TRIBHUVAN UNIVERSITY

INSTITUTE OF ENGINEERING

PULCHOWK CAMPUS

THESIS NO: 074/MSUrP/020

Impacts of Exorbitant Land Price on Urban Form
(A Case of Kageshwori Manohara Municipality)

by

Swornima Munankarmi

A THESIS

SUBMITTED TO THE DEPARTMENT OF ARCHITECTURE

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN URBAN PLANNING

DEPARTMENT OF ARCHITECTURE

LALITPUR, NEPAL

SEPTEMBER, 2020

COPYRIGHT

TRIBHUVAN UNIVERSITY

INSTITUTE OF ENGINEERING

PULCHOWK CAMPUS

The undersigned certify that they have read, and recommended to the Institute of Engineering for acceptance, a thesis entitled **"Impacts of Exorbitant Land Price in Urban Form - A case of Kageshwori Manohara Municipality"** submitted by Swornima Munankarmi (074/MSU/020) in partial fulfillment of the requirements for the degree of Master of Science in Urban Planning.

……

Supervisor, Mr. Ashim Ratna Bajracharya

Assistant Professor

Department of Architecture

...……

External Examiner, Prof. Dr. Bharat Sharma

...……

External Examiner, Mr. Suresh Prakash Acharya

……

Coordinator, Dr. Ajay Chandra Lal

M.Sc. in Urban Planning

Department of Architecture

September, 2020

ABSTRACT

Urbanization has become unavoidable phenomenon observed all across the globe especially in developing countries. In Nepal, urbanization is consequence of centralization of major economic activities and population movement rather than outcome of a planning effort. Kathmandu Valley is epicenter of urbanization in Nepal which is also one of fastest growing urban agglomeration in South Asia. Migration and population boom resulting from urbanization has various impacts on the city structure. One of the most significant impacts of urbanization is on the price of land. The major problem in urban areas is the scarcity of land due to excess demand and speculation. As the supply of land is inelastic and the speculative demand for land breaks equilibrium of demand and supply leading to deviation of land prices from their basic value.

Land is morphology and power which is largely the basis of town planning. In context of Nepal, land is most secured form of investment which can be inherited by offspring. Land fragmentation, unregulated urban land market, faulted land acquisition and compensation and incomprehensive zoning regulations characterize the current urban land. Due to negligible presence of government, speculative bubble is created in urban land market. Land prices in Kathmandu are increasing way beyond their potentiality; decreasing the affordability for the majority. This overpricing of land has severe effect in urban land form and urban land management.

This study focuses on studying impact of exorbitant land prices on urban form. Land price logically has economic linkages, but it has been dealt with planning perspective in the study. The study area taken is Kageshwori Manohara Municipality which is rapidly urbanizing municipality where the land price has increased in even faster pace. To gain insight into the current scenario of study area, both qualitative and quantitative analytical methods were used using the data collected via interviews with key informants and questionnaire survey. Various indicators with respect to land price at ward level were analyzed.

The major limitation of study is the consideration of informal land price for the analysis of land overpricing impact as there is huge difference between legal government price and market price. The study has drawn conclusion and recommendations regarding the urban form and land management for the municipality and for urban areas that are in the stage of rapid urbanization.

ACKNOWLEDGEMENTS

I am very thankful to Dr. Ajay Chandra Lal, Year coordinator at Masters in Urban Planning Program, Department of Architecture, IoE for providing opportunity to conduct and present this dissertation. I would like to express my deep gratitude to my thesis supervisor Asst. Prof. Ashim Ratna Bajracharya for his guidance throughout the preparation of the research writing. His suggestions and support to complete this dissertation is highly appreciable.

I am highly indebted to all those from government agencies, informal land developers and respondent residents of Kageshwori Manohara Municipality who unconditionally helped me in data collection. My special thanks go to Structural Er. Umesh Jung Thapa, Er. Seema Acharya, Er. Deepa Karki, Ms. Lizana Khadka, Mr. Pratap Shrestha, Mr. Purusottam Lamichchhane from Kageshwori Manohara Municipality for their immense help in data collection. I would like to take this opportunity to extend my sincere thanks to senior Ar. Sushmita Sharma Manandhar for her profound help, continuous support and encouragement to complete this thesis.

I would also like to thank my friends and seniors for providing their valuable views and suggestions during the research writing. My heartiest respect goes to my family, especially my spouse Mr. Niraj Amatya for their due support, understanding and endless encouragement in preparation of this thesis. Last but not the least, I am grateful to all those who directly or indirectly supported me in preparing thesis report.

Table of Contents

List of Figures

List of Tables

List of Charts

List of Acronyms

BFI	Bank and Financial Institution
CBS	Central Bureau of Statistics
CDO	Chief District officer
DLR	Department of Land Revenue
DNDRC	District Natural Disaster Relief Committee
DoS	Department of Survey
DRC	Development Right Certificate
FAO	Food and Agriculture Organization
FAR	Floor Area Ratio
FSI	Floor Space Index
GCR	Ground Coverage Ratio
GLD	Guided land Development
HH	House Hold
HIG	High Income Group
INR	Indian Rupees
KMC	Kathmandu Metropolitan City
KVDA	Kathmandu Valley Development Authority
LAA	Land Acquisition Act
LG	Local Government
LGOA	Local Government Operation Act
LLR	Land and Land Resource
LR	Land Readjustment

LSGA	Local Self Governance Act
LUP	Land Use Plan
LUZ	Land Use Zone
MoLRM	Ministry of Land Reform and Management
MTMP	Municipal Transport Master Plan
NRB	Nepal Rastra Bank
NUDS	National Urban Development Strategy
PIR	Price to Income Ratio
PPP	Public Private Partnership
RIR	Rent to Income Ratio
TDA	Town Development Act
TDC	Town Development Committee
TDR	Transfer of Development Rights
TPS	Town Planning System
UN	United Nations

1. CHAPTER 1: INTRODUCTION

1.1. Background

Urbanization has become megatrend of century; a phenomenon observed all over the world which is dominant especially in developing countries. Main causes being migration and increase in population, it has various impacts on the city structure. One of the most significant impacts of urbanization is seen on the value of land. As the supply of land is inelastic and the speculative demand for land breaks equilibrium of demand and supply leading to deviation of land prices from their basic value (Ranjitkar, 2017).

Urbanization in Nepal, as a process, is largely the outcome of location of new economic activities and population movement as opposed to the outcome of a planning effort (UN HABITAT, 2010 c.f. Bakrania, 2015). Nepal is one of the ten least urbanized countries in the world. However, it is also one of the top ten fastest urbanizing countries. Urbanization in Nepal is dominated by a few large and medium cities with an excessive population concentration in the Kathmandu Valley.

Back to history, according to Mathema (1999), the trend of urbanization in Nepal began in the 1950s. With the help of foreign aid, infrastructures related to health, education, transportation and communication flourished in urban areas attracting new residents into Kathmandu Valley. As the valley's population tripled to more than a million by the end of 1980s; the suburbia of modern houses began transforming the traditional landscape of Kathmandu Valley. As the result, land values in Kathmandu valley soared.

The Kathmandu Valley has become most populated urban region and one of the fastest-growing urban agglomerations in South Asia (Muzzini & Apericio, 2013; MoUD, 2015). Kathmandu Valley accounts for 24 per cent of the total urban population, with Kathmandu Metropolitan City alone accounting for 9.7 per cent (Bakrania, 2015). With the population of 2.5 million people, Kathmandu valley is struggling to respond to its current urbanization rate of around 4 percent (National population report, 2017).According to Ishtiaque et al., (2017), during the time period of 1989 – 2016, built up area in Kathmandu valley has increase from 5.10% (2153.79 Ha.) to 26.06% (11,020.62 Ha.) of total land area. Consequently, Agriculture area in valley has decreased from 80.54% (34,057.40 Ha.) to 55.30% (23,387.06 Ha.) of the total land area. In last three decades, built-up areas increased by 412%, while agricultural land encountered a 31% loss. This data shows the pressures of urban growth in

peri urban areas of Kathmandu Valley as the development is sprawling outward from urban core (as shown in fig. 1). These pressures have led to huge rise in land values, land speculation and uncontrolled urban development. Land cover land use data of Kathmandu valley mentioned earlier has showed rapid conversion of fertile agriculture land to non-agriculture uses which is issue of serious concern.

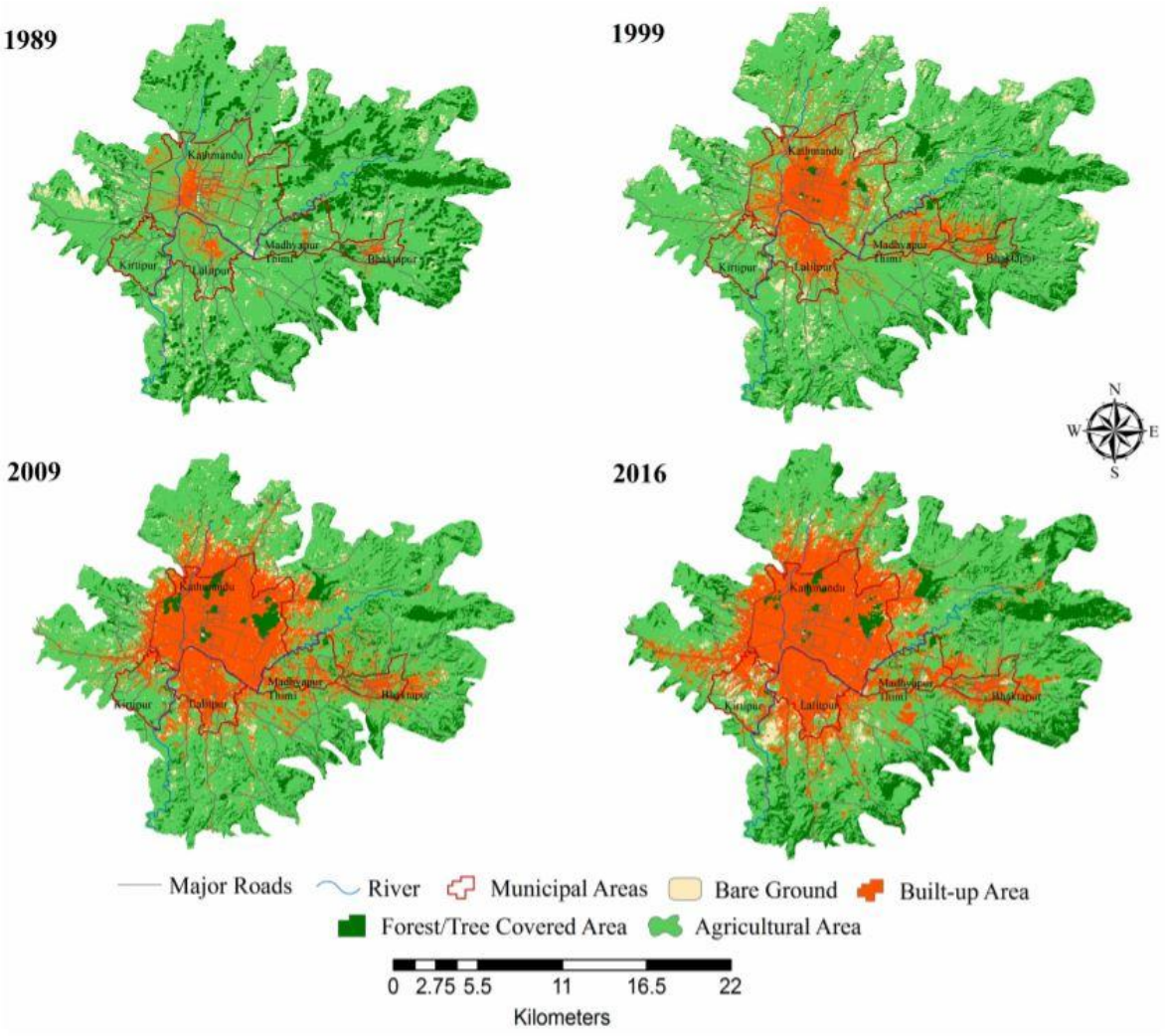

Figure 1- Land use Land cover maps of Kathmandu Valley

Land is a natural resource which is immobile, indestructible and fixed in supply. Land is heterogeneous and has alternative uses. Land has a broad definition as primary factor of production and can take on various forms, from agricultural land to commercial real estate to the resources available from a particular piece of land. Land is a key resource in any economy and the construction industry has amounted to a quarter or more of total investment

(Ranjitkar, 2017). In context of urban land, there are various determinants of land value and many driving forces for changes in land usage.

Land in Nepal has traditionally represented the principal form of wealth, the principal symbol of social status, and the principal source of economic and political power (Mathema, 1999). In Nepal, land is still the most secure form of financial investment. In addition, land is an asset to pass to future generation. Citing to Ranjitkar (2015), Land can have different value based on its character like commercial value, social value and cultural value. Land is evaluated on a subjective, not objective basis. Land does not just have value because it is there (objective). It has value due to numerous characteristics such as location, size, quality etc. Property in real estate market is priced according to its land value. The growing population has generated various demands of land use over limited supply of land resulting to increase in rent and land value. In absence of strong government regulation and intervention land brokers, land developers and land owners have become the major actors involved in determining the land price in the market. According to According to Nepal Land and Housing Association, land prices have risen by 300% since 2003.

Ranjitkar (2015), states that the concept of speculation has been evolving and its role in inefficient urban land market has been a huge issue which has made it next to impossible for poorer section of society to acquire land. Land speculation is a financial activity that involves the purchase of real estate with the hope that the price will increase (Wisegeek, 2017 c.f. Ranjitkar, 2015). Land speculation has become one of the most urgent and challenging land management issues in present context. Speculation adds to the demand for land, making prices go even higher. Land becomes priced for future use, not present day use (Foldvary, 1998 c.f. Gyawali, 2007). Such a spectacular increase in land prices will inevitably have a significant impact on land use, production, income and the economic welfare of people (Ranjitkar, 2015).

1.2. Need of the research

Land is necessary for all kinds of production and the value of land depends on many economic decisions. According to Bhandari (2015), housing is said to be affordable if a household spends less than 30% of their income in it. Housing price is cumulative of land price (including infrastructures) and the construction of structure (design, material and labor price). The economic, spatial and mobility trends in Nepal point towards the certainty of increased urbanization and urban growth in favored locations and regions. While urbanization

and urban growth appear inevitable, urban areas are beset with a host of critical issues related to urban development, management and institutions (NUDS, 2017). Kathmandu has witnessed spiraling increase in Land value decreasing affordability for majority of population which is promoting haphazard urbanization and urban sprawl.

Price of land is directly proportional to its productive potential which is simple law of economics. But, as the speculative bubble grows in our land markets; the price rise in many areas has become illogical. For example, A land at Durbar Marg is over two crores and anna, Baneswor is 1.25 crore per anna. If you buy a four anna plot in Baneswor and make a 4000 sq ft building for rent, it is going to cost around 5.6 crore rupees. For servicing the interest and investment money at 12% you need Rs. 560000.00 per month, which is realization of Rs.140.00 per sq.ft. This price is very high in the present context. And profit on that, it is very difficult to even visualize. This is the scenario in the prime business locality (1 Ropani.com).

UN HABITAT has concluded in Nepal Urban Housing Sector profile, 2010 that fast paced urbanization combined with the absence of planned urban development is causing an increasingly worrying situation in Nepal's cities. Land prices in cities have soared to unprecedented highs, making land increasingly unaffordable for the urban poor. More than 75% of the population does not have sufficient income to afford the minimum standard house in the city outskirts. As a result unauthorized occupancy of land is a growing phenomenon in Kathmandu, it is estimated that in Nepal nearly 7% of the urban population lives in squatter settlements. Another worrying situation is the quickly increasing proportion of people renting without any form of support or control, often in overcrowded conditions. The trend of adding more floors to meet housing demand is irreversible and is creating a dangerous situation in earthquake prone Nepal, it also puts an immense burden on the existing urban infrastructure which is already overburdened: water supply is poor, sanitation is alarming in some urban areas, road-conditions are appalling and facilities for waste collection and treatment are glaringly lacking. Yet meanwhile the housing sector has largely been neglected by the government and is dominated by informal processes with little institutional control or help of formal sector. The municipalities who in theory carry the main responsibility for provision of urban services are ill equipped to deliver and unable to meet the quickly growing demand. To date, the main intervention instruments were land development programmes like land pooling but these have failed to address the needs of the lower income groups.

According to Ranjitkar (2015), the major three effects increased land price due to land speculation has are on economic efficiency, urban sprawl and poverty. There is a very urgent need of study in this area. As speculation increases, more loans go towards long term capital making less credit available for businesses who need it for quick turnover items creating economic bias. According to Archer (1973), when the speculators hold their land out of current market for resale at later date at higher price; buyers and developers have to bypass it and travel further afield for purchase. This phenomenon causes scattered development or rather urban sprawl. High rents and poor public services in urban centers lead to syndrome of urban blight. The benefit of speculation, however, has come at the expense of the people who do not have access to land and its rent. The land prices certainly go up if more people are able to buy land which results in increment of rent for the people who cannot afford to buy real estate (Ranjitkar, 2015). Impediment in access to land and increment in rent will increase the incidence of poverty among the rental population.

Very little is known about the socio economic effects of land transaction and extent of land speculation in Nepal. There is need to study the problem of urban land management and the reasons behind skyrocketing growth of land prices for accessible and affordable land development to all. This study will attempt to research on the important issue of land market operation.

1.3. Importance of the Research

Population and economic growth does not take place in thin air; it requires land and lots of it (Dowall, 1991). The major problem in urban areas is the scarcity of land due to excess demand and speculation. In this research, attempts will be made at determining the significant factors that determine the land value. In the research, land use pattern, development trend, migration trend, land value increment etc. will be studied. The findings of research will be helpful to anyone who wants to have knowledge about dynamics of land value and urban land management. The findings of research will be information related to land value and dynamics of land market. Furthermore, the research could be important to government, planners, general public and land developers. Also this research could be baseline study for future research.

1.4. Problem Statement

Land prices in Kathmandu have increased significantly across all urban areas due to pressures of urbanization. Kageshwori Manohara Municipality is rapidly urbanizing municipality

where the land price has increased in even faster pace. In absence of proper planning and regulatory policies, this overpricing of land has negative implications on urban form of the municipality.

1.5. Research Objectives

The main objective of the research is to study the link between urban land market and urban form. The specific objectives of this research are:

- To find out the significant factors that determine land price in urban areas
- To study the implication of land price on elements of urban form
- To give recommendations regarding urban land management in present and future scenario.

1.6. Scope and Limitations of Research

This study basically focuses on studying impact of land overpricing on urban form. While the study focuses on urban form; the study has left out other facets of extortionate land price implication such as socio economic effects. Land price logically has economic linkages, but it has been dealt with planning perspective in the study. The major limitation of study is consideration of informal land price for land price effect analysis as there is huge difference between legal government price and market price. The market price used for analysis is determined through information received from various sources. Elements of urban form – Population Attributes, Land use configuration, Housing characteristics and Transportation Infrastructure were selected for the analysis of land price impacts. The scope of study area is Kageshwori Manohara Municipality and range area of HH questionnaire survey is Ward no 9, 8,7,6,5 of the municipality. Micro level analysis of land price impact indicators is valid for ward no.8 of the municipality only.

1.7. Validity of Research

The existing urban conditions are reflected through available basic data on urban infrastructure, environment, economy, governance, finance and investment and through analysis of current nature and characteristics of urban land, densities and form. Land fragmentation, unregulated urban land market, faulted land acquisition and compensation and incomprehensive zoning regulations characterize the current urban land. The evolving urban form is becoming increasingly disorganized mixed with incompatible land uses, declining level of amenities and neighborhood environment. Deficiency of urban infrastructures is

highlighted by the situation of water supply, sanitation, solid waste management, housing, transport and energy (NUDS, 2017). There is no systematic system for pricing of land which has given liberty to lot of speculation in land. Furthermore there no proper regulations and policies prepared by government for urban land management. Land is being developed mostly by private sector and government has almost negligible presence in land markets. Unprecedented growth of our economy mainly due to remittances which accounts 29% of our GDP has increased the demand and price of land for non-farm uses such as housing, commercial etc. Similarly, loans from Bank and financial institutions (BFIs) and monetary policy of NRB also plays a role in Land market as BFIs are financing up to 60% of total project cost in land development sector. There is something more than just equation of demand and supply in the dynamics of land prices in urban areas. Implication of overpricing of Land needs to be studied as land is primary factor of production. As this topic relates urban planning and economics, this is an important research topic. Very little research has been done in this topic.

1.8. Methodology

1.8.1. Choice of methodology

In this particular research, data required for achieving stated objectives required a particular way of looking at the research problem. For this suitable research paradigm needs to be associated with the study. Paradigm is a "worldview" or a set of assumptions about how things work. It, according to Bogdan & Biklen (1998 c.f. Mackenzie & Knipe, 2006) is a loose collection of logically related assumptions, concepts, or propositions that help orient thinking and research paradigm is a theoretical framework of research which influences the way knowledge is studied and interpreted.

The Nature of Research requires both qualitative and quantitative research approaches (viz. Pragmatic Paradigm). First objective, to find out factors determining land price have multiple reality in play and needs to look upon objectively. The epistemological Position of research is post positivist where observations may involve error and reality is imperfect. Post positivism recognizes that all observation is fallible and has error and that all theory is revisable. Post-positivism is influenced by a philosophy called critical realism (Trochim, 2006). Critical realism, however, recognizes that observations may involve error and that theories can be modified (Trochim, 2006). Reality cannot be known with certainty. Co relational research methodology based on inductive logic needs to be applied where broad generalizations are

made from specific observations. In co relational research, researcher do not influence any variables but only measure them and tries to find relationship between different variables. An inductive logic is logic of evidential support. Inductive reasoning makes broad generalizations from specific observations (Trochim, 2006). In inductive logic, after observations a pattern is discerned and generalizations are made to infer an explanation or a theory. Conclusion is likely based on premises and involves a degree of uncertainty. Quantitative method of data collection – Literature review, collection and analysis of needed statistical data, questionnaire survey etc. will be used.

Second objective is to study the implication of land price on elements of urban form and third objective is to give recommendations regarding urban land management. Here, epistemological Position is Interpretivist where there are multiple subjective interpretations of social reality. Creswell (2007 c.f. Pham 2018) states that, in interpretivist paradigm, the researchers tend to gain a deeper understanding of the phenomenon and its complexity in its unique context instead of trying to generalize the base of understanding for the whole population. Since, policy can be interpreted differently by multiple stakeholders including the researcher, policy makers, and the end beneficiaries, it is relativist ontology. Pham (2018) states that in relativist ontology, a single phenomenon may have multiple interpretations rather than a truth that can be determined by a process of measurement. Relativist ontology is subjective. So, qualitative Interpretation needs to be applied to gain subjective understanding. Qualitative method of data collection – Long Interviews, Analysis of related data and documents (Policies, Laws) etc. will be used.

1.8.2. Methods of Data Collection, compilation and analysis

Initially, articles and papers related to first and second objectives were collected from internet and concerned bodies to gather the required background knowledge. Document analysis is a form of qualitative research in which documents are interpreted by the researcher to give voice and meaning around an assessment topic (Bowen, 2009). Document analysis is a social research method and is an important research tool in its own right, and is an invaluable part of most schemes of triangulation, the combination of methodologies in the study of the same phenomenon (Bowen, 2009). After collection, those documents were reviewed and inferences were drawn from it. To enable the fulfillment of third objective, case study of similar scenario was done.

To gain insight into the current scenario of study area, both qualitative and quantitative analytical methods were used using the data collected via interviews with key informants and questionnaire survey. Various indicators with respect to land price at ward level were analyzed. The selected key informants were ward members, engineers, local brokers and local residents and were interviewed upon different facets of overpriced land in municipality. The indicators of land price impact on urban form – Population Attributes, Housing Characteristics, Land use configuration and Transport Infrastructure were determined on the basis of literature review and related data were collected from municipality. The market price of land was verified from different sources such as local residents, local brokers, clients, property websites etc. At least five samples of land prices were taken to calculate each average land price. The data pertaining to indicators and average land price were analyzed at both micro and macro level.

Mathers, Fox and Hunn (2009), has explicated 6 steps of carrying out questionnaire survey that includes determining sample frame, population and sample selection, questionnaire construction, pretesting and operationalization in the field.

Once a survey design has been identified, the next step in a survey exploration is selecting a sampling method (Henry, 1990; Kalton, 1983; Kish 1965; Sudman, 1976). Kerlinger (1986) states that sampling is portion of a target population or universe as a representative. In this research, household number of Ward no 9,8,7,6 and 5 from HH Population survey conducted by municipality in 2075 B.S. was used as the sample frame. A total of 21,420 HH from ward number 9,8,7,6 & 5 was taken as HH Population.

Sample size was calculated at 90 percent confidence level with 5 percent margin of error. Total calculated no. of sample size was 269 Households. Settlement clusters were identified within the selected wards for proportionate distribution of sample.

A questionnaire then was developed using the variables of land value determinants. According to Zikmund (2003), questionnaire is the simplest and effective research tool. The structured questions were formulated using various scale and precision mainly of nominal, and Likert scale. Multiple choice questions were designed in either 2 or 4 point Likert Scale.

The questions were designed in such a way that it had different blocks sequenced in logical order (viz Family detail, Land detail, Building detail, Finances and perception survey). While doing so ambiguous and non-measurable questions were avoided as far as possible. Cooper

and Schindler (2008), asserted that a researcher should do pilot study of the tool before moving with the research. The questions developed for survey were pretested in the study area (3% of the total sample size i.e. 8 HH). In the study area, cluster of settlement was determined & selected with the help of key informant (Ward engineer) and a total of 160 HH samples were collected from the study area.

According to Cohen et al (2007), a probability (random) sampling and non-probability (purposive) sampling are two main strategies for selecting research subjects. This research adopts stratified random sampling method. Stratified random sampling is a method of sampling that involves the division of a population into smaller sub-groups. The respondent interviewed were above 18 years old as required. The descriptive data from HH questionnaire survey were collected. Both qualitative and quantitative data were analyzed and conclusions were drawn out.

1.9. Research Ethics

Ethics is moral principles that govern a person's behavior or the conducting of an activity. Research ethics deals primarily with the interaction between researchers and the people they study. Parveen and Showkat (2017) have referred research ethics as doing what is morally and legally right in research. They are actually norms for conduct that distinguish between right and wrong, and acceptable and unacceptable behavior. The principle concern in research is respect for the participants' dignity, rights, safety and well-being (Parveen & Showkat, 2017). Since, ethics are fundamental requisite of the research process; this research has maintained ethical considerations as far as possible.

In this research, during the preparation of questions for questionnaire survey, discriminatory and ambiguous questions are avoided and questions are made objective as much as possible. During the operationalization of questionnaire survey in the field, respondents were chosen from voluntary participation. There was no forced participation. There was no discriminatory behavior based on gender, ethnicity, economic background etc. towards the respondents.

2. CHAPTER 2: LITERATURE REVIEW

2.1. Land

“Land is considered as the morphology and power which come together to form a large part of the basis of town planning. Town planning process being largely synonymous with the land use planning. ” (Kivell, 1993 c.f. Ranjitkar, 2017)

Food and Agriculture Organization (FAO) of United Nations has given a broad definition of land as "Land is a delineable area of the earth's terrestrial surface, encompassing all attributes of the biosphere immediately above or below this surface including those of the near-surface climate the soil and terrain forms, the surface hydrology (including shallow lakes, rivers, marshes, and swamps), the near-surface sedimentary layers and associated groundwater reserve, the plant and animal populations, the human settlement pattern and physical results of past and present human activity (terracing, water storage or drainage structures, roads, buildings, etc.)."

In context of urban development, Ranjitkar (2017) states, Land is the key understanding of two important aspects. Firstly, land is vital in explaining the shape, layout and growth of urban forms. Secondly, it is at the center of city’s activities, influencing economic development and determining the relationship between the different social groups and activities.

