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**DEPARTMENT OF ARCHITECTURE AND
URBAN PLANNING
M.SC. PROGRAM IN URBAN PLANNING**

THESIS NO: 066/MSU/F/204

**COMPARATIVE STUDY OF LAND POOLING AREAS IN GONGABU,
LIWALI AND NAYA BAZAAR , KATHMANDU VALLEY**

BY

Khushi Ram Adhikari

A THESIS REPORT

**SUBMITTED TO DEPARTMENT OF ARCHITECTURE AND URBAN
PLANNING IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE
DEGREE OF MASTER OF SCIENCE IN URBAN PLANNING**

NOVEMBER, 2011

LALITPUR, NEPAL

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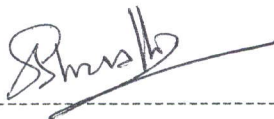
DEPARTMENT OF ARCHITECTURE AND URBAN PLANNING

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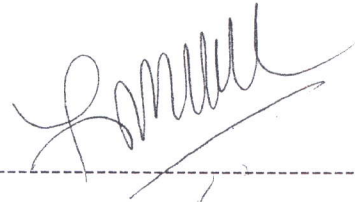
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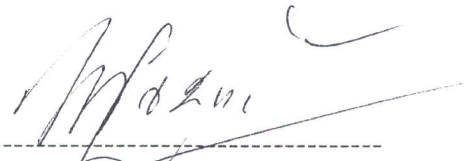
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Abstract

Land pooling is a widely practiced and successful land development technique. It provides housing parameters which have varying standards according to locations.

Different countries are making policies favoring low income groups through land pooling. Korea takes high percentage of contribution from land owners to provide land to low income groups for housing. Land pooling in public land to supply serviced land to poor can be very effective in our case.

Comparative study shows that feasibility study before deciding a project is necessary for its success. From the research problem of road is regarding its strength which cannot bear heavy load which needs proper attention. Services provision should be according to forecasted population and join to main city networks. Deep boring is against the right of other neighbors who cannot install. Unless and until policies are not in favor of poor, land pooling with 50% agreement is not scientific.

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List of Abbreviations

ADB: Asian Development Bank
BMc: Bhaktapur Municipality
CDO: Central District Officer
DOR: Department Of Road
DPR: Detailed Project Report
EWS: Economically Weaker Section
FAR: Floor Area Ratio
GRRC: Gongabu Residential Reformation Committee
HIG: Higher Income Group
HMG: His Majesty's Government
KMC: Kathmandu Metropolitan City
KMc: Kirtipur Municipality
KVPDP: Kathmandu Valley Physical Development Plan
KVTDC: Kathmandu Valley Town Development Committee
LIG: Low Income Group
LPP: Land Pooling Project
LSMC: Lalitpur Sub-Metropolitan City
MIG: Middle Income Group
ST: Septic Tank
TDC: Town Development Committee
TSS: Tole Sudhar Samiti
UC: Users' Committee
UML: United Markcist and Leninist
UN: United Nation
VDC: Village Development Committ

Chapter 1 | INTRODUCTION

1.1 Background

Nepal is a developing country and the least urbanized among the developing countries of South Asia. In 1961, 3.6 % of the total population lived in 16 urban areas. The figure increased to 6.4% living in 23 urban areas in 1981, and 14.2% living in 58 urban areas in 2001 (MOPE, 2002). Also, 23% of the total urban populations were poor in Nepal in 1995-96 (World Bank, 2004). According to a recent estimate the urban population will double by the year 2030 out of which will be 30% of the total population of Nepal.

Housing has been a major challenge to meet the need of growing urban population in urban areas of the country. There have been different approaches from government and private sectors for residential development. Since 1988, different land development techniques (site and services, guided land development and land pooling) in the valley have been applied by Kathmandu Valley Town Development Committee (KVTDC) as a government planning effort under 'Town Planning Act 1973'. Similarly private sector has been involved in residential development through different sectors, but they are not only ineffective but also weak in providing legible urban setting and addressing socio-cultural needs of the inhabitants.

The land pooling area is not only for land development and demarcation activities but it is also for housing activity. There is no meaning of land pooling without housing development. Actually housing development is the second major step of the land pooling technique. Land pooling project is one of the most viable urban land management tool because of more advantages and provision of basic physical infrastructure i.e. roads, drainage, sewerage lines, water supply etc. which are the basic needs for sustainable housing.

1.2 Rationale

The urbanization process in Nepal has recorded a high growth rate in recent years with about 14% population presently residing in urban areas with growth rate of 4.4%. By 2017, it is estimated that 20% of Nepal's population will live in urban areas. This clearly indicates the true requirement of urban land. As a matter of fact, Nepal's rapidly growing towns and cities are taking over land at a fast pace. The performance of public sector in ensuring supply of serviced plots as well as facilitating overall

urban development in planned ways remains poor with great struggle they have managed to implement only 12 land development projects during 20 years in Kathmandu valley. It is perceived to be of least priority with respect to other national problems. On the other hand, informal (unregulated) land development in Kathmandu Valley by land brokers have directly or indirectly paved the way for the extension of urban use in the urban fringe of Kathmandu Metropolis.

The living condition in Kathmandu Valley is deteriorating day by day and is characterized by acute shortage of water supply, congestion, environmental pollution, poor sanitation and lack of proper infrastructure and open spaces. As a result, the residents of the city are forced to live in the undesirable living conditions. Due to congestion and unavailability of land for housing and other purpose, the land price has reached its peak during last decade. Due to high potential many people migrated in the valley are willing to own a house in the periphery of the metropolis and ultimately they are landing in the urban fringe of Kathmandu and Lalitpur. The land transaction and rate of construction in the vicinity has indicated that if proper planning intervention is not undertaken in time it will face the consequences of haphazard growth as other towns of the country.

Land pooling is a tool for converting rural land use to urban uses by consolidating fragmented land parcels for their cumulative servicing and subdivision for planned urban development (Archer, 1992). The concept of land pooling technique is basically guided by three key words: unification, partnership and land exchange. The word unification indicates the consolidation of fragmented land under single project management, while the term partnership means partnership among landowners for equitable share of cost and benefit of the development. Land exchange indicates that the landowners participate by contributing their parcel of disservice land in exchange for plots without monetary contribution.

The three basic components of land pooling as practiced in many countries are:

- a) Consolidation of separate landholdings with the consent of majority of landowners and leaseholders.
- b) Re-plotting design of land into building lots with the provision of road networks, open spaces as prescribed by the specific rules and regulations.
- c) Construction of roads and public utilities networks is highly appreciable.

Land pooling is the technique to redefine the ownership of land in such a way that the shape and configuration of plots is more appropriate for urban structures and uses and

the size of all plots is reduced by and agreed proportions to create sufficient public land for the planned provision of roads, infrastructure social facilities, open space and reserve plots. Land Pooling tool is used first time in Nepal in Pokhara in 1976 while opening New Road connecting Chipledhunga and Prithvichowk.

It is called land pooling because all owners pool their land into a single large plot, normally held in the name of planning agency. A new plan is prepared by the agency and used as the basis for subdivision of the large plot into a number of smaller plots that are redistributed to the original owners. The size of each redistributed plot is less than the original size by an amount calculated according to agreed proportions and these are called the contribution ratios.

The total public land created from the contribution ratios of all plots is sufficient for the newly planned roads, services, public facilities and open space. Any surplus land can be allocated as reserve plots, which can be sold or auctioned to raise funds to cover the management cost of the project.

Because of the needs and importance for land pooling we can positively conclude for the urgent need for research to assess, compare, analyze, draw conclusions, provide certain suggestions and recommendations from the experiences of different projects for the progressive implementations through different lessons learned from any of the projects. Different principles and activities while project formulation and implementation are adaptable to new projects. Here I should like to quote the population with homelessness which is 19000 (3800 families) in urban area and 50000 (10000 families) in rural area which should be addressed through certain mechanisms within land pooling can also be proved to be effective. There is a defined and standard practice for contribution of varying percentages which is scientifically designed. This ratio is determined with respect to the plot with road width, plot frontage width and corner plot which ultimately and indirectly works as cross-subsidy to urban poor. All owners' land are pooled into a single large plot, normally held in the name of planning agency. A new plan is prepared by the agency and used as the basis for subdivision of the large plot into a number of smaller plots that are redistributed to the original owners.

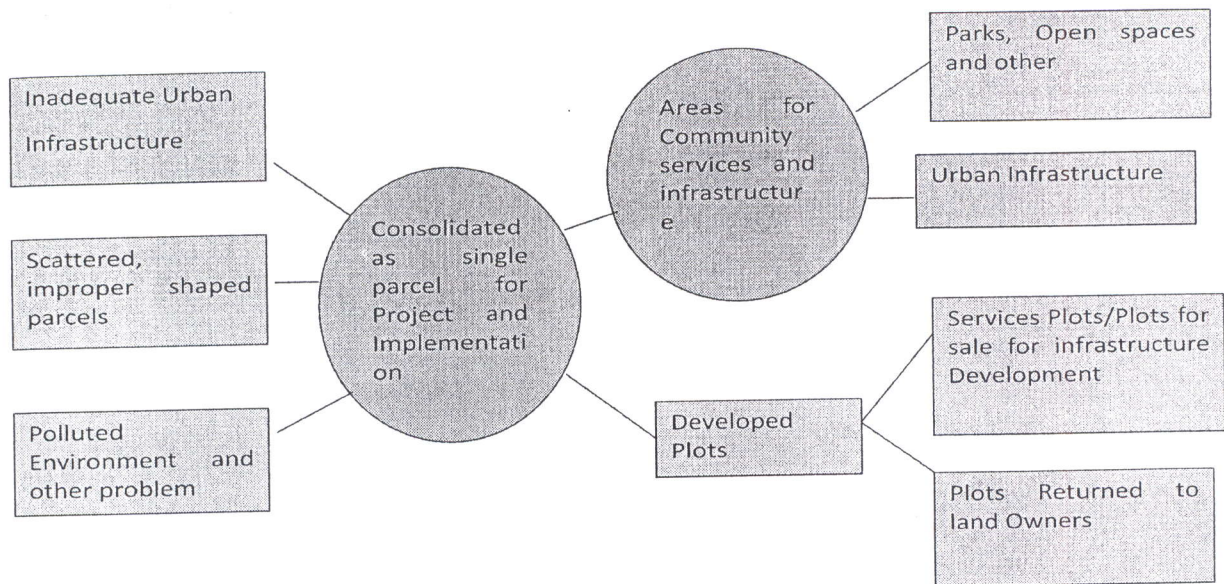


Fig 1.1 Flow chart of land pooling

1.3 Research Questions

- What are paces of development and who are responsible for maintenance and further development of the projects?
- How displacement trend of farmers of land pooling area can be checked?

1.4 Objectives

General Objective

- To compare the pace of development in the considered land pooling projects and underlying causes.

Specific Objectives

- To compare three land pooling sites to study housing development.
- To suggest possible measures to make a land pooling success in an agricultural land with high degree of participation.

1.5 Assumption.

Land pooling areas being the planned areas (developed with basic infrastructure) together with different implementation strategies will be the suitable areas for the housing development as a second step of land pooling project.

1.6 Scope and limitations

As mentioned in background, there are several efforts from the government and private sector to solve the housing problem in Kathmandu. New urban spaces have

been developing day by day. To have a better understanding on such development trend, the study focuses on revising three land pooling projects to represent other land pooling projects. Comparison between Liwali Land Pooling Project, Gongabu Land Pooling Project and Naya Bazaar Land Pooling Project will be done in terms of infrastructure, time frame, cost, open spaces, conflict and consensus collection, easiness to implement, housing emergence and degree of success. The study will help to provide new setting for planned development. The study is based upon key informant survey, the secondary data, published leaflets, drawings, books, manuals and literatures.

Chapter 2 | **RESEARCH METHODOLOGY**

The study has analyzed with comparison for qualitative description and quantitative measurements of different particulars of the considered projects. Here different subjective data collections are followed by objective analysis. In the research, existing condition or improvement regarding uses of open spaces are well elaborated. Quality level of different services and their adequacy level are dealt for road, sewer, drain, water supply, electricity, solid waste disposal and sanitation. Quantitative data for areas of the projects, percentages for contribution, open spaces, space for greenery area and bus park where provided are dealt. Areas of minimum plot sizes and number of plots in the area are studied. Other data include percentage of circulation area, commercial area and residential area. Years of completion of projects are studied. The quantitative data for the parameters dealt for the projects taken for case study are also dealt for some other projects in the valley.

To take sources of data and evidence direct observation, field exploration, visit to sites and site offices, taking photographs of services and open spaces are primarily done. Documents of land pooling offices are taken and correspondence of concerned officials of project offices were done.

Multiple narratives have been done for multiple cases. Narration for the conditions before the project were assessed through key informant survey. People who provided detailed information were actively involved people in the project. These people provided information in accordance with the questions managed to meet the requirements of the thesis. Those who could not provide appropriate information of the questions suggested to meet other persons who were involved more for those related activities. The informants of the survey were technically as well as socially involved in the projects. Questions were formulated for the purpose of comparison of different indicators of the projects as the research is based on the comparative case study method. It is used to explore, describe and compare the projects.

The research considers the relevance of interim plan for land pooling as the main measure for the management of haphazard and uncontrolled urbanization together with constructing services using appropriate technology for making the services safe and cost effective. In the study, the literatures for different projects of Kathmandu

Valley have been incorporated with features of land pooling such as location, duration, area, number of plots and holdings, percentages regarding open space, circulation, commercial use, contribution and residential use, plot size, heading of management committee and legal basis. The research considers the relevance of land pooling practices in different countries in terms of providing serviced land to the group of people who have no access to those in urban area in terms of subsidy and enforcing housing policy. The research emphasizes on land pooling in public land in order to have access for urban poor. Since there is increasing need of shelter, the ways in shelter policy for increasing dwelling units and financing for shelter are studied. Building bye-laws which are essential to be followed for a properly arranged city are dealt in the research. Since the projects under case study could not follow the patterns of city which were traditionally practiced, the research has suggested to make a city with a sense of place with protection of culture, architecture and provision of physical features like landmarks and heritages.

Primary survey regarding the land uses and preparation of land use map has been done and the differences in land uses for different projects has been compared.

The research provides into consideration the detailed land pooling guide together with legislation, institutional arrangement, feasibility study, detail planning, implementation, problems encountered and built environment. The report has drawn success requirements and pros and cons of land pooling.

The study has considered the impacts of social, cultural, occupational, technical and political aspects as major factors. Suitable and sufficient condition for a land pooling project is studied in terms of topography. For fulfilling the objectives of land management, land pooling can be a proper solution and hence the objectives of land management are also studied.

Generation of innovative ideas therein for how to proceed for a successful project can be assessed which differs for different circumstances. How the projects were undertaken and why such done will be answered. Outside and inside impacts for the projects will be analyzed. Development experiences and life histories of various people are taken to study the change in living and surviving level.

A comparative case study is done for two or more than two cases which are similar in some respects but they differ in some respects. These differences become the focus of examination. The goal is to find why the cases are different. Comparison of projects in terms of time frames, costs of projects, conflict situations, equity, win-win situations for all plots, easiness to implement, existence of housing situation, consensus, design, implementation process and degree of success have been studied. The comparison is in the form of tables where separate columns are referred for separate cases. During the process of analysis, some new aspects are added and some fruitful ones are dropped. Comparative case study is essentially done for finding the causes for differences of different parameters in different projects are basically taken into consideration. These underlying causes provide the lessons which would be used in places lacking their implications.

SWOT analysis for different indicators of selected sites are done to draw the strengths, weaknesses, opportunities and threats regarding the considered indicators.

Recommendations are drawn from the comparative studies and with the considerations of different literatures. These are taken to suggest for successful, easy and effective implementation of any land pooling project.

Report has been prepared by identifying the audience which are colleagues, practitioners, thesis committee etc.

Chapter 3 | LITERATURE REVIEW

A literature review was conducted to find out the content and extent of previous studies in order to support the necessity of this research. Literature review includes those literatures which dictates housing situations in Nepal and other countries, the improvement of this being possible through land pooling projects. Directions given by building bye-laws always support for planned, strong and beautiful city. Neighborhood design guidelines are included for the information of how a city can be made livable by properly arranging mass and voids and amenities inside it. Need of urban design and conservation is studied which if merged to land pooling it becomes a better living area. Housing policy by world bank would be supportive in our case to include in land pooling. Planning and land development efforts of our country are included and detail for land pooling phases and steps are summarized. Summary of some completed land pooling projects are provided which would be supportive to different particulars. Legislative study and problems encountered with lessons learned are gone through. Pros and cons of land pooling and its practice in various countries are gone through.

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3.1 Urban Land Management

There are many more private land in comparison to the publicly owned land in context of Nepal. Further, constitution of Nepal has given full right to people to develop their land in their own way. There are not any norms except this for land management. Fragmentation of land has been continued to grow leading to irregular shapes which has made difficult to plan a city in a right form. Government is not being able to manage land for urban development and thus there is increasing need of land pooling in context of Nepal.

For land pooling of urban area, topography of habitable land should be utmost favorable. Provision of various land uses should be in special forms and patterns. This is difficult for hilly and rolling terrain, almost impossible in the former case because the construction cost for patterned road and other services becomes very much costly. Expansion of urban area in case of Terai becomes limitless while hill towns expand following the topography. Hence land pooling in plane area becomes sustainable since this type of urban land can be subjected to multiple use or it can become investment capital. Unplanned land use constantly changes and subdivision also exists.

Government manages for planning regulatory and infrastructure activities. Government creates physical, legal framework to guide private land subdivision/building projects being under taken through the land market. Land are designed to achieve planned urban expansion, adequate land supply and sustainable urban development. Thus the objectives of land management are to speed up the supply of developed land, make it available in adequate amount at right locations and at affordable prices, ensure optimum utilization in terms of efficiency and to safeguard the interest of urban poor by equitable distribution of urban land. Land is regarded as one of the three basic factors of production in an economy together with labor and capital. Land is a special component because unlike labor and capital it is finite and because of this reason land has to be efficiently utilized. Land/land-use rights have been used as a commodity to be bought and sold in capitalist systems for at least the past two centuries. The urban economy comprises three basic markets: the urban land market, the urban capital market, and the urban labor market. These markets are inexorably linked and dependent on each other. Of these markets the land market most directly affects the urban environment and the quality of life in cities. Efficient and equitable land markets are a prerequisite for well functioning cities.

Land market distortions is caused by poor land development & management policies that include poor planning, slow provision of infrastructure and services, poor land information systems, cumbersome and slow land transaction procedures and under regulation of private land development.

Land markets should be efficient, equitable, environmentally sound and compatible. Efficient land market indicates quick development and transaction of land. Equitable land market indicates the system governing the land market provides reasonable access to all income groups. Environmentally sound market is that in which the system governing the land market protects its sustainable use for the good of both current and future users. It should integrate well with the cultural, social and political heritage of the country. Lastly compatible means the system governing the land markets is integrated with other laws and regulations governing land, ie. Planning, taxation & provision of public infrastructure/ services.

Land registration system should be well managed for urban land management and can be improved through the following functions.

