%	2.38%
House units	95%	65%

Figure 2: Description of site

Figure 3: Case Areas ,3 km appart and Manahara River

7.1 Case area 1: Old Sinamangal Town Planning

Sinamangal Land Pooling was started in 2051B.S. under Town Development Committee (TDC) Act 1988 in order to control the haphazard urban growth of Sinamangal. Owners are benefitted with a good return value of the agricultural land after the pooling. Located at Kathmandu municipality, ward no. 35. The opportunity are Increase of immigrants, higher density in future, and advancement in living style, Smart technologies adaptations. Major concern of the place is Sun City Apartment, airport and commercial plus Pepshicola factory.

Figure 4: Old Sinamangal planning Features

7.2 Case area 2: Sintitar, Bode Town planning

Bode is old settlement and its periphery has the spontaneous urban housing developed.it is also connected with the planning area from west corner.The city is found to be existed from the lichhavi period. Sintitar town planning project went through different phases to reach to this situation. The report according to 2074 Chaitra months. The distribution of the plotted lands to the respective land owner completed to 90 percentage.The site is ironic in cultural tangible and intangible aspects. The festivals are celebrated throughout the year which has a direct influence over new planning.[8]

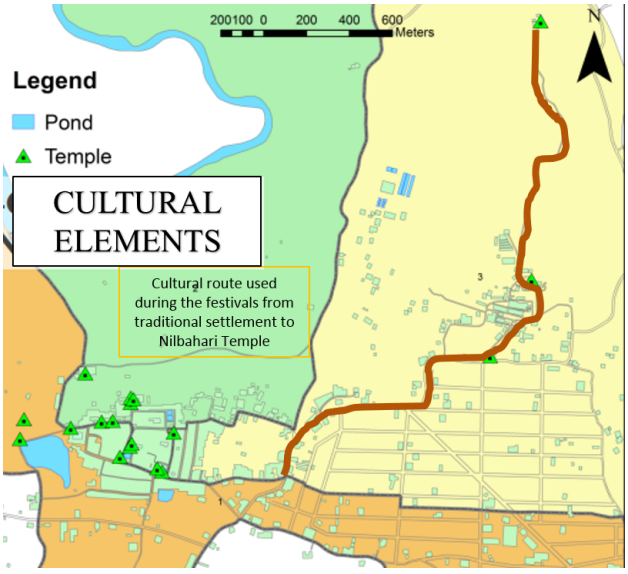


Figure 5: Bode cultural elements

8. Findings and Analysis

Data finding and analysis was done according to the site data, surveyed data and the secondary data from different sources, following are the summarized finding on the basis of those data. The site briefing have been done and different means of analysis tools for comparative analysis was done.

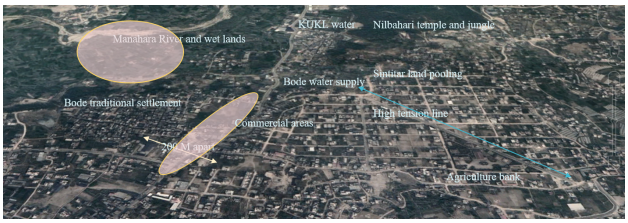


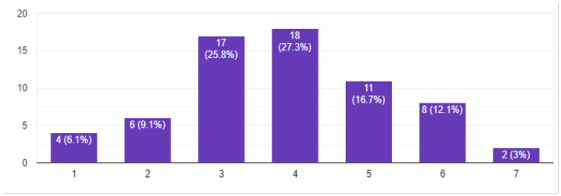
Figure 6: Sintitar Bode planning Features

8.1 Provision and location of open spaces

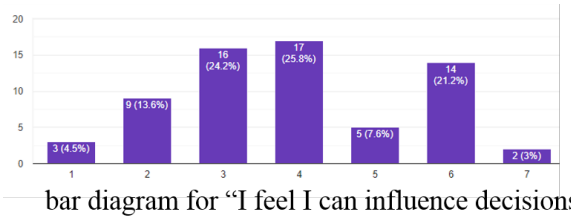
Open space that is well-distributed and well-located at both the precinct and neighborhood levels. The majority of the housing units are within 5–10 minutes walking distance of all public places. Parks and open space are delimited by streets and bounded by the front side of the housing unit rather than the rear fence. People of all ages utilize the place for various purposes. At both site, the open area is of a good size and shape. Landscaped and well-equipped with passive recreational amenities, including commercial, sporting, and walking opportunities. In both the case areas, the majority of activity are seen in the morning. Daily activity was observed in time of morning, evening and day and was found to differ in both the cases.