2.2. Urban Land

Urban land means any land situated within the limits of an urban agglomeration or land situated in any areas included within the local limits of a municipality. Based on the lens of urban planning, urban land is the transmission and presentation of urban functions in the process of urbanization (Yang et al., 2018). Spatially, urban land can be categorized into Urban and urban fringe land. Main urban centers are generally highly occupied by trade, commerce and institutional buildings. Gradual change in land use from highly commercial to residential to sprawl development to vacant agriculture land can be seen further and further away from urban center.

In general , major characteristics of urban land are continuous change in its value, continuous change of its comparative location within the city, its openness to the external factors’ uncontrolled by the land owner, possessing multi functions and continuous change of its characteristics in time. In order the lands of the urban areas to be qualified as urban lands,

infrastructure should be maintained, the development rights should be determined by zoning plan and urban parcels should be defined and superstructure should be determined on the basis of infrastructure and zoning plans (Kartal, 1977 c.f. Emur & Yildiz, 2018).

Economic characters of urban land are multiple use potential, investment capital and land cost. The political impact like political stability, government policy, decisions also have influence over the urban land (Bhandari, 2015). Gyawali (2007), states that "With urban land there is different type of interdependency between uses at one time and potential flow of service at another." To be used most productively, urban land must be combined with durable, immobile capital. But poor spatial patterns of urban land cause diseconomies of agglomeration due to extra costs imposed because of traffic congestion, pollution and land degradation.

2.3. Land Value and Land Price

Value of land can be associated its social, cultural, economic and market value. Value, as per Verheye, in economics, is the esteem in which something is held or can be exchanged under current market conditions. "Value" corresponds to a fair or proper equivalent in money, commodities, etc. for something sold or exchanged; the worth of a thing in money or goods at a certain time, market price; the quality of a thing according to which it is thought of as being more or less desirable, useful, important. The concept of value involves two main conditions: it must be related to a desire and there must be a certain difficulty to obtain it. While land is finite resource, and population pressure and demand for land are increasing, land is becoming both a scarce and desirable commodity, the value of which can still be expected to increase in future.

In our context, there is major distinction in government value and market price of land. Nepal government publishes minimum value of land through various land revenue offices all over Nepal within land management and archive department under the ministry of land management, Cooperatives and poverty alleviation. Government rate of land is the legal rate and is necessary for loan and tax purposes. Government rate is also the basis for compensation in land acquisitions. However, market rate; though it is informal, is used in land transactions and is more determining factor in urban land use.

From economic perspective land value refers to value of land along with the improvements made to it. Land value stems from the fact that land is necessary for construction, and

buildings are necessary for most kinds of production of goods and services and for some types of consumption like housing (Geltner et al, 2007 c.f. Ranjitkar, 2017). The real estate value of land is determined by derived demand where people pay for land not because of its inherent value but because land is necessary to achieve things that have consumption or production value. So, land is a primary commodity and a commercial asset. Bhandari (2015), has stated that the spatial concentration of economic activities creates the value of urban land. Value is typical component of free market economy. If urban land supply is very responsive to demand, there is the tendency to reflect the productive value of land but if urban land markets cannot effectively respond to demand pressure, land values will tend to be much higher (Gwamna et al., 2015)

There is distinction between exchange value, real value and sales value in Land marketing. The exchange value is commonly associated with a price and is expressed in money. Real value is obtained when there is balance between demand and supply. While real value corresponds to a commonly accepted value for everybody, the opportunity value involves also the personal appreciation of one or more individual. The sales value is highly influenced by personal appreciation and circumstances, and is therefore rather variable in time and space. The valuation of land is complex because the same attribute can have very different uses, and thus different values. Value is a relative concept, which is function of circumstance and is variable with time (Ewert, 1979 c.f. Ranjitkar, 2017).

Price is a parameter to express the value of an object or a property. Price, expressed in money, is the generally accepted means to compare values in a market. However, land price is also affected by uncertainties about net rent, interest rates and inflation. In other words, the value of land depends as well on the evolution of rents". There is a fundamental difference between price and value. Market price designates what a property might be sold for at a specific period in time; value designates a property's actual worth in relation to other similar properties (Ewert, 1979 c.f. Ranjitkar, 2017). This difference between "price" and "value" stems from the premise that there are significant variations in intelligence, knowledge and willingness that enter into the process of establishing price as compared to value (Ranjitkar, 2017).

Since market price is mainly determined by the forces of the market at a particular point of time, there can only be one value at one time. In this context the European Union (EU) established a clear definition in Directive 91/647/EEC which reads, "Market value shall mean

the price at which land and buildings could be sold under private contract between a willing seller and an arm's-length buyer on the date of valuation, it being assumed that the property is publicly exposed to the market, that market conditions permit orderly disposal and that a normal period having regard to the nature of the property, is available for the negotiation of sale."

Under free market conditions, the price of land should be such that, on average, land earns a rate of return in the long run roughly equal to that of other assets of similar risks and characteristics. However, Ranjitkar (2017), argues that the price of land is not determined by its production value only, but also by the services it incorporates at present or will incorporate in the future and those are expressed in a price elasticity. Moreover, the amount of serviced land is limited and is determined, not by the normal rules of profitability of supply, but by institutional, administrative and financial abilities of the authorities to install desired services. The land supply may further be limited by planning or zoning restrictions, and by various rationing or allocation arrangements deemed in the public interest which commands much higher price of the marketed land than would occur in a free market.

2.4. Determinants of Land Value

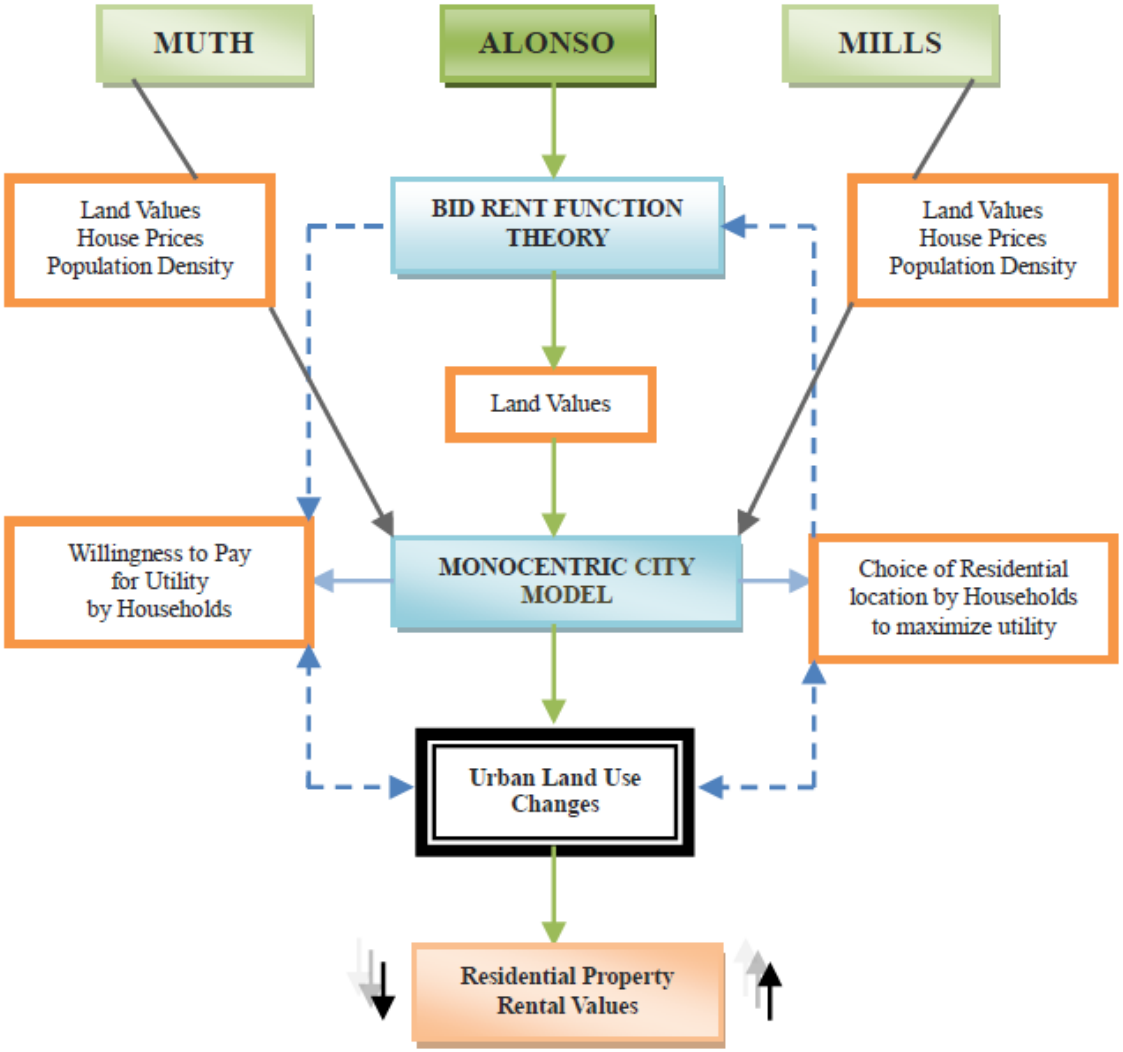

Figure 2 Foundation models used for land use and Property value analysis

Source: Gwamna et al., 2015, adapted from McDonald and McMillen

Like most economic transactions, economic forces of demand and supply, *ceteris paribus*, are expected to determine the value of urban land. Generally, the relative dearth of land allocated to various uses influences the value significantly. If urban land supply is very responsive to demand, there is the tendency to reflect the productive value of land. However, if urban land markets cannot effectively respond to demand pressure, land values will tend to be much higher (Gwamna et al., 2015).

Traditionally land was a common asset which enabled people to fulfill their primary needs for food and shelter and was hardly transferable. Now, as urban settlements are expanding worldwide, individual ownership of land is increasing. With this there is growing perception

that land is an asset for which various potential users compete. This in turn increases the need for functional land market where demand meets supply. The concept of willing ness to pay (WTP) to maintain or achieve utility is very important in analysis of land use and land value. Interest of buyer/user in land determines its land use and consequently creates demand which sustains property values. The concept of WTP was first advocated by Alonso's bid rent function theory in tandem with monocentric city model of Muth and Mills. The monocentric city model has proposed that the land value, housing rent and population density all decline with the distance from CBD. The willingness to pay for satisfaction and utility in various forms – accessibility, less transportation costs, more space, safety, security, public utilities and infrastructure, conducive living environment determine the forms of land use and land value. Even with the current modern day complexities of cities where several CBDs are found in an urban settlement(Polycentrism), the dynamics of land use and property value still revolve around the nearest CBD (activity focal point) that exerts influence on properties which is essentially Monocentric effect (Gwamna et al., 2015). The issues and finding of previous empirical researches are tabulated in table 1 to highlight the various determinants of land use and property values in different scenarios.

Table 1 Past studies on determinant factors of land use and property values
Source: Gwamna et al., 2015.

AUTHOR	ISSUES	FINDINGS
Dziauddin et al., 2013	Effect of Light Rail Transit (LRT) systems on house prices.	Properties close to LRT station were valued higher than property situated further away.
Ong, 2013	Relationship between macroeconomic variables & the price of housing.	GDP, Population growth and property gains tax are the key determinants of house prices.
Aliyu et al., 2012	Violent ethno-religious conflict on residential property values	Conflict prone areas have lower rental value due to decrease in demand and vice versa.

Uju & Iyanda, 2012	Location & non-location factors in the determination of residential land values.	Non locational factors such as time of land purchase were the most significant determinants of residential land values than the distance variables.
Kemiki et al., 2014	Impact of factory noise & dust on rental values of residential settlements.	Adverse externalities of dust and noise diminished the rent.
Adegoke, · 2014	Factors influencing rental value of residential property	Structural attributes and security are the most important factors influencing rental values.
Famuyiwa, Babawale, 2014	Inherent values of particular physical infrastructure in rental values.	Infrastructural and utility attribute such as street lighting, good road conditions etc. have positive effect on residential rental values.
Emoh et al., 2013	Determinants of residential land values.	Neighborhood and Locational attributes determine land value
Oloke et al., 2013	Factors affecting residential property values.	Structural, locational & neighborhood characteristics are all relevant.

A review of past studies has shown that major determinants of land use and property value fall within the classification of structural, locational and neighborhood attributes of property.

Brigham (1965), has also stated that the value (V) of a particular urban area site is functionally related to its accessibility to economic activities (P), to its amenities (A), to its topography (T), to its present and future use (U- i.e. industrial, commercial or residential) and to certain historic factors that affect its utilization (H). He has also quantified these variables into basic land value model of i^{th} site which is expressed as. $V_i = f(P_i, A_i, T_i, U_i, H_i)$.

Food and Agriculture Organization (FAO), of United Nations has put forward seven variables that determine value of land – Productive land capability, security of land, agriculture policy, land use option, land taxation, land policy and zoning and land speculation. It is applicable to both urban and rural (Agricultural) Land. Land has intrinsic physical properties which largely

determine its use potential and natural carrying capacity. Security of land is a firm basis for incentives to optimize land use and land management, and to maintain values. The degree to which government aligns their consumer price policies determine major price component and related benefit. If crop prices are high, profit from the land will be high, and the value of land as a production factor will accordingly be high. Where alternatives to land use option exists, the land price will increase (or decrease) as a function of the desirability and willingness of one or more individual or groups to exploit them. The expectations of higher earnings will then determine the market price, independently of the natural land use potential. In relation to land values and prices, taxation can mainly be considered a negative factor eroding profitability and income generation, and thus as a source for lower land value and price. Land zoning is a political instrument to prevent the uncontrolled occupation of land. However, zoning and related land policies have a direct effect on the land market through their impact in three major fields: urban planning; the optimization of agricultural production; and environmental protection. Zoning often has a stabilizing effect on land prices because it removes the speculative element of future land use changes. Speculation creates short-term variations in market prices, and may distort land markets. Inflation and money erosion will attract more buyers to the land market and thus increase prices.

2.5. Land Speculation

From Perspective of Urban Planning, Land speculation, as defined by Adedamola (2018), is the purchase of land with the intention of not using it but to invest in it for future sales with the hope that the price will inflate at short time which can be inhibitor of the built environment. Disorganization attribute of land speculation has rendered it one of the factors that distort image of cities and regions physically, economically and socially. Thereby, reducing the level of smartness, resilience and sustainability of such environment.

Physically, land speculation affects manner and rate at which cities grow. Cities are meant to develop in such a way that all land uses will be accessible, compatible and connected with the efficient roadways. But with the influence of land speculation, many areas are neither accessible nor developable due to ownership status. Built environments are meant to be developed with efficient facilities and services that will serve the population allocated in that locality. But with speculated lands that are initially allocated in development plans for health centers, schools, commercial centers and several other ones will not be utilized for these purposes therefore causing change in the use of land available to uses that those speculated

are meant for. Speculated lands in some areas are later developed in such a manner that does not conform to the development plan provided to guide such environment (Adedamola, 2018).

Land speculation has high economic costs. It accelerates the rise in land price by the initial increase in speculative demand and the subsequent reduction in the effective supply of land. This increasing cost of land investment creates 'bubble' economy which can also trigger financial crisis. Beside that land speculation has high environmental as well as social costs. Due to the creation of vacant land within the city the developers find it more profitable to develop new land along the transport arteries by converting agricultural land or green areas. The environmental consequences of speculation are decrease in green areas, pollution, urban waste generation etc. From the social perspective speculation drives the urban poor out of the formal urban land market, pushing them into squatter settlements, illegal subdivisions and slums. The intensity of speculation in the urban land market is such that the housing is becoming unaffordable even for middle classes (Gyawali, 2007).

2.5.1. Land Speculation Effects

According to Pollard (1980), different effects of land speculation includes:

- Inelastic supply: When land price rise, more land cannot be produced to satisfy demand. As land supply is fixed but demand is increasing, price will rise.
- Non-commitment: In this there is trend of holding land in 'cash crop' fashion without deep commitment which allows the land holder to easily keep sites of the market.
- Reluctance to sell: A land holder is no more imperative. Once he sells, he is no longer land holder, his job is finished. Therefore, his motivation to sell is weakened, and he can always find excuse to wait for a better price.
- Timing of sales: The first sale gets the lowest price, so land owner who can hold out longest is rewarded most. The land market becomes crowded with suppliers, all of whom are trying to be the last one to sell.
- Unstable economy: As land price increases, land maybe transferred to producers who cannot recover immediately in the rent the price they have paid. The producer becomes the reluctant speculator, relying on the economy to behave in the manner that will recover his investment.
- The amateur speculator: In the case of land, it should be noted that professional speculators, who depend on turnover in the land market to make a living, do not try to

move land to the market. Their aim is to earn most by doing least which can be troublesome for land market.

2.5.2. Land Taxation and Efficient Land Speculation

Tideman, (1990) has stated that the optimal timing of development is an important allocative function that can be either enhanced or degraded by the impact of land taxes on land speculation. He has discussed four different types of taxes on land that reduce incentives for speculation in land and have beneficial effect of mitigating imperfections in capital markets. The four types of taxes are:

- taxes on the rental value of land
- taxes on the sale value of land
- taxes on realized income from land
- taxes on realized gains from the sale of land

The least beneficial taxes on land are taxes on the realized income from land and on realized gains from the sale of land. They impose no explicit costs on those who hold land idle, and they tax entrepreneurship as well as land. A tax on realized income from land also has conceptual difficulties when applied to those who own the land they use. A tax on the realized gain from the sale of land has the unfortunate characteristic of being avoidable by refraining from transferring land. Taxes on the sale value and rental of land have no such unfortunate consequences. Taxes on the sale value of land do the most to discourage speculation. However, if assessors treat developed land as if it is more valuable than similar land that is not developed; there will be an inefficient incentive to postpone development.

Tideman, (1990) further adds that, a very important effect of taxing land is the opportunity it provides for removing non-neutral taxes such as those on improvements. This is highly stimulative of development. A related stimulative opportunity that is created by taxing land is the opportunity to provide services such as water, sewerage and electricity at marginal cost. If nations that are setting up systems of private possession of land are concerned about land speculation, the best course of action is not to seek to regulate or prohibit speculation, but rather to tax land enough to make speculation not worthwhile.

2.6. Urban Land Market

Urban Land market is one of three basic markets of urban economy besides, urban capital market and urban labor market (Bhandari, 2015). Land market can be defined as a site which brings together buyer and sellers to exchange land and land use rights for an agreed price.

Urban land market is shaped by state regulations, policies, norms and principles of demand and supply. For a land market to be functional, land must be available and in demand. Urban land market plays a critical role in shaping urban development outcomes – determining the location, density, form and price of residential, commercial and industrial development (serra et al., 2015).

Efficient and equitable land markets are a pre requisite for well-functioning cities. However, most cities in developing countries suffer from land market distortions caused by poor land development and management policies which include poor planning, slow provision of infrastructures & services, poor land information systems, cumbersome and slow land transaction procedures & under regulation of private land development which leads to unplanned development of land in urban periphery.

2.6.1. Efficient Land Market

The key to efficient land market is the easy and ready availability of developed land. An efficient land market underpins the capacity of bank and financial organization to lend money and for land owners to invest (Bhandari, 2015). An efficient and effective land market can improve the performance of nation's economy. Gyawali, (2007) has listed out characteristics of efficient land market as efficient, equitable, environmentally sound and compatible with other laws and regulation governing land.

A poorly functioning land market leads to several problems including speculation of land, creation of slums and squatter settlement, environmental deterioration and an inefficient urban development pattern (UNHCS, c.f. Gyawali, 2007). Land markets in developing countries tend to flourish best in urban and peri- urban areas where commercial opportunities are high and migration can stimulate land market development. For an efficient land market to exist there must be well defined property right, transparency with openness and ease of access to all, and protection of minorities, sound land administration system, opportunities to raise revenue through land and property taxes and support for environmental sustainability

(Bhandari,2015). An efficient land market has not only positive economic effects but also has its positive effects on urban land management system.

2.6.2. Real Estate Market and its functions

The real estate refers to land and housing development. Real estate is booming in urban areas of Nepal mainly due to uncertain share market, inflow of remittances from foreign employment, lack of new avenues for investment and rapidly sprawling urbanization caused by in migration from rural areas. The real estate market has seen booms and slumps in last few decades. The recent rise in real estate business is seen after the devastating earthquake of 2015 A.D., mainly due to in migration from badly affected rural areas.

The efficient real estate market performs various functions. The free interaction of the market forces of demand and supply determine the efficiency of real estate markets. The function of land market should be to assure the most economic and efficient use of land. The main function of real estate market includes distribution of existing space, Adjustment of space supply, determination of prices and rents, determination of land use to produce sufficient and appropriate usable space, determination of timing for land improvement and determination of amount of capital improvement.

2.6.3. Urban Land Market in Nepal

Ranjitkar (2017) affirms that Land market of Nepal is largely unregulated and informal where landowners incrementally fragment and sell land. She further adds there is tendency to keep land as an alternative investment and keeping prime urban land fallow for long time period purely for speculative purpose. In Nepal, Land holding cost is low but transaction cost is high. There is no formal and reliable land information system in Nepal and no regulations to curb speculation of land and property. On the top of that, Government does not guarantee the deeds of land transaction process - putting the investment of buyers at risk. Compensation of land has become another great issue during acquisition of private land due to huge gap between government valuation of land and market price. Urban form is being marked by residential sprawl in outlying areas which is in general rapid conversion of agriculture land into built ups further accelerated by unhindered infrastructure extension. Haphazard land use and management is the ultimate price to pay as outcome of Urban land market practice of Nepal.

2.6.4. Government Interventions in Land Market

Interventions from government are necessary in land markets for eliminating market imperfections and failures to increase the operating efficiencies. A government has two options for intervention: it can either develop land itself or it can promote land development through private sector. Government should reserve its interventions in regulating the market to ensure that it is competitive, sustainable and equitable. Following tools can be used by the government for intervention in land market (Uprety, 2015 c.f. Bhandari, 2015):

- Improving land registration system
- planning Tools
- Land development tools
- Legislative and fiscal tools

The most powerful tool that a government has to intervene in land markets is land development. The main objective of land development project in Nepal is to provide land required for human settlement through environmentally sound planning process and land use as to increase people's access to land. (Joshi, 2000 c.f. Bhandari, 2015).

2.7. Land Tenure

In the context of developing countries as ours, land tenure plays very important role as a variable for urban land efficiency and equity. Land tenure involves, "a complicated collection right to own, use, occupy, use or improve space and to lease, sell or pass it on to one's heir. It consists in part of physical attributes such as size, topography, location and accessibility, and, for the other part, a set of institutional and legal right and obligations. These latter are essential social constructs which vary from country to country, and from time to time"(Kivell 1993:93 c.f. Gyawali 2007). They define how access is granted to right to use, control and transfer land, as well as associated responsibilities and restraints.

In Nepal, until 1951 A.D., many forms of land tenure were prevalent such as *raikar, birta, jagir, guthi* and *kipat.* Tenure rights protection act was put forward in 1951 A.D. to secure right of land holders and improve land productivity, retaining only two forms of land tenure - *Guthi* and *raikar*. Then a series of land related act were put forward such as Birta Abolition act, 1959 A.D., Land Reorganization Act. 1962 A.D. etc. The land Act, 1964 A.D., abolished Zamindari system and fixed ceiling of land holding and protected tenancy rights. The fifth Amendment of act has fixed the ceiling on ownership of the land holdings as, 10 Bigha (6.77

hec.) in Terai and inner Terai, 70 Ropanis (3.56 hec.) in the Hills and Mountains and 20 Ropanis (1.01hec.) in Kathmandu. Likewise, a person can own 5 ropanis (0.25 hec.) in Kathmandu and hill districts and 1 Bigaha (0.67 hec.) in terai for homestead purpose. The main hindrance of Land reform and development in Nepal is fragmentation of land to the smallest size due to possession of land through division of parental property. This continued fragmentation of land leads to gradual marginalization of land.

2.8. Measures of Land and Housing Affordability

Affordability is the ability of a person in providing something, which is usually referred to his ability in financial terms. Affordability as a concept is hard to define. When we refer to the affordability of an item, we are usually talking about the amount of financial stress that the purchase would place us under. There are two ways to consider this financial stress. Firstly, the amount of income going on the purchase and Secondly, amount of income left over for other goods. These measures can be applied to housing just as easily as any other good. However these two measures both have an inherent problem, arising from our lack of a specific definition of the word 'afford'. Affordability can generally be thought of as a continuum, which is itself a relationship between income and relative prices. At one end is easily affordable, at the other definitely not affordable. But at which point do we say that something that was affordable now becomes unaffordable? There is very little difference between the concepts of affordability as it applies to housing and as it applies to other goods. The obvious variation is that a person might consider a particular house to be quite affordable, while they consider some other good for the same price to be very unaffordable. What makes this possible is that what we really care about is how much money we have left over after a purchase and what we think we might need to spend it on. Since housing accounts for a much greater proportion of a household's monthly expenditure than most other groups, we need less income left over after housing costs than we do after, say, clothing costs. Also, when purchasing a house the total cost (and benefit) can be spread over several years, more so than most other goods (Robinson et al., 2006).

Stone (1994, p.21 c.f. Robinson et al., 2006) states that affordability is not an inherent characteristic of housing, but rather a relationship between incomes and relative prices. Similarly, "Housing affordability" refers to the capacity of households to meet housing costs while maintaining the ability to meet other basic costs of living (Burke 2004, c.f. Robinson et al., 2006). Concept of housing affordability is generally to determine income affordability of

a person to pay for housing monthly installment. According to Robinson et al. (2006), factors contributing housing affordability are:

- Income (current and expected lifetime): directly impacts on a household's ability to purchase and make housing payments
- House prices and rents: represents the level of payment that is required to secure housing
- Interest rates, nominal and real: determines the cost of borrowing for home owners
- Labor market conditions: affects a household's ability to participate in the labour market and earn an income, and thus be able to maintain housing costs over a period of time
- Mortgage and rent payments: directly impacts on a household's ability to save and increase their housing consumption in the future. This is especially relevant for households in the rental market who are looking to purchase a house
- Supply constraints: may limit the ability of the market to respond to excess demand for housing

There are many approaches to measure housing affordability. The approaches are Price to Income Ratio (PIR), Rent to Income Ratio (RIR), Housing Expenditure to Income Ratio, Market Basket Measure, Quality Based Measure and Residual Income Measure. Price to Income Ratio (PIR) is often used as indicators of measuring housing affordability (Sani, 2015).

Price to Income Ratio (PIR) is the ratio of median house prices to median familial disposable incomes in percentage or years of income. The ratio of average house price to average income is often used and cited, due to its simplicity and ease of understanding. The Demographia International Housing Affordability Survey (Demographia, 2015 c.f. Bhandari, 2015) rates housing affordability using the "median multiple". The median multiple is widely used for e valuating land markets. The median multiple is calculated by dividing the median house price by gross annual median HH income. It shows the number of annual median salaries taken to buy a median priced house. Housing affordability ratings are indicated in following table:

Table 2: Housing Affordability Rating Categories

Rating	Median Multiple
Severely unaffordable	5.1 & over
Seriously unaffordable	4.1 to 5.0
Moderately unaffordable	3.1 to 4.0
Affordable	3.0 and under

Source: Demographia, 2015

There is requirement of a benchmark for an absolute affordability analysis. "Households in the lower 40% income bracket who pay more than 30% of their gross income on housing costs, whether renting or buying, are said to be in 'housing stress'." (Affordable Housing National Research Consortium 2001 c.f. Robinson et al., 2006). So, housing is considered affordable if households can access suitable and adequate housing by spending a maximum of 30% of their gross income on housing related expenses such as loans, taxes, insurance and service payments.