- Establish the cadastral map on a higher scale initially such as, for example, the block or ward unit. This would not include registration of each parcel or owner;
- Use simpler methods of delimitation and demarcation. There exists even an example of a successful system where dwellings were identified on aerial photos;
- Reduce standards of accuracy for land registration surveys .
- Minimize fieldwork; Use existing maps and records as much as possible;
- Establish provisional registers;
- Selectivity; Selection of land units can be based either on registration of individual landowners or an area. The system may or may not include compulsory registration

3.2 Land Development Efforts in Nepal

The history of land development efforts in Nepal is not very long. The ministry of Housing and Physical Planning was made responsible for undertaking land development projects since 1969 with a *site* and *service* program for planned residential area in Kathmandu. However, not any project was formulated till the preparation of Master Plan of Kathmandu Valley in 1976. Furthermore, a separate act for planning and development of regional centers was enacted in 1973 and under this law Town Implementation Development Committee (TIDC) was formed. Three types of land development techniques have been widely applied since the promulgation of Town Development Act in 1988; a) Guided Land Development b) Site and Services c) Land Pooling (Land Readjustment).

3.2.1 Site and Services

Site and Services refer to the process of assembling raw land and convert it into fully serviced plots before selling it to the beneficiaries with or without any subsidy. The technique was developed to provide serviced plots for housing to low income groups in developing countries. In this program, the government acquires publicly owned land or private land and provides the necessary infrastructure after re-plotting the plots. After the enactment of Town Plan Implementation Act , the government adopted Kathmandu Valley Physical Development Plan in 1976. and formed Kathmandu Valley Town Development Committee (KVTDC) to implement and enforce the approved land use plan in the valley. Three sites were then identified and

designated as planned development areas, namely; *Kuleshwor*(26.5 ha), *Dallu*(17.5ha) and *Galfutar* (10.8 ha). The Kuleshwor and Dallu projects were started simultaneously in 1977 while Galfutar was started in 1982. However due to the resistance of land owners Dallu was later converted in Land Readjustment. These projects were targeted to supply the housing plots for civil servants and employees of the government corporations who did not own a house in Kathmandu Valley. The main social problems of the site and services schemes, among other administrative and technical problems, are low land compensation rate to the landowners resulting strong resistance and displacement of original landowners.

3.2.2 Guided Land Development (GLD)

GLD concept was formulated in Jakarta in 1970, for the development of urban fringes. It was devised as a technique to enable the government to guide the haphazard development of private land around Jakarta. It is a process in which landowners participate in the land development process by voluntary contribution of the part of their land as per prior agreed upon layout plan for road and other public facilities. In this technique, the government becomes a facilitator and provides a technical support and construction of infrastructure eg. Road, drain, water supply, electricity etc. GLD is the appropriate tool for the urban fringes having potential for urban expansion but lacking access roads. GLD is basically applied for widening of roads. About 118 km of roads have been opened in Kathmandu, Lalitpur and Bhaktapur by this program so far, out of 472 km. of design.

3.2.3 Land Pooling/Readjustment

After the failure of site and services program due to strong opposition from land owners, it gave rise to the emergence of land readjustment. Among these techniques, the land readjustment has been running quite satisfactorily. However due to several factors, the program has not yet grown to the extent it was anticipated. Since public sector had started its first planning (sites and services) in 1977, it has completed only 8 projects until 1998 covering the area of only 200 ha. The area of each project varies from 7 ha to 34 ha, which is not satisfactory at all. The challenge of developing more than 5,000 ha still lies ahead. As the first step of urban development is the management and development of land, such patch development works will not take us to the desired goal. The unplanned growth of the valley has created an alarming

situation in terms of supply of facilities, emergency services, environment and overall beauty of the city.

Site and services projects acquire land for providing services but the landowners get less return from the government as compared to the land value which would increase after land pooling. Government needs large amount of budget for acquisition of land for site and services. These landowners may or may not be able to afford the serviced plots. The serviced plots in site and services are difficult to sell as compared to the selling of plots in land pooling where there is no need of selling of whole plots. As the GLD scheme depends on the consent of the landowners it cannot be applied in areas with fragmented land ownership. Land owners having less land will not voluntarily agree to contribute for access. Landowners may want to continue the rural land use.

3.3 Urban Design Concept

Urban area should be designed in such a way that it should make the area pleasing and livable . It should provide comfort to the residents of the area. It should provide attractive appearance at its glance which should be consistent to its use. Different amenities provided should be easily available. These parameters can be found in ancient city forms and many planners have suggested and different countries have practiced about arrangement of services and public facilities in their cities which enhance the images of their cities.

3.3.1 Ancient City Forms

In Manasara, the town planning principles have been described. It started with the site itself. The site was thought to be suitable if it was level, smooth and had slope towards north east and east. This would also receive sunlight and it would be easy for drainage also. It would have a fort having four gates. The town was divided into different wards and each ward was allocated to people practicing a particular trade. The workplace and residence were provided nearby. Brahmins were made to stay near the temple. Dandaka cities were for small population and Sarbatobhadra for large cities. There were other types such as Swastika, Prastara, Nandyavarta, Padmaka, Chaturmukha, Karmukha , Kumbakham etc. Sarbatobhadra, Prastara, Karmukha and Dandaka forms were used by cities of Brahmins, Chhetris, Baishyas and Sudras dominant locations respectively. Lalitpur has Dharmachakra form, Kirtipur has Sword form and Sankhu has Cong-shell (Shankha) form. Indian city Jayapur has

Prastara type of design. Though separate townform for separate community may not be feasible in the context of today's heterogeneous society, best type of town form considering various circumstances can be applicable through land pooling.

Each city has its growth with passage of time or it passes with its morphology. Any city borns with a small farming community and passes through secondary activities, specialized trades, migration from all around and then deterioration of city core and eventually all cultural activities go down. Hence the evolution of cities need different forms which would accommodate the size of the city. City developed in one period have to be revitalized and transformed in terms of form and also needs expansion. As a city expands there is need for sense of place, greenery and place for cultural activities. Form of a city suitable for any area can be driven from detail study of practices for various locations, relieions and cultural preferences and thereby changes through urbanization. Practices in one place and period of the world can be adoptable and imitative for the city of another place and period according to the morphological stage and locational similarity of the cities.

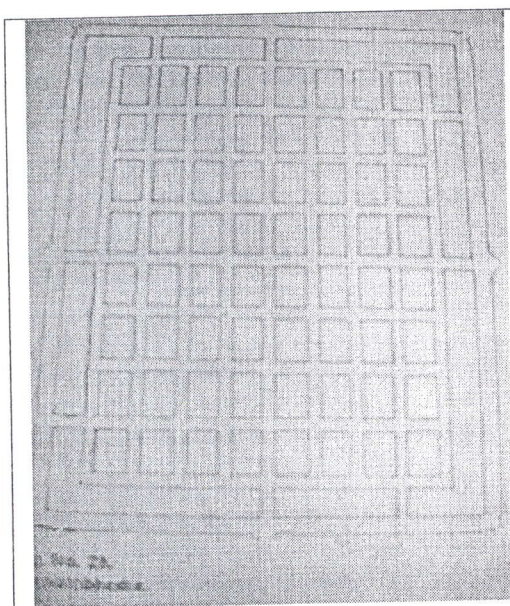


Fig 3.1 Sarbatobhadra Form

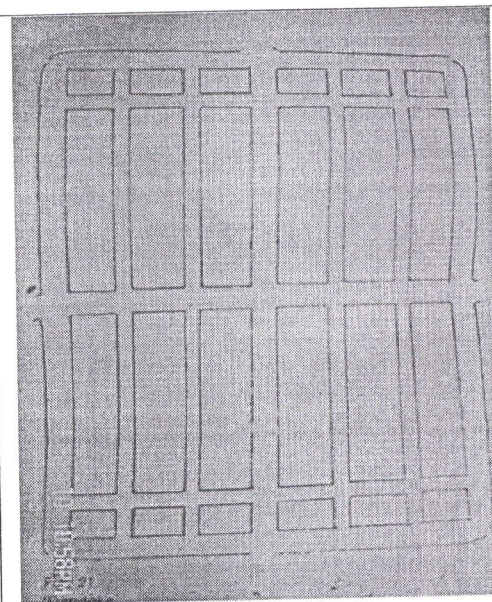
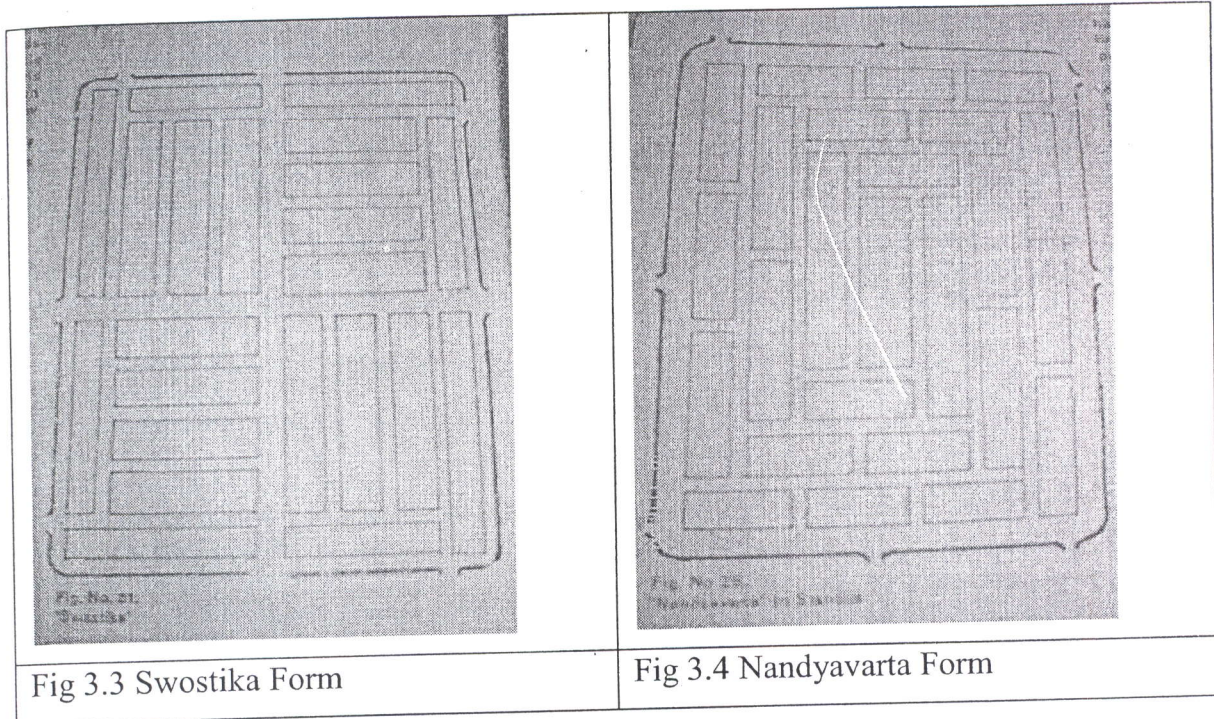


Fig 3.2 Dandaka Form



3.3.2 Image of a city

Different cities have their own physical identity which has been described by Kelvin Lynch as pathways, districts, edges, landmarks and nodes. If these parameters are properly arranged through land pooling in a large chunk of land it enhances the image of the city. Major and minor routes should be first arranged in a pattern. There should be arrangement of self contained assemblages such as the residential areas, trainyards, factory areas, suburbs, colleges etc. so as not to be affected and disturbed one use by the other one. This also enhances beauty of a city. Edges of two districts should be beautifully distinguished with some separation structures. The prominently visible structures form the landmark for a city. Landmarks are those which help to find the location of any place which also helps to enhance the beauty of a city.

3.3.3 Safety and Comfort of a City

Any city should be comfortable to live. Physiological needs and biological needs should also be met while designing a city. New Jersey of Radburn is one of the cities where these needs are incorporated while designing. The concept not only considered the comfort but also considered the safety inside the city. Environment of the city has been improved with greenery. This is the city where residential area has been pedestrianized. Hospitals and other public offices are in easily reachable locations. Children can freely move while going and returning school. Women can easily and freely reach to markets to buy different things. Roads are constructed around this

central city area. Moreover; people can reach to the vehicular locations easily in short time.

Neighborhood design guidelines are the guidelines for designing different areas and structures so as to make them pleasing to live, strong and comfortable. The design may be of parks, walkways, gathering areas, paving materials, lighting, site furniture, buildings on parks, landscaping, public art etc. Neighborhood area may be separate as residential, commercial, street way or combined of these. Guidelines has to be made so as to make these districts pleasant, friendly in appearance, compatible, accessible, safe, weather protected etc.

3.3.4 The Downtown Columbia And Symphony Woods Park Neighborhood Design Guidelines

The Downtown Columbia Design Guidelines

The Howard County Council approved Downtown Columbia Design Guidelines in March 2011 to provide urban design guidelines for development under the Plan downtown-wide. They include general provisions for building heights, setbacks and other design objectives for all six downtown neighborhoods in Columbia's downtown core. They describe how buildings and landscapes support the intentions of the Plan and create places containing pleasing proportions, scale and character that people will want to inhabit. Together the Downtown-wide Guidelines and the Neighborhood Design Guidelines will be used to ensure that what is built under the Downtown Plan will be attractive, aesthetically coherent, practical and of beauty and value. The Downtown Plan includes a Primary Amenity Space Framework Diagram which identifies recommended locations for parks, greens, plazas, paths, promenade and preserved natural areas.

The Downtown-wide Guidelines include the following design principles for creating a livable downtown .

Employment Opportunities. Maintain and enhance the concentration of jobs, in both the public and private sectors that provides the foundation of a sustainable Downtown.

Housing Choices. Provide a range of housing types and price levels that offer a full range of choices, including home ownership, and bring people of diverse ages, ethnicities, household sizes and incomes into daily interaction.

Transportation Choices. Enable people to move around easily on foot, by bicycle, transit and auto. Accommodate cars but also strive to allow people to live easily without one.

Shops and Services within Walking Distance. Provide shops and services for everyday needs, including food/grocery stores, day care, cafes and restaurants, banks and drug stores, within an easy walk from home.

Safe, Shared Streets. Design streets not just for vehicles, but also as complete streets with usable outdoor space for walking, bicycling and visual enjoyment.

Gathering Places. Provide places for people to socialize, including parks, sidewalks, courtyards and plazas that are combined with shops and services. Program places for events and gatherings.

Amenity Areas. Provide adequate public recreational amenity spaces, including joint use open space, within walking distance of residents.

A Rich Cultural Environment. Integrate public art and contribute to the civic and cultural life of Downtown Columbia.

The Neighborhood Design Guidelines for each neighborhood are intended to build on and to provide more specific guidance for each neighborhood that is appropriate for the land uses, individual character and other features of that neighborhood. The Neighborhood Design Guidelines are consistent with and include information from the Downtown-wide Design Guidelines. The Neighborhood Design Guidelines provide specific guidance for the evaluation of design choices that will significantly influence the character of the neighborhood. The Neighborhood Design Guidelines will describe, for example, one or more appropriate materials for pavements. The reviewers of the Site Development Plan would refer to the Neighborhood Design Guidelines approved with the Final Development Plan to verify that the applicant's choice is acceptable.

Amenity Space Design General Considerations

- A. Amenity spaces should be physically (except for environmentally sensitive areas) and visually accessible, and designed to invite people of various ages and mobility.
- B. Amenity spaces should be designed for their intended function; for example, plazas should be designed with adequate amounts of hardscape to accommodate public gatherings; large greens or parks should minimize hardscape areas that will detract from their intended appearance as a green oasis dominated by native vegetation, some lawn areas, and trees.
- C. Amenity spaces should not be overly designed with structures and planting that will block visibility to storefronts, public art, or important vistas.
- D. Amenity spaces should be designed with consideration for local climate and sun exposure during different seasons of the year. Where appropriate, take advantage of views from Amenity Spaces to visually link these spaces with the public realm and special sites with the rest of downtown Columbia.
- E. Amenity Space design should give careful consideration to maintenance, so that in even severe conditions and with limited maintenance, the Amenity Spaces always look attractive.
- F. Paving materials and installation should take accessibility needs into consideration.
- G. Parks should provide opportunities for recreation such as urban playgrounds, tot lots, picnic areas and related parking. Parks in Downtown Columbia are anticipated to be flexible Amenity Spaces used for a variety of functions, including active recreation at times, as well as festivals and other events.

Parks

A park is a public space available for active and passive recreation, typically located at the edge of the neighborhood, with access from a public thoroughfare, and is within or connected to natural areas. The landscape may include more formal lawns, gardens and walks. Although parks may be designed or remain in a somewhat natural state, they require maintenance. Parks may accommodate active structured recreation such

as urban playgrounds, tot lots, picnic areas and related parking. Parks in Downtown Columbia are anticipated to be flexible. Amenity Spaces used for a variety of functions, including active recreation at times, as well as festivals and other events.

Path

Pathways for pedestrians, cyclists and skaters provide connections among important destinations. Paths are typically fitted to the natural character of the site or to the urban context, and are often constructed with such materials as concrete, stone dust, asphalt, mulch and board-walks (for spanning waterways and environmentally sensitive areas). Paths should be designed for their intended use and intensity of use, including consideration for safety. If appropriate, they may include lighting, benches and drinking fountains.

Amenity Space Guidelines For Symphony Woods Park

These Amenity Space Guidelines for Symphony Woods Park build on the Downtown-wide Guidelines for Amenity Spaces that are relevant to the design of the Park. The overarching goal for these guidelines is to preserve and emphasize the distinctive qualities that make Symphony Woods unique and to make the park the best possible asset for the community. Each park design element below includes a general statement regarding the design intent for that element followed by specific design standard. These Symphony Woods Amenity Space Guidelines are intended to be used with and to be consistent with the Sustainability Guidelines for Symphony Woods Park.

1. Paths And Walkways

Design Intent.

Walkways in Symphony Woods Park will be part of the system of pedestrian connections that will provide continuity throughout Downtown Columbia. These walkways are distinguished from sidewalks in that they are not immediately adjacent to a street or in the public right of way. Multiuse paths may serve many of the functions of amenity space walkways but are distinct and are described elsewhere. Walkways should generally be designed to provide the following a safe, interesting and nuanced walk for people with a variety of abilities.

Design Standards for Paths and Walkways

Paths and walkways shall include a minimum clear walking zone of 6 feet. In areas of heavy pedestrian use they shall include a minimum clear walking zone of 8 feet. Walkways must be designed to allow barrier free access to gathering areas from the site periphery and from on-site parking and between key use areas within the park. These should provide an efficient route between key areas, allow for passive surveillance, have clear sight lines and include seating furniture.

2. Gathering Areas

Design Intent.

Gathering Areas in Symphony Woods Park are spaces designed to encourage people to gather and engage in social interaction. Such spaces may also be designed to support eating, playing and experiences such as performances. Gathering areas include benches as well as other features used for incidental seating such as appropriately dimensioned low walls.

Design Standards for Gathering Areas:

Gathering areas should comfortably support large groups of people during community events. These should allow for passive surveillance, protect against unpleasant sensory experiences (rain, temperature extremes, fumes). These should have variety and preferences that may be related to the age of the user. These should maximize pleasant views, people watching, unhindered views. These should promote communication and interaction and dimension in observance of important human dimensions

3. Paving Materials

Design Intent.

Pavement materials for walkways, gathering areas and parking in Symphony Woods Park should be highly durable and connote a sense of permanence and quality

Design Standards for Paving:

This should use changes in paving materials to distinguish use areas, select pervious where appropriate, design pavements to meet ADA requirements for smoothness. This should use acceptable paving materials which include poured concrete paving, brick or concrete pavers, bituminous pavement may be used for walkways and parking. Boardwalks may be wood, recycled decking materials, and other materials specifically designed for use in boardwalks.

4. Lighting

Design Intent.

Landscape lighting has three basic objectives: providing safety, security and aesthetics. All three of these objectives should be considered in the design of lighting at Symphony Woods

park.