"The change is great. Some of the elderly residents, who usually sit and rest in the shade and parks in the morning or at night, would greet each other and share their talks, they discuss about different topics in the place." One of the youth in Sintitar Bode.

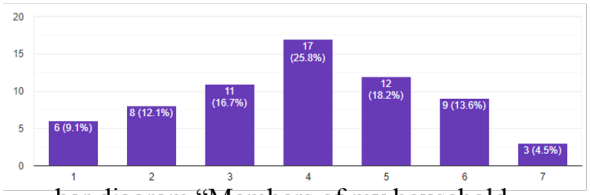
One of the community member of Old Sinamangal said that- "people around here are willing to help their neighbors. People in this neighbourhood can be trusted and generally get along but some do not share the same values and could not get along the community groups. It is little difficult to deal with temporary residents that is rental person due to they so not provide the feeling of belonging. They create quarrel in their places."



Level of social engagement in neighborhood rate from 1 – 7. I know my neighbors on my streets



bar diagram for "I feel I can influence decisions that affect my neighborhood"



bar diagram "Members of my household participate in formal or informal neighbourhood association or groups."

Figure 7: bar diagram,results 1=v.good 7= very bad for Questions raised in survey

8.2 Provision and location of social infrastructure

Open space and a shopping center are integrated. At both the precinct and neighborhood levels, many forms of social infrastructure are available. Social infrastructure is accessible in Bode, however it is located on the outside of the development and is not within a 5–15 minute walking distance, but in Sinamangal, all infrastructure is within a 10–15 minute walking distance. Open areas, social infrastructure, and commerce are all easily accessible and visible. Sinamangal's permeability is improved by the tiny block size, which is no more than 20 meters long. Accessibility is good, although most of the housing units have limited visibility. The block length is too lengthy, which has an impact on permeability.

8.3 Circulation pattern and road networks

Sinamangal has easy automobile access, however pedestrian walkways with roadways that link to essential amenities are not well connected. Other cars use local roads as a shortcut to their destinations. From one end of the planning to the other, all roads

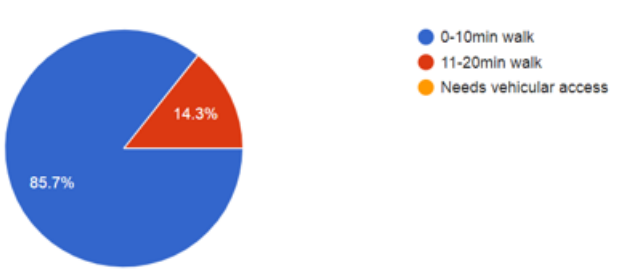


Figure 8: social infrastructure distances

meet at the exit point. When it comes to Bode, Convenient automobile access, however pedestrian walkways with roadways that lead to essential amenities are not properly connected. There are dead ends and faulty connections on the road. The Jatra and ceremony take place on the outskirts of town.

Concerning about aesthetics, in Sinamangal Residential development is very well integrated with open space and social facilities. This provides interesting street scape and good aesthetic value to the neighbourhood. Manohara Rivers have been encroached. While in Bode, This development is dominated by row housing and monotonous structure and, therefore, loses aesthetics. Site lacks uniformity. Bhaktapur has its bylaws of it's for brick facade that is not followed in this neighbourhood. Manohara River is untouched and preserved wet land.