In Urban areas of Nepal, especially in Kathmandu Valley, land holds the maximum cost of total housing costs. Bhandari (2015), states that even smallest housing in the fringe area of Kathmandu valley is affordable only to the richest quintile of Nepalese people. All the housing and apartment units developed by private sector are targeted to HIG. Migrant HHs and first time home buyers are among the most significantly victimized by the housing affordability losses. The lucky ones inherit home from their parents. Almost 40% of urban population resides in rental homes. If land and housing remains unaffordable, Kathmandu might be a city of renters, not home owners. Cities are engines of economic growth, and housing that can be afforded by the median earner is a pre requisite for a city to attract and retain the human force required to ensure its economic success.

2.9. Urban Form and it's Elements

The term 'urban form' can be used simply to describe a city's physical characteristics. At the broad city or regional scale, urban form has been defined as the spatial configuration of fixed elements (Anderson et al., 1996 c.f. Dempsey et al., 2009). Urban form is closely related to scale and has been described as the 'morphological attributes of an urban area at all scales' (Williams et al., 2000c.f. Dempsey et al., 2009). Characteristics therefore range from, at a

much localized scale, features such as building materials, façades and fenestration, to, at a broader scale, housing type, street type and their spatial arrangement, or layout. The scales at which urban form can be considered or measured include the individual building, street, urban block, neighborhood and city. These levels of spatial disaggregation influence how urban form is measured, analyzed and ultimately understood. Urban form generally encompasses a number of physical features and nonphysical characteristics including size, shape, scale, density, land uses, building types, urban block layout and distribution of green space. These are categorized here as five broad and inter-related elements that make up urban form in a given city (Dempsey et al., 2009).

Density

Density is a deceptively complex concept with a number of inter-related dimensions. While it may provide an objective, spatially-based, measure of the number of people (living) in a given area, it is also assessed subjectively; it is a social interpretation dependent on individual characteristics and so may differ from resident to resident (Churchman, 1999 c.f. Dempsey et al., 2009).

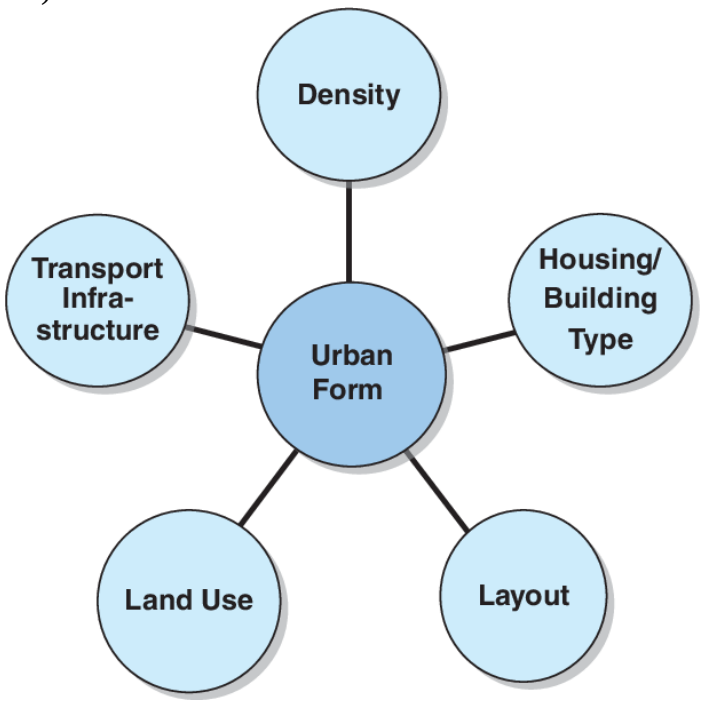

Figure 3: Elements of Urban Form

Density is closely linked with other elements of urban form as well. For example, for a service or facility to be viable, it needs to serve a population of a particular size. Density has therefore been used as a tool to measure the viability of public infrastructure and other service provision, the feasibility of certain land uses, particularly commercial and service, in urban design and construction. At what point density becomes high (or too high) is unclear, but in recent years planning policy and practices in many countries have been attempting to increase the average density of new development (Dempsey et al., 2009).

Land Use

Broadly speaking, the term land use is used to describe the different functions of the environment. Within the urban context, the dominant land use tends to be residential but a functional urban area requires industrial, retail, offices, infrastructure and other uses. There are also certain 'locally-unwanted land uses' such as penitentiaries, airports, or landfill sites claimed to be undesirable in residential mixed-use areas. Planners have conventionally attempted to separate land uses because of potential undesirable externalities but are now in favor of mixed use developments. However, land use patterns are dynamic rather than static phenomena and are subject to real estate market forces. The provision of services and facilities; one of key component of local land use is dependent on the resident population's requirements. So land use mix differs from neighborhood to neighborhood (Dempsey et al., 2009).

Accessibility and Transport Infrastructure

Transport infrastructure is closely associated with accessibility level as it determines the ease with which buildings; spaces and places can be reached, as well as the extent to which they have the means to access places, services and facilities that are outside their local area. Accessibility is closely linked to land use and layout: the services, facilities, open space, how they are arranged within a city or neighborhood and the means of getting to them all contribute to how accessible a place or service might be described (Dempsey et al., 2009).

Urban Layout

Layout describes the spatial arrangement and configuration of elements of streets, blocks and buildings. Layout has an important influence on pedestrian movement and the way in which different places and spaces are connected to each other. The layouts of today's cities are largely artifacts of their historical development and planning and building regulations. The configuration of the street network, in terms of its urban block sizes, their overall location within the city, pedestrian and vehicular connectivity, can affect the functioning of a city by influencing the location intensity of activities (Dempsey et al., 2009).

Housing and Building Characteristics

The characteristics of housing and other buildings in urban settlements can have an important bearing on everyday living: it has already been noted that residents living in low-density detached dwellings with large gardens will have a distinct experience of the urban environment from high-rise city centre apartment dwellers. However, the influence of

building characteristics extends beyond the density of urban living. Other factors such as the amount of living space in dwellings, number and types of particular rooms and lowest level of living space may also have significant influences on the efficiency of buildings in terms of its embodied, operating and life cycle energy (Dempsey et al., 2009).

2.10. Planning Consequences of Increasing Land Price

As urbanization is increasing worldwide, the demand side of urban land is also increasing which naturally escalates the urban land price. Apart from the economic equation of demand and supply, land speculation also plays a major role in increasing the price of land, even beyond their possible economic potential.

The findings of Joshua et al. (2016) has revealed that the effects of land speculation on urban planning and development consists of poor land subdivision, poor access roads, urban sprawl, lack of proper setback, emergence of cul-de-sac, dominance of residential land uses over other land uses like recreational, commercial and public and semipublic as well as presence of incompatible land uses.

Land subdivision is the division of a single plot, tract or parcel of land, or a part thereof, into two or more plots, tracts, or parcels of land for the purpose, whether immediate or future, of transfer of ownership for residential, commercial or industrial purposes (Adeigbe et al, 1977, Obateru, 2002 c.f. Joshua et al., 2016). Subdivision the plots into smaller plots at higher rates to make more profit create other planning problems. Indiscriminate land subdivision results in narrow and poor access roads which can create problem in case of emergency.

One of the problems associated with land speculation is Urban Sprawl. Urban sprawl is rapid and haphazard spread of city into its periphery or area surrounding it often without planning which is characterized by low density scattered occupation with unlimited expansion potential. Urban sprawl creates obstacles in land use and urban planning and in development of access and infrastructures. Cul-de-sacs are unconsciously formed when the sprawled out area has no layout plan that spells out the plot sizes, access roads, setbacks and utilities lines among others. In absence of proper land use plan in the area, there is tendency for emergence of incompatible land uses in the same neighborhood. As the land is sold to the highest bidder, the use of land is in the hands of buyer. In an ideal urban planning, spaces are allocated for different land uses such as commercial, recreational, industrial, educational, public and semipublic use. When the residential land use becomes dominant over other land use, there

will be very little space for recreation, market etc. which are also vital land use. Setbacks are desirable space standards usually between different land uses to allow harmony in the use of human space. As plot size gets smaller, there will be less setbacks which creates congested environment. Land Speculation has consequent effects on urban space management.

2.11. Urban Land Management

Land is the vital and prime resource for planning and development of any area. As Land is a limited and non-renewable resource, the importance of optimum usage of land in urban area is obvious. Undesired urban environment emerge as urban development is difficult issue to control. While urban centers have undergone substantial growth and change, urban systems have been neglected, resulting almost everywhere in conditions which are unacceptable by any criteria. For the example, fragmentation of land parcels into incredibly some units is the result of inefficient implementation of land management tools, lack of laws regarding land transformation and continuous land subdivision over the years. Rasheed and Parambath (2014), has highlighted the main challenge of physical planners as the proper and effective land use planning with the allocation of all the physical and social amenities for existing and the growing population of the area and its hinterlands.

Land management, as stated by Ranjitkar (2017), is dynamic and active process where the most appropriate land use is constantly changing with management of its planning regulatory and infrastructure activities. Physical and legal framework is created in land management to guide private land subdivision/ building projects being undertaken through the land market. Land management is designed to achieve planned urban expansion, adequate land supply and sustainable urban development. Land management helps to speed up the supply of developable land, make it available in adequate amount at the right location and at affordable prices, ensure optimum utilizations in term of efficiency and safe guard the interest of urban poor by an equitable distribution of urban land. Mattingly (1995), focuses on prioritizing the management of human settlements in the less developed countries if the aspirations of citizens, governments and the concerned international community are to be realized. The conventional practice of land management such as zoning and master plans were rigid and lengthy in procedure which were not successful in our cases. Recently, participatory and more flexible approach of land development and management are in practice such as Land Pooling, Guided land Development etc.

2.11.1. Issues of Urban Land Management in Nepal

- Low priority government on urban land management and development.

Urban land management needs and its future implication is not seriously felt by government as the main focus of government has been on solving the problems oif present rather than preparing for future

- Lack of up to date information about urban land

There is no way to know demand and supply of serviced plot. There is no reliable and formal source of information on prices and price fluctuation of urban land. Due to lack of actual picture of urban land market, problems and potentials of urban land management are not being able to be addressed.

- Inadequate government intervention for adequate supply of serviced plot

Due to financial crisis, delays, disputes and inefficient mechanisms, government is not being able to show its considerable presence in urban land market and land market is being taken over by private sector.

- Non participation municipalities in urban land management

Previously, Local government bodies such as municipalities are not much involved in urban development and planning. Recently, after the election of local government and announcement of new municipalities, this situation is slowly changing and IUDPs are being prepared for different municipalities.

- Inadequate provision of key network infrastructure

Key network infrastructure such as trunk roads as is needed to develop fringe areas which is lacking in fringe areas of city.

- Poor land recording and inaccurate cadastral mapping

Although government has started GIS based land record system, many areas still depend upon blueprints for cadastral mapping.

- Lack of financing mechanism for urban land development

Investment in land is considered as unproductive sector and there is lack of finance to start many land management projects.

- Lack of coordination between different government institutions

There seemingly is conflict of interest between two government bodies involved in planning. The ministry of physical planning and works has the planners and plans but no direct authority to implement it in municipalities due to different regulations. On the other hand, Ministry of local Development, though has ample authority, has no ownership of the plans.

2.12. Urban Land Use Intensity

Urban expansion has been nucleus of urbanization and industrialization in countries throughout the world. From the perspective of regional planning, there are two modes of city expansion, one is “exogenous” and the other is “endogenous”. The exogenous mode refers to expanding laterally on an urban scale, while the endogenous form refers to intensifying urban land use (Hui et al., 2015 c.f. Yang et al., 2018).. Accompanying the exogenous mode is often the occupation of numerous high-quality cultivated lands, the destruction of the ecological environment, and the intensification of social contradictions. Consequently, it is often considered as an unsustainable mode for city development. By contrast, endogenous form is becoming the preferred pattern for urban smart growth in the current and future.

Land use intensity as a measure of degree of development, is an important element of urban form. Urban intensification is regarded as the prevalent strategy in many cities of the world to ease the pressures of urban sprawl and deliver sustainable development through increasing the density of built form and activities. Urban land intensive use has been getting more and more concern in the study of urban expansion and is widely researched in urban planning, landscape analysis, and land use management. The related research can be summarized in five aspects: Firstly, the basic connotation of intensive use of urban land. For example, mixing residential, commercial, and other uses at higher densities supports in achieving an intensification of land use. The second is the evaluation of urban land use intensity based on different scale units and land types. The scale of evaluation includes national, provincial, municipal, and even specific land types, such as industrial land, residential land, and commercial land. Third is quantitative analysis of influencing factors of the intensive use of urban land using various model methods. Industrialization, urbanization, economic development level, location, transportation, and policy are significant impact factors on urban land intensive use. The fourth is the exploration of the intensive utilization path and mode of construction land in the process of urbanization. Smart growth, compact development, and multifunctional intensive land use are the important modes for urban land intensive use. The

fifth is the research for evaluation and improvement of the intensive utilization policy of urban land. Composite indicator management policy, more scientific urban master planning, and strict industrial land policy can promote urban land intensive use. Accordingly, urban land intensive use level should be compatible with the level of urbanization (Yang et al., 2018).

2.13. Land Development Practices in Nepal

Land development is a tool for efficient land management. Land development is one of powerful means for government to intervene the land market. Land development is a process that involves changing or intensifying use of land to create buildings for settlement. For the land development there should be acquisition of land in the first place. Nationalization, expropriation and land banking can be used as tools to make land available for development. Four land development practice for land development in Nepal are described below:

2.13.1. Site and Service

During 1970s and 1980s, site and services schemes were implemented in nearly 100 countries mostly on the behest of international agencies like UN and World Bank. (Chhetri, 2014 c.f. Ranjitkar, 2017). Site and services is the traditional technique of land development in which the government buys primarily the cheaper vacant sites or make available the public land and develops them by adding necessary infrastructures and services. Financial resources for development are recovered by selling the developed plots at affordable prices to pre-determined group. This technique require substantial upfront budget to implement the project until the developed plots are sold. The economic viability of the project is also associated greatly with the availability of public land and extent of the development area- which is necessary to achieve economies of scale in order to minimize the cost of serviced plot (Bhandari, 2015).

The major drawback of this land development concept is the displacement of land owners and farmers from their land and low compensation rate from government as compared to market prices. This concept lacks participatory approach and basically ignores community roles and its interest – making it unpopular among land owners as well as policy makers.

Due to strong opposition from land owner and heavy initial investment due to expensive land price, this land development technique has not proved feasible in Nepal. Government has

succeeded to complete only two housing projects under this technique – Kuleshwor and Golfutar Housing Projects.

2.13.2. Land Readjustment

Land readjustment is a technique for managing the urban development of urban fringe lands, whereby a group of separate land parcels are assembled for their unified planning, servicing and sub division as a single estate, with the sale of some developed plots to recover the costs and redistribution of the other plots back to the land owner (Archer, 1992 c.f. Bhandari, 2015).It is widely used technique for promoting efficient, sustainable and equitable land development in the urban fringes. The concept of LR was first used by George Washington to build the capital city of U.S. and has been practiced in various countries of world for at least 200 years.

Bhandari, (2015) writes, The concept of LR consists of acquisition of a plot of land divided into a large number of small parcels belonging to an equally large number of land owners; plan and provide all necessary infrastructure such as road, water supply, drainage, electricity and telephone, open spaces, community service area, consolidate & re plot the parcels and give back to the owner. The cost of planning and providing infrastructure is covered from the land itself, to be contributed by each land owner. Thus, the owner gets back about 12-30% smaller piece of land but with all necessary infrastructure including parks and open spaces. Moreover, the original irregular shape plot is converted into a nice regular geometric shape. Thus, LR can be defined as a land management technique for carrying out unified design, servicing and sub division of a group of separate land parcels for their planned urban development with the sharing of the project costs and benefits between the land owners and recovery of the project costs by the sale of some of the developed plots.

LR projects help to minimize premature conversion of farmlands and control urban sprawl. LR is a self-financing project where landowners receive equitable development benefits and are not displaced. There are many difficulties in LR projects which are listed as:

- Inaccurate and insufficient land records
- Absent Land owners and Pending court cases (mainly related to ownership)
- Land broker’s vested interests
- Resistance to change and long gestation period
- Low confidence in procedure

The concept of Land readjustment was first introduced in Nepal in 1975 with the initiation of Chipledhunga project, in an area of 13.5 Ha. in Pokhara. LR has been practiced in small size and shape throughout the country.

2.13.3. Guided Land Development

GLD is a land management technique for guiding the conversion of privately owned land in the urban periphery from rural to urban areas. GLD uses the provision of infrastructure as a mechanism to guide urban development. The concept of GLD is based on a process whereby local land owners agree to contribute a part of their land, on the basis of a pre agreed layout plan, for advance provision of space for roads and other services. Bhandari (2015), explains the idea of GLD as an encouragement to land brokers and land owners in the urban fringe for their participation in land development process through voluntary contribution of parts of their land for public use, such that the area becomes attractive for private investment for housing and other urban activities. Governments can use infrastructure investment policies o guide the direction of land development as well as to ensure land development is efficient, environmentally sound and equitable through construction of trunk infrastructure.

The key advantage of this approach is that it is less costly than outright land acquisition and more equitable than land banking (Upreti, 2001 c.f. Ranjitkar, 2017).GLD rationalizes development by preventing sprawl growth and ensuring a better use of land. Cost effectiveness of GLD depends upon the land owner's cooperation in contributing land and paying for betterment levy to recover the cost of the project.

In the case of GLD, all the owners along its route must agree to provide land for the road. Very difficult problems arise at the junctions with existing roads (entry points to the new roads), where those who have already access provided by the existing road see no advantage in giving land to start a new road. Very small plots are also problematic, whose owners will be left with too little land if they contribute to the road. Consequently, to make GLD work, it is necessary to have power and resources to pay compensation in difficult cases, force participation at entry points and land acquisition from owners who object to the scheme (Mattingly, 1994 c.f. Bhandari, 2015).

In practice, GLD has been successful only in widening the right of way for existing roads. It is recognized that GLD does not deal with environment problems or provide sites for schools and open spaces. It is often said that GLD should be used only where there are adequate

public and community facilities, a rare situation in urban areas of Nepal. GLD does not usually increase the number of plots, nor changes the configuration of plots; but improves the condition for plots which already exists. As it is very difficult to provide sufficient and efficient road access to all plots in the area under GLD scheme in urban areas of Nepal, it is then necessary to propose LR to deal with interior areas where GLD cannot create roads.

2.13.4. Private Sector Development

In the Kathmandu Valley, private land and housing developers are supplying most of housing plots as compared to government. There are two types of the private sector land and housing developers; formal land and housing developers which consist of a registered firm, an individual or a group of people and informal land and housing developers who work in informal basis. Gyawali (2007), states that formal developers develops housing units in a planned way by providing partial urban infrastructures while informal developers only subdivide the land without minimum infrastructure.

Gyawali (2007), further adds, mode of land development in Kathmandu valley includes owner led and broker led subdivision practice. Land brokers are the predominant supplier of land for urban housing. Land brokers buy large chunk of agriculture land, plot it and sell it with minimum level of basic infrastructure which may or may not include roads, sewerage, water supply and electric poles. Absence of regulatory measures for informal land development has negative impact on urban land market. Result of which is wrongly located and scattered poorly developed plots. Formal land developers have not been able to develop land on a large scale due to speculation, complex land ownership pattern, inadequate land information system, land ceiling in valley etc.

Private sector in form of real estate companies were efficiently organized in term so of taking bigger and better subdivision projects, generating finance and marketing the product on a competitive basis as compared to informal broker led subdivision practice. However, it is observed that, the quality and level of development in projects carried out by this private sector lacked in quality and in absence of clear government policy (Sigdel, 2003 c.f. Gyawali, 2007). Real estate transaction act 2062 has some provisions related to capacity of developers. But this act also has provisions for the urban poor. Some provisions related to private housing development have been included in building bye laws such as GCR, FAR, capacity of water tank etc. (Gyawali, 2007).

3. CHAPTER 3: LAND RELATED POLICIES AND REGULATIONS IN NEPAL

3.1. House and Land Tax Act, 1962

This act has authorized government appointed tax officer to assess the amount of house and land tax to be recoverable pursuant to this act and tax amount needs to be deposited in tax office. The tax officer is also authorized to valuate land and house of urban areas on the basis of prescribed principles for tax purposes.

3.2. The Lands Act, 1964

The Lands Act of 1964 A.D. has been subject to various revisions and amendments. The Fifth Amendment of act has fixed the ceiling on ownership of the land holdings as, 10 Bigha (6.77 hec.) in Terai and inner Terai, 70 Ropanis (3.56 hec.) in the Hills and Mountains and 20 Ropanis (1.01hec.) in Kathmandu. Likewise, a person can own 5 ropanis (0.25 hec.) in Kathmandu and hill districts and 1 Bigaha (0.67 hec.) in terai for homestead purpose. It also has provisions regarding land acquisition in case of upper ceiling of land holding is crossed. Land upper ceiling is exempted if the land is owned and possessed by government of Nepal, District development Committee, Municipality, Trust, foreign institutions with diplomatic immunities, agro industries and educational and health institutions prescribed by the government.

This act has provisions regarding tenants and rent. The act has devised provision to operate land use program and has prohibited land fixed for one use in another use. There is also provision to operate programs relating to control land fragmentation and control to enhance productivity of land. The act has given power to Nepal Government to declare any area or settlement area within Nepal as an insecure or unplanned area, prevent developing settlement and make necessary arrangements for resettlement of inhabitants in a secure and planned area. The lands act as well has designated powers and modus operandi for the same.

The land reform program was introduced with the aim of diverting idle capital from land to other areas of economic activities to initiate the process of industrialization in country (Khanal, 2010 c.f. Ranjitkar, 2017). It was thought that the upper ceiling on land holding would make large chunks of land available for redistribution. It would have benefited landless people like bonded laborers, dalits, indigenous communities etc. Even though land upper ceiling was minimized twice, there was simply no excess land available. Land reform

is limited to land administration. Rather than controlling, there is need of managing and regulating land fragmentation in today's scenario of rapidly growing urbanization. Government needs to be prompt on regulating and planning settlement in the areas where urbanization is sprawling as resettlements in planned areas is not practical option now.

3.3. The Land Acquisition Act, 1977

Urban planning involves large-scale acquisition of land but most of the land in our country are either private or forest area in Nepal, i.e. pubic land is limited. So, land acquisition is much required procedure in the country. Land Acquisition Act, 1961 was revised and provided legal provision and procedure to acquire private land and enforced as Land Acquisition Act 1977. The act empowers the government to acquire any land for development purposes providing compensation and entitles tenants to 25% share of compensation. Public land acquisition is entrusted to the chief district officer (CDO) & a compensation committee, which engages in negotiations with land owners. LAA provisions include an annual review of land rates, minimum registration ate every year in the beginning of fiscal year by land revenue officers in each district on the basis of land transaction record, a access to the land increase in public utilities & development of the area.

However, due to the problems like lack of guidelines for determining compensation, lack of requirement that land be acquired in conformance with a clear development plan & lack of stipulation that compensation to be paid within specified time has troubled land acquisition process. The major problem with the implementation of this act is public opposition due to huge gap between government & market rate of land. Government is not being able to acquire land in urban area for any sort of development works. Also government is not being able to show its presence in urban land market to regulate it.

3.4. Land Revenue Act, 1978

This Act empowers the government to collect revenue from any land within Nepal and is the basis for the collection of land revenue. It gives provision for the establishment of the land revenue office. Land revenue office shall be register each land within the district in such a manner as may be prescribed in the act. It gives provision for the transfer of land from one person to another after verification of the previous record. It has power to collect land revenue and everyone has to pay under the laws of Nepal. Such revenues shall be paid yearly and rate shall be fixed by the government of Nepal itself. It restricts anyone to convert government and public land to personally owned land also has the provision for punishment.

This act is stepping stone for development land information system in Nepal. Efficient and updated land registration system is required for efficient functioning of land markets as it indicates the legal ownership of land. Ranjitkar (2017), states that the systematic and updated land registration have various benefits including security of ownership and tenure rights, efficient land transfers, security of credit, public control of land market and interventions, support for land taxation system, improved land use and management, reliable land information system etc.

It also helps protecting public land from being privatized. Department of land revenue (DLR) has responsibility for land registration and imposing registration tax while Department of survey (DoS) is responsible for keeping the cadastral information of land. Land revenue in today's scenario needs to be fixed as per the land use. Different concepts of land revenue such as vacant land tax needs to be brought into practice to discourage land speculation and promote infill development in urban areas. Also GIS based cadastral mapping of land should be extended country wide.

3.5. Town Development Act, 1988

The town development act (TDA) promulgated in 1989, besides being comprehensive act for the planned urban development in urban areas. It is also the most important act to date regarding urban land management. The major objective of the act are to carry out the physical development, redevelopment and reconstruction of existing town areas, establishment of new town, preparation of land and comprehensive plans and enforcement of planning norms and regulation.

The section 12 of the act empowers the TDC's for the initiation and implementation of land development programs for urban housing and development through GLD, site and services, and LR. Under section 16, it has provision to make use of existing land acquisition acts for the public land acquisition. The act has the guiding provision for the involvement of various actors of urban land development process.

3.6. National Urban Policy, 2007

Bhandari (2015) expects National Urban Policy 2007 to serve as a road map to address challenges posed by the haphazard urbanization in the country. Bhandari (2015) further adds that the policy document realizes the need to have an integrated and coordinated approach to urban development as there are many issues involved in this sector. The major thrust of urban

policy is to achieve balanced urban infrastructure through industrial development and provision of urban infrastructure in a balanced manner by prioritizing the backward regions of the country.

It consists of Policies related to strategy to develop a system for supply of affordable land and dwelling units accessible to the different income groups including those who are economically deprived. It encompasses policies regarding implementation of land development program based on adoption of various land development options for planned development of the settlements. It enables the local bodies to carry out land development programs through legal empowerment, institutional strengthening measures and establishment of land development fund to assist local bodies to carry out land development programs. The policy offers necessary legal arrangements to encourage the private sector to participate in the land development programs through Public Private Partnership (PPP) model.

The policy also arranges for necessary legal instruments that help towards the provision of a specified number of house plots and dwelling units for low income people while caring out land development programs. It provides easy access to loan through the government channel or through other mediums for providing housing facilities to the low income groups.

The policy adopts and implements innovative approaches in the form of land banking and land exchanges to guide the form and trend of urban developments, and for timely supply of land. It formulates and enforces appropriate policies to ensure smooth supply of land in urban areas, and to keep an inventory of vacant land so that such land could be made available for town expansion in future. It aims to develop an information system that keeps track of land availability, name of individuals and firms involved in land sale, potential buyers, and information on land prices; and develop an appropriate mechanism and institution to provide land related information to the general public. It helps to regularize land and house rental market through proper legislation, and encourages private investment in this sector.

However, people's participation in planning process is not mentioned in the policy. It is still unclear how housing problems of urban poor and low income group will be addressed. Moreover, the policy is silent about the inclusive urban planning approach so that all categories of people like Dalit, Janjatis, Madhesis and Muslims etc. could be integrated within the broader framework of urban development umbrella in the country (Shrestha, 2012, c.f. Bhandari, 2015).

3.7. Kathmandu Valley Development Authority Rule, 2012 (2068)

This rule was promulgated for Kathmandu valley under TDA (KVDA Act), 1988 & is the only legal document for guiding the LR projects. The rule has provision for formulation & approval of physical development plan. Similarly, it has provision on operation of the programs related to land development i.e. GLD & LR. According to rule, LR programs can be land owners or tenants on the area intend and if at least 50 families can reside in the area. Similarly it highlights the participation of local landowner in land development process.

It has also stated that local body can operate land development programs within their administrative boundary by taking approval of authority. The authority may provide technical & financial facilities to local body for operation of land development program as per this rule.

However, KVDA which is functioning under this rule is accused of interfering with the jurisdiction of local units and obstructing their regular work. The mayors, deputy mayors and other officials of the municipalities have claimed that KVDA, which was established years ahead of the introduction of the federal system in the country, was not accepting the spirit of the new system and the changed context. They have also accused KVDA of not abiding by the constitution and other laws that have mandated the municipalities and other local units to carry out development activities at the local levels (my Republica, May 9 - 2019).