Design Standards for park lighting:

It should be scaled for pedestrians and spaced in observance of average perceptual abilities, include fixtures selected for quality design, fine detailing, durable materials and effective performance. It should use a coordinated family of fixtures in the Park , Light-Emitting Diode (LED) fixtures. It should include fixture for attachment of signs, banners or plants, if desired.

Lighting should select walkway light fixtures with meeting International Dark-Sky Association standards with 14 to 16 feet in height.

5. Site Furniture

Design Intent.

Site furniture for Symphony Woods Park includes benches, trash/recycling receptacles, bike racks, and tables. Site furniture should be highly durable and connote a sense of permanence and quality and should be appropriately located throughout the park.

Design Standards for site furniture.

This should be placed to allow unobstructed pedestrian movement.

This should select styles, finishes and colors that are consistent throughout the Park. Seating and Benches should be grouped together in gathering areas, placed along pathways to provide comfort and convenience. Acceptable materials for benches are powder coated metal and wood. Acceptable materials for tables are powder-coated metal, wood, recycled plastic and should be movable to allow flexibility. Trash & recycling bins should be permanently attached. This may have tops to keep contents dry and out of view. Acceptable materials is powder-coated metal .Acceptable material for bike rack is powder coated metal which should be permanently mounted and placed in convenient locations that are not in the way of pedestrians Rack should have bike contact at 3 points.

6. Park Buildings

Design Intent.

Park buildings at Symphony Woods Park may include one or more buildings for a café, restrooms and storage and utility purposes.

Design Standards for park buildings:

These should be located appropriately in relationship to gathering areas and other park facilities to allow for ease of maintenance, maximum utility and natural surveillance and designed to be highly durable and connote a sense of permanence and quality.

7. Landscaping

Design Intent.

Symphony Woods Park will include both landscaped areas and other vegetated areas which are essentially natural areas. Landscaped areas include maintained planting beds and trees located in mowed, high use areas. Natural areas consist of vegetation that is un-mowed and essentially unmaintained after establishment. Guidelines for natural areas are found in the Sustainability Guidelines for Symphony Wood Park below. New landscaping including tree planting should be designed to provide interest and comfortable conditions for people visiting the Park and to serve important ecological functions as well such as wildlife habitat and slowing the flow of storm water.

Design Standards for landscaping.

Each tree should be replaced to be removed due to park construction activities with, at minimum, two trees. Replacement trees may be planted in both landscaped and natural areas on the project site. Trees and other landscaping should allow for unrestricted pedestrian flow. Trees and other landscaping should be placed to allow for natural surveillance around primary use areas, allow site lighting to be effective. Plant materials should be provided interest in all seasons. Landscaping should include native or adapted species that are durable and have low maintenance requirement. It should be specified that plant materials should meet the American Standard for Nursery Stock (ANSI Z60.1-2004 or latest edition) and meet or exceed requirements in the Howard County Landscape Manual, latest edition, where applicable.

8. Public Art

Design Intent.

Art objects should be an integral part of the Park landscape.

Design Standards for public art.

It should have place to allow for passive surveillance. It should be selected to be appropriately scaled for its proposed location, allow for unobstructed pedestrian or vehicular circulation, include water, seating or decorative architectural elements, if desired. It should be free of physical hazards and without major or frequent maintenance requirements.

3.4 Planning Efforts in Nepal

Though there was an attempt to make a planned city at Rajbiraj when the then district headquarter was flooded away in 1940, the urban planning effort in real sense is said to have started in mid-sixties, when the government sought UN technical assistance to initiate planning in the valley and other urban centers of Nepal. As a result a comprehensive document called 'Kathmandu Valley Physical Development Plan (KVPDP)' was published in 1969. After then some of the important planning efforts are summarized as hereunder.

- Formation of Kathmandu Valley Town Development Committee (KVTDC) under Town Development Plan Act 1973 as recommended by KVPDP to

enforce the land use plan and building control bye-laws suggested by Land Use Plan of Kathmandu Valley (1976)

- Adoption of regional development strategy by the division of the country into five regional development centers with a concept of developing north-south (mountainous to terai region) growth corridors by linking ecologically diverse regions.
- Initiation of planning and development efforts for the growth of urban and rural centers of the terai belt under Town Development Committee Act.
- Launching of the Bhaktapur Development Project (1974-1984) with the technical and financial assistance of GTZ (Germany). The main objectives of the project were to improve the living condition of the inhabitants with improved sanitation system and to preserve the cultural heritage of the city.
- Promulgation of Town Development Act, 1988 to promote urban development activities in the whole country.
- Introduction of Urban Development Through Local Efforts (UDLE) –a joint assistance program of GTZ and HMG to provide advisory services to the municipalities and concerned bodies and to increase the capacity of municipalities to plan and manage all aspects of urban development ; planning, finance, organization and training.
- Execution of various studies for the planned development of Kathmandu Valley. Studies like Kathmandu Valley Physical Development Concept (1984), Kathmandu Valley Urban Policy Study (1986), Urban Development and Conservation Scheme for Greater Kathmandu (1988) , Kathmandu Valley Urban Development Plans and Programs (1991) and Kathmandu Valley Limit to Growth (1995) by different national and international agencies have laid foundation towards the planned development of the urban area.
- Execution of Kathmandu Urban Development Project (1994-1999) with the financial assistance of ADB for the infrastructure improvement works and institutional strengthening in Kathmandu. After its successful completion, Kathmandu Valley Mapping Project (KVMP) is underway for the implementation of strategy plan for Kathmandu Valley.

The planning directives in the valley, at present, have been derived from the Kathmandu Valley Urban Development Plans of 1991, which recommends:

- To encourage urban development in areas where present trends deem it inevitable provided that these areas can be properly serviced and to discourage urban development in areas where infrastructure would be costly and inefficient.
- To encourage densification in established urban areas to enhance infrastructure servicing.
- To increase the rate of urban development in a manner that proper planning facilities and infrastructure development in a phased manner in coordination with programs for executing infrastructure systems.

Development Plan 2020 of the Kathmandu Valley is the 20-year strategic plan for the valley. It is expected to provide a broad framework to the municipalities and VDCs for the preparation of detailed land use plans and local area plans.

The plan has proposed principals of urban expansion including the followings.

- *Equitable growth distribution* based on the concept of the growth sharing by all three districts of the valley.
- *Growth confirming to the infrastructure capacity* so that the proposed development does not reduce the quality of basic services in the area
- *Development within designated urban area* only to facilitate planned growth.
- *Avoid growth in risk or environmentally sensitive areas*, such as seismically active areas, liquefaction zones, flood plains and unstable and steep slopes.

Likewise, management of urban expansion proposed in the plan includes

- *Orderly rural-urban transition* which would eventually facilitate a desirable urban form unlike the haphazard development pattern of the present valley.
- *Urban-rural land delineation* to act as important policy intervention in order to contain the current urban sprawl and manage the growth of the valley.
- *Preservation of agricultural land* to maintain the functional open spaces, to maintain some level of agricultural production, to contain urban sprawl, and for sustainable development of the valley.

Some of the policies forwarded include densification and in-fill development instead of uncontrolled urban sprawl, provision of infrastructure to guide development of

desired areas, high density development nodes in major road intersections along the ring-road, promotion of mixed land use within the city, and location of industrial activities to the peripheral areas. It also calls for broad regional policies aimed at economic de-concentration, urban containment and regional planning approach to manage urban growth of the valley.

3.5 Land Readjustment Program Guide

An article entitled 'Land pooling: The Public Private Participatory Urban Development in Nepal' has been published by PP Oli which has complete guidance for land pooling including legislation, institutional arrangement, feasibility study, detail planning, implementation, problems encountered and built environment.

3.5.1 Legislation

The legislation are Urban development Act 2045, Para 12 (2) defines the land pooling and the procedures. The land pooling Manual 2061, compiled by SB Sangachhe and G.P Gorkhali, and published by Dept, of Town Development and Building Construction, Min. of Physical Planning and Construction, Govt. of Nepal, is guiding the land pooling/readjustment programs for urban development in Nepal. The users committee and project management committee will provide guidance for running land pooling the project. Land (Survey) Act 2019, Para 11 (C) had provision of survey of private, government or common land and Land (Survey) Bye law 2058 Para 24, also have provision on the land pooling. Land related Act 2021, has provision of minimum ceiling of land, that a parcel could be subdivided i.e. in case of urban land, minimum ceiling area is 80 sq m in hill and mountain areas and 85 sq. m in terai areas. There are also maximum ceiling of land which is not problem in land pooling projects. Building standard also fixed the 6 m minimum size of frontage of the parcel. The standards for infrastructures of urban development are being worked out; however, twenty years of town development program of Kathmandu Valley can be used as guide.

3.5.2 Institutional arrangement

The government of Nepal constitute town development committee or project with appropriate legislation to carry out the land pooling or urban development program. The Kathmandu Valley Town Development Committee(KVTDC), Outer Ring Road Development Project, Town Development Committee in municipal or town of

developing areas outside Kathmandu Valley are the examples, who will develop town plans and carry out land pooling programs. The users committees from land owners, and project implementation committee from the stakeholders will be also constituted to each project to mobilize land owners and other stakeholders. The town development committee generally composed under the member secretary of district town planner and chaired by member secretary of KVTDC in Kathmandu Valley or independent expert nominated by the government. Study is generally carried out by the district town planning and building construction office with private surveyors and planners. Most of the large land development work is carried by Land pooling techniques, which is public, private partnership on private, public and government land.

3.5.3 Feasibility Study

The concerned project conducts the study of the possible areas for feasibility of land pooling by studying maps and documents, interaction to local officials and land owners and site visit. The area is identified in terms of technical feasibility-suitability of the area for urban development and social feasibility- the acceptability of programs by land owners, agencies and local politicians. The feasibility study is carried out mostly where the land owners applied for urban development, construction of buildings are taking place rapidly, government project requiring of large private portion of land and area assigned by government for land pooling. If the area feasible, then, the general meeting of stakeholders will request the concerned government agency to implement land pooling program. During this period, nodal points of major infrastructures and tentative areas will be fixed by the stake holders and district development committee for land pooling program.

3.5.4 Detail Planning

It will be carried out by detail surveys-digital topographical surveys, preparation digital cadastral data (map and records), establishment of GIS, socio-economic survey, the study of economic and social feasibilities of land owners and stakeholders, decision on contribution policy, and preparation of urban development plan and sample readjustment of cadastral plots. The detail reports including descriptive text, maps and charts in hard and soft copies form. During the period, the area will be divided into sector, sub sector, neighborhood, blocks and sub blocks. The

existing administrative boundary and land owners land to be returned will be considered during the sub block or road alignment planning. No land owner, total area ward (administrative boundary) or natural features will be affected during block planning. As far as possible, the road will be planned to be the boundary of existing administrative units.

The survey activities briefly described as following:

- Mapping

The control survey for topographical mapping will be based on national control networks and carry out to cm accuracy. If the area will be extended and the inaccuracy of existing control points may be not negligible, the coordinates of midpoint will be fixed and calculation be carried out accordingly. Topographical mapping will be carried using total stations, and graphical maps at the scale of 1:500 will also be produced, showing all details including infrastructures - road, electricity, water supply, sewerage lines, other facilities. Frontages of buildings are also important for new road network planning. The connection of water, electricity, telephone and roads will be considered and shown in mapping areas. Generally survey area is extended 50 m outside the periphery of the area. During survey period, any objections of the land owners will be appear on land pooling program. The surveyor should arrange meetings of stakeholders and official, as and when problem will be arose and the finding of study will be presentation at the end of field works. The half of these earlier cadastral maps are mainly isle land type or free sheet maps. They may not have accurate connection to each other. These existing cadastral data (maps and records) will be digitized and superimposed on digital topographical maps, map by map and the cadastral data base will be prepared as per the accuracy of maps.

- Land Valuation:

The existing price of land parcel will also be evaluated during survey period judging the price of land owner willing to sell, and the purchaser or real estate agent willing to pay and from the cadastral survey data which also have of land area, land class and use. The simple questionnaire is completed in the field for the purpose. After planning and provision of infrastructure, the value of land/land class will be increased as per the land classes. The price of the land will be estimated as per land

price existing developed neighboring areas. The real estate agency will also be asked for the price they are willing to pay after the infrastructure development.

- **Socio Economic Survey:**

The socio-economic survey of all land owners including residing outside the land pooling area will be conducted to explain about the project, collect their opinion about the project, infrastructure requirement, land utilization and their contribution, and gather other information required for planning. A simple questionnaire will be completed from all land owners.

- **Readjustment:**

The sample readjustment plan of a block will be also prepared after decision of contribution policy, infrastructure, road and block planning and calculation of total project cost to be borne by each land owner or parcel. In Nepal the contribution of land pooling of a parcel is recovered by deducting the portion of land parcel that receive extra facilities. Generally the contribution of land of land pooling in Nepal is about 19% for road, 5% open spaces, 8-10% infrastructure development and 4% administrative cost and in total about 35-40% of the land. The individual land owner has to contribute 15-55% of parcel depending upon the position of land and infrastructure available. The minimum size of parcel for planning will be kept 125 sq. m and 80 or 85 sq m parcels could consider as rare case. The plot depth and frontage ratio of parcel will be 1.5-2.5 and minimum frontage will be more than 6m.

- **Land Use**

Most of the land pooling projects implemented to provide comfortable housing plots on small areas to control the unplanned urban sprawl. After implementation of land pooling programs, the area will be a mixture of housing plots, shops, small scale industrial and commercial areas. It is difficult to develop the industrial and commercial plots in such small plots. Therefore, large scale land pooling program should assign the larger plots for commercial and industrial purposes near the main road areas. There are common opinions that the block adjacent to outer ring road or main road will have commercial and industrial plots with larger plots and plot depths. The area adjacent to it will be mixed commercial/ industrial and residential

uses and further blocks adjacent minor roads will be mainly residential use. The land use areas will be assigned as per the existing situation and planned infrastructures. The parks/open spaces are also assigned to each block.

- **Cost Recovery:**

The cost of land pooling work is generally borne by selling every year service plots assigned to each sub block as per the annual budget requirement. Initially seed money and administrative cost will be available from government and donor agency. The local administration or financial institution may also be involved to assist the program by providing soft loan to develop infrastructure in initial phase of the program. The cost will be recovered by selling developed service plots annually. Before implementation of the program, initial cost or seed money should be arranged and detail financial schedule is required to prepare to sell the developed plots.

3.5.5 Implementation

The implementation of program consists of works like formation of users' committee, project management committees and project office, getting consensus of land owners, updating maps and land records, preparation readjustment plans and marking plots on the ground, final design of infrastructures and constructions of roads and other infrastructures. It may take 3-5 years to complete the work of this phase. The project in this phase will only start after approval of planning and commitment on implementation by the government and concerned authorities and leaders. It may be briefly describe as following:

- **Consensus Collection:**

A team of sociologists will be assigned and series of local meetings will be conducted along with project teams, land owners, local authority and other stakeholders at various levels. During the meetings users' committee of each ward will be formed. The land owners will be requested to sign for consensus of carrying out development works through the land pooling program. It will be most difficult tasks to have consensus of all people especially at present Nepal, where there are diverse political opinions about ownership of land.

- Preparation of Readjustment Plans and Demarcation

The topographical and cadastral data base will be updated before finalization of readjustment plan. The readjustment plans will be prepared after decision of contribution policy which fairly fixed. However, there will be minor variation in each project, as it will be decided by project management committee. The contribution area of each parcel will be calculated and the positions of all parcel areas will be tentatively fixed. Generally, a land owner will get his/her land in the original location, where his/her majority of land falls or his house exists. During the planning of minor roads, demolition of house will not be carried out. If it is economical to demolish the house, than to relocate the main road, the house will be compensated to rebuild in the new location of parcel. The land parcel of small plots may be located on smaller plot depth areas. The tentatively fixed parcel will be decided after discussion with land owners. The new parcels plans will be prepared with tentative parcel No, area and dimension of parcel. The field book will also be prepared and provisional land certificates will be issued. The demarcation of all parcels in the field will be set out including road by concrete markers using existing ground control point established during topographical survey. The above cadastral plans will be also printed to the scale of the cadastral map with new parcel numbers and sent along with field book to Survey Department for approval. The new maps and records will replaced the existing maps and records after approval of Survey Department, concerned district survey office and Land Revenue office. The concerned office will issue the final (new) land owner registration certificates to land owners.

- Finalization of Infrastructure Plans and Cost:

After updating maps, the minor changes of minor roads and other infrastructures will be carried out and final drawings, cost estimates and tender documents will be prepared.

- Construction of Infrastructure:

The track road will be opened on the demarcated areas and construction will be carried out as per planned schedule. The land owner will be compensated for the crops which they would be unable to cultivate. The construction will be carried out

phase wise basis block by block. The road, drainage, sewer line and electricity poles and line will be constructed completely one area by another areas. It will be generally contracted out and supervised and monitored by the project office in collaboration with users' committee.

3.5.6 Problems Encountered

The problems encountered of the implementation of land pooling projects are social feasibility or convincing land owners for land pooling, weakness of cadastral map and records, management of small parcels, location of returned parcel and financial problems.

- **Social Feasibility:**

It is hard convince the land owners to agree to allow their land to carry out land pooling. They are sure that the value of land will be increased tremendously after land pooling. The project office should seriously explain and commit that the program will be implemented as per schedule and honestly. Some political parties or local land brokers may disturb the work and misguide the land owners. It will be seriously delay the schedule.

- **Weakness of Cadastral Maps and Documents:**

The cadastral maps have errors due to smaller scale of maps, difficulty to match adjoining sheets and errors of land records. Some of the parcel may not be registered or has litigation or on mortgages. If the total area of the project and the summation of area of all parcels as per the land records are same or more or less same, it will not be the problem. Because, new parcel may not be the same and after land pooling the owners will have undisputed, accurate map and document for future. The mismatching of adjoining sheets will be solved. The unregistered land disputed ownership or on mortgaged land will also be readjusted and returned to the land owners with ownership situation as it existed.

- **Management of Small Parcels:**

The small parcels will be managed by consolidating the other parcels to form a better parcel. If the owner has parcel smaller than minimum size, he/she will be provided minimum size of parcel, however the owner required pay the present

price of extra land in installments basis or he/she has to sell his land to the project which is against the objective of the program.

- **Location of Parcels:**

The parcel will be located to its original position. The existing house/building will not be shifted. The owner of parcels located 2 or more places will be consolidated and allowed to choose the location. Similarly, owner of smaller parcel required to shift to the area of low plot depth or procure more land from the project.

- **Financial Problems:**

There will be no fund in initial stage or without developing infrastructure and selling the service plot. Fund is also required for the feasibility study, detail planning and construction of infrastructure of priority areas. It is usually carried out by the assistance of central and local governments, seed money, or bank loans. After selling the parcels first year lot, the project will have required fund for infrastructural development and payment of loan if any. The poor and landless/houseless persons will not be considered in land pooling program because it looks after the interest of land owners and government may purchase the service plots and distribute to poor at soft loan. There will be numerous financial problems encounter during implementation, which will be solved in consultation with users' committee and members of project management committee.

3.5.7 Built Environment

The land pooling improves the environment of the city or municipality at the investment of land owners. It will conserve cultural and natural heritages existed in the area and provide spaces for tree plantation. Past land pooling considered only the conservation and improvement of cultural and urban recreational environment. Instead of taxing more to the uncultivated land in urban areas, municipality should encourage land owners to have more trees and open spaces in city areas. The urban greens are being planned in higher slopping areas with walkways along with terraces in land pooling areas. It may require tree plantation or grove with number of trees ten times of the projected population to meet the climate proof goals. Therefore, it may require 10-15% of land for park and open space instead of 5% presently prescribed. The areas for water harvesting, solar, wind or

bio energy generation and composting facilities of solid waste should be assigned. The government and donors should encourage and assist the land pooling program on production of alternate energy and water harvesting.