8.4 Resident's satisfactions and Safety

Residents' feedback was sought in order to assess their feelings about the layout and its relevance to social activities. Residents at both sites were pleased with the amount and placement of open space in their neighborhoods at varying levels. Most of the residents in bode were happy with the location of open space but criticize on the lacked of facilities to the children and old age. Both the cases there was a good relationship with their neighbors. The frequency of peoples interaction was more in bode than that of old Sinamangal. People interaction was weekly and monthly and communication was through the social online Medias. The treatment of native people of bode to the outside valley native people was found to be dis satisfactory. There was a lack in sense of belongings in the people of bode who are not native and rental people.

"There is a certain gap in old-new and owner-tenant relationships. This diversity in the ethnicity and cultural practices in the community have brought

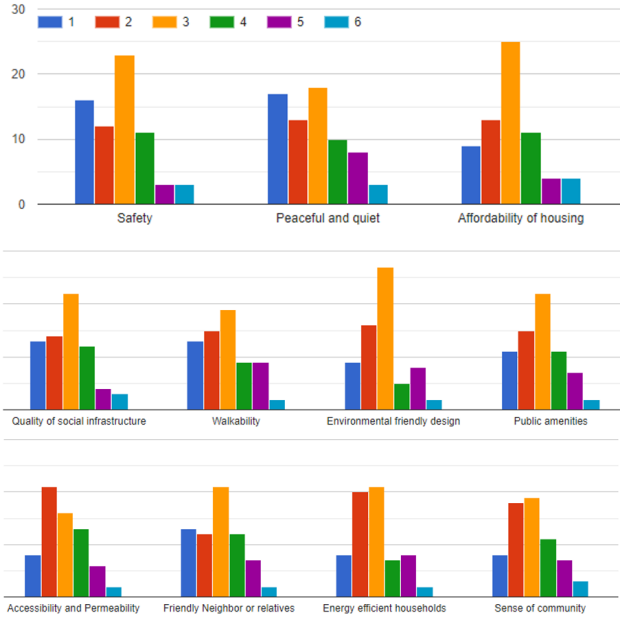


Figure 9: Level of importance of neighbourhood factors

about difficulty in reworking in society. People coming in front and discussing about the problem and solutions will definitely change the perception of evaluation of people in other context than ethnicity and caste." – youth, social activist.

Open areas and roadway networks are well-placed in Sinamangal. People will flock to public areas as a result, and streets will be vibrant and safe. Streetlights, CCTV, cameras, and a police station are all present. In their neighborhood, people feel relatively safe. Bode lacks a link between open space and highways. There are no street lights and streets lacks permeability. While interview with the local one key informant,he has to say-"Kathmandu Municipal must revise its ward level working modality and master plan based on the outputs gained from knowledge sharing workshop / conference. It should implement the plan through one door system but decentralized and hassle-free governance approach in coordination with civil societies (Tole Sudhar Samiti) with clear cut work division based on the nature of institutions."

A 42 years old woman from community during interview said" I received greetings from the neighbors. Sometimes, when I met other housewives, I asked 'Are you looking for work?' I also gave advice and recommend the amenities and facilities around the place. I helped make the connection. I also ask them if they are interested to join the woman social

group (Ama Samuha) there if she was interested."

9. Conclusion and Recommendation

According to the findings, there is a clear link between urban form and social sustainability. The viability of new settlements in various parts of the same metropolis might vary. In terms of social sustainability, an ancient traditional village has a direct impact on a new settlement. While conducting a neighborhood research, it is necessary to have a deeper understanding of the case's location and surroundings.

According to this study, there is a relationship between design features and social indicators. However, in order to create design standards and planning policies, a comprehensive research including stakeholders, experts, and users from a variety of cities in developed and developing nations is required.

The study found that the conditions of an old traditional local environment are clearly different from those of a new settlement with a strong socio-cultural component, and that the traditional settlement's local environment has a direct impact on the new settlement. Contextual characteristics change throughout cities, and even between neighborhoods within the same city. It is essential to stress the necessity of taking into account the local character of each community in order to build a sustainable neighborhood.