3.8. Constitution of Nepal, 2015

Nepal is governed according to the constitution of Nepal 2072, replacing the interim constitution of 2007. Under section 17 of part 3 of the constitution 'Fundamental Rights and Duties', it is stated that every citizen has the freedom to move and reside in any part of Nepal. Similarly, section 25 states the ' Right to Property' which mentions clauses like every citizen have the right to acquire, sell, utilizes, or dispose of own property. The state shall not acquire, requisition, or create any encumbrance on the property of any person except in the public interest. In the case when the land when the land of a person is acquisitioned by the state according to clause (2), the basis of compensation and the relevant procedure shall be as prescribed by the Act.

The provision of clauses (2) and (3) shall not obstruct the state in carrying out land reforms, management and regulation by law in order to increase the production and productivity of land, modernize the agriculture and make it professional, environment protection and managed housing and urban development (Nepal Constitution, 2072). In case the state has

acquired the property of any person for public interest pursuant to clause (3), three shall no hindrance to use such property for any other public interest, other than the public interest for which it has been acquired (Nepal constitution, 2072). In section 37, 'Right to housing', it is stated that each citizen shall have right to appropriate housing and no citizen shall be evicted from his/ her housing.

In section 51 under part 4 'Policies regarding Agriculture and land Reform,' some clause have been mentioned such as:

- Introduction of scientific land reform by ending dual ownership of land for benefit for farmers
- Increasing production and productivity through land plotting and by discouraging absentee land ownership
- Protecting and promoting rights and interests of Pleasants and utilizing the land use policy for increasing production and productivity of agriculture and for commercialization, industrialization, diversification, and modernization of agriculture
- Making proper utilization of land through proper regulation and management on the basis of productivity of land, its nature, and also by maintaining environmental balance
- Making arrangement for agricultural tools and an access to the market with appropriate price for the produce.

3.9. Land Use Policy, 2015

Merriam Webster defines Policy as, "a definite course or method of action selected from among alternatives and in light of given conditions to guide and determine present and future decisions".

It also defines Policy as "a high-level overall plan embracing the general goals and acceptable procedures especially of a governmental body". Policies are one of the base tools or guidelines for any sort of development or plan formulation.

Land Use policy is devised for protection, promotion and optimum use and effective management of Land and Land Resources (LLRs).

The fast growing population of Nepal, uneven migration has led to unmanaged and rapid urbanization as well as encroachment of arable land and forests, Government and public

lands and various resources. The uneven pressure on land and changes in land‘s geographical and geological condition has paved way for disaster like flood, landslides and soil erosion. To provide a safer settlement, maintain ecological balance and for food security, Land Use Policy 2013 was adopted. The main agenda of Land Use Policy, 2013 was protection of arable land ensuring food security.

The earthquake of 2015 brought into light the need to focus on secured settlement as well and disaster risk mitigation to escape the vulnerability from such devastating disaster. Thus, Land Use Policy 2015 came into existence upon making a review over Land Use Policy 2013. (Ministry of Land Reform and Management (MoLRM), 2015)

Land Use Policy 2015, aims for social, economic and ecological development by optimum use of available Land and Land Resources (LLR) thus leading the country towards prosperity. The objective of Land Use Policy 2015 is to categorize lands into specific land use zones thus making it easy for protection of agricultural land, forest land and develop better sustainable settlement all the while reducing the risk of disastrous hazards.

3.9.1. Problems addressed by Land Use Policy 2015

- Reduced agriculture produce and low productivity due to encroachment of arable land
- Problem in protection of life and property and disaster management due to lack of approach of scientific classification, development and management of land
- Encroachment of arable land, forests, Government and public lands and natural resources
- Lack of open spaces in urban areas

3.9.2. Policies of Land use Policy 2015

- Classification of entire lands of country into Land use zones (LUZs)
- Level wise Land use plans compatible with physical infrastructure development project shall be devised and institutional structure shall be developed for execution
- Discouragement of non-agriculture use and fragmentation of arable land
- Discouragement of keeping land under conditions of ‘nonuse’, ‘under use’, ‘misuse’ and ‘excessive use’
- Development of information system on Land use plan
- Development of minimum valuation and land tax system on the basis of land use

Land use policy helps to discourage haphazard development and incompatible land uses. Land use policy is more focused on implementing land use plans.

3.10. Basti Bikash Mapdanda, 2015

Basti bikash mapdanda, 2015 has given various authorities to local bodies under local self-governance act. All the local bodies should prepare their bye laws on the basis of basti bikash mapdanda. Local bodies would be responsible for implementation of risk sensitive lap use map in whole or part which should be prepared on the basis of land use policy 2015. The building constructions would be permitted according to land use of area & construction in risk sensitive areas identified by DNDRC would be restricted. Similarly building use would be controlled according to land use of the area.

This would help to reduce haphazard development, incompatible land use & construction in risk sensitive areas. The bye laws have restricted changes in land area that would decrease the existing area of public land, fasts opens spaces & road width. This would help to preserve public land & open spaces which are vital to settlements.

The bye laws have authorized local bodies to issue planning permit for land plotting purposes. To issue planning permit, 15 % of total land should be invested in road & 5 % of total land should be in open spaces. Open space should not be less than 80 sq. & should not be less than 8 m wide. Also open space should not touch outer boundary of project. This helps to curb haphazard & scattered land plot development to some extent & helps in creation of usable open spaces. Still this cannot address the scarcity of large open spaces.

The byelaw has devised different building regulations to maintain urban density, ground coverage, setbacks, MTMP etc. Basti bikash mapdanda has urban development regulation in level of individual building but it has not much regulation in macro level or town level.

3.11. Land Acquisition, Resettlement and Rehabilitation Policy, 2015

It has been felt necessary from all quarters that the Land Acquisition Act of 1977 has become redundant, and it has not been able to address the emerging challenges, such as the soaring prices of land in the mountains, hills and Terai regions. The government and the private sector have been facing stiff hurdles in the acquisition of private lands for infrastructure development such as hydro power projects, airports, railways and roads. The government has introduced land acquisition, resettlement and rehabilitation policy, paving the way for developers of various physical infrastructure projects to acquire land without affecting

livelihood of people who have to be relocated from area where such projects will be built. Policy, which call for creation of a scientific standard for a land registration, valuation of a collateral for loans to be extended by banks and financial institution (BFIs) and extension of compensation for land acquisition equivalent to minimum market value of land, is expected to facilitate developers to implement project, like hydro, roads and transmission line, on time (Subedi, 2015, c.f. Ranjitkar, 2017).

Land value determination committee led by chief district officer will have to take into account the type of road or way connecting the land plot concerned, its type, average market price in the previous fiscal year, access to development infrastructure and productivity for determining its value. Currently, many developers have to wait for an extremely long time to acquire land to require building various physical infrastructure projects. For instance, (Subedi, 2015 c.f. Ranjitkar, 2017) has pointed out that the government still has not been able to acquire land in khokana area of lalitpur to build Kathmandu-Terai fast track. Similar is the case with acquisition of land required to build various transmission towers and use of right-of-way for installation of transmission lines.

Upon land Acquisition Act 1977, project developers are acquiring land to develop various physical infrastructures at present. However, the Act does not properly address issues such as rehabilitation of people who have to be relocated from the area where projects are being built. In this regard, the policy has stressed on the need to first assess economic and social impact of the development project. Based on this, projects will be categorized as high- medium- low risk.

High risk projects refer to those which displace 50 or more household in the mountainous region, 75 or more households in the hilly region and 100 or more households in the Terai. Medium-risk projects, on the other hand, are those the force relocation of less than 50 households in the mountainous region, less than 75 households in the hilly region and less than 100 households in the Terai.

The compensation amount for those affected by the project will be fixed by a five- member compensation committee formed under chief district officer. The committee can form a technical team to determine compensation amount. This team should derive the compensation amount by working closely with members of families that are likely to be displaced. Once the compensation amount is fixed by committee, it cannot be reviewed. Those not satisfied can

lodge complaints at a body formed at the projects office and complaint hearing offices at district and regional levels.

The policy has major focus on creation of scientific standard for land valuation and compensation equivalent to minimum market value of land. The policy has provision for action against those who try to disrupt land acquisition process. The policy categorizes projects based on economic and social impact assessment and also has provisions regarding relocation and rehabilitation of people affected by the projects. If the provisions of the policy are effectively brought into implementations then it would be easy to carry out infrastructure and land development project. This will help in regulating urbanization, urban land use management and increasing the presence of government in urban land markets.

3.12. National Urban Development Strategy, 2017

National Urban development Strategy has addressed various issues on urban system, urban environment, urban economy, urban finance & investment, urban governance & Urban Land Management. It has pointed out following major issues in urban land management.

- Inadequate land acquisition & compensation mechanism
- Dominance of informality in urban land market
- Land fragmentation & public land encroachment
- Inadequate land use controls & implementation
- Inequitable benefit sharing from urban development
- Absence of urban land use policy.

It has recommended following strategies & activities to address the issues:

- Establishment of judicious valuation for compensation of urban land through preparation of land valuation guidelines.
- Establishment of land price freezing mechanism for specified period once the government shows intent to acquire land implement projects. The strategy can be put into action through preparation & enforcement of relevant laws & Guidelines.
- Establishment & internalization of land information system by improving accuracy/ reliability of land measurement & up gradation of cadastral & land record system to reflect urban dynamics. Also, private land sectors should be facilitated to establish web based information system of land parcel availability for transaction.

- Establishment of land use control with infrastructure & environmental threshold & Standard by preparing & enforcing standards for the same, prohibit incompatible land use and address urban environment issues resulting from particular land uses such as supermarket, party palaces, workshops & factories, schools, Sports facilities etc.
- Building incentives/ disincentives for preserving critical agricultural land by formulating legal basis for regulating urban land use to discourage agriculture land sub division, fragmentation & new development & also preparing policy guidelines & legal basis for regulating minimum plot size in line with land use policy.
- Classification of land as urban & rural subjected to periodic revision with adequate urban reserve land to meet future land demand by preparing guidelines & legal basis for classification & revision.
- Prioritize implementation of large scale land pooling, land banking & land swapping schemes as alternative means to increase public possession of private land by preparing guidelines & legal basis for the same.

3.13. Local Government Operation Act, 2017 (2074)

The Local Government Operation Act has paved a strong legal foundation towards institutionalizing legislative, executive and quasi-judiciary practice of the newly-formed local government. The Local Government Operations Act, 2074, the successor of the Local Self Governance Act (LSGA) 1999, and its provisions reflects the multi-dimensional roles and responsibilities assigned to the LGs. The legal mechanism was enacted as per the Article 296 (1) of the Nepal Constitution-2015 so as to leverage local leadership and governance system. The Act has stipulated several arrangements related to authorities, duties and responsibilities of local government, assembly meeting and working system, assembly management procedures, plan formulation and implementation, judicial works, financial jurisdictions, administrative structure and district assembly, among others. Most of the sectoral services so far rendered by the federal government (FG) are being entrusted to the LGs, such as local taxation, health, education, local roads, agriculture, land registration and management, heritage conservation, alternative energy and forestry. However, there is a very cursory treatment of planning and development aspects related to shelter, human settlements and urbanization.

This newly formed act describes about the criteria to divide a state into municipalities or rural municipalities and respective rights, duties and responsibilities in different development and

conservation sectors. It clarifies the rights of municipalities/ rural municipalities to form local laws, regulations and criteria for conservation of environment protected areas and species; for environmental pollution and hazard control; solid waste management; etc.

The act has given local government following authorities:

- To levy property tax, rent tax and land registration tax under federal and provincial laws
- To prepare laws, bye laws, project and impact assessment regarding urban and safe settlement development, infrastructure development and building regulations in local level and implement them
- To carryout land registration, land survey, providing cadastral maps, updating the land territory and ownership transfer of land and to keep record of land according to classification of land
- To assist and easement in land acquisition and compensation for public purposes
- To fix and maintain R.O.W for local roads within its administrative boundary
- To prepare local level land use plan under provincial and federal laws and implement it and to map risk prone areas within the administrative boundary and relocate risk prone settlement
- To prepare plan and programs for systematic and integrated settlement development through land unification, land development and land management
- To demarcate probable touristic attraction as touristic area within the administrative boundary and also develop and manage local markets

Local governments (LGs), as the third tier of federal governance, as enshrined in Nepal's Constitution 2015, hold the potential of playing a unique and powerful role in bringing about socio-economic and physical transformation in the country's towns and villages. The act has given various rights to local government to plan and regulate land use, develop and manage urban land in local level.

A cursory review of the LGOA, 2074 done by Malla (2019), indicates that the focus is more on the formulation and execution of the sectoral programmes and projects without consideration of their spatial consequences. Hence, the overall development approach as envisaged by it would be piece-meal and project-oriented, lacking spatial integration within the geographical boundary of a particular LG. The desired integration would only be possible

only through the design of the spatial planning framework brought through reforms in the existing town planning legislation.

Presently, the Town Development Act, 1988 and Amendments, and the Kathmandu Valley Development Authority Act, 1988 provide a legislative framework for town planning in Nepal. Seeing the inadequacy of those acts, which are not in tune with the constitutional provisions and the adopted three-tier federalism model, there is a need to review the prevalent act. Despite a half a century of planning activities, an appropriate planning system could not be established in the country. Hence, the prime focus of the new legislation should be on establishing a town planning system (TPS) for Nepal, implying a need for physical development plans at the various levels, including basic infrastructure along with the regulatory mechanism for guiding the urban growth process within a LG. This would mean bringing an entire gamut of the LGs, both rural and urban, within a spatial planning framework for directing and managing development activities towards the desired directions. This would imply planned urban expansion, effective services delivery and management along with due attention to ecological conservation and to disaster risks like floods and earthquakes (Malla, 2019).

3.14. Nepal Rastra Bank Directives

The increase in the demand for land, especially in urban areas, is attributed to the inelastic supply of land and absence of viable investment opportunity. The speculative assumption of people that price of real estate will never decline and it is a safest sector to invest, has played and instrumental role in increasing the real estate price. With accelerating growth of remittances accounting for about 20 percent of GDP and lack of alternative investment opportunities, a huge amount of money has gone into land and housing business that created a real estate boom. The proliferation of financial institution together with an excess liquidity situation in the past also fuelled the real estate boom, especially in the urban areas.

The tendency of migrating from rural areas to urban has fuelled the real estate business in Nepal. Basically people are purchasing real estate (land or land with house) for two general motives: first, for self- residence and second, for business purposes. The first motive has boosted up the second one. The bank and financial institution are financing in real estate sector as one of the important sector for lending. In the loan portfolio of banks and financial institution the real estate lending has a significant share. Similarly, in the composition of collateral types, house and land hold 61 percent of share (NRB, 2010 c.f. Ranjitkar, 2017).

The real estate business is being done largely in the unorganized sector that purchases a large area of land and do plotting with or without developing the residential facility. However, there is growing trend to develop land and construct residential housing by organized real estate developers. The organized sectors are those which formally registered institutions for the real estate business that are involved in developing mass residential infrastructures. They are basically involved in the purchases of a large area of land and developing the land with proper planning along with various residential facilities. They can often sell the plotted land with basic infrastructures. The organized sector comes under the government law and regulations, but the unorganized sector generally does not come under the law and regulation of government." (NRB, 2011).

The development of any sector in the economy needs financing. Real estate sector is not an exception; it certainly needs continuous and huge investment. Nepal, being a developing country with limited infrastructure and lack of accumulated capital, seriously requires huge investment in most of its socio-economic sectors. Further, real estate, being a capital-intensive industry, also demands considerable amount of capital for the infrastructure. This is also required for the expansion, growth and sustaining of the sector. In addition to this, more financing is necessary for the support services and for the promotion of related industries. Moreover, adequate supply of financing also facilitates the overall growth of the country. The increasing demand for finance in the real estate sector and supply of financing by BFIs have been the serious economic issues in Nepal. Nepal Rastra Bank, being the central bank of Nepal, has a basic concern to discourage risky lending in real estate and encourage lending in productive sectors for the country's economic growth (NRB, 2011).

The financial and economic instability that followed the plunge in asset prices prompted central banks to revisit their policy responses. Central bankers generally have two options when they faced with a surge in asset prices: they can either be protective or reactive. To be proactive would be to lean against the wind that is to tighten monetary policy during the boom phase. The reactive policy would be mitigating the consequences of an expected or actual asset price bust (laquindanum, 2010 c.f NRB, 2011).

The NRB fully cognizant of all issues and constraints of real estate sector, has been working scrupulously to establish a dedicated infrastructure and institutional mechanism along with some deliberate initiatives to strengthen the real estate sector. The NRB has been conducting

research/analysis on the existing status of regulatory and policy frame works. It has designed and implemented regulation to address the burning issue of housing and real estate sector.

According to the latest amendments in directives of Rastra Bank, those seeking home loan to build or purchase residential houses in the Kathmandu Valley will not get credit in excess of 50 percent of the fair market value of the property. The loan-to-value ratio for credit sought to build or purchase residential houses outside of the Valley, however, has remained unchanged at 60 percent. Earlier, loan-to-value ratio for credit sought to build or purchase residential houses in the Valley also stood at 60 percent. The NRB has raised the ceiling for home loan to Rs15 million from existing Rs10 million. The NRB has defined home loan as credit extended by banks and financial institutions for purchase of a house or an apartment for residential purpose or to rent it out. Such credit should be extended on the basis of the income source of the borrower.

The NRB's latest directive has also revised loan-to-value ratio for credit sought to purchase real estate in the Valley to 40 percent. The loan-to-value ratio for credit sought to purchase real estate outside of the Valley has remained unchanged at 50 percent. The NRB has introduced a policy to discourage expansion of real estate and housing businesses in the Valley to enable the sector to grow in other parts of the country. These changes were made as per the announcement made through the latest Monetary Policy to curb down unhealthy practices in real estate activities through the regulatory framework for commercial banks and financial institutions to manage concentration risk and prudently match maturity profile of their assets and liabilities.

4. CHAPTER 4: CASE STUDIES OF COLLECTIVE APPROACH TOWARDS LAND MANAGEMENT IN INDIA

The following case studies highlight different forms of land management and development practices highlighting a shift towards inclusive and participatory planning practices in India. The case studies are evaluated upon the theoretical framework and their appropriateness to the subject of Strategic spatial planning.

4.1. Town planning schemes of Gujarat

The 74th amendment to the Indian constitution empowered the urban local bodies such as municipalities allowing them to draft master plans and development plans. These plans were drafted using the statutory planning instruments such as Land use, Zoning, building regulations, and development of master plans and acquire private lands for public purposes and development of infrastructure. Town planning schemes were used to create development plans for the implementation of master plans. It was based on participatory land pooling and adjustment with equal development rights for all landowners; zero displacement and inclusion of landless urban poor with reduction infrastructural development cost. The new adjusted plots have access to infrastructure, public amenities and attract higher land values. The realization of such schemes within a master plan framework leads to overall monitoring and approval by the State government, thus taking it away from being a completely bottoms-up approach. Gujarat has pioneered the process and urbanized significantly its peri urban agricultural zones were transformed by ring roads and Town Planning Schemes.

4.2. Magarpatta Farmers Township

The Township is located on the outskirts of Pune, an industrial and educational city in western India. Magarpatta is the first project in India in which farmers pooled their land and created a township, rather than selling their land to a real estate developer. The entire development area of Magarpatta City covered 430 acres and was owned by about 120 farmer families with more than 800 beneficiaries. The area was under agriculture and was included in the urban expansion zone during 1980's. The farmers belonging to one community afraid of losing their land under the urban land ceiling act, created a shareholding farmers company with the help of a politically connected entrepreneur. This proximity to the urban expansion of the city led the farmers to float themselves as a real estate venture, which benefited from the loosely defined town planning legislation. The town was referred as, 'Collective

institution of landownership that included agrarian landowners as partners in the development'. The main reason of successful cooperation among the farmers was the similarity in caste and land holding sizes.

Each family got shares in the company according to its landholding, and each share is equivalent to 1 square meter of land. According to an article published recently by Infochange, an online resource base of developmental news, the cost of one share has gone up from Rs 100 in 2000 to Rs 1,000 in mid-2008, and the cost of a hectare from Rs 3 crore in 2000 to Rs 3.75 crore in 2007. Thirty per cent of the cost of construction was earmarked as cost of land and paid to the shareholders. A shareholding family has the option of reinvesting the amount in the company in the form of a term deposit. Land title remains in the name of the farmer even when the land is developed and urbanized.

The Town planning schemes are the most favored methods of land pooling within India. It accommodates the real estate desires of the city and the 'well-aware' farmers of the peri-urban locations. It is desired by most municipal organizations as it operates within the framework of statutory planning and is based upon the aspect of participation (Manna, 2015).

4.3. Transferable Development Rights in Mumbai

On the back of growing urbanization and lack of availability of space, TDR assumes a greater importance especially in the suburban areas of the cities. Rasheed & Parambath (2014), states that, governments generally try to rely on the past records of sales transactions in determining the 'fair price of land' to be acquired. These are rarely reported or recorded correctly because of highly informal land market. Today, Local Bodies or the State Governments do not have adequate funds to acquire the necessary land even at the recorded low rates. Kankariya & Bhangale (2015), points out rapid growth of infrastructure in Indian cities due to Public Private Partnership in infrastructure development and consequently, a dire need to improve sustainability and efficiency of land use with respect to infrastructural development. A pragmatic solution to this problem could be the use of 'Transfer of Development Rights'.

The Urban Development Plans Formulation and Implementation (UDPFI) Guidelines, MOUD, Government of India (1996), define Transfer of Development Rights (TDRs) as, 'Development Right to transfer the potential of a plot designated for a public purpose in a plan, expressed in terms of total permissible built space calculated on the basis of Floor Space Index or Floor Area Ratio allowable for that plot, for utilization by the owner himself or by

way of transfer by him to someone else from the present location to a specified area in the plan, as additional built up space over and above the permissible limit in lieu of compensation for the surrender of the concerned plot free from all encumbrances to the Planning and Development Authority'.

"Transfer of Development Rights (TDR) is a method of land development which separates the development potential of a particular package of land from it and allows its use elsewhere within the defined zones of the city" (URDPFI, 2011 c.f. Kankariya & Bhangale, 2015). This TDR allows the owner of the land to handover the rights of development of the particular land in exchange of another land or money. This process is carried out with respect to the FSI allowed in the area and with assuming all the rules and regulations of municipal authorities. The developer can get additional built up area for development in the development zone. It also helps in rezoning of the area and redevelopment of the areas in inner parts of city. It also keeps control on the unwanted development in the area.

The one side of TDR is that it directly affects the traders and vendors and other hand indirectly affects the entire local economy which operates in a market setting. While TDR is a flexible development tool which helps in preservation of land, the results of TDR programs are indecisive and TDR program designed for one locality cannot be used for another locality of same populations as thinking and expectations of society vary. For successful implementation of TDR program, detailed demand and supply gap analysis is needed with respect to the market analysis (Kankariya & Bhangale, 2015).

Mumbai is the first city in India, which has adopted the TDR concept in a regulated manner as an alternative mechanism for land acquisition for providing the essential amenities in accordance with the development plan proposal, for slum redevelopment and urban renewal through reconstruction of dilapidated buildings (Rasheed & Parambath, 2014).

TDR in Mumbai was carried out to utilize development potential of the land (benefit arising from land), which was suspended because of the reservation of land in the Development Plan for Mumbai by the Government of Maharashtra to be acquired for public purposes (reserved land). In order to avoid the payment of heavy compensation and the lengthy proceedings involved, the Government found an exclusive way of compensating the landowner under which the development potential of the land is detached from the reserved land itself, the land stands transferred to the Government and, in return, the development rights, equal to the development potential attached to the reserved land, are transferred to the owner, to be used

in some other land as per the provisions of DCR. The owner of the reserved land is thus compensated by additional FSI which can be used on some other land over and above the normal FSI permitted in relation to that piece of land. These detached rights are known as TDR, which are formalized by the issue of Development Right Certificates (DRC) by the municipal commissioner. The owner of such DRCs can transfer them like a negotiable instrument for valuable consideration if he himself is not inclined to exploit DRCs in his own properties.

In Mumbai, the TDR which is generated in the island city (i.e. southern part) will be utilized for development in the suburban areas (i.e. northern part). The underlying principle of such utilization is also to facilitate development of the underdeveloped areas. Predominantly, there are four types of TDR that are generated – Road TDR, Reserved plots TDR, Slum TDR and Heritage TDR. In most of the cities, majority of the construction activities take place with the aid of slum TDR.

If a property developer surrenders his plot of land and offers to build homes free of charge for slum dwellers or those displaced due to infrastructural projects, he gets proportionate property development rights northward of that plot. He can then sell the property so developed on the open market. The TDR was to be an incentive for builders to construct homes for the underprivileged. It is an extra right used to make rehabilitation projects possible. If the FSI of plot is too small, it is possible to get some development rights as TDR, to be transferred to that plot or to a more northern area pursuant to the provisions of DCR.

In Mumbai the TDR utilized against the development of road is about 1073360 sq. m. similarly 491080 sq. m. for reservation of land and 560965 sq. m. for slum development. The following figure illustrates the details of utilization of Transfer of development rights in Mumbai. Figure 6 illustrates the cost and benefits of the TDR utilization in the Mumbai city. The Cost of development of roads handed over by TDR is about INR. 60.25 Crore. The Cost of improvement of reservations handed over by TDR is INR. 139.5 Crore. The acquisition costs saved by TDR assuming market land rate is INR.720 crore and the acquisition costs saved by TDR assuming ready reckoner rate is INR.1841 crore (Nallathiga, 2006 c.f. Kankariya & Bhangale, 2015).