3.6 Pre-requisites and Success Requirement of Land Pooling Project

Land pooling project must be supported by the national, regional and municipal governments. There is need for greater role of government in sharing project cost. The land readjustment agency must be given powers to coordinate and to get access to assistance from various government departments. The land registration and cadastral system needs to be efficient; and so is the technical resource at local and national levels. As the method is based on public/private cooperation, the majority of the landowners should support the use of the technique. Agricultural land use of the plots should be converted to other more economical uses by housing development in the land pooling areas. Coordination with the city's development plan is needed. Greater attention on *social equity*, to cater to the land/housing needs of lower income groups and integrating peripheral communities.

3.7 Replotting Policy

Extensive discussion with the concerned user's committee & will be adopted to return the plot. The general re-plotting policy should be as follows:

- Location of the plots should be as close as possible to their original location.
- The smallest plot size should be at least 80 m². (i.e. 0-2-2-0)
- If returned plot becomes < 80 m², additional land required to make it 80 m² should be charged to the land owner at the price decided by the project. If the owner doesn't want to buy such land, project will buy that plot paying the cost that project had decided.
- Minimum plot frontage - at least 6 m.
- If the plot is < 130 m², (i.e. 0-4-0-0) the corner plot contribution will be charged only for 130 m². If the plot has roads on both sides & the plot depth is not enough for double plots, the plot will contribute as if it were a corner plot.
- Corner plot contribution will not be charged if it is in a junction made by dead end road.

- If the existing plot owner doesn't agree for the corner plot, then it will be offered to the nearby big plot. If a bigger plot is not possible there, it will be plotted as reserved plot.
- When re-plotting is done where there is house, 1.5m set back is left from the side with window and door side but only 1m is allocated on the roadside
- For the plots served with footpath wider than 1.5 m, contribution will be calculated as per the footpath served plot for up to the first plot depth (i.e.18 m) & alley served plot then after.
- For the plots served with footpath less than 1.0 m, contribution will be calculated as per the alley served plot for up to the first plot depth (i.e.18 m) & treated as no access then after.
- Plots adjacent to the open space should contribute 1% more & if the boundary of the open spaces is road having width less than 8m then the front plot should contribute 0.5%.
- After re-plotting map is prepared, the plot register is prepared and the Land management sub-committee approves it.

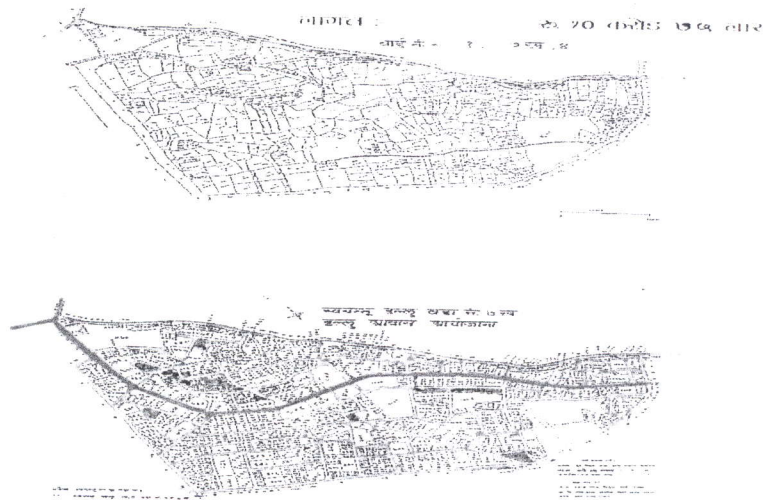
3.8 Some Completed Land Pooling Projects in Nepal

- **Dallu Land Pooling;**

Project: Dallu	Location: KMC	Ward no.15	Duration: 12yrs
Start: 1991	Complete: 2003		Area(ha):19.80
No. of holding: 455 %	No. of plos: 698		Open Space: 7.0
Circulation: 25.0 %	Commercial use: 8.0 %	Contribution: 40.0%	
Residential use: 60%	Min. plot size (m2): 80		
Management Committee Headed by: Mayor			
Legal basis: S & S Proj. 1977, TDC Act 1988			



Fig 3.5 Dallu Land Pooling Project from Google



gFig 3.6 Dallu Before and After Land Pooling



Fig 3.7 Dallu land Pooling and Housing Development

- Gopi Krishna Land Pooling

Project: Gopikrishna, Chabahil Location: KMC Ward no. 7 Duration: 7 yrs
Start: 1995 Complete: 2002 Area (ha): 8.9
No. of holding: 242 No. of plots: 259 OpenSpace:3.8 %
Circulation: 22.7% Commercial use: 7.0%
Contribution:33.6%
Residential use: 66.4% Min. plot size (m2): 80
Management committee headed by: Mayor
Legal basis:TDC Act 1988



Fig 3.8 Gopikrishna Land Pooling Project from Google

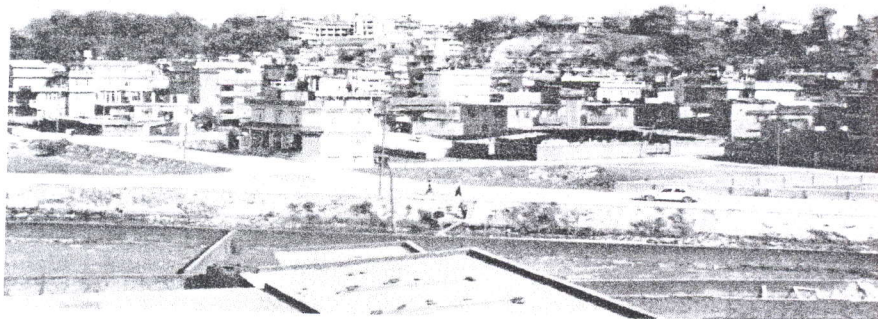


Fig 3.9 View of Gopi Krishna after Project



Fig 3.10 Gopi Krishna Land Pooling Map After Project

- Bagmati Phant Land Pooling

Project: Bagmati Phant	Location: LSMC Ward no. 10	Duration:
9 yrs		
Start: 1992	Complete: 2001	Area(ha): 9.8
No. of holding: 239	No. of plots: 258	Open Space:
Circulation: 19%	Commercial use: 2.7%	
Contribution: 21.7%		
Residential use: 78.3%	Min plot size(m ²): 80	
Management committee headed by: Mayor		
Legal basis: 1977 TDC Act 1988		

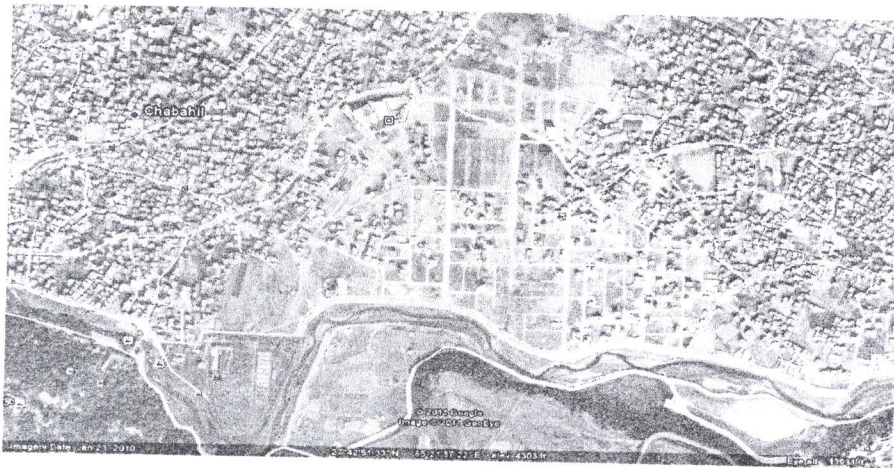


Fig 3.11 Bagmati Phant Land Pooling Project from Google

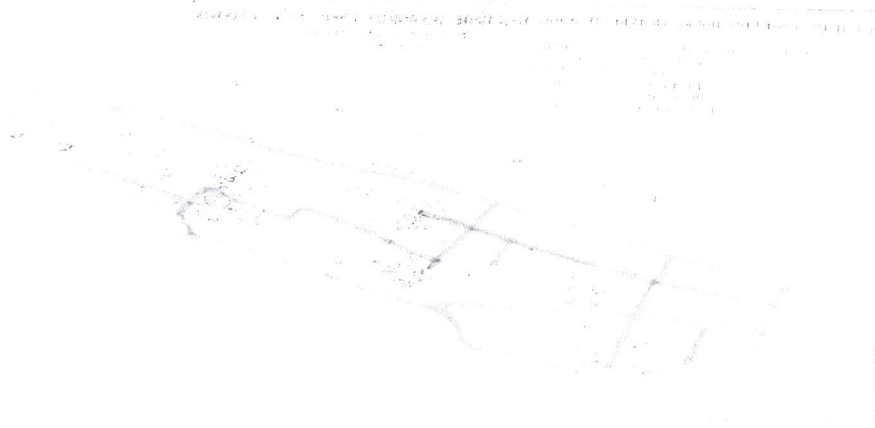


Fig 3.12 Bagmati Phant Developed Parcels



Fig 3.13 Bagmati Phant After Land Pooling

• Lubhu Land Pooling

Project: Lubhu Location: Lalitpur District, Lubhu VDC Duration: 3 yrs
 Start: 1993 Complete: 1996 Area (ha): 13.5
 No. of holding: 207 No. of plots: 243 Open space: 4.4%
 Circulation: 17.9% Commercial use: 9% Contribution: 31.3%
 Residential use: 68.7% Min plot size(m²): 80
 Management committee headed by: DDC Chairman
 Legal Basis: TDC Act 1988



Fig 3.14 Lubhu Land Pooling Project from Google



Fig 3.15 Proposed Area and Parcels in Lubhu

- Kamalvinayak Land Pooling

Project: Kamalvinayak
4yrs

Location: Bhaktapur Ward no. 4 Duration:

Start: 1991

Complete: 1995

Area (ha): 7.3

No of holding: 170

No. of plots: 205

Open space: 4.2%

Circulation: 21.5%
32.5%

Commercial use: 6.8%

Contribution:

Residential use: 67.5%

Min plot size (m²): 80

Management committee headed by: Mayor
1988

Legal basis: TDC Act

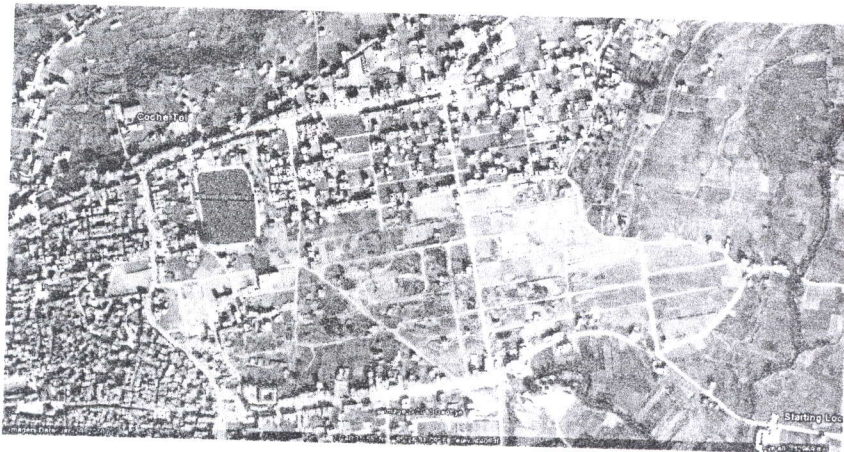


Fig 3.16 Kamalvinayak Land Pooling Project from Google

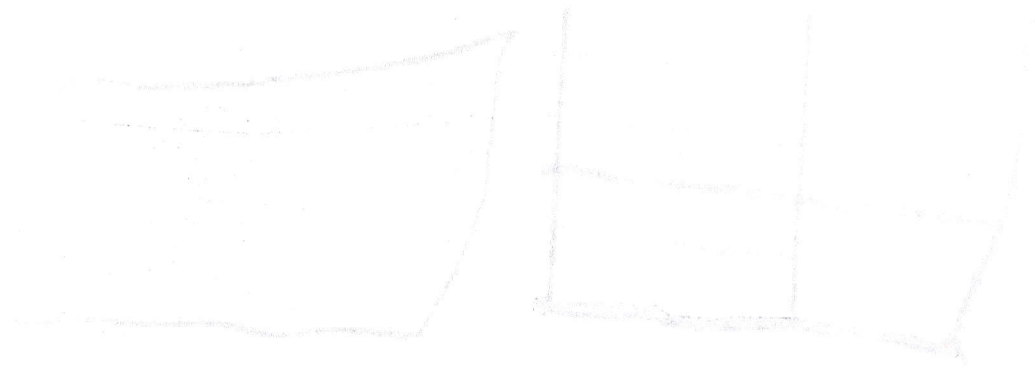


Fig 3.17 Kamal Vinayak Before and After project

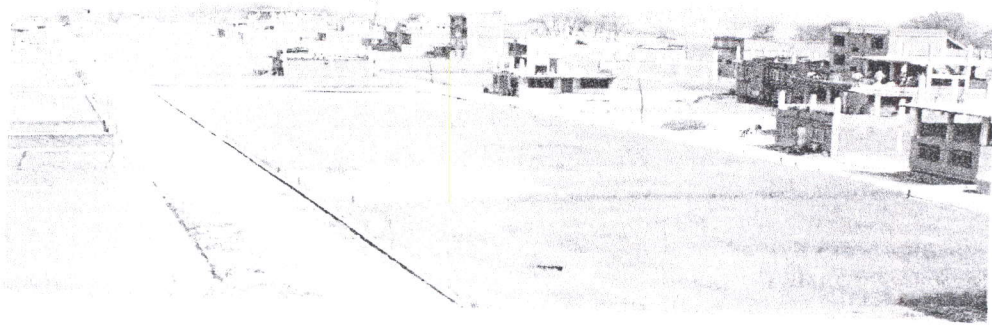


Fig 3.18 Kamal vinayak Land Pooling Area

- Sintitar Land Pooling

Project: Sintitar
3

Location: Madhyapur Thimi Municipality Ward no. 1 & 3

Duration: 7 yrs

Start: 1996

Complete: 2003

Area (ha): 26.5

No. of holding: 812

No. of plots: 871

Open space: 3.4%

Circulation: 18.8%

Commercial use: 10%

Contribution: 32.2%

Residential use: 67.8 %

Min. plot size (m²): 126

Management committee headed by: Mayor

Legal basis: TDC Act 1988.

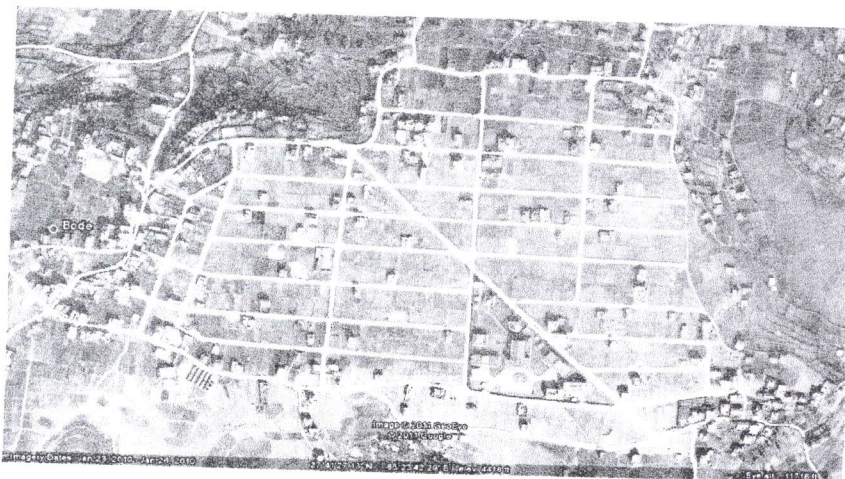


Fig 3.19 Sintitar Land Pooling Project From Google

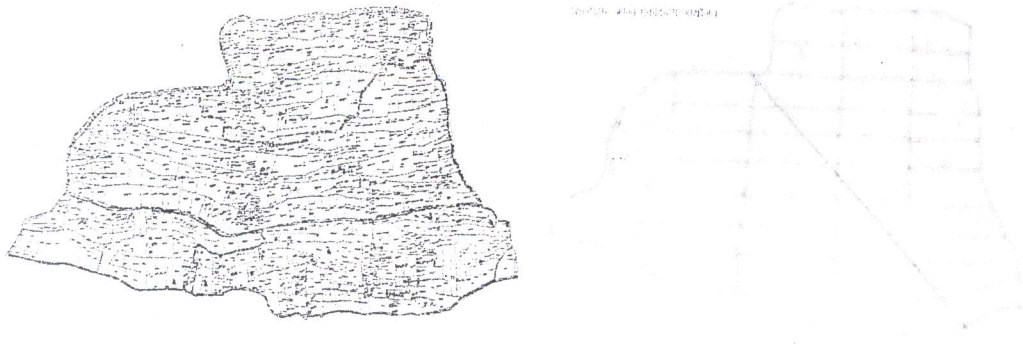


Fig 3.20 Sinsitar Before and After Project

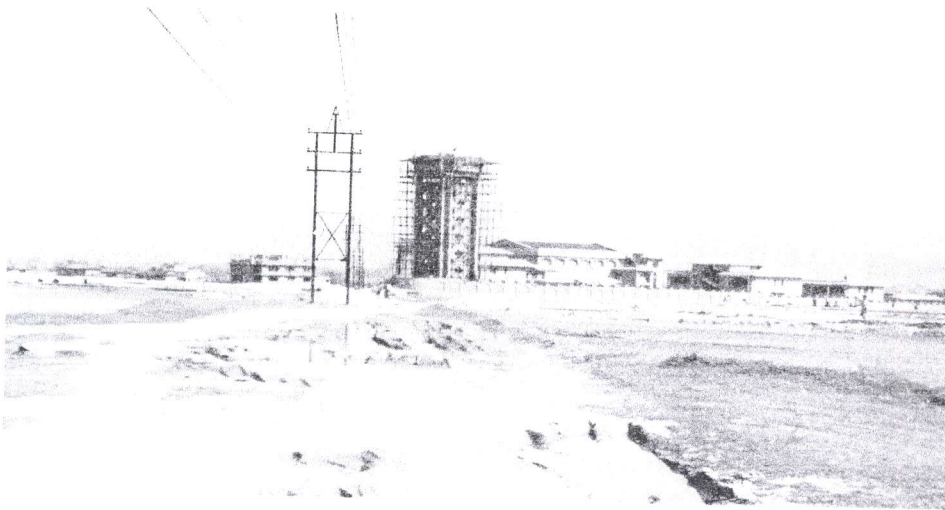


Fig 3.21 Sintitar land pooling area

- Sainbu Land Pooling

Project: Sainbu	Location: Lalitpur District, Sainbu VDC	Duration: 12 yrs
Start: 1991	Complete: 2003	Area (ha): 27.6
No. of holding: 536	No. of plots: 611	
Open space: 12.9%	Circulation: 22.8%	Commercial use: 20.3%
Contribution: 56%	Residential use: 44%	Min. plot size (m ²): 126
Management committee headed by: DDC Chairman		
Legal basis: Land Acquisition Act 1976 & TDC Act 1988		
6% for o.s and 6.9% for school, market and office area		



Fig 3.22 Sainbu Land Pooling Project From Google



Fig 3.23 Sainbu Before and After Project



Fig 3.24 Sainbu: View After Land Pooling

- Sinamangal land Pooling

Project: Sinamangal	Location: KMC Ward no. 35	Duration: 8 yrs
Start: 1995	Complete: 2003	Area (ha); 35.1
No. of holding: 660	No. of plots: 964	Open space: 5.3%
Circulation: 20.3%	Commercial use: 7%	Contribution: 32.6%
Residential use: 67.4%	Min. plot size (m ²): 80	

Management committee headed by: Mayor

Legal basis: TDC Act 1988



Fig 3.25 Sinamangal Land Pooling Project From Google

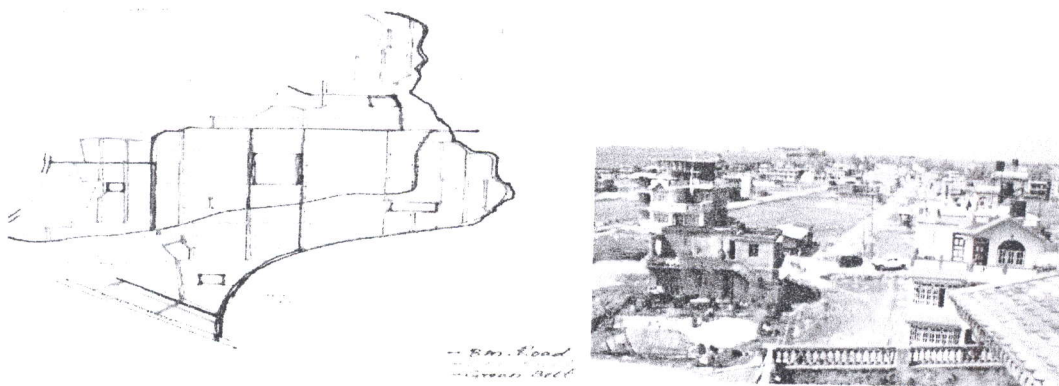


Fig 3.26 Sinamangal After Land Pooling

3.9 Pros and Cons of Land Pooling

Pros:

Land pooling discourages sprawl growth i.e. allocation of resources are in confined area with varieties. Constructions of all types of Infrastructure are possible using available modern technologies. Maximum use of local materials and labor causes poverty alleviation due to increase in income. Highest level of public, private partnership can be accessed. Flow of fund and investor in the area is supported. Housing development can be accessed. Establishment of services centers is promoted. 10 % serviced land allocation for low income people and deprived groups is possible (Town Development Guideline, Cl 5.2). Land pooling is playing vital role in improving daily life style in terms of income and expenditure of the people. Land pooling projects are attracting many financial institutions as well as other business houses in the periphery. Land pooling projects are helping to expand neighborhood area. Overall economic development can be seen in the land pooling areas.