Similar patterns of sustainability performance were discovered, indicating that neighborhood infrastructure and public engagement with culture should be prioritized in cultivating sustainable neighbourhoods, as well as the importance of incorporating bottom-up participatory neighborhood planning in policymaking and implementation by factoring in local residents' perceptions of sustainability.

Furthermore, the neighborhood is a level at which socioeconomic repercussions may be better understood and citizen involvement can be made more straightforward and meaningful. Community-based development Any preliminary planning effort should take into account UNHABITAT's five principles for a new approach of sustainable neighborhood development.

The CDD (cooperative development department) stresses the importance of beneficiaries in project decisions. CDD interventions enhance social cohesion by assisting and strengthening community decision-making and collective action capability through a participatory approach. There are two key components: 1. facilitation and support for community engagement in the selection process, and 2. design and execution of a development project; and financing for development project implementation.

Sustainability differs by neighbourhood typology and what contextual factors should be considered in promoting neighbourhood sustainability. For traditional Bode Bhaktapur neighbourhoods, 'rebuilding the Neighbourhood identity' and 'enhancing public participation' should be a priority. Regarding the Old Sinamangal, 'promoting effective self-governing body' will be helpful to social interaction and inclusion should be its priority.

During the planning of land use because only allocating an open area is not sufficient for optimum use of the open spaces; the appropriation of open space and uses are important. Various activities of sports as well as gardens, seating areas and green lawn can act as a breathable space in the urban space also adopting dhunge dhara, Chautari, pati pauwa, traditional Architecture in respect to traditional settlement.

There is a high percentage of road in the planning area. It may have been decreased with developed cul-de-sac concepts through a common major road in cluster and pedestrian access to make the streets planning sensible. The usage of clustered or fused cul-de-sacs with vehicle restricted zones in future urban design can provide safer streets for all age groups. Instead of an automobile circulation area, a green corridor and a living street are proposed.

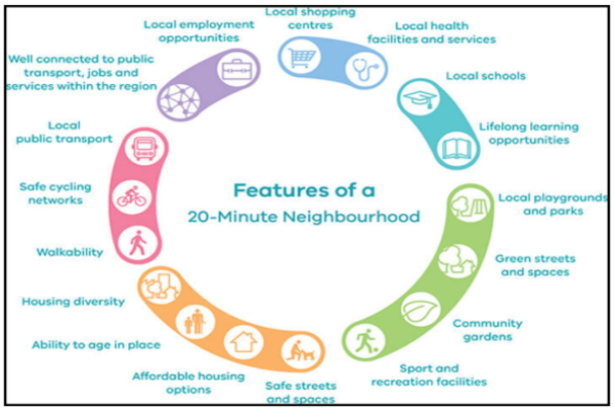
Figure 10: Clustering of houseing units

Implementation of policy: Policy should address diminishing social capital, growing heterogeneity, and

shifts in residents' perceptions, especially those who live in the traditional Bode neighborhood's preferences and demand. The majority of long-term residents and an increasing number of non-locals and tenants indicate the need of addressing heterogeneity issues in policy making, such as old-new and owner-tenant interactions. To deal with both physical (living circumstances) and non-physical (social capital) elements of deterioration. Experts should emphasize properly engaging renters and immigrants in the policy-making process.

Social infrastructures such as schools and hospitals are to be assigned in service plots so that spontaneous expansion of social infrastructures, such as unreliable hospitals in the case area, is avoided and the facilities and infrastructures are within a 10-15 minute walking distance.

A new Enovation is the notion of a 15- or 20-minute neighborhood, which may be applied in both present and future cities. The 15-minute city app, developed by Here Technologies, a digital mapping company, is an accessible tool that helps normal people understand how car-dependent their neighborhoods are by allowing them to see which daily necessities they might easily reach in a 15-minute walk.



The City of Melbourne, Australia adopted a slightly larger radius for their decentralized city — and crucially, included *safe* transportation options as a necessity — but the concept is the same. Source: Beesmart City

Figure 11: concept of 20 minutes neighbourhood

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