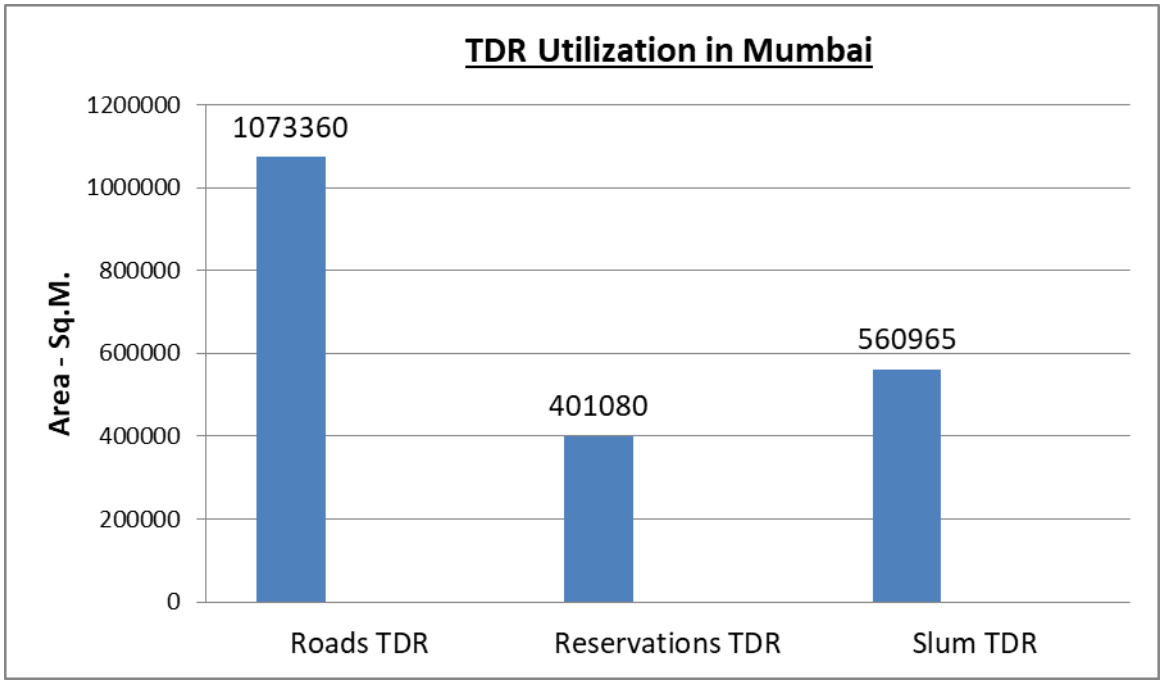

Chart 1: TDR Utilization in Mumbai

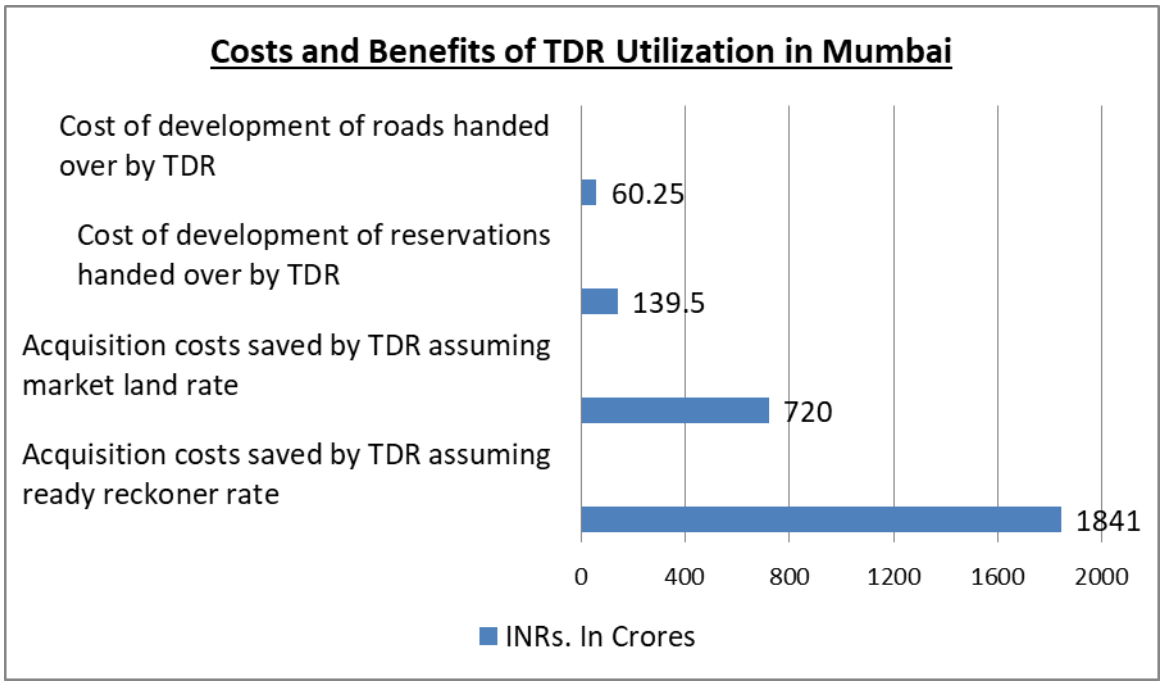

Chart 2: Cost and Benefits of TDR Utilization in Mumbai

On a conceptual level, TDR seemed to be a perfect urban development tool as it facilitated the development of suburban locations. However, developers used it as a tool to maximize the saleable area in a few prime locations. This excessive construction has resulted in congestion in the suburbs, haphazard and unplanned development, and intense pressure on infrastructure - a move severely criticized by the planners and environmentalists. To address this issue, Mumbai has a new Transfer of Development Rights (TDR) policy that is linked to

the width of the road beside the project's site. As per the new policy, projects on roads that are less than nine meters, will be granted no TDR benefit, while projects on roads over 30 meters wide, will get FSI of 2.5. The new policy seeks to redistribute the load, based on the carrying capacity of the roads. The policy will also help to increase the width of existing roads in congested areas, as people will now willingly offer their land for road widening, to get the additional FSI that is linked to the road's width. This will ease traffic woes in the most congested areas. .

Another criticism to the concept is that it has led to an increase in the real estate prices. Since the TDR acquisition cost is loaded onto the project cost, the developers increase the final pricing of the project. In order to curb this, the Government should have some mechanism to keep a check on the quantum of TDR available in the market and the trading price.

4.4. Land Readjustment and Density Bonuses for high density development in fringe areas of Surat

A density bonus is an incentive-based tool that permits developers to increase the maximum allowable development on a property in exchange for helping the community achieves public policy goals. Increasing development density may allow for increases in developed square footage or increases in the number of developed units. This tool works best in areas where growth pressures are strong and land availability limited or when incentives for attaining the goals outweigh alternative development options. Density bonuses are widely used in Unites States.

Density bonuses are often used to increase the supply of affordable housing for low income or senior households. Density bonus ordinances permit developers to increase the square footage or number of units allowed on a piece of property if they agree to restrict the rents or sales prices of a certain number of the units for low income or senior households. The additional cash flow from these bonus units offsets the reduced revenue from the affordable units. The density bonus is the most common form of incentive used by inclusionary housing programs.

Surat is located 200 kilometers north of Mumbai in the state of Gujarat. It is second most populated city in Gujarat after Ahmedabad and it is famous for textiles and diamonds. This case study presents opportunities for planning professionals who face the challenge of supplying infrastructure and addressing transportation difficulties. The innovative technique

of land pooling and readjustment as self-financing mechanism is utilized to create space for R.O.W of outer ring road and other infrastructure without appropriation of private land by acquisition.

One of the main factors which make it possible to self-finance LR Projects is the money saved at the outset. Purchasing all the land needed for an outer ring road through negotiated or compulsory project would not be feasible as estimated land purchase cost up to INR 2200 crores. LR gives implementing agencies a mechanism through which land can be acquired without purchase, while enhancing the land values in the area via. Planning marketable lots and installing infrastructure. Surat has incorporated following additional fund generating technique:

- Land bank Creation

After space is set aside for infrastructure development and lots are reparceled for individual owners, 10% of land can be distributed to public domain for resale.

- LR Based betterment levies

The GTPUD act has allowed betterment charges to be levied on landowners based on increment in property values produced by LR Project.

- Charges for FAR bonus

The most novel attribute of Surat ring road project is incorporation of bonus FAR allowance into large scale LR development project. By incorporating floor area bonuses into their LR plans, Surat can create vital infrastructures, developable high value real estate and a denser urban area for more efficient use of scarce land. Extra FAR is available to private land owners in exchange for payment of 40% of government set minimum land price. A maximum FAR of 4.0 instead of 0.6 FAR is granted in exchange for payment (Mittal et al., 2019).

5. CHAPTER 5: STUDY AREA

5.1. Introduction – Kageshwori Manohara Municipality

Kageshwori Manohara Municipality is located in north east of Kathmandu District in province no. 3 of Nepal. It was declared municipality in 2071 Mangsir 16 (December 2, 2014 A.D.) by the decision of council of ministers of Government of Nepal. It was formed combining six village development committees namely Gothatar, Mulpani, Danchi, Bhadrabas, Alapot and Gagalfedi. Geographically, Kageshwori Manohara Municipality lies within 27 ° 41' 20" to 27°46' 33" North (Latitude) and 85 ° 21' 45" to 85°28' 19" East (Longitude). Elevation of the municipality ranges from 1297 to 2258 meters from sea level. The name of municipality was taken from historical Kageshwori Mahadev temple situated in Gagalphedi (Ward no.1) and Manohara River. When the council of ministers declared altogether 276 municipalities according to Rajpatra published in 2073 Falgun 22, some changes were made to this municipality as well. The Municipality now borders sankharapur Municipality in east, Kathmandu Metropolitan City and Gokarneshwor Municipality in West, Sindhupalchowk District in North and Madhyapur Thimi Municipality in South. Previously, there were 16 administrative wards in the municipality which were merged into 9 wards. Total area of the municipality is 28.8 square kilometers.

According to household survey done by municipality in 2075 B.S., total population of Municipality is 102235 and the population density in municipality is 3552 persons per square

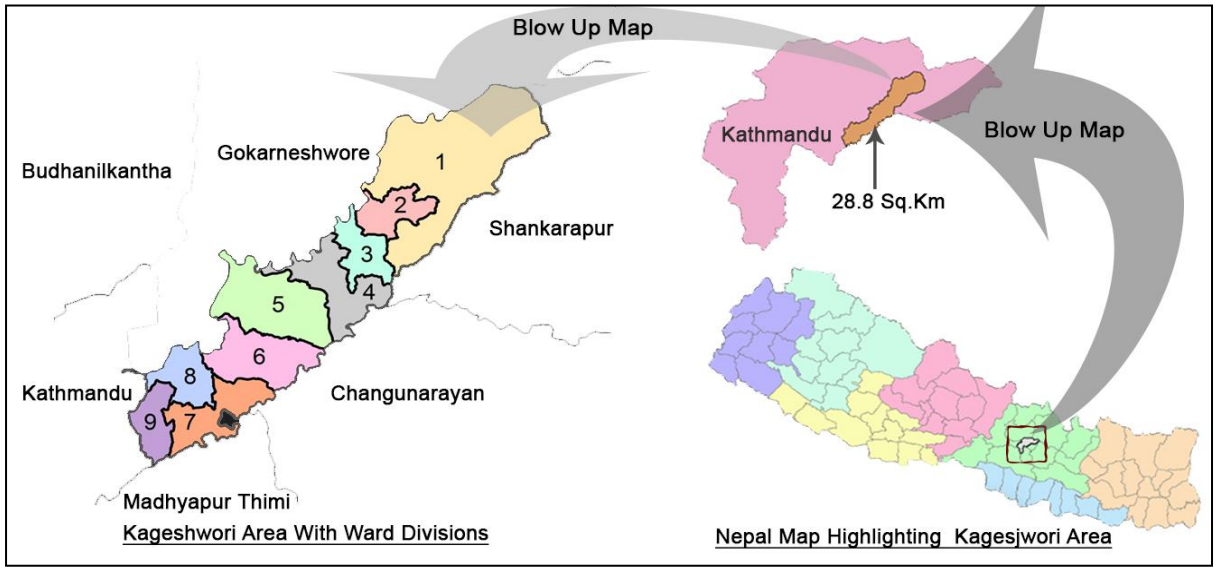

Figure 4: Location Map of Kageshwori Manohara Municipality

Source: GIS Shape files, Preparation of Urban Base Map and Municipal GIS of Kageshwori Manohara Municipality, Implementing Agency: Kagshwori Manohara Municipality, Office of Municipal Executive, Daanchi, Kathmandu

urbanization. According to brochure issued by the municipality, the municipality has ample of land which it has viewed as both strength and opportunity from perspective of agriculture and probable industries. Both agriculture and industry are viewed as generator of employment and thus income. But from planning perspective, there is always threat of spread of urban sprawl towards vacant and agricultural land. The municipality, in its brochure, as well has stated rapid urbanization as a threat.

Table 3 Ward Level Population data of Kageshwori Manohara Municipality- 2075 B.S.

Ward No.	Total Popn.	Area(Sq. Km.)	Pop. Density	Household No.
1	6784	9.82	690.84	1515
2	3468	1.55	2237.42	752
3	2932	1.61	1821.12	683
4	7785	2.96	2630.07	1796
5	9780	4.22	2317.54	2397
6	12886	3.03	4252.81	2941
7	19046	2.42	7870.25	4901
8	11032	1.72	6413.95	3029
9	28522	1.46	19535.62	8152
Total	**102235**	**28.79**	**3551.06**	**26166**

Source: HH Population Survey, 2075 B.S., Kageshwori Manohara Municipality

5.2. Development Trend in Kageshwori Manohara Municipality

From urbanization perspective, Kageshwori Manohara is rapidly urbanizing Municipality. Kageshwori Manohara Municipality is considered urban sprawl of KMC. When we analyze the population data from census of 2068 B.S. and household survey done by municipality in 2075 B.S., we can see that in span of around 7-year population has nearly doubled from total population of 60237 in 2068 B.S. to 102235 in 2075 B.S. Similarly, number of households has also increased from 14329 HH in 2068 B.S. to 26166 HH in 2075 B.S.

From reference of Google satellite images, it is seen that the settlement is developing more on ward no. 9 as it is the nearest to the core urban areas of Kathmandu. As we go further north not much development is seen in span of nearly a decade. Settlement increment is centered in ward no. 9, 8, 7, 6 and 5 of the municipality. The graph based on spatial temporal analysis of Google Earth images from 2010 A.D. to 2019 A.D. shows that the percentage of built up in the municipality has increased from 7% to 20% in span of a decade. It can be abstracted from map showing present settlement pattern of municipality that the settlement is sprawling haphazardly towards northern side of municipality.

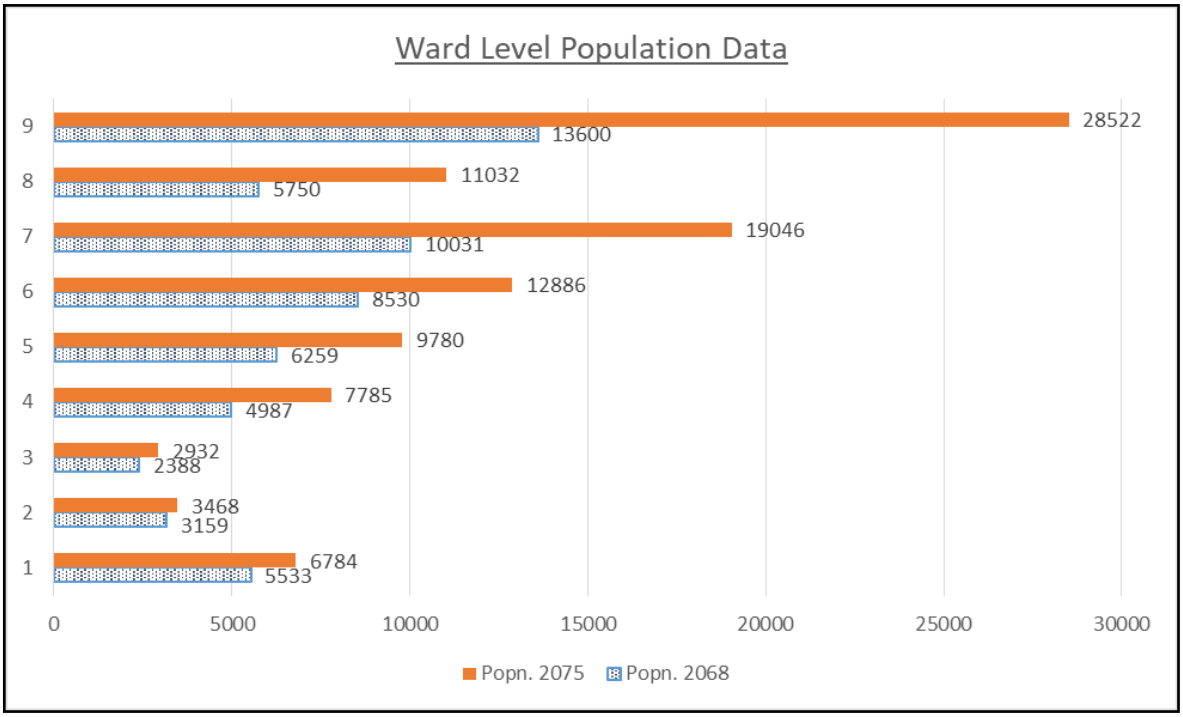

Chart 3 Ward Level Population data of 2068 B.S. & 2075 B.S.

Source: CBS 2068 B.S. & HH Population Survey, 2075 B.S., Kageshwori Manohara Municipality

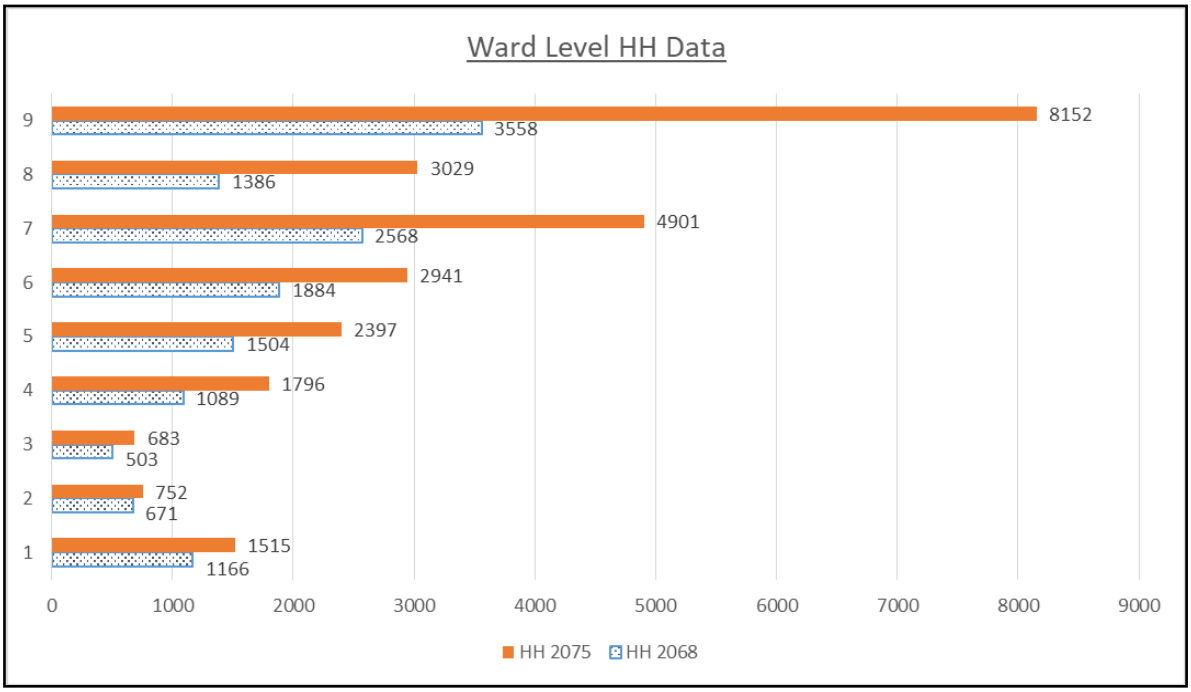

Chart 4 Ward level HH data of 2068 B.S. & 2075 B.S.

Source: CBS 2068 B.S. & HH Population Survey, 2075 B.S., Kageshwori Manohara Municipality

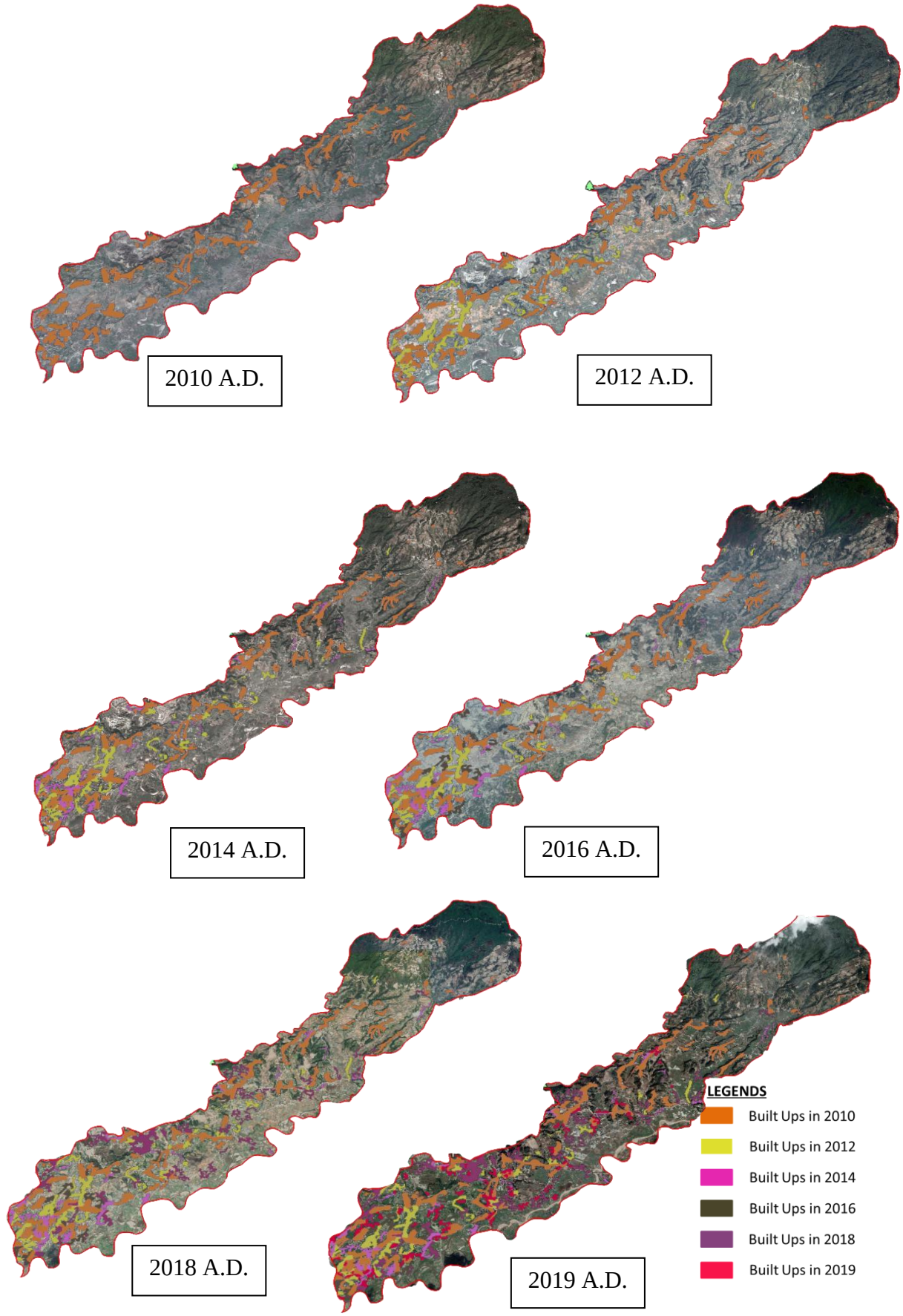

Figure 5 Settlement development Trend of Kageshwori Manohara Municipality from 2010-2019

Source: Google Earth Satellite Image

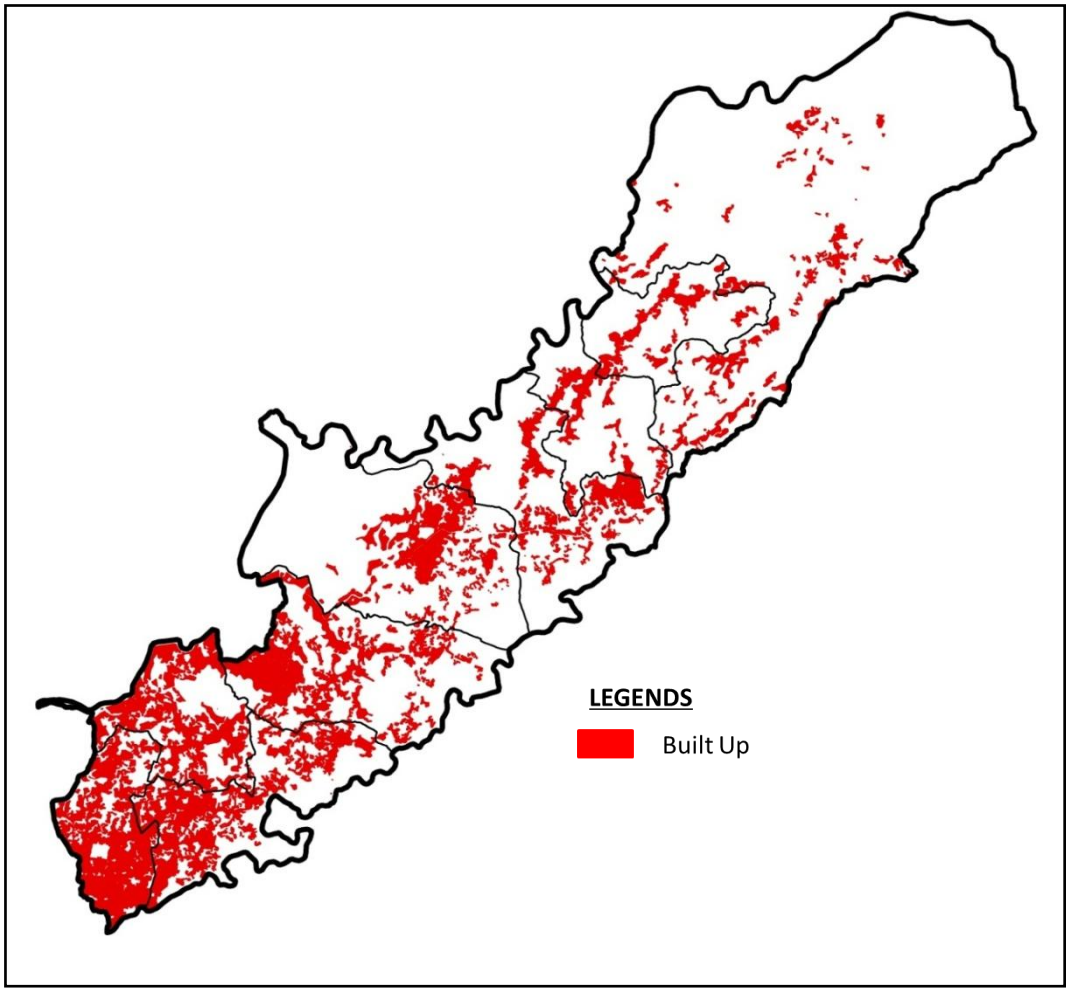

Figure 6: Present Settlement Pattern of Kageshwori Manohara Municipality

Source: GIS Shape files, Preparation of Urban Base Map and Municipal GIS of Kageshwori Manohara Municipality, Implementing Agency: Kagshwori Manohara Municipality, Office of Municipal Executive, Daanchi, Kathmandu

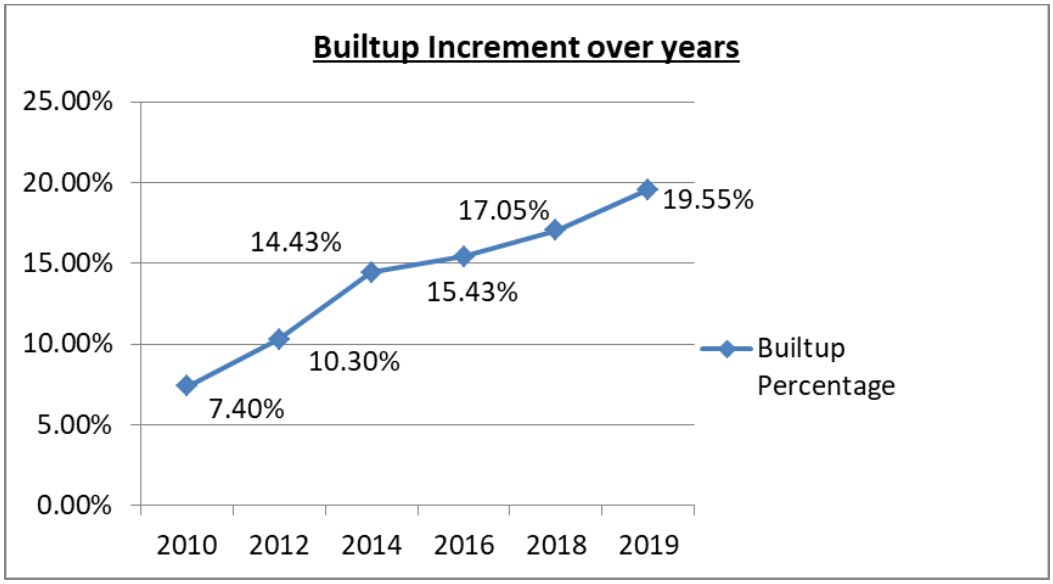

Chart 5: Built up growth in Kageshwori Manohara Municipality from 2010 A.D. to 2019 A.D.