Cons:

Pricing of developed land is always high. Land records may be incomplete and incorrect. No legal frame work to resolve disputes has been formulated. There inadequate skilled man power and inadequate financial resources. There is no provision for government subsidy in developing infrastructure. Coordination and integration of infrastructure between the different services is poor. There is always poor definition of relocating the new plots. Less effort is given on environmental aspect. There is no provision of plots for poor but there is compulsion to landlords to contribute although they were in good location. Long time is consumed for completion of project. Financial viability is not proved. There is no framework for community participation. Physical and social infrastructure lacks specific standard. Projects are predominantly for middle economic class people and no consideration for economically weaker section. Wide scale speculation of land by landowners after development can be observed. Land readjustment works are best when implemented in small to medium-size areas. There is excess and shortfall of areas during re-cadastral survey.

3.10 Land Readjustment in Different Countries

3.10.1 Land Readjustment in Republic of Korea

Land readjustment was introduced in Korea by the Japanese colonial power in 1934 with the Colonial City Planning Act (Lee,1990). After the Korean War, the method was used to provide basic urban services and revitalize urban centers. During the 1960s and 1970s the country experienced rapid urbanization and economic development. Several very large and more comprehensive readjustment projects of typically 300-400 hectares were implemented mostly in the urban fringe (Lee,1987). As much as 64 per cent of all completed projects in Seoul until 1987 had been developed during the time period 1960-1980(Park, 1991). In the 1980s several factors contributed to a shift towards outright purchase and development by public corporations such as Korea Land Development Corporation and Korea National Housing Corporation. These included: (a) excessive increases in land prices and rampant land speculation in and around the project area; (b) strong resistance from landowners owing to the fact that less than half the land was returned; (c) the revenues from the sale of the acceptable amount of land were sometimes inadequate for the provision of roads, open spaces and public facilities forcing a reduction of standards; and (d) the Government considered that past projects had not provided adequate distribution of betterment gains between the public sector and landowners (Park, 1991 and Lee, 1987). Since the introduction of the Residential Land Development Promotion Act in 1980, 143 sites have been designated for "public development" and only five for Land Readjustment until 1987(Ministry of Construction, Republic of Korea, 1988). In total, 347square kilometers land has been developed with the land readjustment technique since its introduction. However, during the 1980s, land readjustment was common in urban redevelopment project and the special joint renewal program, initiated in 1983, mandated landowners and residents to form an association which could invite construction companies to be responsible for the development process. Most current residential renewal projects in Seoul use this program (Lee, 1990).

The latest land readjustment projects have included a strong element of cross-subsidy for the provision of low-income housing and only about 42 per cent of the land has been returned to the landowners. In four areas, public housing corporations have been provided serviced land for the construction of housing units for low-income groups at

50 per cent of the price of other sites (Lee, 1987 and 1990). Moreover, these projects created areas which integrated different income groups.

3.10.2 Land Readjustment in Japan

When a land pooling project is implemented by a public authority, the implementing agency must exhibit the project's Action plan to the public for two weeks according to Japanese system. The outline of the project's design specified in the action plan must be approved by the Prefectural Governor or Minister of Construction. When a land pooling project is implemented by an association, two-thirds of the landowners and leaseholders in both numbers and acreage within the project area must approve both the agreements and the action plan. Once approved, the association applies to the Governor for legal establishment of the project. The approved agreements and action plan are then exhibited before the public for two weeks.

- Control of Building Activities/Application Rights

The construction of buildings is subject to approval by the prefectural governor through the appropriate implementing body during a land pooling project. The governor's control over building activities begins on the day the Action Plan is promulgated, and ends after replotting disposition is carried out. During the governor's building control period, the governor may regulate alteration of lots, all new construction, enlargement and/or rebuilding of structure, installation and/or heaping of goods and loads which weigh more than five tons and are a hindrance to project completion. If a building is constructed without permission, the governor may order them removed or rebuilt at another location after soliciting the opinions of the builder and the implementing body.

- Land Pooling Council

A land pooling council is established for projects implemented by a Public Authority. The purpose of the council is to protect the rights of landowners and to ensure that landowner opinions are reflected in the replotting disposition. Council members are elected representative landowners and leaseholders within a project area. The council size is dependent on the project area, but is usually between 10 and 50 members. Representatives serve terms of not more than 5 years. The implementing agency must seek the Council's agreement on issues pertaining to the selection of evaluators,

decisions on reserve land, decisions on “no-delivery” of replots, special disposition for special sites, and what constitutes an “excessively small” site or leasehold. The council may make suggestions for replotting design, give opinions on the creation and alteration of replotting design, the designation and alteration of temporary replotting, and the amount of compensation for decreased land value after replotting disposition occurs. The council is convened by the implementing agency and a chair is elected by the representatives. In a land pooling association, all landowners and leaseholders within the project area become members of the association. The executive board of an association is made up of at least five directors and two auditors. At a General association meeting, decisions are made with the entire association. If the number of association members exceeds 100, a Representative association meeting may be established, and the number of representatives are established by the Agreements of the Association.

Land and building evaluators are enlisted by associations to determine land values, existing rights for lands designated as reserve land, compensation for decreased value, and payment of equity in the replotting design. When a project is implemented by a public authority, evaluators are selected by the implementing body with the approval of the council.

- Replotting Design

Replotting design refers to the reallocation of land to landowners, less contributed land, within a project area using specific guidelines. A replotted parcel must “correspond” to its pre-project plotting with regards to location, acreage, soil condition, accessibility to water supply, land usage, and environment. The term correspond means a replotted lot must resemble the original lot in regards to the relative balance of the various factors listed.

- ✓ Location: “absolute” means location recorded in property register; “relative” means location relative to surrounding sites and/or facilities. Location of a site as it relates to degree of site utility is the basis of property value. Absolute location cannot be maintained if the parcel is replotted because the meets and bounds change. However, relative location can.

- ✓ Acreage: the size or extent of land over which rights are claimed. Must assume relative acreage because the meets and bounds of property may change in replotting.
- ✓ condition: composition, strength/weaknesses, fertility, moisture content.
- ✓ Accessibility to water supply: relationship to water supply and drainage capacities, canals, rivers, and water channels. Water is especially important if post-pooling land is to be use for agriculture.
- ✓ Land usage: zoning and other restrictive planning measures.
- ✓ Environment: natural and social environmental factors of pre-project are retained in replotted areas.
- Removal of Buildings and Compensation
 - ✓ Building removal occurs in two ways, negotiated removal or direct execution removal. Negotiated removal occurs when the demolition of a building is successfully negotiated between the owner and the implementing body. Direct execution removal occurs when the implementing body demolishes a building without the consent of the owner. Direct acquisition may occur in the following cases:
 - ✓ A landowner is not satisfied with the replot or the monetary compensation received and will not agree with removal;
 - ✓ There is conflict among owners concerning land and buildings;
 - ✓ The landowner cannot be located or is an absentee landlord residing away from the project site.

The bottom line is that a building owner can negotiate compensation for removal of their building with the implementing body, or the building will be removed by the implementing body without consent or compensation. After necessary buildings have been removed, land planned for roads and parks are prepared and construction of public facilities begins.

3.10.3 Land Readjustment in India

In India, urban land development has occurred mainly through the long drawn and time consuming process of urban accretion on the fringes of existing towns and cities. Land policy instrument are used by states and local planning authorities of India to achieve planned development of urban land. Towards this, many urban development

authorities and other public agencies have pursued the policy of large scale acquisition, development and disposal of land.

Unlike the state run system, the commercialized land supply system functioned independently for shelter supply. The earlier method of individualized transfer and subdivision of properties in developed areas continued but was overtaken by the large scale subdivision and sale of agricultural land into residential plots. This was an organized activity taken up by the large number of real estate and land development agencies that came up in this period.

Then master plan for Delhi was prepared with an intention to guide development upto 1981. It proposed a balanced distribution of population in Delhi and selected ring towns and greater access to facilities by the division of the city into eight self-contained planning divisions and improvement of living and working conditions in already built up areas.

The proposals of the Master Plan were to be strengthened and implemented by means of the large scale land acquisition, development and disposal policy which had four major goals. They were as follows:

- To achieve optimal social use of land.
- To ensure the availability of land in adequate quantities at the right times and for reasonable prices to both the public authorities and individuals.
- To prevent the concentration of land ownership in a few private hands and safeguard the interests of the poor and underprivileged.
- To control land values and to eliminate speculative profits.

According to this programme land prices for low income households were proposed to be subsidised through auction proceeded of commercial, industrial and high income residential plots. Middle income households were to get land at the actual cost of acquisition and development. Out of total number of residential plots 50 percent were to go low income group, 30 percent to middle income and 20 percent to high income group.

In India planned supply of urban land has been attempted in the form of new town too. For example this include Chandigarh, Bhubaneshwar, Gandhinagar, New Bombay and a number of integrated industrial new township. (Tamakuwala 1995:5).

India initially launched its 'sites and services' program in Madras in 1977. One of the best example of sites and services projects in India was that one at Arumbakum near Madras city. (Thapa 1994:9). The main positive features of the Arumbakum project were:

- More than 70 percent of the sites were within the affordable limits of the economically weaker sections.
- Material loan was provided to the people.
- Social facilities such as college industries etc. were also provided.

3.10.4 Land readjustment in Pakistan

Like many other developing countries Pakistan is also facing tremendous population growth in the city causing unplanned urban sprawl and informal settlement development. The most severe situation among the cities in Pakistan is in Karachi with an area of 19474 sq. Km and a population of 10 million. Basically the influx of people in Karachi was due to separation of Pakistan from India in 1947. Since then the population growth of Karachi is as high as 5% per year.

But Pakistan government solved this problem very easily, because of large piece of land was under the federal or public holding. So, the most of people settled in the public land which was later converted into private land.

One of the popular program in Karachi was Metroville development. Metroville program is a totally new type of urban development project. In fact it is a new satellite town development program to check unplanned urban sprawl in the fringe of Karachi city. In this program Master Plan Development suggested a new comprehensive housing policy, together with a program to implement the policy in Karachi. This program included four basic residential development program, they were as follows.

- Improvement and Regularization of unauthorized area (IRP)
- Open Plot Development (OPD)
- Utility Wall Development (UWD) and

- High Standard Development (HSD)

More or less Metroville was defined as a comprehensive program for developing fully integrated and viable self-sustaining urban communities. It introduced the new development concept providing a utility wall with connections for water, sewerage, electricity and gas in smaller plots.

The main objectives of Metroville were

- To provide the proper range of plot types matching the paying capacity of different income groups, particularly responding to the demand of the lower income groups.
- To encourage incremental building to match the family budget priorities and family needs; and discourage forced housing standard through built-up houses requiring more payment for housing and thereby further curtailing already deficit food budget.
- To arrange readily available house building loans to the lower income group, to enable them to finance their own housing.
- To provide 40% of resident labor force employment opportunities within or near to the Metroville site, so as to minimize commuting trips, cut down transportation time, cost and reduce the load on the transportation system.

With above mentioned objective Metroville-1 was designed in an area of 204 acres for an ultimate population of 35,000 persons. It provided maximum number of small plots for low-income families, large playground was placed in the centre of Metroville. Larger plots were planned along wider road to provide easy access for private cars and improve the aesthetic look of the major traffic routes. Basically Metroville Program provides a full range of housing types, including open plot development on 80 to 120 sq.yard plots and utility wall development with water, sewerage, electricity and gas connections on a wall and cemented floor in the kitchen, bath and toilet area. There were also high standard development on larger plots of 240 to 400 sq. yard plots with full utilities.

3.10.5 Land readjustment in Germany

In Germany land readjustment schemes are generally carried out by government with strict guidance of municipal authority. Land pooling instrument is generally used to

supply land for housing and urban development in Germany. Land pooling is being used in Germany since 1885 (but the law was effective only after amendment in 1907), after getting the legal basis by the effort of Lord Mayor Franc Adickes of Frankfurt A. M. In Germany land readjustment programmes are carried out in many forms of urban development. In short land readjustment programmes are extensively used in Germany. For instance, land readjustment project for the last more than sixty years were carried out in most of all the cities of Germany except Berlin. In these cities, where most of the whole urban development has been done by land readjustment. (Muller, 1995:16). Land readjustment is applied in the urban development of Frankfurt very often. The great majority of all district plans were realized by land readjustment. Only the project area owned by one or very few landowners may be realized by the landowners accordingly to the detailed district plan. Most of the land readjustment projects have been implemented to extend the urban development in the suburbs and outskirts in other countries, but in Germany there are also some big and small land readjustment projects for redevelopment of the inner cities.

Land readjustment in Germany has proved to be very effective. This is the result of thousands of land readjustment projects where enormous number of plots for residential, commercial, industrial and other uses as well as public infrastructure has been provided. With land readjustment implementation in redevelopment areas lots of urban deficits have been alleviated by an increase of living standard, good infrastructure and improvement of the traffic situation.

3.10.6 Land Readjustment in Thailand

Like many other countries, Thailand is also facing severe problem of housing and urban development. Bangkok also has a experience of Land Pooling/ Readjustment scheme. In Bangkok most land pooling projects are carried out by local government, but sometimes it is undertaken by government body such as housing authority or highway authorities.

As land pooling provides a means of determining the timing of land sub-division, then a program of pooling projects can be formulated towards the objectives of ensuring orderly urban expansion, countering excessive land speculation and ensuring an adequate supply of land for housing development. So, Thailand government has taken

very seriously for the application of land pooling in the context of city planning and housing supply and has formed a land readjustment committee under Interior ministry. (Singhasilarak, 1993:7).

3.11 Government Policies in Urban Land Development

In Nepal, during the last four decades different towns and local bodies have made efforts to develop land for planned urban expansion and growth. In most of these cases, land was either public land or acquired at a very low cost. In all these land development efforts, the focus was for developing commercial plots. Total urban land needs for different purpose including need of growing urban population for housing and other urban services were ignored.

Serious efforts at urban land development within the overall planning framework was begun in the mid seventies when Nepal adopted a regional development strategy which led to the division of the country into five development regions (Eastern, Central, Western, Mid Western, Far western) each with a designated regional center. Physical development plans for all these regional centers were formulated and adopted by the Government and serious attempts have made to implement these plans through land development efforts and land use control system. A separate Act for planning and development of regional centers was enacted in 1973 and this law provided sufficient authority to the Town Development Implementation Committee (TDIC) formed under the Act to undertake different land development activities.

Many houses built outside the compact settlements during past three decades do not have proper access for emergency services, and it will be a hard task to provide emergency services to the affected households if some natural or manmade disaster takes place. Due to complication of land acquisition, compensation and land owner's resistance have lead some of the sites and services projects to the failure. Of course there are numbers of factors in the failure of projects, but main is the compensation of acquired land, which were very low than the prevailing market rate of the land. So, at present no more sites and services projects are carrying out in the valley due to the complication in land acquisition, compensation and land owner's resistance.

Most of the developing countries do not have effective policies at the national or subnational levels to control the supply and is of urban land nor have they been able

to intervene significantly at local levels to improve the access of the urban poor to owning land. Since the late 1960s, however, many governments have introduced a number of controls mostly directed towards public acquisition, tenure and use of urban land. Though the intrinsic problems associated with urban land management are largely common to most developing countries there exist wide differences between them in their perception of their land problems and the choice of methods for tackling them. Most countries, however, have the objective of striking a balance between the demands for urban land by individuals and the society at large. Effective land policy and control over the use of land are important from the viewpoint of urban efficiency. Market forces normally ignore societal and community purpose are at least served if the land development decisions are left entirely to the market forces in order to maximize the potential of urban land.

Government become urban land developers with the objectives of facilitating government planning decisions, and the provision of a steady stream of land into the market as a means of curbing undesirable increases in the land prices and returning to the government enough to profit from land development to cover the cost of urban infrastructure and help the urban poor to have access to land and shelter.

From the above, it may be summarized that the direct public intervention in the urban land market is necessary in a situation where economically weaker sections constitute the bulk of the population and the market forces are free to ignore the interest of the poor. For effective public intervention on urban land following may be the necessities.

- Town Planning Implementation Act 1973

Actually, this Act applies only to regional development centers. It is designed for different project areas rather than whole city areas. Although, it has been proved as an important legislation which has served as the basis for the institutional structure for urban development and urban planning in Kathmandu Valley.

This Act provides the power to acquire or requisition of any immovable property within the town planning project area.(TPI Act 1973: Section5). Same section further elaborates that it is illegal for anyone to engage in any property transactions, build any structures or tamper with natural cultural resources without the consent of the board. In 1976 under this Act HMG had adopted Kathmandu Valley Physical Development

Plan and formed Kathmandu Valley Town Development Committee and Kathmandu, LLITPUR AND Bhaktapur Town Plan Implementation Committee. Later KVTDC acquired land in three places in Kathmandu Valley and implement sites and services for housing development.

- Land Acquisition Act 1977

If it is necessary to acquire land for public purposes, it can be done through expropriation under Land Acquisition Act 1977. Any HMG agency can acquire land and an officer of any government office may initiate a land acquisition proceedings. In fact any acquisition of land for public purposes carried out under the guidance of chief district officer(CDO).