Source: Google Earth Images and GIS Shape files, Preparation of Urban Base Map and Municipal GIS of Kageshwori Manohara Municipality, Implementing Agency: Kagshwori Manohara Municipality, Office of Municipal Executive,

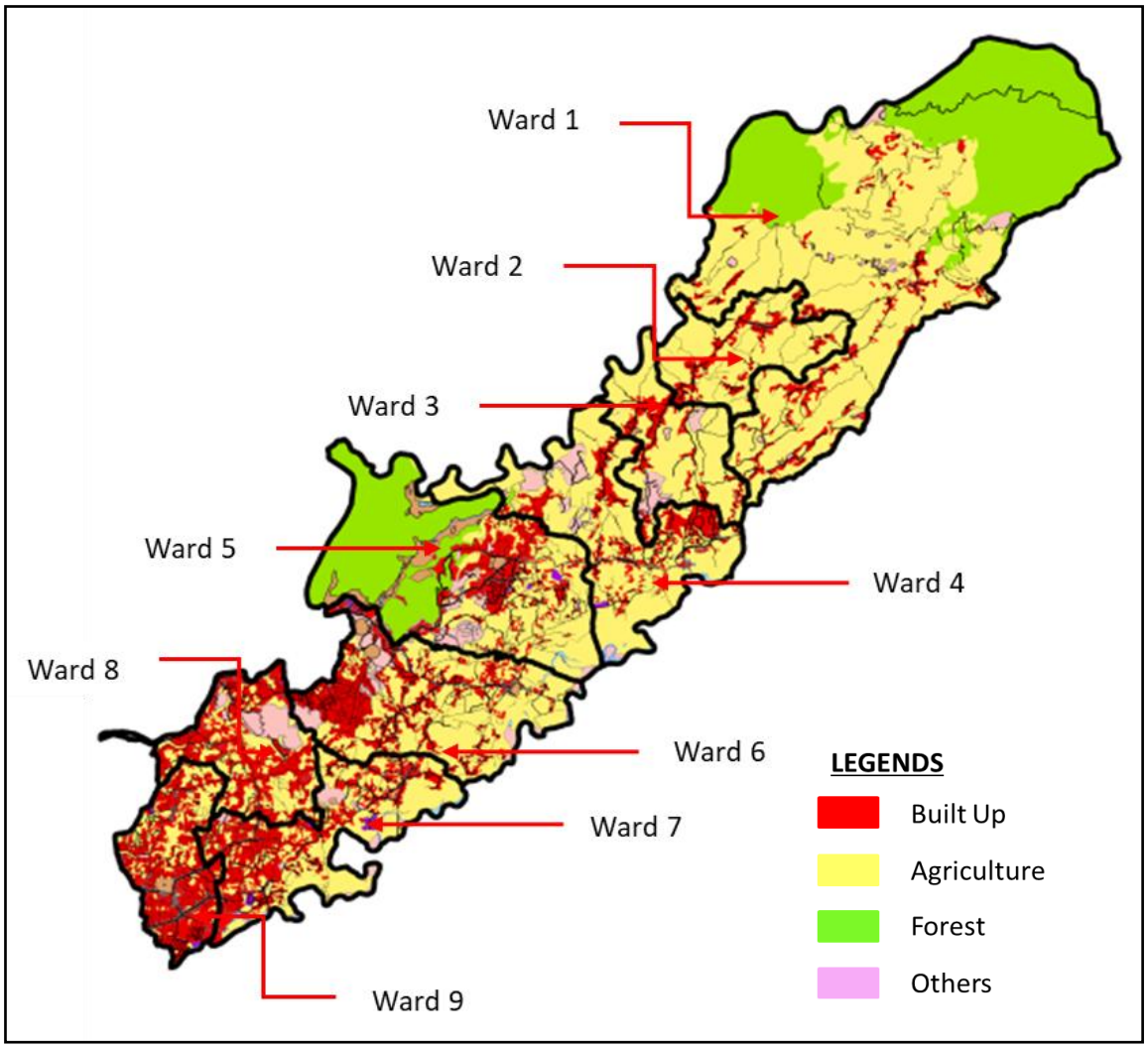

Figure 7: Land use map of Kageshwori Manohara Municipality

Source: GIS Shape files, Preparation of Urban Base Map and Municipal GIS of Kageshwori Manohara Municipality, Implementing Agency: Kagshwori Manohara Municipality, Office of Municipal Executive, Daanchi, Kathmandu

The land use data of the municipality as it is illustrated in the pie chart; shows that there is still dominance of agriculture. 51% of land is occupied by agriculture. 20 percent of land cover in the municipality is forest which is in ward no. 1 and 5. Gokarna forest resort is in ward no.5 of municipality.

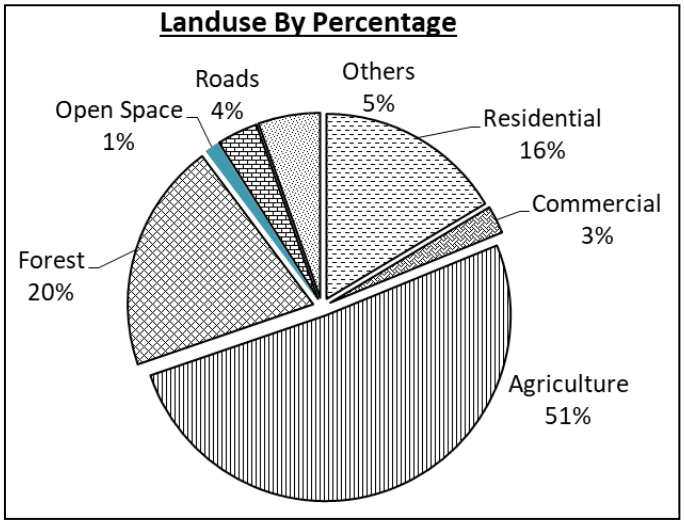

Chart 6: Land use distribution percentage of Kageshwori Manohara Municipality

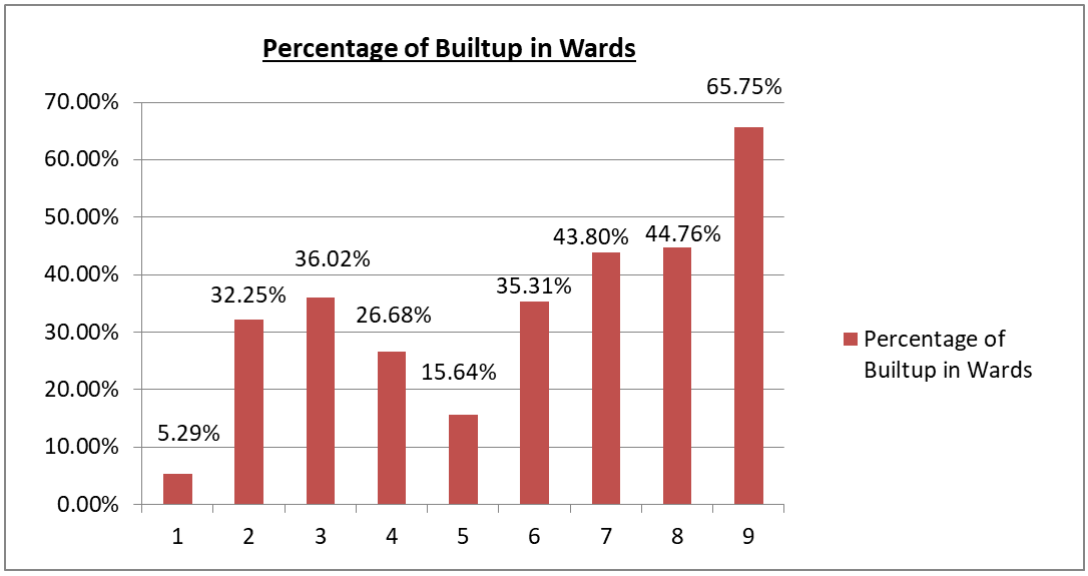

Chart 7: Built up Percentage in Land cover of each wards of Kageshwori Manohara Municipality

Source: GIS Shape files, Preparation of Urban Base Map and Municipal GIS of Kageshwori Manohara Municipality, Implementing Agency: Kagshwori Manohara Municipality, Office of Municipal Executive, Daanchi, Kathmandu

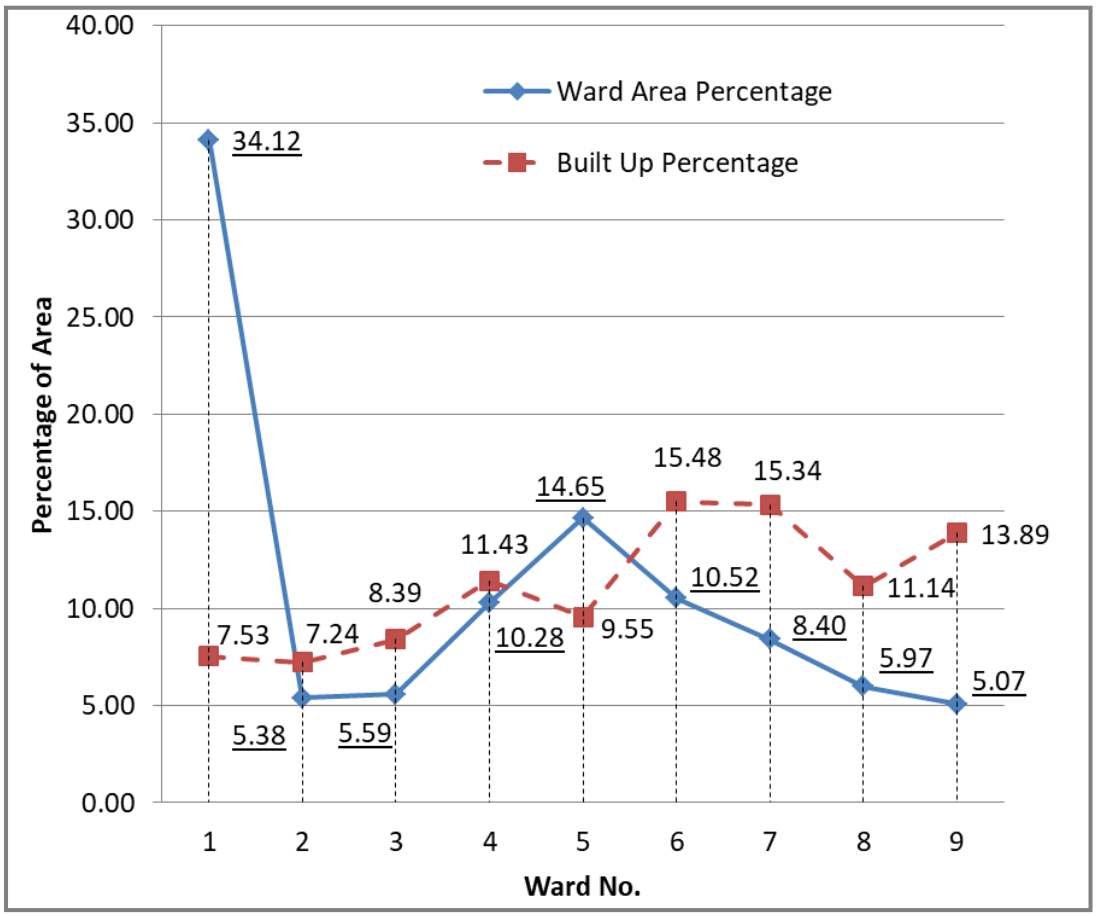

Chart 8: Comparison Between Ward Area and Built up Area Percentage of each ward in Kageshwori Manohara Municipality

Source: GIS Shape files, Preparation of Urban Base Map and Municipal GIS of Kageshwori Manohara Municipality, Implementing Agency: Kagshwori Manohara Municipality, Office of Municipal Executive, Daanchi, Kathmandu

Around 20 percent of Municipal Land cover is built up area. Ward no.9 which borders ward no.32 of KMC, has 65% of land cover as built up. It is of no surprise that ward no.9 has highest percentage of built-up in the municipality as compared to its area. Similarly, northernmost ward which is ward no.1 has lowest percentage of built up. Only about 5% of land cover is claimed by built ups as most of its land cover is occupied by Forest area and the ward is farthest from urban core of Kathmandu. Also, as we go northward, we encounter sloppy terrain. Ward 2 and 3 have relatively small areas as compared to other wards. So, even though the ward has built up areas over 30% of its land cover; its share of built-up areas in whole municipality is very less which can be seen in comparative line chart. Ward no. 5 has most of its land cover occupied by forest areas. So, percentage of built-up in land cover of ward seems less; around 15%.

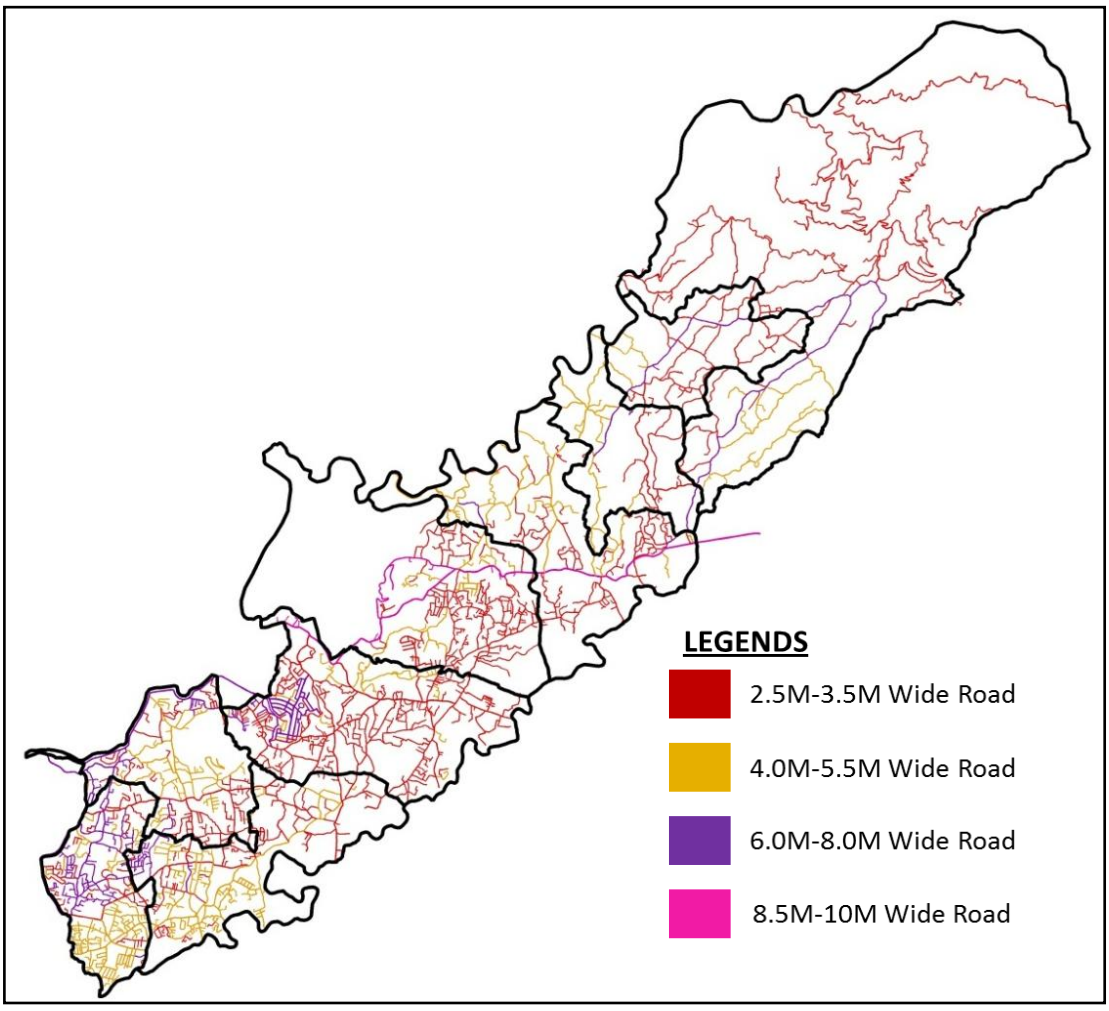

Figure 8: Road Network of Kageshwori Manohara Municipality

Source: GIS Shape files, Preparation of Urban Base Map and Municipal GIS of Kageshwori Manohara Municipality, Implementing Agency: Kagshwori Manohara Municipality, Office of Municipal Executive, Daanchi, Kathmandu

Total 4% of land is occupied by roads. As seen in the map, road network in the municipality is highly unregulated and developed without any sort of planning.so; the road network needs to be developed properly and in planned way as the settlement develops. The inventory of the roads in the municipality shows that majority of roads in the municipality is gravel comprising of more than 65% of the roads. The metaled, i.e. blacktop roads and rigid paved roads is about 21% and about 11% of the roads are earthen. Kageshwori-Manohara municipality is directly linked with Kathmandu Metropolitan via a wide road which lies under SRN strategic roads (Feeder Roads).

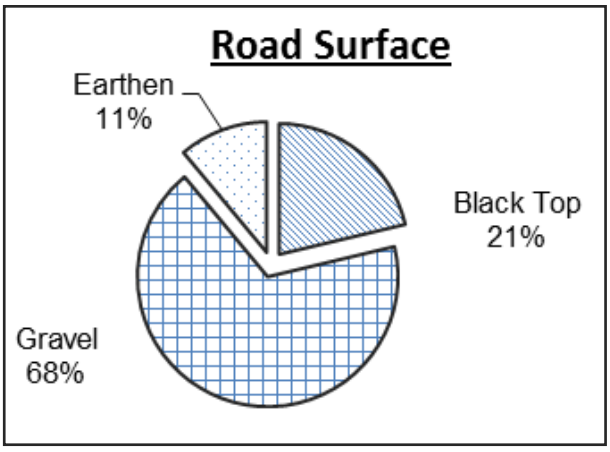

Chart 9: Percentage of Road Surface Type in Kageshwori Manohara Municipality

Source: HH Population Survey, 2075 B.S., Kageshwori Manohara Municipality

According to national urban strategy, the target of urban road density is 7.5 km per square km land area. Most of the roads are very narrow (<4.0 m) to address the trip generated from various area.

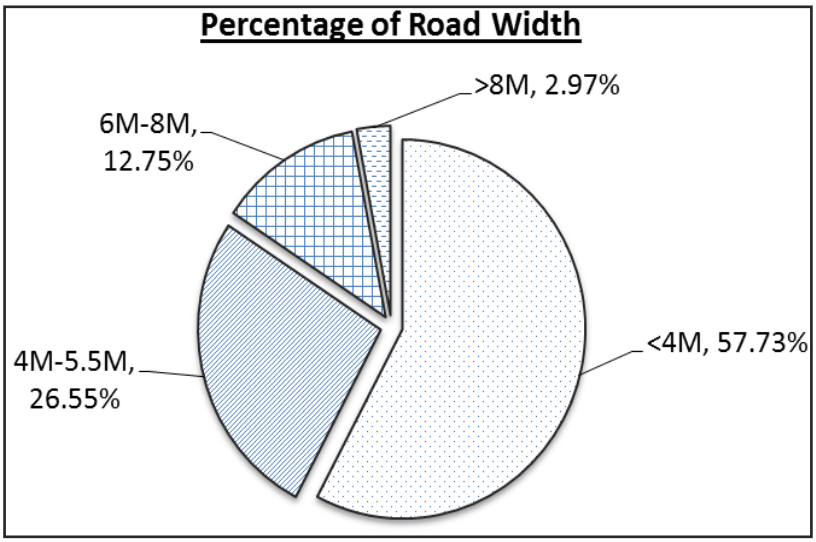

Chart 10: Percentage of Road Length on the basis of Road Width

Source: GIS Shape files, Preparation of Urban Base Map and Municipal GIS of Kageshwori Manohara Municipality, Implementing Agency: Kagshwori Manohara Municipality, Office of Municipal Executive, Daanchi, Kathmandu

The average road density for total area of municipality is 19.29 km road per square km area and the density of road per 1000 population is 5.43 km. The density of the road in municipality is found to meet the national strategy. Road transportation is most crucial for socio-economic development of the municipality in Nepal.

6. CHAPTER 6: DATA ANALYSIS

6.1. Analyzing Responses from Interviews with key Informants

Mr. Umesh Jung Thapa, Structural Engineer – Kageshwori Manohara Municipality

According to Mr. Umesh Jung Thapa, Structural Engineer of Kageshwori - Manohara Municipality, development is much centered in wards 9, 8, 7, and 6. According to him, price per anna of land also varies Rs. 5 lakh per anna to Rs. 70 Lakhs per anna. Due to settlement trend, this great variation of land price is seen within a single municipality.

In his words, the main cause of settlement increment and subsequent sky rocketing of land price is the devastating earthquake of 2015 A.D. He says, even before the earthquake, the in migrant population in the area is mainly from Dolakha, Sindhupalchowk and Ramechhap districts. The epicenter of second major quake of 2015 Gorkha earthquake was Dolakha district. Due to which, much destruction was observed in Dolakha and neighboring districts. As the result, people migrated to Kathmandu and especially in Kageshwori Manohara Municipality where people from those districts were already residing. Also, very less damage of earthquake was seen in ward no 7, 8, and 9 of the municipality. Even the Sun City apartment sustained minor damages only. This further attracted people in post-earthquake scenario. This rapid change in land use is increasing commercial activity in those wards. Many banks have established their branches in these areas and so many franchise of popular restaurant have opened here. The commercial rent price is also high ranging from 95-110 rs per sq. ft.

He has also provided ward wise data of *Naksapass* numbers in fiscal year 75/76 B.S. According to his data, around 1200 *Naksapass* has been registered in the aforementioned year. He also added that the data could have been doubled but the smart city project of KVDA has hold some portion of land and halted *kittakat* in ward no 5,6,7 and 8 for five years to develop 'Ishaan' city.

Ms. Seema Acharya, Ward Engineer – Kageshwori Manohara Municipality

The population in Kathmandu valley has been increasing adversely since huge population has been migrating to the valley. Due to this reason, the necessity of residential land has also been increased which has led to experience the largest change in land values. The broker culture where commission rates are far too excessive is the main reason for the price of land

being high. The price of land is based on instincts, no accurate value of selling and purchasing is fixed. Also, property ownership is one of main cause of price rise. Local people here have much land as the area was primarily agriculture land. They usually don't need to sell their land. So the local land owners themselves are holding the land and selling them only at very high price.

The changing trend of land price has led to haphazard urbanization. There has been huge increment in occupying the productive agricultural land for non- agricultural residential as well as commercial purpose. As the price of land is generally high, middle class families migrating from rural areas can't afford larger area of lands. Therefore, the land is divided into small parcels and sold which ultimately results to negative externalities such as rising congestion, overcrowding, overload infrastructure, pressure on water course, higher property costs etc. The land parcels are sold not ensuring enough infrastructures. Growing demand for the land has mostly affected the agricultural land. However, Unmanaged urbanization, improper land use planning, overcrowding are the major effects.

Ms. Deepa Karki, ward Engineer – Kageshwori Manohara Municipality

A main issue Kageshwori Manohara Municipality is facing in transport system development is difficulty in orderly and efficient implementation of MTMP.

Firstly, the municipality lack enough budget as municipality has not been able to collect and spend fund on transport sector as planned in MTMP. Even then also municipality is not putting efforts on resource collection, its efficient mobilization and coordination with provincial and federal government for rapid and amplified budget allocation.

The road development prioritization is done on the different basis of Population served, no. of CBD, Proximity of educational institutions, Market Centre, hospital etc. but there is conflict between wards for first priority of road construction regardless of scientific criteria for road construction priority. Technical section of municipality not equipped with required manpower for the close supervision and monitoring. Settlements are so dispersed that transportation networks are less efficient and to provide proper road accessibility for every building is not economically feasible. Most of existing roads have minimum road width and have not properly followed guidelines during road construction along road alignment. As usual there are some political issues as well.

Talking about impact of haphazard urbanization in transportation sector, rapid increase in no. of migrant (majority from north side) have caused unmanaged & haphazard settlement development in the municipality. Due to heavy pressure of immigration, there is lack of planning in new settlement which has heavy effect on transportation sector as well. The municipality has been facing problems on expansion of existing road, outer ring road ad Chabahil- Sankhu road. Every year during monsoon we face the problem of transport in this area. The residents of these areas are not allowing government to expand road. Partial section (with no issues) has been completed long before but government has not been able complete road expansion due to the disputes with residents of some areas.

Due to unregulated road network which is as haphazard as the settlement is; there is problem on linkage of feeder roads to main road. It is very difficult to inter connect the branch roads to main road. Hence, there is formation of so many dead ends which leads to lack of alternative road. We are facing problems in preparation and implementing access management plan due to lack of inter connectivity. There is also problem in traffic signal warrant studies, safety assessment and environmental impact assessment. It also very difficult to arrange road alignment.

There is increase no of vehicles on road due to large settlement causing increment in road accidents, traffic congestion (especially in Gothatar and Thali area), and fuel consumption and commuter hour loss. Many settlements are near to river, landslide prone areas which can't be good from urban planning point of view.

Mr. Ram Babu Acharya, Land Owner, Ward no.8 – Kageshwori Manohara Municipality

We are family of four and have recently purchased land in ward no.8. Currently we are living in rent nearby our purchased land. After our house was damaged in earthquake of 2072 A.D., we have been living here in rent. We decided to buy land here as we have many relatives (especially in laws) here in this area. This place is more accessible and near to city center than our Chhaimale. Also, my daughter has job nearby in this municipality. We have sold 11 anna of our ancestral land at Chhaimale, near Dakshinkali to be able to afford land here.

Mr. Pratap Shrestha, Land Owner, Ward no.9 – Kageshwori Manohara Municipality

I live in Koteshwor and I have bought this land at around 2065/66 B.S. in Rs. 2 Lakh/Anna. I have 4 anna of land here. I have bought this land at cheap price. At that time little did I know

that the land price would hike this way in a decade. Today, Market rate of my land is around Rs. 35-40 Lakh per Anna. But, I have no intention of selling it. I am building a house here and I will rent it out once it completes.

6.2. Analysis of Urban form and Land Value Indicators

The list of indicators that help to analyze the impact of land price on urban form and find out influence level of land value determinants is created on the basis of literature study. The indicators are in line with the elements of urban form. These indicators are analyzed in both micro and macro level against the market price of land to measure its influence and determinants. The indicators chosen are:

- Population Attributes
- Housing Characteristics
- Land Use Configuration
- Transport Infrastructure

Population is one of the most basic indices for estimating human statistics. Correlation between land price and different attributes of population like population density, in migration rate, percentage of rental population needs to be analyzed as to find out the determinants of land value and impacts of land prices on urban form. In simple terms, population density refers to the number of people living in an area per square kilometer. In-migration is the process of people moving into a new area in their country to live there permanently.

Housing characteristics that are important in analysis of this research are plot area, Building density and settlement pattern. Analysis of land prices in parallel to the study of Land use configuration through analysis of extent of residential land use domination, development of settlements in very steep contours and percentage of open space and other land use helps to gain insights into the impact on urban land form induced by land prices. Transport management and accessibility are one of main issues of urban areas. Road network pattern, road width and road density are one of key factors that determine the efficiency of urban form. A comprehensive analysis of indicators will lead to determination of strong and weak influences regarding the land price on urban form.

6.2.1. Macro Level Analysis of Indicators

Macro level analysis is carried out in ward level where average data of each ward is taken as base of analysis. Average land price was determined with the help of information sources

listed in annex section of the report. The average land price is co related with the variables that are selected as indicators in this research. Analysis of correlated indicator is below:

Table 4: Ward Level Population Density, Percentage of In Migrants, Rental Households, Built ups, Road Densities and Average Land Price per Anna

Ward No.	Population density ppl/sq.km.	% of In migrants	% of Rental Households	Builtup % in Ward	Road Density Km./Sq. Km.	Road Density Km./1000	Average Land Price/Anna
1	690.84	15.2	12.28	5.29	9.65	13.96	575,000
2	2237.42	11.2	11.17	32.25	18.01	8.05	1,230,000
3	1821.12	22.1	17.28	36.02	15.78	8.66	1,700,000
4	2630.07	42.2	21.49	26.68	19.41	7.38	1,770,000
5	2317.54	75.2	38.1	15.64	15.62	6.74	1,775,000
6	4252.81	73.5	28.18	35.31	31.71	7.46	2,240,000
7	7870.25	72.9	45.89	43.8	28.24	3.6	2,700,000
8	6413.95	81.2	51.22	44.76	31.6	4.92	2,940,000
9	19535.62	85.1	61.74	66.75	44.64	2.28	3,310,000

Source: Report - Preparation of Urban Base Map and Municipal GIS of Kageshwori Manohara Municipality, Implementing Agency: Kagshwori Manohara Municipality, Office of Municipal Executive, Daanchi, Kathmandu

6.2.1.1. Population Attributes

It is seen in the graph that population density of the ward no. 9 is exceptionally higher than other wards. Percentage of in migrant population is relatively higher in ward no. 5, 6,7,8,9. If we consecutively look into the ward level data of rental population, Ward no. 5, 7, 8 and 9 have exceptionally higher percentage of rental households. Population attributes have strong relationships with average Land Price.

Source (chart 11-14): Report - Preparation of Urban Base Map and Municipal GIS of Kageshwori Manohara Municipality, Implementing Agency: Kagshwori Manohara Municipality, Office of Municipal Executive, Daanchi, Kathmandu

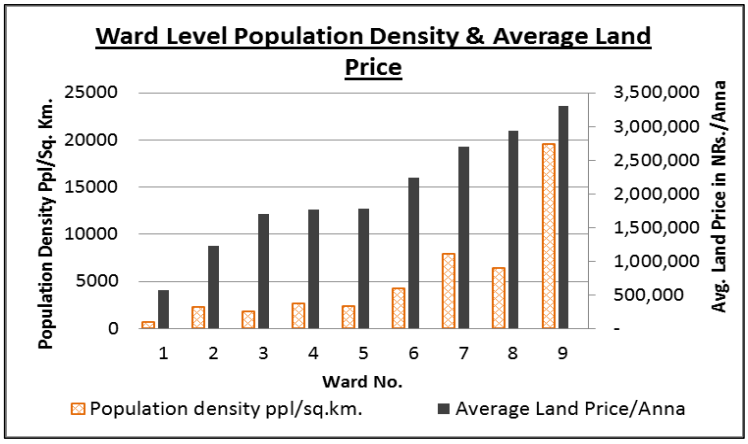

Chart 11: Ward Level Population Density & Average Land Price

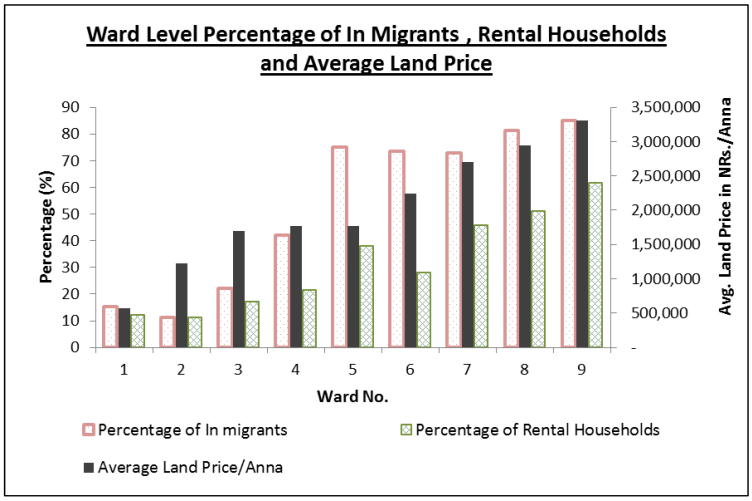

Chart 12: Ward Level Percentage of In Migrants, Rental Households and Average Land Price

6.2.1.2. Land Use Configuration

Percentage of Built up in each ward is dependent on the composition of land cover. Ward 9 has the highest percentage of built up in its land cover. Ward 1 and 5 has relatively low percentage of built up because the land cover of these ward consists of ample forest areas which is owned by government. Drastic difference is not seen between the built up percentages of other wards. There is positive but weak relationships between average land price and built up percentage of ward.

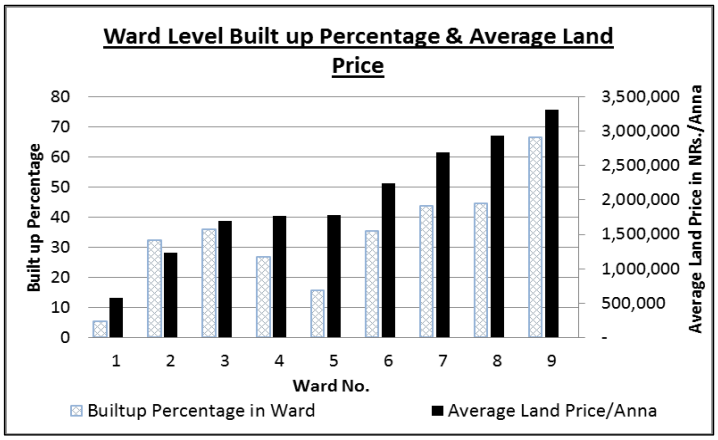

Chart 13: Ward Level Built Up Percentage & Average Land Price

6.2.1.3. Transport Infrastructures

Ward no. 1 has higher road density per 1000 population than per sq. km. of area. But it is contrasting in rest of all wards. The difference between road densities increases as we move southwards of municipality. There is abrupt rise in road density per Sq. Km. area between ward 5 and 6. Road density per 1000 population seems to be more strongly related with Average Land Price than Road density per Sq. Km. of area. There is strong but negative relationship between average land price and roaddensity per

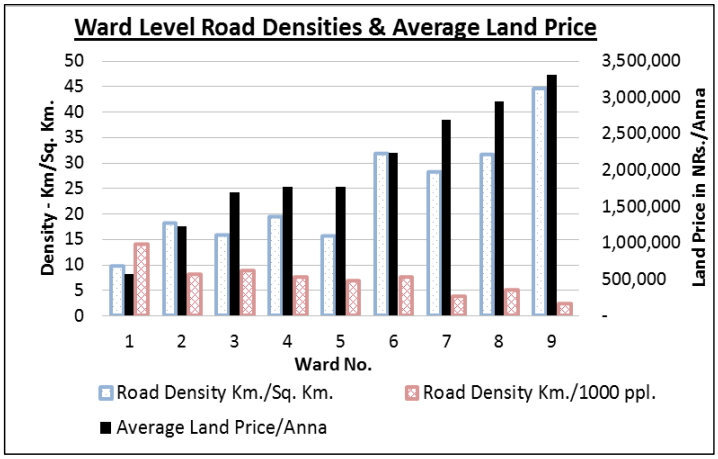

Chart 14: Ward level Road Densities & Average Land Price

Table 5: Road Width & Average Land Price

Overall Municipality	
Road Width	Average Land Price Per anna
<=10'	3,010,000
11'- 13'	2,390,000
14'-20'	2,280,000
>20'	4,000,000

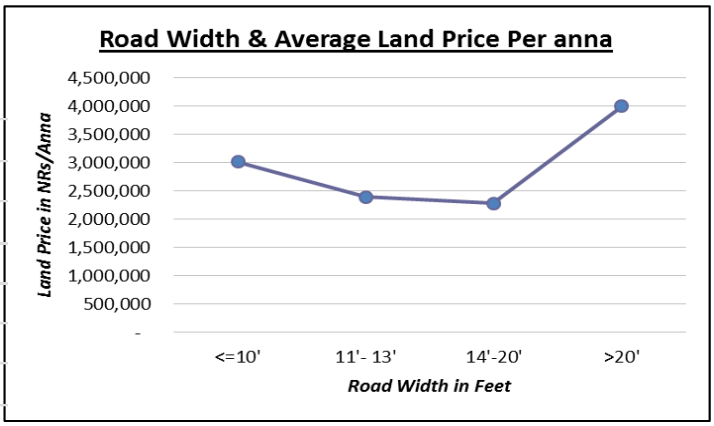

Chart 15: Road Width & Average Land Price per Anna

1000 population. At municipality level, there is weak relationship between road width and average land price per anna. Road width is not the most determining factor of land price in municipality level.

6.2.2. Micro Level Analysis of Indicators

For Micro Analysis of Indicators, ward no.8 of Kageshwori Manohara Municipality is chosen. Land Price in ward no.8 is comparably higher. The effects of land price is noticeable in urban form and land use of the ward. The land cover/land use of ward no. 8 is dominated by built ups/ Residential Land Use. 38% of total land cover is occupied by Residential built ups. Agriculture land is being converted into built ups. Built ups are developed in haphazard fashion which is contributing sprawl. The percentage of

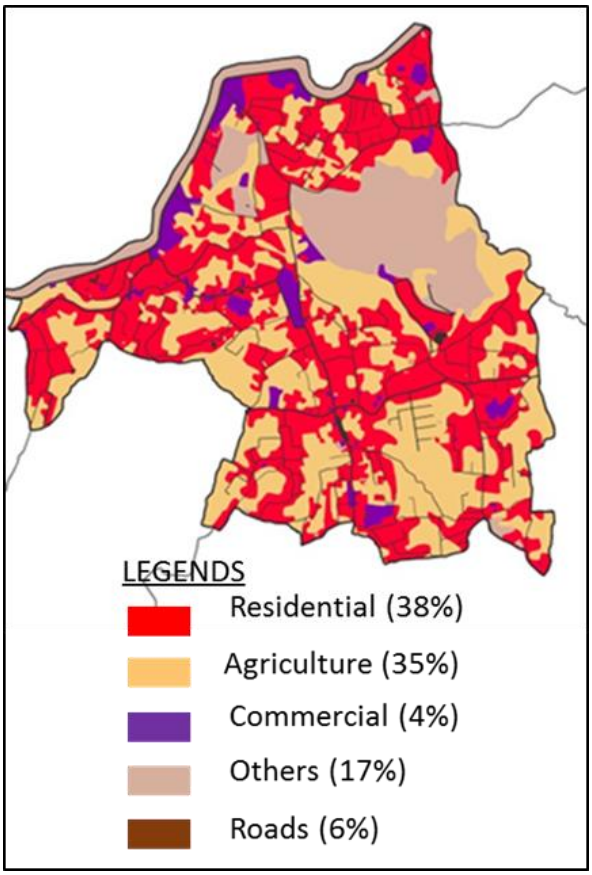

Figure 9: Land cover map of ward no.8

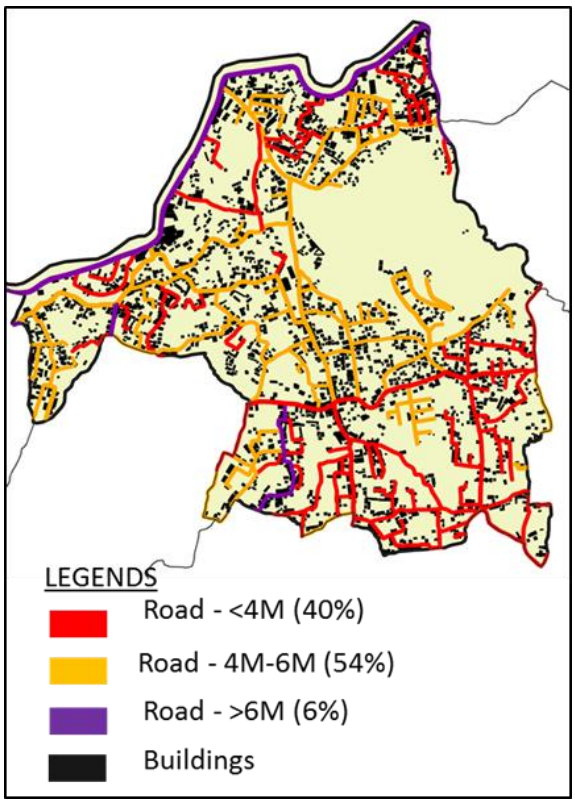

Figure 10: Road Network & Settlement Pattern of ward no.8

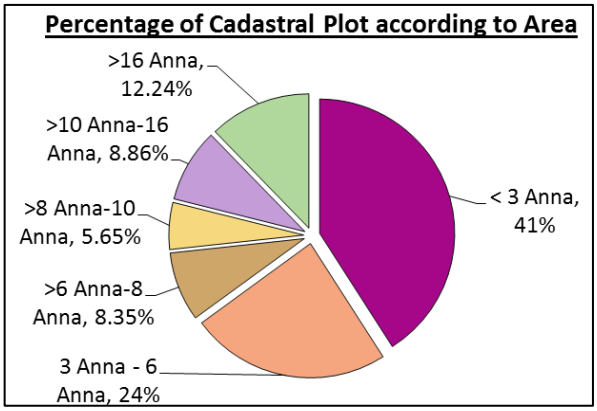

Chart 16: Percentage of Cadastral plots by area in ward no. 8

Source (Figure 9-10, Chart 16): GIS Shape files, Preparation of Urban Base Map and Municipal GIS of Kageshwori Manohara Municipality, Implementing Agency: Kagshwori Manohara Municipality, Office of Municipal Executive, Daanchi, Kathmandu

Table 6: Road Width & Average Land Price of Ward no.8

Ward No. 8	
Road Width	Average Land Price Per anna
<=10'	2,700,000
11'- 13'	2,780,000
14'-20'	3,525,000
>20'	4,395,000

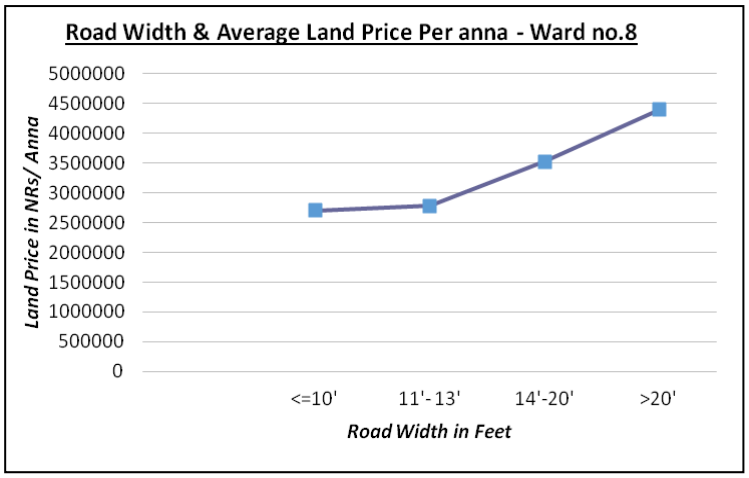

Chart 17: Relation between average land price and road width in Ward no.8

designated open space is less than 1 percentage of total ward area. Commercial areas are developed along major roads. Land especially agriculture land is fragmented into small plots for residential purposes. 41% of total cadastral plots are less than 3 anna or 95 sqm (1026.75 Sft.). 82% of total buildings are less than 2.5 storey suggesting low density development. Net building density is 3185 buildings per sq. km area of Residential land. Settlement pattern is organic without centralized planning. Road networks are unregulated with high numbers of cul de sacs. 40% of total road is below 4 meters width.

One of major factors behind higher land price of ward in the municipality is it's locational attribute as it is nearer to KMC. Road width is another determining factor of land price in the ward. Generally, wider roads in the ward are newly widened, blacktopped and are in good condition. Land prices of plots connected with wider roads are typically higher. Locational attributes and Infrastructural (road) attributes are the major determinants of land price in the ward.

6.3. Analysis of HH Questionnaire Survey

160 samples were collected from Ward no 9,8,7,6 and 5 of study area using random stratified sampling. There was voluntary participation of interested home owners.

The analyses of HH survey result are described below:

6.3.1. Family Details

As per the data obtained from survey, the average household size is calculated to be 4.45. This shows most of family structure is nuclear or extended nuclear. There is probability of increment in household size in future and demand for more living space.

66% of respondents have government and private jobs which is indication that people from medium income group reside in the area.

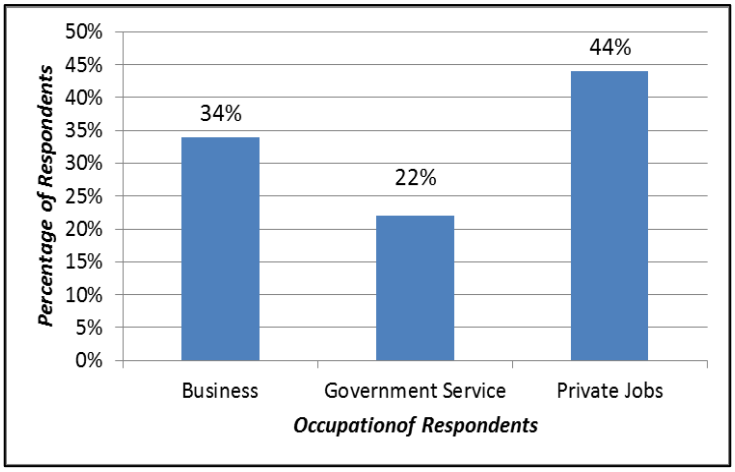

Chart 18: Percentage of Respondents in different occupations

Similarly 84% of respondents owned their own vehicle. This is because the Municipality is still the peri urban area for the urban core of Kathmandu. There is movement towards the urban core for various purposes like employment purpose, educational purpose etc. As the public transportation service is not reliable; people own their own vehicle.

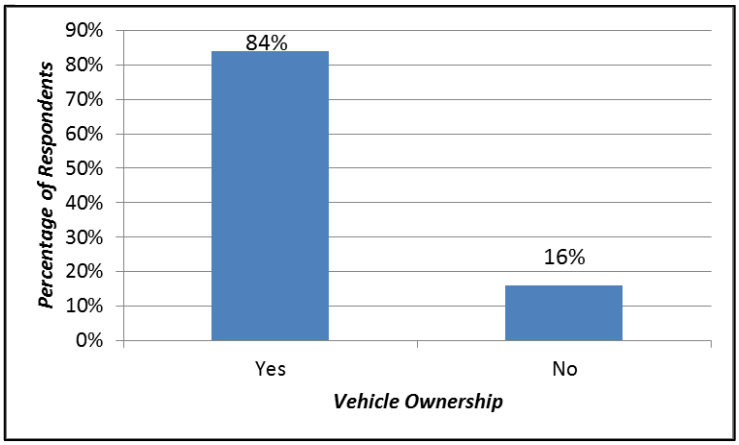

Chart 19: Vehicle Ownership status of Respondents

6.3.2. Land Details

In the survey, it is found that there is huge gap in land plot size between indigenous and migrated population. Among the 160 respondents, 40% were indigenous (local) people and 60% migrated from somewhere else. The average plot size of local people is 2716.63 sft. or 252.38 sqm. (0-7-3-3) while average plot size of migrated respondents is 1197.87 sft.or 111.28 sqm. (0-3-2-0). This result confirms to say of one of key informant that ownership status is also one of influencing factor for land price hike.

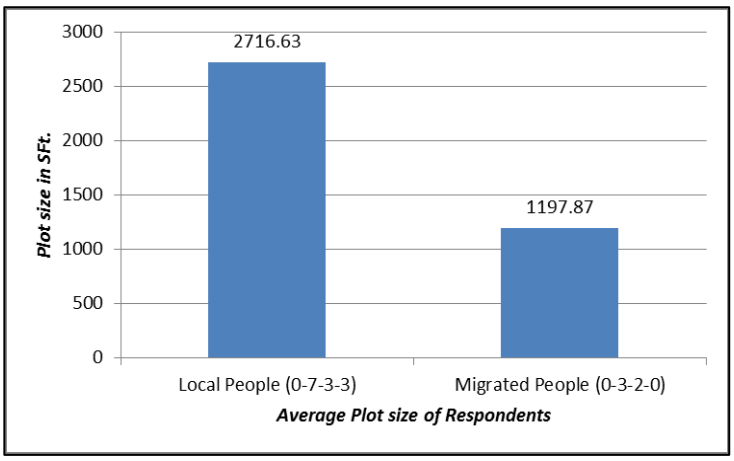

Chart 20: Average Plot size of Local & Migrated Respondents

The relationship between road accessibility and land price was tried to establish. Not much Land Price difference was found in plots with roads below 20 feet road width. Price of plots with roads above 20 feet width was much higher which is due to better accessibility condition and commercial potential added to it.

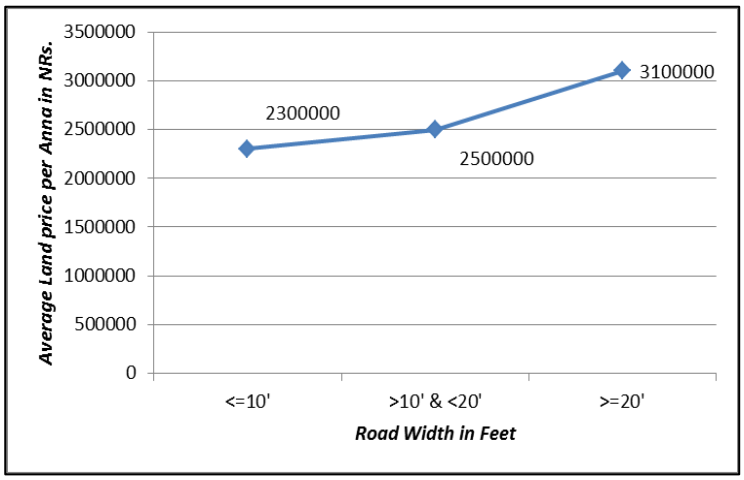

Chart 21: Relationship between Road Width & Average Land Prices

6.3.3. Building Details

The average plinth area of building is 898.8 sft. 65% of total buildings are equal to or below 2.5 Storey. 64% of respondents answered that they had rented out the space of their house. 81.25 % of rented space is rented out for residential purpose.

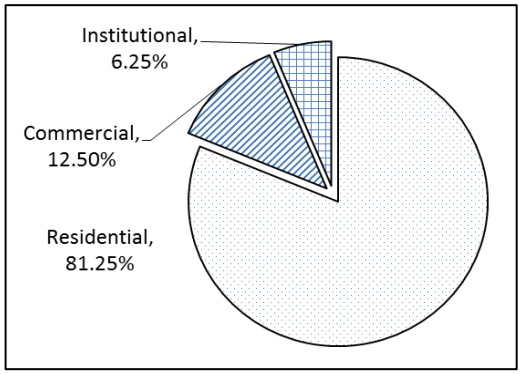

Chart 22: Purpose of Rental Spaces

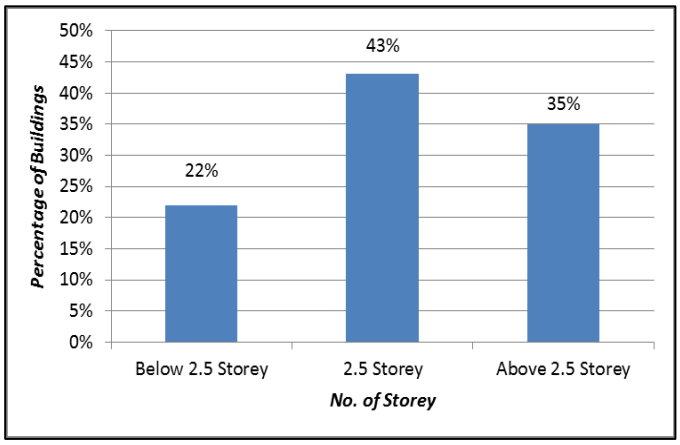

Chart 23: Percentage of building on the basis of Storey

6.3.4. Finances

60% of respondents sold their inherited property elsewhere or taken loans to afford land and house here in the municipality. Savings of only 40% of respondents suffice the cost of land and housing here. This trend not only has planning implication but also

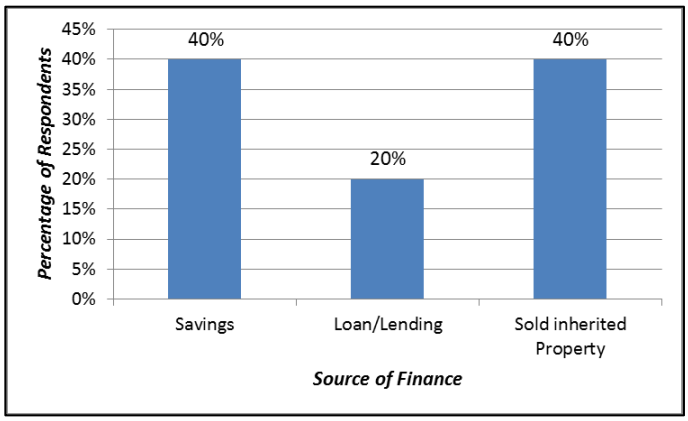

Chart 24: Financing source of Respondents

social and economic implications.

6.3.5. Perception Survey

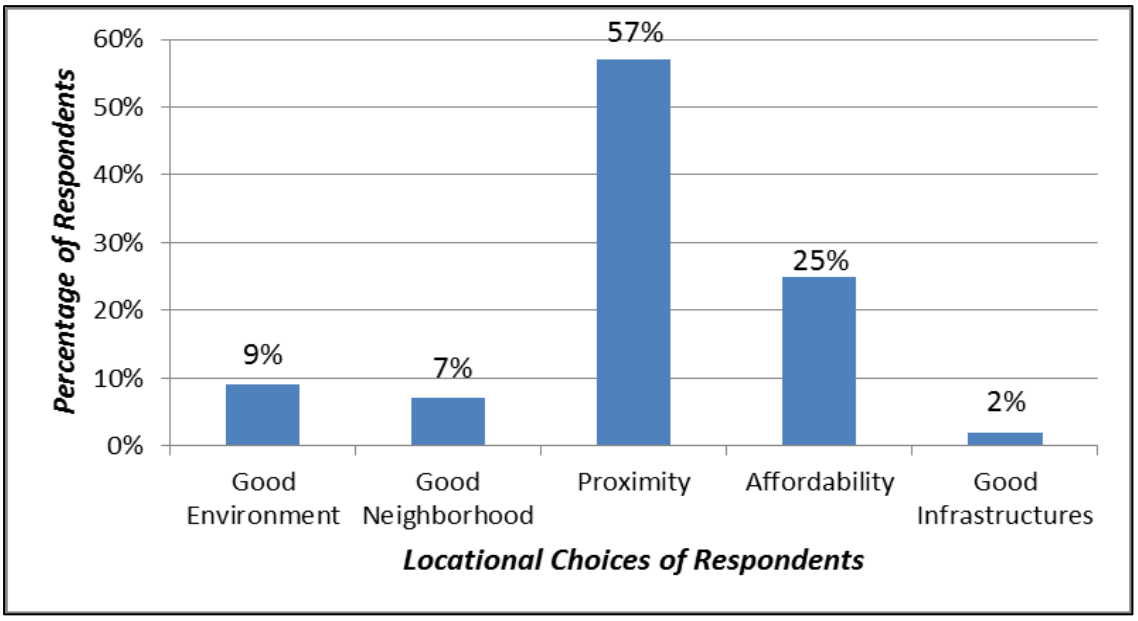

Chart 25: Locational Choices of Respondents

In the perception survey, when asked to respondents why they chose particular locality, they answered different reasons. 57% of Respondents said that proximity to main road, their workplace, marketplace, hospital, schools etc. and easy road accessibility as the main reason behind their choice of the land plot. Similarly, 25% of respondents accepted that just because the plot was affordable than other plots, they decided to buy it. Similarly, Good natural environment, Good neighborhood and Good infrastructures were among the reasons of the particular location choices of respondents.