To acquire a land a notice of intent to acquire is issued. At this point, the local Land Administrator and land Revenue Officer suspend processing for any further transactions concerning the land. Compensation due to the land owner is determined by a compensation fixation committee composed of CDO, the chief revenue officer, the director of the HMG agency concerned, and a representative from the district development committee.

- Town Development Act 1988

This Act was envisaged for the development of town or city, further development of a town or a city and development of a new town or a city with total infrastructure facilities to the people and to develop general people's health, opportunity to economic development in the context of population growth and urbanization in Nepal.

This Act gives power to integrated physical development of city in reconstruction, further development, new town development and land use development in any parts of the Nepal. (TDA, 1988: Section-3)

Section 12 of this Act gives power to Town Development Committee on land development for urban development and housing. It offers power to develop land through Guided Land Development (GLD), Sites and Land Pooling/Readjustment. (TDA, 1988: Section 12)

This Act also includes land acquisition provisions for any type of above mentioned land development in the country. (Ibid: 16)

- Land Use Regulation

Until now there is no zoning laws and subdivision regulations for Kathmandu Valley. In fact, there is no systematic legal control over land use although laws do exist covering land registration, land surveying, transfer and taxation. (PADCO: 122)

In 1973, a land use map of the Valley, titled 'Kathmandu Valley Physical Development Plan', was prepared. But it could not be approved due to various causes and could not get legal status. Then in 1976, the Kathmandu Valley Town Development Committee prepared a series of documents including zoning proposals dividing the urban areas of the Valley into broad land use categories based on the 1969 and 1973 work with the title 'Kathmandu Valley Town Development Plan.' But so far the legal status is unclear or it was not approved.

Similarly another concept was done in 1984 by Kathmandu Valley Town Planning team, with title 'Kathmandu Valley Physical Development Concept.' This report includes land use zoning map of Kathmandu (area only within the ring road) with the title "Proposed Land Use". In this way we can say this first product of land use map of Kathmandu Valley.

Until then there were only policies and regulations in written form. But unfortunately this land use map also has not been used properly, because so far this map hasn't received legal status. So, it can be said that until now there is no legal land use document for Kathmandu Valley. (Ibid: 123)

In 1988, Kathmandu Valley Town Development Committee developed a revised 'land use plan' for the valley and is still in discussion and has so far no legal status. In the same year in 1988, 'Land development and conservation scheme' was introduced. But this generally emphasizes on local area development planning. But in the absence of approved land use plan, it has a very little contribution on the urban development.

In 1991, Halcrow Fox and Associate were appointed as a consultant by Asian Development Bank to prepare a comprehensive plans and program for the development of Kathmandu. It produces a huge volumetric report (7 volume) from problem identification to recommendations in each and every field of urban development. But it also lacks the concrete land use zoning plan. It is in use in great extent.

3.12 Housing: Theories and Practices

3.12.1 Theories of Housing

Different theories with relation to housing are given by Turner Burgess, World Bank, which are discussed herein. These theories have to be followed while formulating and developing a land pooling project.

- **Structuralism:** According to this theory, the construction of the infrastructure should be such that they should confirm the strength requirements to the users to protect from deterioration, decay, damage due to rain, wind, heat, snow and other external forces as seismic ,fire hazard etc.
- **Functionalism:** According to this theory the infrastructure should function well for an expected lifetime with satisfactory services and necessary amenities.
- **Formalism:** According to this theory infrastructure should be pleasant in look, aesthetics, cultural and social reflections should come out in the scene.

3.12.2 Nepal Land and Housing Development Association

The association works for the following aspects.

- **Planned Housing**

Nepal Land and Housing Development Association (NLHDA) understands that regulated Planned Housing is absolutely necessary for a better city.

Construction in Nepal is growing at a tremendous speed. In fact we see a trend that most of the remittances that enter into Nepal is being used for construction of these houses. Unfortunately majority of the construction is carried out in a haphazard way and in an unplanned area. If this trend continues in no time our city is certainly to be registered as one of the ugliest built cities in the world.

As a matter of fact, this trend has to be stopped. Government including the private sector must work on promotion of planned housing. More strictly, building of houses should be regulated keeping in mind the growing demand of urban construction and therefore haphazard growth of the city landscape.

Their proposal to all of the authorities is to take them in symbiosis in planning of the cityscape and the vertical growth.

- Land Pooling

NLHDA strongly believes that Land Pooling can be a healthy solution to the congested infrastructure of urban construction.

NLHDA, in symbiosis with the government, conceives of several of land pooling projects in such areas where more development can be ensured through the pooling project. In such doing, they believe, they should not only become able to plan a particular area right from the beginning and thus can ensure link roads to the roads and from a sewerage to a green area. All of this can only be achieved if they are allowed to acquire a large piece of land and develop it as a perfect residential colony or a business zone.

Due to the haphazard development that usually otherwise takes place in the Kathmandu valley is making it uglier by the day. It is a well-known fact that the construction takes place without taking any basic amenities into consideration. More dangerously people also do not seem to care for any facility or the locality's long-term development interest and just keep building. Also adding to the woe is the people who already live in a locality also do not act on making it better.

All of these problems can be solved with only one solution: and it is through land pooling by private players like them according to their declaration. Therefore they request the government should take action on this behalf and bring forth the Land Pooling Act. If the Act is introduced with their consultation, they of course shall adhere to the provisions then declared.

3.12.3 Housing Situation in Major Cities

Activities that we see are for the fulfillment of the needs. Needs have to be fulfilled otherwise it can create a bad situation. Housing is one of the basic need and hence it needs to be fulfilled. Nepal spends only 0.3 per cent of GDP in housing, in three years it is spending 6 billion from GDP of 583 billion. India spends 4 and China 6 per cent of GDP. The urban housing attains increased significance because the countries receive more contribution from the urban areas. The 12th Plan is expecting a 75 per

cent contribution from the urban areas which is not possible if the urban housing is not given due attention. Only 77.8 % of the people in the urban areas felt the provision of housing to be adequate, 21.6 per cent of the people found it inadequate which shows the eminent need for housing. The urban population growth rate is almost double of the rural population. At the present, only 72 per cent of the people own houses in the urban areas. The squatter population has almost touched 10 per cent. The temporary housing type is almost half of the total housing. The number of renters is quite significant with 23 per cent. 30.6 per cent of the urbanites are still using wood as the cooking fuel. Only 87.4 per cent of the people are using electricity for lighting purposes. The buildings with damp walls and leaky roofs are close to 10 per cent needing for the up-gradation of the existing houses. Many buildings are vulnerable to flood. Only 53.3 per cent of the urbanites have access to piped water.

3.12.4 Supply and Demand of Land and Housing

Nepal opened to the outside world in the year 1950. However, the urbanization process got accelerated only in the last three decades starting with the early 1970's. The urban population which was just 2.9 % in 1952 in 10 designated urban areas grew up to be 3.6, 4.1, 6.3 and 9.2 % in the year 1961, 1971, 1981 and 1991 respectively and they were distributed among 33 urban areas (Bhattarai 2003). The contribution of major urban centers like Kathmandu valley is obviously significant.

The population of Kathmandu is escalating at tremendous speed with the growth rate of 6 % per year. Due to ever increase in population more and more people need to be accommodated and there has been shortage of land and housing in the city. PADCO (1986) estimated that the residential land requirement is 3849 ha and 720 ha in 2001 as compared to 1569 ha and 378 ha in 1981 in Kathmandu and Lalitpur. On the other side there has been haphazard & leap-frog development of the land in Kathmandu. Also, conversion of land from agriculture to urban use has been rapid. Public sector housing in Nepal is still hiding besides large flock of urban population since housing is still considered as an individual responsibility.

Table 3.1 Required dwelling units for extra increased population by 2021

S N	Particular	Extra pop	P/house hold	Required dwelling unit
1	Housing deficit till 2001	492774	5	98554
2	Extra housing needed from 2001-2011	448991	5	89798
3	Extra housing needed from 2011-2021	576564	5	115313
	Total required dwelling units till 2021			303665

Source: TDC

Table 3.2 Land required for housing between 2000-2021

SN	Year	Projected population increase	Projected gross residential density (pop/ha)	Gross land required
1	2000-2011	507224	300	1691
2	2011-2021	576834	300	1923
	Total	1084058		3614

Source: TDC

To cope with the rapid growth of urban population and to provide a planned urban space with provision of basic infrastructure and services, public agencies have launched several land development projects: Site and Services, Guided Land Development and Land Pooling. There is a need of 732000 houses to be upgraded. Among these 60000 are in urban areas of the country.

3.12.5 Housing Finance

Previously, housing loan was not available from the financial institutions to commoners. It was available to employees of financial institutions only as an incentive. Karmachari Sanchaya Kosh (KSK) started providing housing loan in 1971/72 A.D. for the depositors with the interest rate ranging from 8 to 12 percent. Nepal Housing Development Finance Company is the first finance company on housing established in 1989. It grants loan for improvement of existing housing arrangement, launching new housing schemes, and providing housing related services. It provides maximum tenure of 15 years at a 12% p.a. All loans are payable to the

company on an Equated Monthly Installment (EMI) basis following diminishing balance principle

3.12.6 Private Housing Development

Government alone cannot provide housing for all needed and land management required; hence private housing should come in action. Though the private housing is not affordable to urban poor its study is a major area of concern for an urban planner. Private housing development in the country in organized way started with Tashi Rijal industries entering into the scene in the seventies. Ansal Chaudhary Company was the first of its kind in rendering the services with the sale of apartments, the *Kathmandu Residency* in Bagdol of Lalitpur. Then after, as many as 30 private companies have come forward in supplying the houses; but only 15 companies have got the necessary sanction from the Kathmandu Valley Town Development Committee. So far as the physical fitness is concerned, the houses built by the housing companies are fine. But these houses lack the economic fitness. The housing companies have very often provided the housing loan from the financial institutions. Only organized housing can cater to the need of urban housing.

3.12.7 Housing Policy Favoring Poor

For subsidizing poor, following policy can be adopted. If the actual cost of land is x , then MIG will pay the amount of x for that land. For lower income group the cost can be subsidized to $0.75x$ and for EWS the cost can be subsidized to $0.50x$. Educational institute will have to pay $0.20x$. Social institution will pay $0.40x$. The amount of subsidy for these can be got from HIG and commercial use and industrial use. HIG will pay $2x$ or more. Commercial use will pay 10 times of x while industrial use will pay 2 times of x .

3.12.8 Shelter policy

Following objectives have been incorporated in shelter policy.

- Increase availability of dwelling units by
 - ✓ Increasing supply of serviced lands
 - ✓ Increasing basic infrastructure
 - ✓ Improvement of the use of building materials
- Promote effective mobilization of financial resources by
 - ✓ Mobilizing land and housing credit delivery mechanism

- ✓ Developing cost recovery of public investments in land, physical infrastructures
- Improve organizational structure
 - ✓ Make Clarify role of private and public sector
 - ✓ Make necessary institutional arrangement
 - ✓ Introducing appropriate and effective laws and regulations
 - ✓ arrangement for the data base

3.12.9 Interim Plan

Interim plan is a three year plan of the nation. This plan was introduced after changes in the political situation of the country with the downfall of Shah Dynasty. This plan consists of following objectives and programs to meet those objectives.

- Objectives
 - ✓ Management of uncontrolled urbanization
 - ✓ Strengthening of rural urban relation
 - ✓ Provision of affordable housing through partnership with the private sector
 - ✓ Use of appropriate technology for making the public buildings safe and cost effectives
- Programs
 - ✓ DPR of Outer Ring Road of 40 km
 - ✓ Preparation of physical development plan for 30 municipalities
 - ✓ Conduction of model infrastructural construction program in 25 districts
 - ✓ Preparation of road and drainage network plan for 28 would be municipalities
 - ✓ Loan for 1000 poor families
 - ✓ Physical environment improvement of 25 slums
 - ✓ Physical improvement of 5000 rural houses
 - ✓ Distribution of 2000 low cost houses
 - ✓ 500 poor families to get housing facility
 - ✓ Development of dense settlements in one settlement of 6 districts
 - ✓ Rehabilitation of 600 displaced families
 - ✓ 12000 housing plots to be made available through land pooling
 - ✓ Repair of 1000 houses

- ✓ Conservation of 15 palaces
- ✓ Retrofitting of 12 houses following the Building Code

3.13 Housing, Problems and Policy in Europe

- Housing

Housing policy is usually analyzed in economic terms, as a form of market. In theory, markets lead to efficient allocation through a complex process of matching supply and demand. This depends on competition (to bring prices down); good information; the existence of multiple suppliers; and the existence of multiple purchasers. In housing, this theory has limited application. Barlow and Duncan point to

market closure. Housing production and finance are dominated by a few major players.

the impact of space. Location is acutely important in the housing market; there cannot, because of it, be perfect information and full and free competition.

externalities. Housing both affects the environment and is affected by it.

credit allocation. The housing market is paid for mainly by borrowing, which has to be based on predictions of future value. It is very unlike the market for food.

uncertainty . Because the future is uncertain, so is the housing market. Regulation and intervention are important to reduce uncertainty.

market volatility . Prices are dominated by a limited part of the market - those who are buying and selling property at any time.

the problem of meeting need. If profitability is the only consideration, people will be left with needs unmet - most obviously, through homelessness.

- Housing problems

The root of many problems in Europe is a shortage of adequate housing. This statement may seem strange, because most European countries have a crude surplus of houses over households. There are three main reservations to make about that calculation.

The housing has to be fit to live in. Several countries have regrettably stopped collecting this data, but in 2000, the European Community Household Panel found that more than a fifth of the population in France, Greece, Italy, Portugal and Spain had problems of shortage of space, rot or damp. In the UK it was more than a quarter.

The number of households depends on the number of dwellings. A 'household' is defined as a group of people who normally live together, and households have to fit into the houses that are there. Some countries in Western Europe have half the number of persons per room as countries in the former Eastern Europe.

The houses have to be available. Some housing is owned as a second home; some is in the wrong place; some is uninhabitable. A third of the houses in Greece, and over a fifth in Italy and Spain, are vacant.

Good housing is in short supply. That makes it expensive. Because housing operates in a market, the people who are most likely to be left out will be those who have least resources. People have to live where they can; so they have to live in unfit accommodation, and they may have to accept overcrowding. The shortage also leads to increasing prices, creating problems in the supply of affordable housing.

- Homelessness

Homelessness is a complex problem; the circumstances of homeless people vary greatly. At root, though, the reasons for homelessness come down to four main issues:

Shortages of housing. If there are not enough places for people to live, then someone has to go without. Because housing is mainly allocated by the market, those who are excluded will generally be the poorest people.

Entitlement to land. In many countries, people squat rather than being homeless. Squatters usually build temporary shelters at first, but over time squatter settlements are built up and the housing on them becomes more established. In developed countries, or at least countries with more developed systems of land tenure, land is not likely to be free for occupation.

Entitlement to housing. If people are not entitled exclusion, however, is financial - homeless people are those who cannot afford the housing which is available.

The personal situation of homeless people. Homelessness is often attributed to the characteristics of the homeless person, such as alcoholism and psychiatric illness; or to the social situation of homeless people, such as unemployment and marital breakdown. This approach needs to be treated with some caution; people in these situations only become homeless if they are excluded from housing, or do not have enough resources to secure alternative housing. The central issues are the problems of poverty and exclusion.

- Housing and deprivation

Many of the key issues in deprivation are housing issues. The Breadline Britain surveys, identifying what people thought of as 'essential', came up with answers like a damp free home, heating, indoor toilet, the use of a bath, home decoration, having enough beds and refrigeration - the last two depending on space.

Deprivation is often concentrated. Slum estates occur in both the private and the public sectors. In the private sector, poor people are brought together through the magic of the market; those least able to exercise choice end up in the places least to be chosen. The same is true, to some extent, of the public sector. Where applicants for

social housing are allowed a choice, the people most able to exercise that choice are those who have the highest incomes and the best housing previously. They are the ones who can wait for a better offer. Social segregation by housing officers has contributed to this process in the past, but it equally happens in the private sector where there this has not happened.

However, deprivation is not only concentrated. Most poor people do not live in poor areas; and most of the people who live in these areas are not poor.

- Urban policy

The term "urban policy" is used for a wide range of different concerns and activities. The key issues relate to

economic development, including local economic activity, income generation and employment policy;

social development, including housing and neighbourhood issues, relations within and between communities, and social inclusion; and

geographical issues, concerned with spatial relationships.

3.14 Building Bye-laws

Building bye-laws are formulated by TDC, Kathmandu to apply for Kathmandu Metropolitan City, Lalitpur Sub-Metropolitan City, Kirtipur Municipality and other VDCs which are being urbanized in one chapter; Madhyapur Thimi Municipality in another chapter and Bhaktapur Municipality in another chapter.

3.14.1 Bye laws for Planned Residential Sub-region for KMC, LSMC and KMc

Area have been developed by KVTDC in 1992 for the regulation of the building in the valley. During the preparation of bye-laws, prime reference of 'National Building Code of India' is taken but the unique situation and environment of the nation is also considered.

Some important building specifications specified are as follows:

Open spaces and other facilities:

Common open spaces in planned residential area should be provided as follows:

Table 3.3 Required open spaces

Total area range	Required open spaces (min)
Minimum size	380 sq.m.
Minimum width	8 m
5 Rop to 10 Rop	5%
10 Rop to 25 Rop	4%
25 rop to 100 Rop	3.50%
More than 100 Rop	2.50%
For 1000 people	0.25 hector

In addition to open spaces, other facilities should be managed according to the population in the area as follows:

- i. Educational institutes
- ii. Health services
- iii. Commercial facilities
- iv. Telecom facilities, police, telegraph, fire brigade etc.
- v. Social,community and cultural facilities: religious buildings, cinema ,club etc.

Staircase:

- Width should be as follows
0.9 m (3 ft) for residential building
1.5 m (5 ft) for hotels and public buildings
- Tread size: 23 cm (9") for residential and 30 cm (12")for others

- Riser: 19 cm (7.5”) for residential and 15 cm (6”) for others
- Flight: maximum 15 steps per flight.
- Lift facility:
Lift or escalator should be provided for the building with height more than 17 m (56 ft)

Norms to be followed in planned residential area are as follows:

1. Width of Road:
 - a. Road linking to main road: 7 meters minimum
 - b. Roads to blocks: 5 meters minimum
 - c. Roads to plots: 4 meters minimum
 - d. Cul De Sac Road; Not more than 60 meters
2. Plot Size;
 - a. Plot width: 6 meters minimum
 - b. plot area: 0-2-2-0 minimum
3. Plot Depth
 - a. 2.5 Aana -4 Aana 1.5* width
 - b. 4 Aana – 8 Aana 1.75* width
 - c. 8 Aana – 12 Aana 2* width
4. Land Use
 - a. Road cover: 15%max
 - b. Open spaces: 5% max
 - c. Residential plots: 80% max
5. Miscellaneous:
 - a. Road alignment should consider the topography to make easy extension for water supply, sewerage, electricity, telephone and fire extinguisher when needed.
 - b. In planned residential regions set back of 1.5 m should be left while construction . FAR for residential building should be 2 and for commercial building it should be maximum of 3.

c. Building construction should be at least 20 m away from rivers like Bagmati, Bishnumati and Manohara rivers and there are various provisions for various rivers.