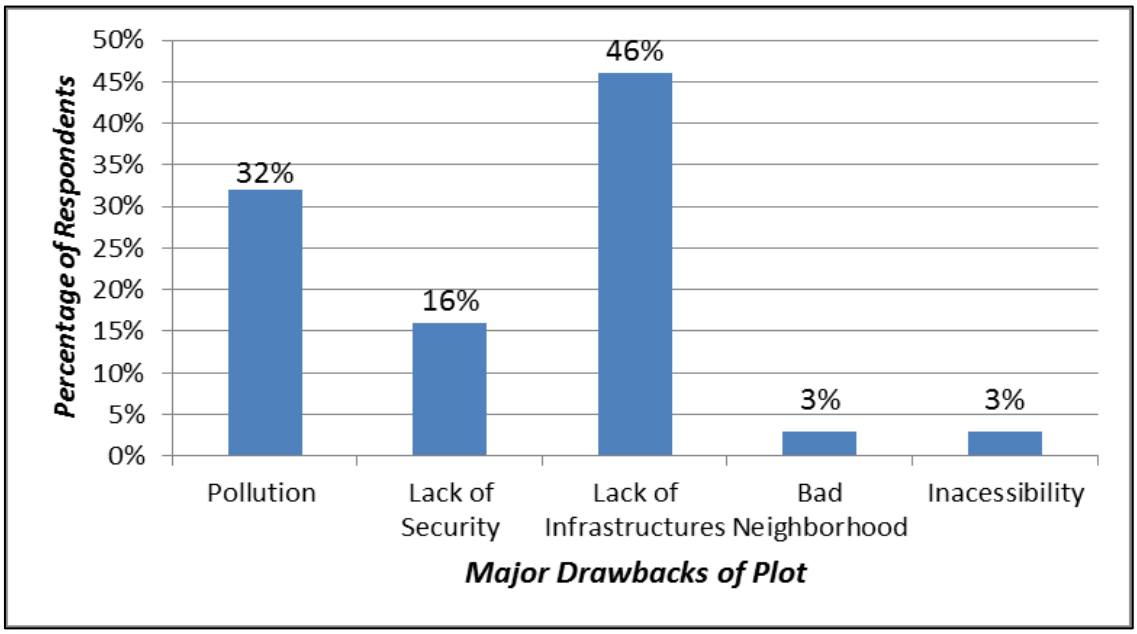

Chart 26: Major Drawbacks of Plots

Also when asked about the negative aspect of the locality, 46% of respondents pointed out lack of infrastructures which includes lack of Sewerage, drainage, drinking water, and wide and blacktopped roads. 32% of respondents answered pollution (air and noise) as the major drawback of the area. Other shortcomings include lack of security and bad neighborhood as well. Inaccessibility is also pointed out as the drawback as facilities like good schools and hospitals are not easily accessible from the plots of 3% of respondents.

When the respondents were asked about their view on the current land market trend, almost all the respondents acknowledged that the land price in Kageshwori Manohara Municipality is higher than it should be. Such abnormal land price has multi-faceted implications. Government should approach to control the price. They answered different causes for land price hike:

- Road accessibility and proximity to city core
- Excessive in migration
- Inflation
- No registered real estate agencies and broker culture in land transaction
- Land tax rates

7. CHAPTER 7: DISCUSSION

There is great variation of ward level population density in municipality as density varies from 690.84 Ppl/Sq. Km. (Ward no.1) to 19,535.62 Ppl/ Sq. Km. (Ward no.9). Population density of Ward no.9 is strikingly higher than other wards. Population density of ward no.9 is comparable to Kathmandu Metropolitan City whose average population density is 20,287 Ppl/ Sq. Km. Above 50% population share of ward no 5, 6, 7, 8, & 9 is of in migrants. 60% Respondents chosen in random stratified sampling for HH questionnaire survey were migrants. This high percentage of in-migrants may have its own social and economic implications. From planning perspective internal migration is one of the significant phenomena that contribute to high level of urban growth and urbanization. One of key informants has pointed out excessive in migration after earthquake of 2015 A.D. as one of major causes for land price hike in the area. At early stage of urbanization, internal migration contributes more to urban population growth than natural increase. But high rate of internal migration in absence of sufficient planning creates problems such as squatter settlements, slum areas, traffic congestions, urban poor, urban sprawl, etc. However, migration has certainly not yet become the central focus of planning strategies.

In conjunction with in migration, high percentage of rental household is seen in ward no. 5, 7, 8 and 9. 64% Respondents in HH Questionnaire survey had rented out their spaces and 81.25% of total number of rental spaces is for residential purpose. The high percentage of rental HH in ward no.5 can be attributed to Gokarana Forest resort located in the ward which is one of generator of employment. Due to locational attributes of ward no.7, 8, and 9, rental HH is high in those wards. These three wards are near from KMC, which is urban center of Kathmandu Valley by default. People tend to choose location here as it is near from urban center and at the same time land price in these wards are high decreasing affordability for many HHs.

Dominance of Residential land use is another planning implication of high land price. Percentage of built up is higher in wards with high average land price per anna. Built ups are subjugated by Residential uses. Those wards especially ward no 9, 8, and 7 are more accessible than other wards. 57% Respondents of HH Questionnaire survey attributed their locational choice as Proximity. They chose the land plot because it was near to their workplace, near to main road, near to schools of children, near to major hospital etc.

Distance from city center or proximity is one of functions of Willingness to pay (WTP) of consumers/buyers. When WTP is higher, the land use of area is dominated by residential land use. In absence of government's ownership and intervention on land and land market, other land use will not be feasible. Also, Municipality is facing problem to designate large open spaces due to land ownership.

Haphazard Settlement pattern of Kageshwori Manohara Municipality has created organic urban form. There is lack of continuity in settlement expansion in the municipality. The micro analysis of ward no.8 is the representation of urban form that is being developed in the municipality. Heimlich & Anderson, (2001) has stated that the sprawling residential development tends to blur the division between urban and rural domain. The edge between urban and rural areas becomes undefined as open spaces and agriculture land gets encroached by settlements. The leapfrog or dispersed development pattern has resulted in many pocket spaces trapped between the built ups. These pocket areas are in some extent results of land speculation. This discontinuous pattern of development increases northwards of the Municipality. Discontinuous development has been explained by economists as the result of market forces. Ewing (1994), explains, "Expectations of land appreciation on the urban fringe cause some landowners to withhold land from the market. Expectations vary, however, from landowner to landowner, as does the suitability of land for development. The result is a discontinuous pattern of development. The higher the rate of growth of a metropolitan area, the greater the expectation of land appreciation, and the more land will be held for future development."

The evolving urban form is increasing private vehicle dependency and longer commuting distances. 84% Respondents of HH questionnaire survey own private vehicle which indicates the same. Such a development pattern results more traffic congestion and air pollution. One of key informant has pointed out the increasing traffic congestion problems in the municipality. It also substantially increases the per-user costs of providing public services such as water supply, sanitation and road.

The low density urban growth was observed by Diksha & Amit Kumar (2017), with increase in land consumption pattern in Kathmandu District. Density of residential development on land that is developed varies directly with land values. The gross density of residential buildings varies vastly across municipality. Ward no 9 has highest number of building per square kilometer of ward area. Lack of serviced plots is common urban problem of Nepal.

46% Respondents from HH Questionnaire survey had pointed out Lack of infrastructural facilities such as drainage, water supply etc. as the major drawback of their land plot. Shapes of plots are irregular and plots are fragmented into minimum possible size for residential uses. The average plot size of respondents who migrated from other places to the municipality was 1197.87 sft.or 111.28 sqm. (0-3-2-0). Colwell and Sirmans, (1980) has explained the economics of land division that the land assembly and subdivision will proceed until price differentials across plot size no longer offer supernormal profit from assembly and subdivision.

Ward no.9 has highest percentage of cadastral plots below 3 anna and buildings above 2.5 storey. Likewise ward no. 8 and 7 have high percentage of cadastral plots below 3 anna area suggesting land fragmentation. Due to land price, people can afford in average 3 to 3.5 anna of land which is affecting regulation of building setbacks and R.O.W. Micro analysis of ward no.8 shows the Prevalence of low height buildings relating to low density development. Ironically, the faster growing cities, while having more sprawl, will actually be denser in those areas that are actually developed. More land will be withheld from development, land values will be higher, and the densities in developed areas will be higher. More will be done on less land, at higher prices, as the owners wait for still higher expected returns from future development. Consecutively, land fragmentation will increase in surrounding region of developed area due to price hike fueled by speculation. One of key informant has indicated that commercial activities are growing in ward no 9. In Kageshwori Manohara Municipality, Ward no.9 is developing as urban sub center and its peripheral effect is seen most in ward no. 8 and 7.

Road transportation is most crucial for socio-economic development of the municipality in Nepal. Transport infrastructure expansion strongly co relates with population growth, spatial temporal expansion and land use change (Aljoulfie et al., 2011). Road Networks are “skeleton” of urban social development and important driving factor for urban land expansion. (Zhao, et al., 2017). The road network density distribution reflects the basic trends of urbanization. High road density in urban areas tends to have overloaded transport system, land scarcity and high air and noise pollution. Road kilometers per 1000 population reveals road infrastructure accessibility situation. More roads per inhabitants lead to lower congestion level and vice versa. Wards having high kilometers of road per square kilometers of ward area have highest percentage of built up in ward land cover. These are ward no. 9, 8, 7 and 6. It can be clearly seen that population increment in those wards caused increment in built up

area which in turn induced road network development. These wards also have highest population density amongst the wards of Kageshwori Manohara Municipality. This can explain less road kilometer per 1000 population in these wards. Population growth increases travel demand and if the transport infrastructure cannot sufficiently respond to the travel demand, traffic congestion is inevitable.

Road Network of sprawl land use pattern is characterized by hierarchical road network with many unconnected roads and walkways, and barriers to non-motorized travel. Road network of municipality is highly unregulated with severe lack of interconnectivity. It is extremely difficult to link feeder road with main roads because of cul de sacs. Maintaining road alignment and road width is very challenging. Major percentage of road is below 4m of width which cannot address trip generation. The major challenge for the development of road is to make them more operational. MTMP is not being implemented effectively due to issues related with road widening. As land prices are very high, maintain R.O.W of road is nearly impossible. Due to settlement pattern and road network, other infrastructures such as sewerage and water supply have high development costs.

The dominant factor that determines the price of land is the locational attribute of plot. Land price is high in wards that are more accessible and near to urban center. High in migration rate is another determinant of land price. Excessive demand that stems from high in migration causes both scarcity and speculation. Unregulated informal land market and broker culture only supports to speculation and price escalation. Another determinant is road width or road accessibility condition. In ward level, Road width is not strong determinant of land price as infrastructural attribute of plot gets overshadowed by locational attribute. But within a single ward where locational attributes of sales plots are almost similar, road width is significant determinant of land price as wider roads provide better accessibility situation and even prospects for commercial development. The results from HH Questionnaire survey also points towards the same. There is not much variation in Land price of plots connected to roads below 20 feet width. Price of plots connected to road above 20 feet width are comparably higher.

8. CHAPTER 8: CONCLUSION

Owing to the first objective, neighborhood, locational and infrastructural attributes associated with the land/plot was taken into consideration as determinants of land price Neighborhood attribute of the plot is stirring determinant of land price. Here in the case of Kageshwori Manohara Municipality, in migration enticed by neighborhood factor acted as jumpstart for land price escalation.

Locational attribute of the plot is the major determinant of land price. Proximity of plot from urban center is major locational attribute that affects/determines land price in the area. As most of of travel pattern is towards the urban core, proximity of plot has defining role to play in land price. In the municipality, plots in the wards nearer to KMC are unreasonably high. Plots in the wards farther from KMC are cheaper in price.

Road width was selected as determinants of land price to analyze the effects of infrastructural attributes of plot. Road width has variable influence upon the price in different analysis levels. The effects of road width on land price are perceptible only when locational attributes of different plots are same and commercial prospects are added to it. For example, only within the same ward (Micro analysis of ward 8), land price varied along with road width. Similarly, road width above 20 feet has comparably high commercial prospects. Neighborhood, Infrastructural and locational attributes of a plot are determinants of land price but the extent to which they affect the land price are dissimilar.

The second objective of this research is to study the impact of land price on the elements of urban form. Urban form is basically physical characteristics of any urban area. Elements of urban form depend upon the scale of urban area taken into consideration. Land price has impacted elements of urban form in different scales; from Land use to settlement pattern to Street network to individual plot.

At land use level, land price is rapidly changing the land of use of the municipality. Agriculture land cover is being converted into built ups. Built ups of municipality is dominated by residential land use only. For smart growth of urban areas, mix of land use is necessary but other land uses are hardly feasible due to high land price.

Settlements in the municipality are growing organically without centralized planning. Municipality is facing discontinuous scattered development. Agriculture land are being

trapped within the surrounding built ups. Such a pattern of settlement expansion is blurring the edge between what is urban and what is rural. This kind of settlement pattern significantly increases the cost of infrastructure per plot. Designated open spaces are very few and are very small in size. It is really worrying issue from disaster point of view. Open spaces also have positive impacts upon the quality of life as they help improve physical and mental health.

Roads are narrow and meandering and road network interconnectivity is really poor as most of roads are developed privately just to sell the land. In many places slope of sewerage/drainage and road is not properly laid. It is causing longer commuting hour, traffic jams and accidents. Sewerage get clogged time and again. In rainy season, drains get overflowed. Agriculture field are being fragmented to smallest possible size into residential plots without basic infrastructures. It is really hard to build house abiding bye laws including Setback, GCR etc. The percentage of buildings below 3 storey height further conforms to high density low rise development happening in municipality.

From the perspective of urban planning, land price has impacts on urban form via land use, settlement pattern, efficient infrastructural services, plot size and building density.

Regarding the third objective of this research, the effective management of urban growth is essential to promoting compact, well planned city forms. There must be major reforms in bye laws and land use controls should be devised. Effective and innovative Land development tools based on participatory approach is necessary for beforehand land management in areas susceptible to sprawl. Depending upon the nature and level of development, urban growth can be controlled through infill development, land use intensification and urban consolidation. The resultant densification will help to create mixed land uses, decrease commuting hour and vehicle dependency, lessen the infrastructure cost per unit plot and reduce growing urban sprawl in other wards. If urban sprawl towards northern ward can be controlled, ample agriculture land can be protected and urban agriculture can be introduced. Government must intervene in land market through rules, regulation and policies to control the sky rocketing land price and channel the urban growth in desired path.

9. CHAPTER 9: RECOMMENDATION

- The main strategy of local and provincial government should be control of sprawl. First of all, land use zoning of municipality needs to be done.

- Agriculture areas need to be protected by introducing and subsidizing urban agriculture. This can be done to protect ample agriculture areas of Ward no. 1, 2, 3 and 4. Local as well as provincial government should encourage urban agriculture and manage market for the production.

- Urban consolidation and Land use Intensification is necessary for areas that are already engulfed by urban sprawl. This can be done in ward no. 9, 8, and 7. For this Government should carryout necessary strategies and policies for infill development. FAR could be increased on the basis of development intensity.

- As road widening is major challenges for implementation of MTMP, innovative approaches such as density bonuses can be applied.

- Concerned authorities should focus on increasing mix use development to reduce dominance of residential land use in wards with high percentage of built ups. As low density sprawl is inevitable in areas dominated by residential land use, other compatible land use should be encouraged.

- For proper planning of areas with immediate risk of sprawl like ward no. 6, 5 and 4, participatory and innovative land development program must be initiated.

9.1. Further Research

Due to limited scope and time, various other impacts upon urban form couldn't be addressed which has potential of separate research. For further research,

- The role of Land Use Policies & Land Development Tools in Shaping Urban Form

10. REFERENCES

Adedamola, Q. O. (2018). LAND SPECULATION AS INHIBITOR OF THE BUILT ENVIRONMENT. 10.13140/RG.2.2.12698.34247.

Aljoufie, M., et al. (2011). Urban Growth and Transport: Understanding the Spatial Temporal Relationship.

Archer, R.W. (1973). Land Speculation and Scattered Development; Failures in Urban Fringe Land Market.

Bakrania, S. (2015). Urbanization and Urban Growth in Nepal, GSDRC.

Bhandari, J. (2015). Land Readjustment for Affordable Housing Supply: A Critical Assessment, Thesis no. 072/MSU/ 209, Department of Architecture and Planning, IoE, Lalitpur, Nepal.

Bowen, G. A. (2009). Document analysis as a qualitative research method. Qualitative Research Journal, 9(2), 27-40. doi:10.3316/QRJ0902027.

Brigham, E.F. (1965). The Determinants of Residential Land Values. Land Economics, 41(4), 325-334. doi:10.2307/3144665.

Cohen. L., Manion, L. & Morrison, K. (2007). Research Methods in Education. London, Routledge.

Cooper, C. R., & Schindler, P. S. (2008). Business research methods (10 ed.). Boston: McGraw-Hill.

Dempsey, N., et al. (2009). Elements of Urban Form. 10.1007/978-1-4020-8647-2_2.

Diksha & Amit K. (2017). Analyzing urban sprawl and land consumption patterns in Major Capital Cities in the Himalayan Region using Geoinformatics. Centre for Land Resource Management, Central University of Jharkhand, Ranchi-835205, India.

Dowall, D. (1991). The Land Market Assessment: A New Tool for Research and Policy Analysis, Working Paper 534, UC Berkeley.

Emur, S.H. & Yildiz S.G.M. (2018). Land Speculation and Urban Rent in Turkey. ISSN:1304-0278.

Ewing, R. (2004). Characteristics, causes and effects of sprawl: a literature review. Environmental and urban issues 21(2).

Gwamna, E.S., Yusoff, W.Z.W, & Ismail, M.F. (2015). Determinants of Land Use and Property Value. Advanced Science Letters. 21. 1150-1153. 10.1166/asl.2015.6065.

Gyawali, S. (2007). Impacts of Land Speculation (A case of Private Housing Development – Sunrise Homes), Department of Architecture and Planning, IoE, Lalitpur, Nepal.

Heimlich, R. E., & Anderson, W. D. (2001). Developing the urban fringe and beyond: impacts on agriculture and rural land. Report Number 803. (USDA Economic Research Service: Washington, DC, 2001).

Henry, G. T. (1990). Pracfhl sampling. Newbury Park, CA: Sage.

Ishtiaque, A., et al. (2017). Rapid Urban Growth in the Kathmandu Valley, Nepal: Monitoring Land Use Land Cover Dynamics of a Himalayan City with Landsat Imageries.

Joshua, P.B., Glanda, G.G., & Ilesanmi, F.A. (2016). The Effects of Land Speculation on Urban Planning and Development in Bajabure Area, Girei Local Government,Adamawa State. Journal of Environment and Earth Science. ISSN 2224-3216 (Paper) ISSN 2225-0948 (Online). Vol.6, No. 4, 2016.

Kankariya, C.S., & Bhangale, P.P. (2015). Transfer of Development Rights: An Effective Tool for Sustainable Urban Development. IJLTEMAS, Volume IV, Issue VII, July 2015. ISSN 2278-2540.

Kerlinger, F. (1986). Foundations of behavioral research (3rd ed.). New York: Rinehart and Winston.

Mackenzie, N., & Knipe, S. (2006). Research dilemmas: Paradigms, methods and methodology. Issues in Educational Research, 16(2), 1–11.

Malla, U.B. (2019). Local Governments: In need of Town Planning Act. The Hinalayan Times. Published April 1, 2019.

Manna, A. (2015). The role of land management techniques in defining urban growth in India –From conflict to inclusiveness.

Mathema, A. S. (1999). Housing and Land Markets in Kathmandu, Nepal, Massachusetts Institute of Technology, Cambridge, MA, Department of urban studies and Planning.

Mathers. N., Fox. N. & Hunn. A. (2009). Surveys and Questionnaire. The NIHR Research Design service for Yorkshire and the Humber.

Mattingly, M. (1995). Urban Management in Less Developed Countries. Working paper no.72.

Mittal, J., et al. (2019). Creating higher density property development opportunities in fringe areas of Surat, India. A case study of Surat outer ring road using land readjustments and density bonuses. Retrieved March 16, 2020, from https://www.researchgate.net/project/Creating-Higher-Density-Property-Development-Opportunities-in-Fringe-Areas-of-Surat-A-Case-of-Surat-Outer-Ring-Road-using-Land Readjustment-and-Density-Bonuses

Parveen, H. & Showkat, N. (2017). Research ethics. Retrieved from: https://www.researchgate.net/profile/Nayeem_Showkat/publication/318912804_Research_Ethics/links/5984c72daca27266ad9a26ca/Research-Ethics.pdf

Pham, L.T.M. (2018). Qualitative Approach to Research A review of advantages and disadvantages of three paradigms: positivism, interpretivism and critical inquiry. The University of Adelaide.

Pollard, H. (1980). Land Speculation and Ecology. A first paper presented to the annual meeting, Pacific division of the American Association for the Advancement of Science at Davis, California.

Ranjitkar, Y. (2017). Land Value in Kathmandu Valley: A case study of Bhaisepati, Thesis no. 072/MSU/219, Department of Architecture and Planning, IoE, Lalitpur, Nepal.

Rasheed, S., & Parambath, S.G. (2014). Urban Land Management and Planning – Indian Context. International Journal of Scientific & Engineering Research, Volume 5, Issue 7, July-2014. ISSN 2229-5518.

Robinson, M., et al. (2006). Affordability of Housing: Concepts, Measurement and Evidence.

Sani, N.M. (2015). Price to Income Ratio Approach in Housing Affordability. Journal of Economics, Business and Management, Vol. 3, No. 12.

Serra, M.V., et al. (2015). Urban Land Markets and Urban Land Development:An examination of three Brazilian cities: Brasilia, Curitiba & Recife.

Tideman, T.N. (1990). Land Taxation and Efficient Land Speculation. Retrieved January 16, 2020, from http://www.wealthandwant.com/docs/Tideman_LTaELS.html

Trochim, W.M.K. (2006). Research methods knowledge base (2nd ed.). Retrieved December 26, 2019, from http://www.socialresearchmethods.net/kb/

Verheye, W. Value and Price of Land. Retrieved: January 6, 2020, from https://www.eolss.net/Sample-Chapters/C19/E1-05-03-03.pdf

Yang, J., et al. (2018). How to Measure Urban Land Use Intensity? A Perspective of Multi-Objective Decision in Wuhan Urban Agglomeration, China.

Zhao, G., et al. (2017). Spatial and Temporal Characteristics of Road Networks and Urban Expansion.

Zikmund, W. (2003). Business research methods. Singapore: Thomson Learning.

Land use Policy (2015). Nepal Government, Ministry of Land Reform and Management (MoLRM).

My Republica Publication. (May 9, 2019). Adapted February 29, 2020, from https://myrepublica.nagariknetwork.com/news/municipalities-demand-scrapping-of-kvda/

National Population Report. (2017). Nepal Government, Ministry of Population and Environment, Singhadurbar, Kathmandu.

National Urban Development Strategy (NUDS). (2017). Part A – Main Document. Nepal Government, Ministry of Urban Development, Urban Development and Physical Planning Division.

Nepal urban housing sector profile. (2010). UN HABITAT.

Overview of Land Value Conditions, Food and Agriculture Organization of the United Nations. (2003).

Report on Real Estate Financing in Nepal, Nepal Rastra Bank, Economic Analysis Division. (2011).

11. ANNEX

ANNEX 1: LAND PRICES PER ANNA FROM INFORAL SOURCES

ANNEX 2: SAMPLE OF QUESTIONNAIRE SURVEY

ANNEX 3: FINAL PRESENTATION COMMENTS

ANNEX 4: PROGRAM SCHEDULE – 8TH IOE GRADUATE CONFERENCE

ANNEX 5: PRESENTATION SLIDES FROM 8TH IOE GRADUATE CONFERENCE

ANNEX 6: ARTICLE SUBMITTED FOR PUBLICATION IN 8TH IOE GRADUATE CONFERENCE

ANNEX 1: Land prices per Anna from Informal Sources

Informants	Price per Anna								
	Ward 1	Ward 2	Ward 3	Ward 4	Ward 5	Ward 6	Ward 7	Ward 8	Ward 9
Source 1							2,500,000	2,500,000	4,000,000
Source2					2,000,000	2,000,000	2,500,000	2,500,000	4,500,000
Source 3								2,500,000	4,500,000
Source 4									5,000,000
Source 5	500,000	1,200,000	1,500,000	1,800,000	1,800,000	2,000,000	2,000,000	2,000,000	3,500,000
Source 6								2,000,000	4,000,000
Source 7	800,000	1,200,000	1,500,000						
Source 8			1,500,000	2,000,000					
Source 9		1,000,000	1,200,000	1,500,000					
Source 10		1,400,000							
Source 11					1,800,000	2,200,000			

Annex 2: Perception Survey Questionnaire For Respondents

Form no:-

A. FAMILY DETAILS

1. Ward no.:- …….
2. Household size: - …….
3. What are occupations of family members?
   a. Government Service b. Private Jobs c. Business d. Others, Specify……..
4. What is your place of origin?
   a. Indigenous b. Migrated
5. Do you own vehicle?
   a. yes b. No c. If yes, Specify……

B. LAND DETAILS

1. Kitta no. of Plot: - ……
2. Area of plot: - ……(R-A-P-D)
3. Year of Purchase: - ……..
4. Road width: - …….
5. R.O.W of Road: - ……..
6. Tentative Rate per Anna at the time of purchase: - …….
7. Tentative market Rate per Anna now in the neighbourhood: - …….
8. Characteristics of land : - Orientation……. Slope……..

C. BUILDING DETAILS

1. Plinth area of house:-…….
2. No. of storey: - ……
3. Total floor area: -……..
4. Year of completion: - ……..
5. Finishing grade of house:- *modern house, medium quality finishing material.*(to be filled by interviewer)
6. Is the house rented?

a. yes b. no If yes, specify no. of rooms, flat or floor area ……

7. What is the purpose of rent?

a. Residential b. commercial c. institutional d. specify…….

D. FINANCES

1. How did you manage finances to buy this land/build the house?
    1. Sold inherited property or land somewhere else
    2. Savings/ Earnings
    3. Lending from friends and relatives
    4. Loan from bank and financial institutions, sanchayakosh, nagarik lagani kosh
2. Tentative income from rent: - ……

E. PERCEPTION SURVEY

1. Why did you choose the particular plot of land?

- Location (Proximity from market, workplace, schools, hospitals, main roads): -

  ……

  ……
- Finances (Price of plot, opportunity of renting the space):-

  ……

  ……
- Infrastructural services (Road, drinking water etc.):-

  ……

  ……
- Environment (Neighbourhood, Security, Pollution etc.): -

  ……

  ……

2. What are drawbacks of this location?

……

……

3. What is your view on trend of land price change in last few years?

……

……

……

Annex-3: Final Presentation Comments

S.N.	Professors	Comments	Addressed Comments (Pg. No.)
1.	Mr. Suresh Prakash Acharya (External Examiner)	Conclusion of thesis needs to be in par with the objectives	*Conclusion* section in the report has been revised to address the objectives of study (Pg. 84-85)
2.	Dr. Bharat Sharma (External Examiner)	Has impact of land price on vertical dimension urban form been studied?	The land price is one of contributor to high density low rise development in wards that have relatively higher land prices. It has been mentioned in the *conclusion* (Pg. 85)
3.	Dr. Sanjaya Uprety	a. Valid source of Knowledge in Epistemology and calculation for sample size b. The title "Exorbitant Price" may not be suitable as land price may go down after this Covid situation	a. Valid Information sources to fulfil the objectives and details about Sample size calculation has been described in *Methodology* of the report (Pg. 7-10) b. From the study of past trend, the thesis is based on predisposition that land prices in Kathmandu have remained "Exorbitant". If in future the land price goes down significantly, it will pave the way for further research
4.	Dr. Kirti Kusum Joshi	a. The terminology "co related" shouldn't be used to describe the graph in Macro Analysis b. There are various impacts upon the urban form which didn't come up in the study.	a. The terminology has been changed to "strongly related" (Pg. 72) b. Only the impact upon Population Attributes, Land use configuration, Housing characteristics and Transportation Infrastructure have been studied and it is mentioned in Scope & Limitations of research (Pg. 6)