3.14.2 Bye-laws for Special Planned Sub-Region of BMC

This sub-region includes the plots of land pooling programs of Kamalvinayak, Liwali, Chokha, Tumacho and Dugure. The rules of this sub-region will be applicable to other land pooling projects which may be implemented in coming period except for special provisions which may be made for GLD region of ward no. 4 also being the probable area for this sub-region it will be developed in stepwise manner as a land pooling project. For the buildings to be constructed in this region the construction related bye-laws are allocated as under.

Table 3.4 Bye-laws for Special Planned Sub-Region of BMC

S.No.	Area of plot	Max. ground coverage	Max. height	Floor height	Max. no. of floors
1	Upto 4 Aana	70%	45'(13.7 m)	8'0"-9'0" (2.45-2.74 m)	5 (includes stair cover)
2	4 Aana -8Aana	60%or 958 sq.ft whichever is greater	45'	8'-9'	5
3	8 Aana -1 Ropani	50% or 1643 sq.ft whichever is greater	45'	8'-9'	5
4	More than 1 Ropani	40% or 2738 sq.ft whichever is greater	45'	8'-9'	5
			Bldg height not more than 3 times width of bldg.	3m can be provided for ground floor	

3.15 Housing Policy by World Bank

World Bank has published a booklet entitled 'A WORLD BANK POLICY PAPER, HOUSING : ENABLING MARKETS TO WORK, WITH TECHNICAL SUPPLIMENTS' which includes housing policy instruments, needs for a housing sector to function well and types of housing sector works.

3.15.1 World Bank Housing policy Instruments

Government should be encouraged to adopt policies that enable housing markets to work. Governments have at their disposal seven major enabling instruments, three that address demand- side constraints, three that address supply-side constraints and one that improves the management of the housing sector as a whole. The three demand side instruments are (i) developing property rights (ii) developing mortgage finance and (iii) rationalizing subsidies. The three supply-side instruments are (i) providing infrastructure for residential land development (ii) regulating land and housing development and (iii) organizing the building industry.

These instruments are to be supported and guided by developing the institutional framework for managing the housing sector: strengthening institutions which can oversee and manage the performance of the sector as a whole; bringing together all the major public agencies, private sector and representatives of nongovernmental organizations and community- based organizations and ensuring that policies and programs benefit the poor and elicit their participation.

These seven enabling instruments are applicable to a greater or lesser degree in all World Bank borrower countries. Priorities for use of these instruments, however , vary across countries. In low-income countries , priorities are to develop market-oriented systems of property rights , facilitate the housing supply by increasing infrastructure investment and enhance building industry competition. In highly indebted middle-income countries, priorities are fiscal, and financial policy reform, particularly improving housing finance institutions and reducing budgetary transfers to the housing sector, and expanding infrastructure investment. In centrally planned and formerly centrally planned countries, priorities for reform are property rights, housing finance , subsidies, land and building regulations, land development, materials production and distribution, and the residential construction industry.

3.15.2 The Well-Functioning Housing Sector

While largely private housing markets produce most of the housing in developing countries, this does not necessarily mean that these markets are either efficient or equitable. Nor does it mean that these markets completely satisfy all housing needs or help attain broader development goals. Housing sector policies must be based on a positive view of how the sector actually works in a given context, and, as well, with specific notions of how it could work better.

To develop a normative view of the housing sector, one must look at how the sector performs from a number of different perspectives. The five most important perspectives are those of housing consumers, housing producers, housing finance institutions, local governments and central governments.

- **Housing Consumers :**

Everyone should be housed, with a separate unit for every household. Housing need not take up an undue portion of household income. House prices need not be subject to undue variability. Living space should be adequate. Structures should be safe and provide adequate protection from the elements, fire, and natural disasters. Services and amenities should be available and reliable. Location should provide good access to employment. Tenure should be secure and protected by due process of law. Finance should be available to smooth expense over time and allow households to save and invest. Adequate information should be available to ensure efficient choice. Housing consumers should be able to participate in policy decisions that affect their housing and neighborhoods.

- **Housing Producers :**

Adequate supply of residential land should be available at reasonable prices. Infrastructure networks should be adequate and need not hold back residential development. Building materials and equipment and sufficient skilled labor power should be available at reasonable prices. Entry of new firms into the residential construction sector should not be impeded. The residential construction sector should not be discriminated against by special tariffs or controls. Adequate financing should be available. Housing production and investment should respond to changes in demand without undue delay. Contracts should be enforceable. Regulations

concerning land development, land use, building, land tenure, taxations or special programs should be well defined and predictable and government application of these should be efficient, timely, and uniform. Adequate information should exist to enable producers to forecast housing demand with reasonable certainty. Rates of return in all types of housing investments, including rental housing, should be sufficient to maintain incentives for investment.

- Housing Finance Institutions:

These institutions should be permitted to compete for deposits on equal terms with other financial institutions; the role of direct credit should be minimized. Housing finance institutions should not be forced to compete unfairly with subsidized finance. Lending should be at positive real interest rates with a sufficient margin to maintain institutional health. There should be sufficient deposits of an appropriate terms structure for long-term mortgage lending. Mortgage lending instruments that should be in demand by households and that should provide adequate protection for the institution should be permitted.

- Local Governments :

Housing and associated infrastructures should be of adequate quality to maintain public health, safety standards and environment quality. Infrastructure networks and services should be extended in a timely fashion to all communities. Communities should be able to participate effectively in decisions affecting their well-being. The location of new communities should be in close proximity to existing main networks. Land use should be productive and efficient. Sufficient land should be obtained for laying infrastructure networks and providing local amenities and public services. Housing provides a major source of municipal revenues for building and maintaining infrastructure services and neighborhood amenities.

- Central Governments:

Adequate, affordable housing should be available to all. Targeted subsidies should be available to assist households that cannot afford minimum housing. Housing sector policy should be integrated into national social and economic planning. Housing sector performance should be monitored regularly. The housing sector should contribute towards broad social and economic objectives: (i) alleviating poverty; (ii)

controlling inflation (iii) generating household savings and mobilizing household productive resources (iv) generating employment and income growth; (v) enabling social and spatial mobility (vi) increasing productivity (vii) generating investment growth (viii) accumulating national wealth (ix) reducing the balance of payments deficit (x) reducing the government budget deficit (xi) developing the financial system and (xii) protecting the environment.

3.15.3 Housing Sector Works

- Housing Quality, Quantity and Prices

Housing space and quality both improve systematically as economic development proceeds. In general higher incomes associated with economic development permit greater spending on housing, which is in turn reflected in better housing –more spacious, more durable, with more secure tenure and with better facilities. Evaluation of differences among countries in housing outcomes, however, suggest that even for countries at the same level of economic development , housing outcomes vary considerably. This suggests that resources are being translated into better quality housing at very different rates, and that poor quality housing is likely to be as much the result of housing policy. Some countries, generally those with effective housing policies and efficient delivery systems, realize many of the same quality and quantity outcomes as countries with levels of per capita income up to five times higher.

Many of the differences in housing outcomes appear to be the result of wide variations in the relative cost of housing, as measured by either rents or housing values. These variations, in turn, appear to be heavily influenced by housing policies. For example, urban households in Hong Kong and Athens ,Greece, have similar incomes but quite different housing conditions and costs. Differences in cost are attributable to differences in both land and construction costs, both of which are higher in Hong Kong than in Athens.

The differences in the house price-to- income ratios between industrial and developing countries indicate that housing is relatively more expensive in countries with low level of economic development than in industrial countries. In the industrial countries ,the median ratio of house price-to- income was 3.9 while the median for developing countries was 5.5.

- Housing and Urban Poverty

Poor housing conditions are clearly reflection of poverty; all indicators of housing quality improve with higher incomes and with economic development .Even in countries with similar incomes, however, the housing conditions of the poor may be very different, often because of differences in housing policy and its application.

Inadequate housing, moreover, has a direct influence on poverty. If housing is too crowded, poorly built, located in unsafe areas , or inadequately serviced with water and sanitation ,it can lead to increased incidence of sickness and death ;conversely good housing can lead to better health and higher rates of labor force participation. Improved housing also influences the alleviation of poverty in indirect ways .Residential space can be rented out to either residential or commercial users, generating income in the process. Moreover, a house is often the most important asset owned by households; as such it is subject to capital appreciation and if legal and financial systems are adequately developed, it can be used as a source of collateral for either increased consumption or investment.

Low incomes may be reflected in worse housing sector outcomes ,which are still worse poor the poor , in a number of ways: (i) higher than expected housing prices coupled with low income force households to double up, and result in high levels of overcrowding ,low vacancy rates , and, under extreme conditions , homelessness; (ii) housing is of poor quality, and houses are constructed of impermanent ,fire-prone building materials, and are old, dilapidated, and undermaintained; (iii) residential infrastructure is lacking, water supply is unsafe or intermittent, and sewerage , drainage and garbage disposal are non-existent (iv) land tenure is insecure, households are threatened with eviction , and houses are subject to demolition and (v) housing is poorly located , either far away from economic opportunities or in unsafe locations subject to flood and landslides.

- Housing and the Urban Environment

The quality of the urban environment and the performance of the housing sector are inextricably linked. The urban environment in general and the residential environment in particular, comprise important elements of the quality of housing. Water quality, drainage and sewerage facilities, solid waste disposal and the spacious distribution of

housing all affect the quality of housing or its price ,as well as having consequences for the sustainability of the urban environment . The combination of demographic pressures and limited resources has placed the urban environment under extreme stress in many developing countries. For example, despite the expansion of water supply and sanitation facilities during the 1980s,the absolute number of urban dwellers without sanitation services in developing countries has grown by 70 million and those without a nearby source of potable water by 170 million.

Examination of housing outcome in cities also exposes the strong link between poverty and environmental quality. Slums, dilapidated urban neighborhoods, and squatter settlements which provide housing to the majority of urban poor are very often the places of lowest environmental quality, polluted water , inadequate sanitation and garbage disposal and indoor pollution caused by wood- burning stoves are major causes of diseases in cities. Diarrheal deaths are for example, 60 percent higher among children with inadequate water and sanitation facilities. Poor environmental health is a consequence of both inadequate infrastructure provision and insecure tenure. Illegal neighborhood are less likely to be adequately serviced by residential infrastructure, and household uncertain of their physical security are not only less likely to invest in improving their housing but less likely to invest in improving the quality of their local environments. Housing policies that pay inadequate attention to the housing condition of the poor, are, therefore associated with worse environmental conditions in cities. As a result, there are strong complementarities in policy changes necessary to address the problems of the urban poor and the major environmental problems associated with poor housing performance.

Chapter 4 | RESULTS AND FINDINGS OF THE CASE STUDIES

4.1 Introduction of Study Areas

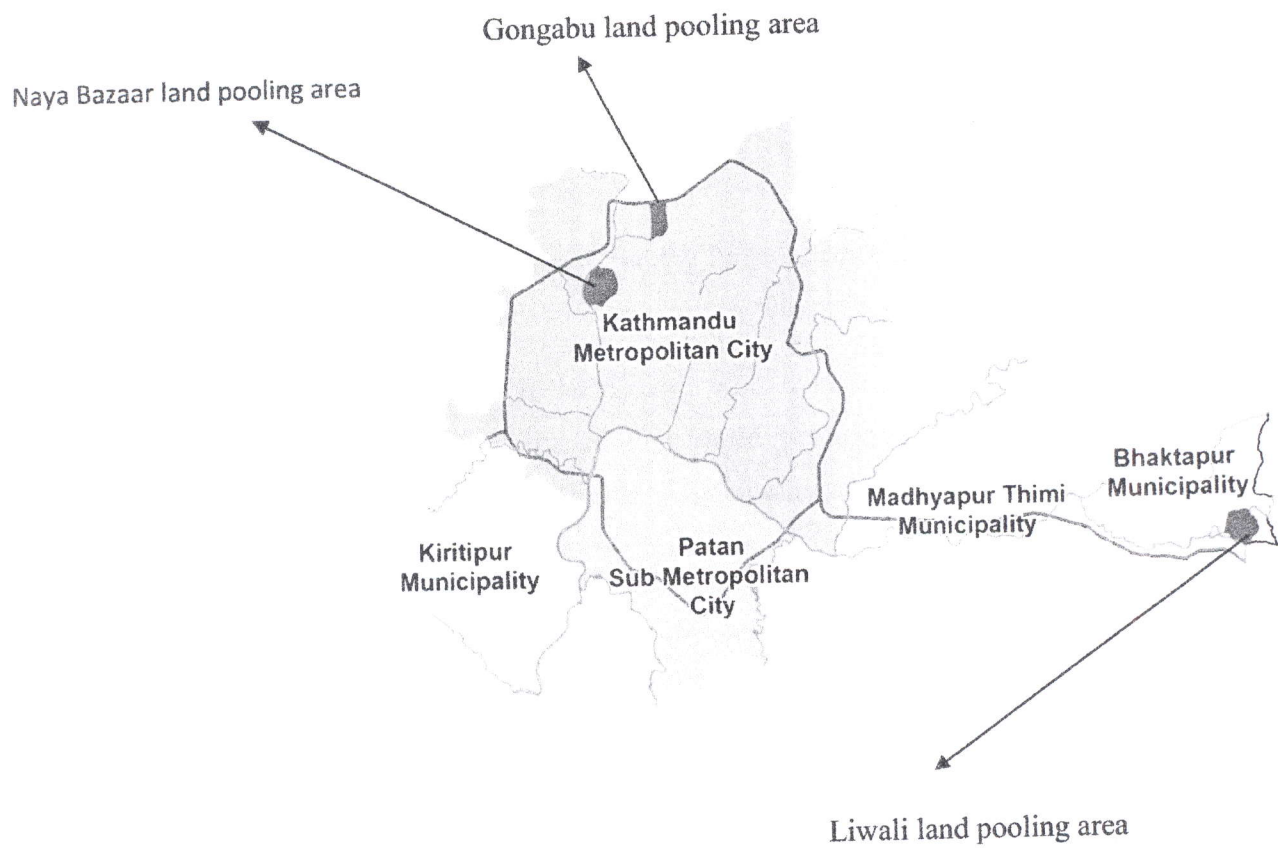


Fig 4.1 Location of study areas

4.1.1 Liwali Land Pooling Project

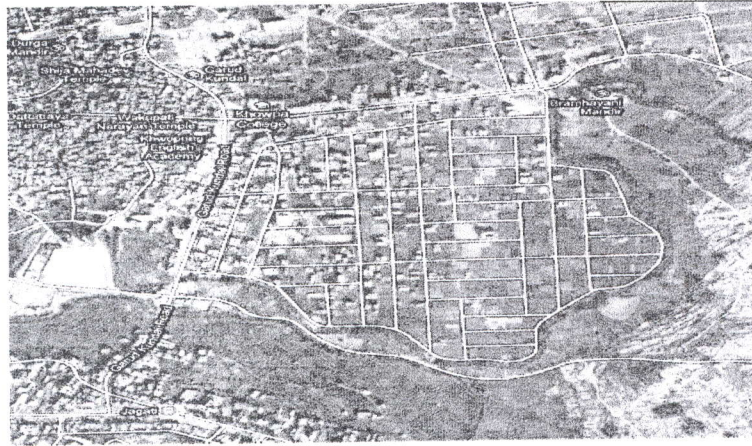


Fig 4.2 Liwali Land Pooling Project from Google

Liwali Land Pooling Project is located at ward number 1 and 2 of Bhaktapur municipality which is one of the cultural world heritage sites. This project was formulated and implemented fully by the municipality to conserve and preserve the cultural and social identity by preventing haphazard development and provide planned services through land pooling projects.

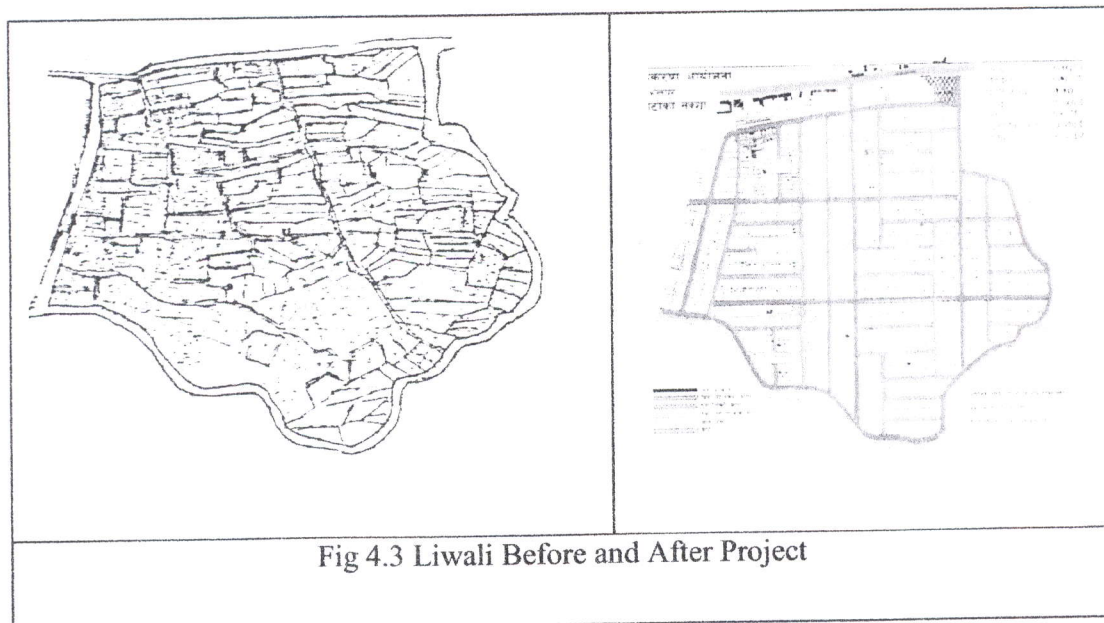


Fig 4.3 Liwali Before and After Project

In general the fund for infrastructure and services is generated from the all sales plots and there is no input from municipalities but Liwali Land Pooling Project had different mechanism which was launched fully by Bhaktapur Municipality.

In Liwali Land Pooling Project Bhaktapur Municipality was the provider of the whole fund. The generated amount from sales plots were taken by the municipality itself. In case of Liwali Land Pooling Project first of all the land acquisition and plotting was conducted by Bhaktapur Municipality. In plotting varying percentage of land were contributed according to defined norms and pole, road and side drains were constructed from the income of municipality itself. Administrative cost required for the project was also recovered from the municipality. Though the plotting was done properly they could not be sold well because of its location. The selling of allocated plots was not urgent as such because municipality provides its own fund whenever needed. The purpose of the project was development oriented rather than profit. In Liwali Land Pooling Project no maintenance committee made of local people but the sole responsibility of maintenance also goes to Bhaktapur municipality.

Project duration: 3 years

Start:1995 Complete: 1998 Area= 678-8-1-0 (34.54 ha) No. of plot=794

No. of holdings =667 Open space= 2.8 % Circulation
area=23.6% Commercial area= 33.5% Residential area=66.5% Average
contribution= 33.

Min plot size=126 m²

Management Committee headed by: Mayor

Legal basis: TDC Act 1988.

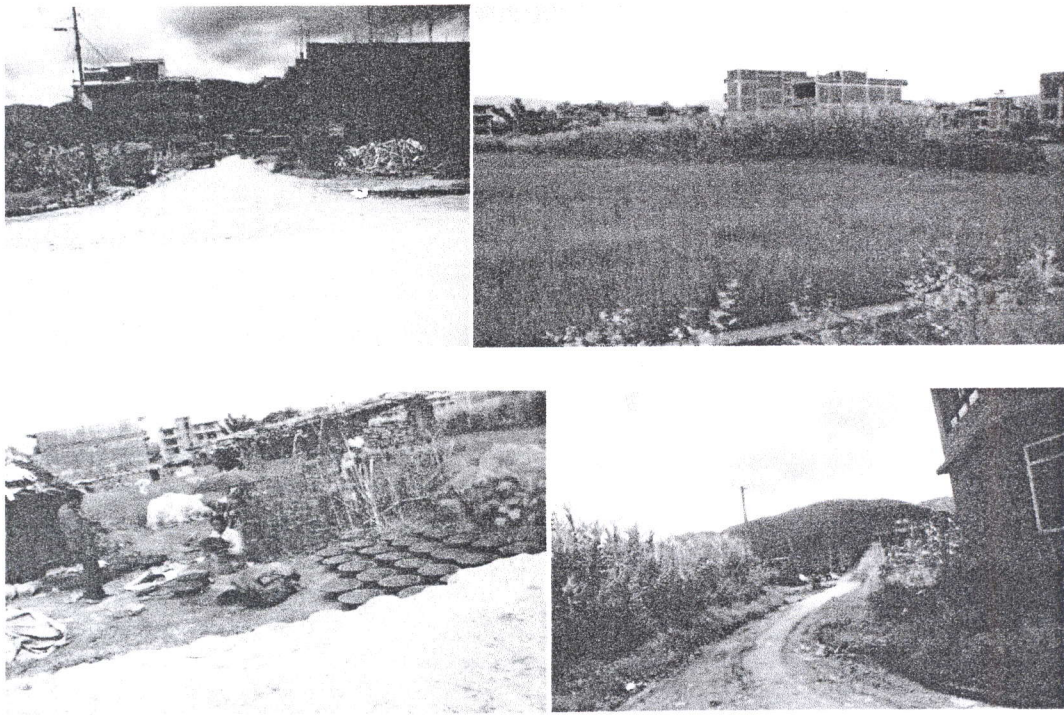


Fig 4.4 Vacant Land, Streetscape and Land Uses in Liwali

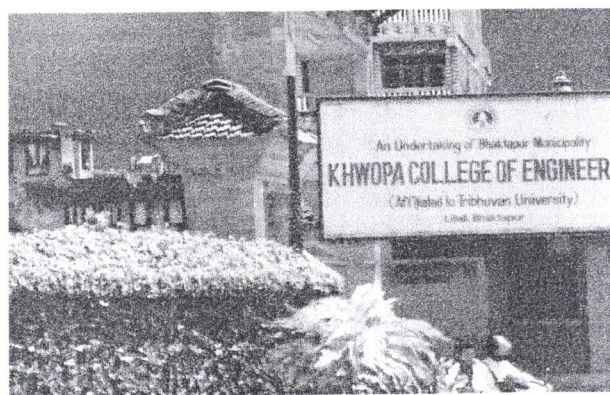
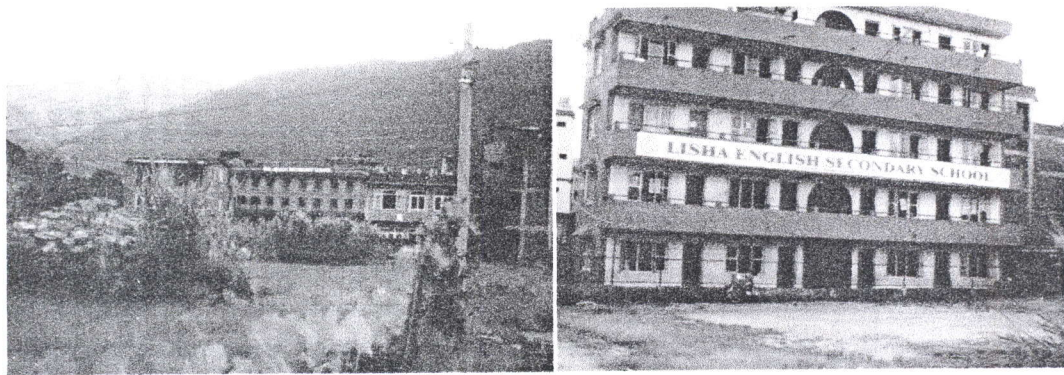


Fig 4.5 Institutions in Liwali

4.1.2 Gongabu Land Pooling Project



Fig 4.6 Gongabu Land Pooling from Google

Gongabu land pooling project is located at ward number 29 of KMC. The project was conducted by Town Development Project Implementation Committee, Kathmandu. The constructed infrastructure consists of surface drain, road, water supply, electricity and community building. The expected land for the infrastructure is 16-10-1-2.45 and thus coming fund becomes Rs.71798023.88. The expected expenditure of the project is Rs.67477006.74.

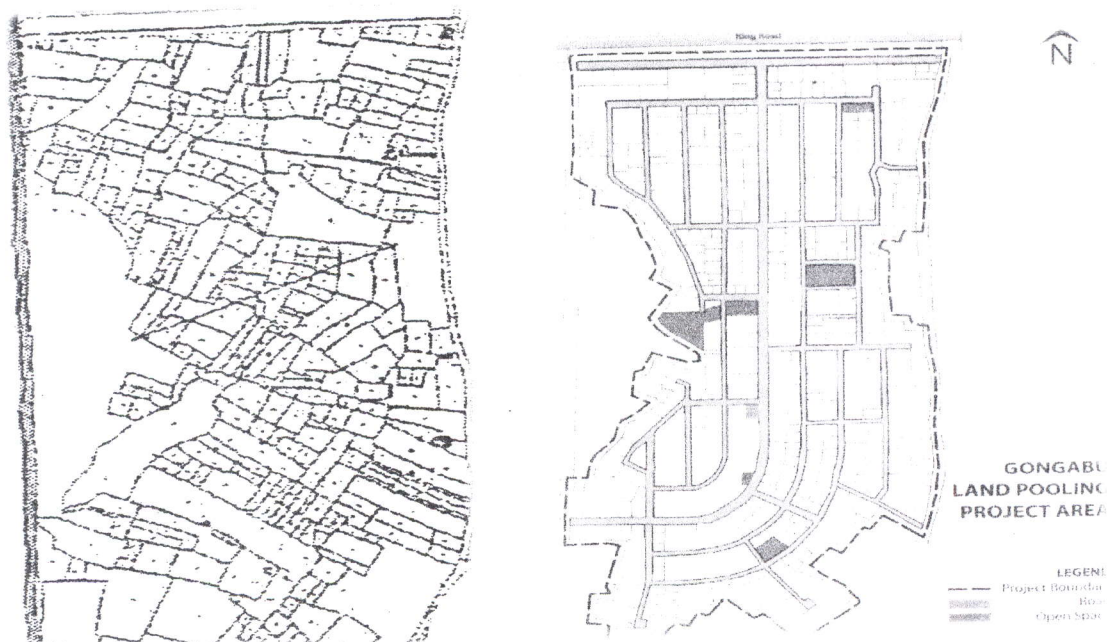


Fig 4.7 Gongabu Before and After Project

In case of Gongabu Land Pooling Project first of all the land acquisition and plotting was conducted by the TDC of Kathmandu. In plotting varying per centage of land were contributed according to defined norms and pole, road and side drains were constructed from the income of selling of some sales plots .Administrative cost required for the project was also recovered from that cost. Because this project was situated at the inside of ring road it could be sold easily. Moreover the plots had become attractive and serviced. In the case of Gongabu Land Pooling Project similar to other land pooling projects there is a committee active. This committee is called Gongabu Residential Reformation Committee. All the developments were done by TDC in Gongabu.

All fund of Gongabu Land Pooling Project has not expended and the remaining fund will be readily provided to Gongabu Residential Reformation Committee if it needs and shows programmes for development works eg. play ground, community building, greenery, children park, boundary fencing, drain etc. Amount of Rs.11 lakhs was taken in the previous year for maintenance. Compounding was also done from rent of swimming pool which was got from TDC. Moreover, all remaining fund will be provided to the committee in time of handover. Besides, rent of nurseries is taken by the committee itself.

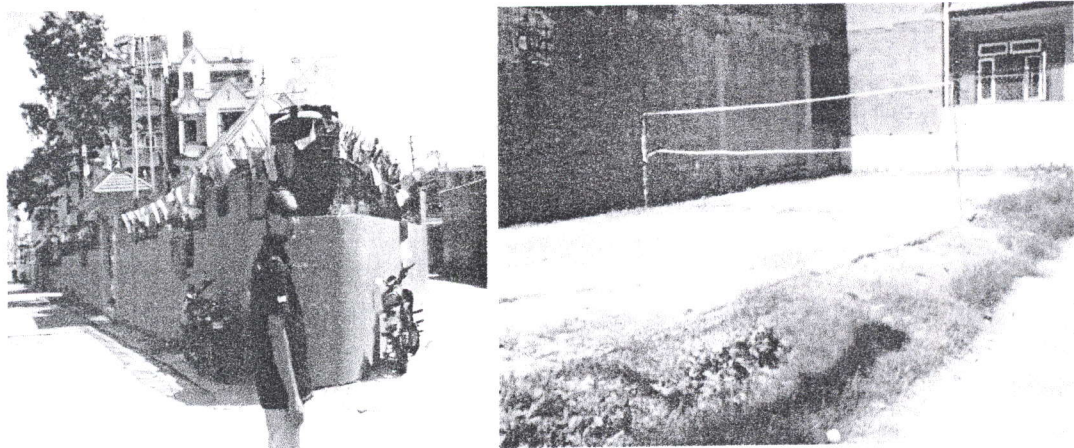


Fig 4.8 Open spaces: temple and badminton court in Gongabu



Fig 4.9 Open space: nursery in Gongabu

Formation of Gongabu Residential Reformation Committee consist of four main members as one electrician, two sweepers, and one office assistant selected in every two years. One member of every household remain as the general member of the committee. Besides these, chief of the ward and one member from TDC remain confirm members, the latter being the governer.

The committee is going to utilize this fund mainly in changing drinking water pipeline for which an amount of Rs. 20900000 has been estimated. There is two fold maintenance system; one being the Gongabu Residential Reform Committee and the other is the line agencies or the concerned authorities like Department of Road, Nepal Electricity Authority, Water Supply Corporation, Nepal Telecom etc.

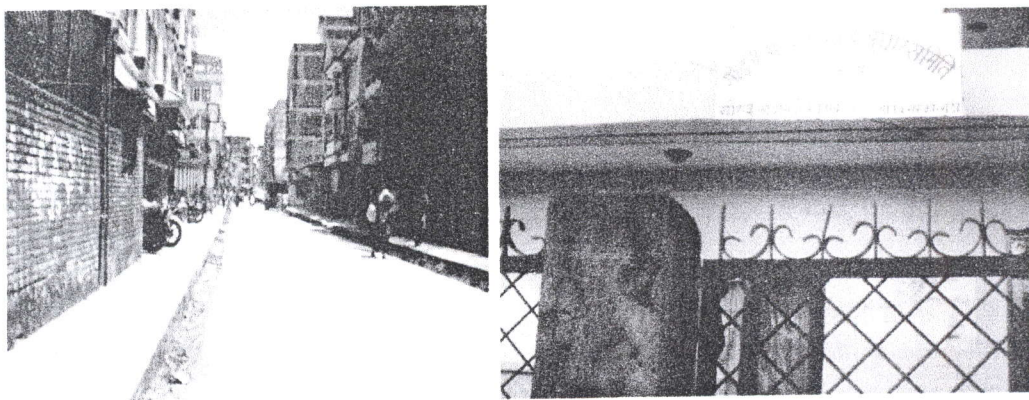









Fig 4.10 Streetscape and GRRRC office in Gongabu

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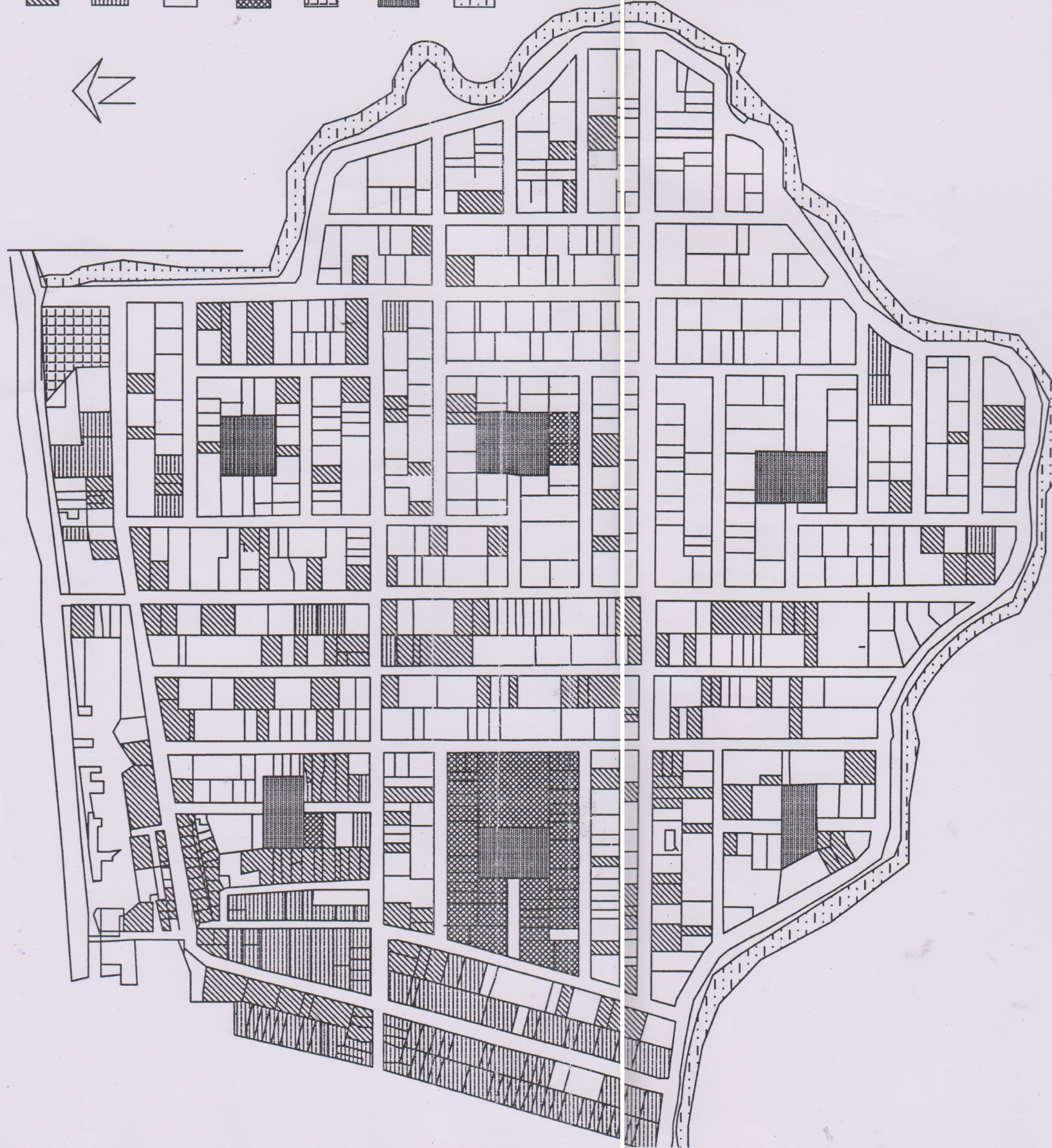
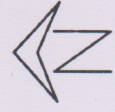
-  RESIDENTIAL
-  MIXED COMMERCIAL
-  VACANT-AGRICULTURAL
-  INSTITUTIONAL
-  OPEN SPACE
-  NURSERY
-  RIVER



LAND USE OF NAYA BAZAAR LAND POOLING

LEGEND









- RESIDENTIAL
- MIXED COMMERCIAL
- VACANT-AGRICULTURAL
- INSTITUTIONAL
- BUS PARK
- OPEN SPACE
- RIVER

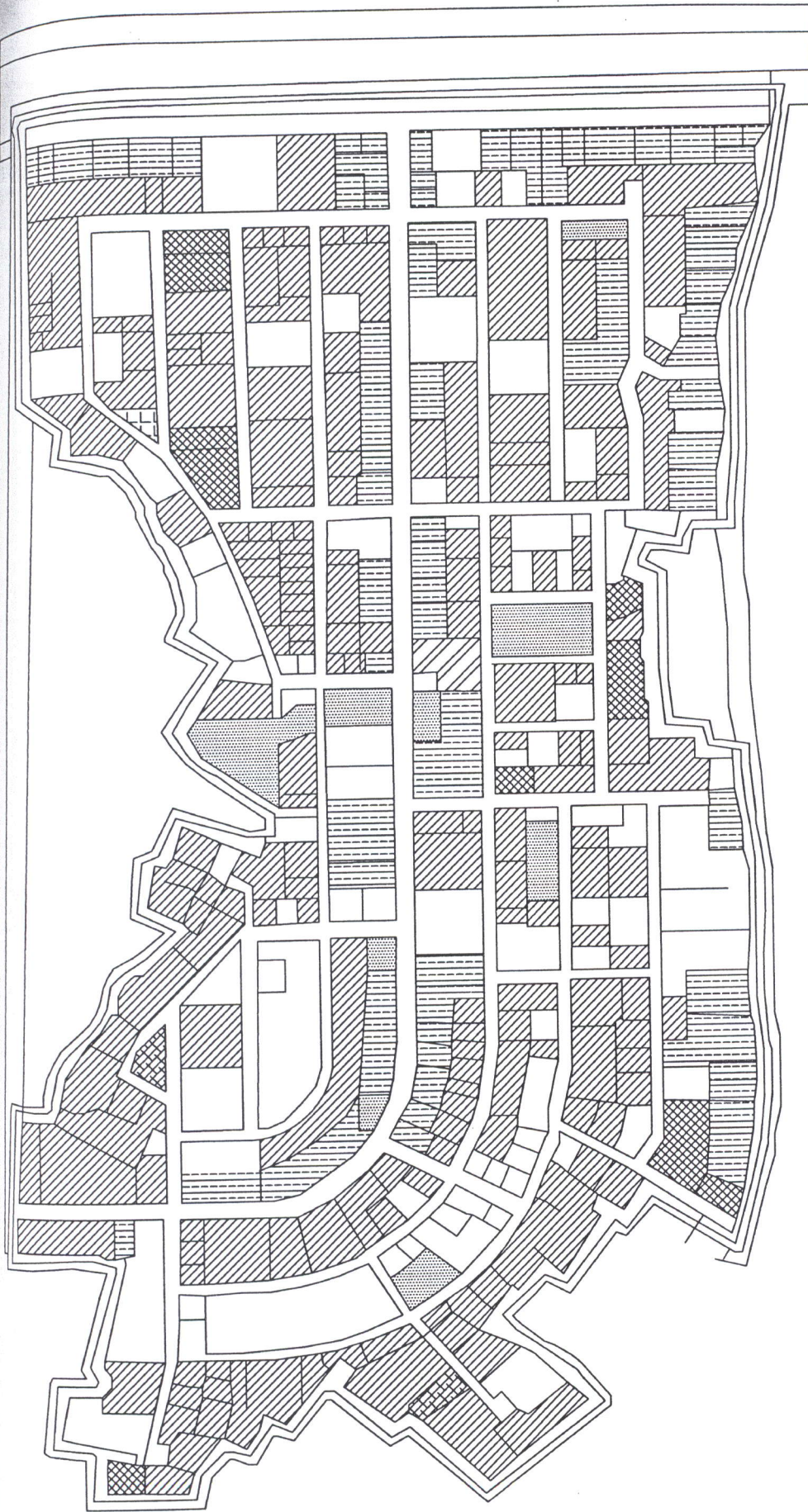


LAND USE OF LIWALI LAND POOLING



LEGEND

-  RESIDENCES
-  MIXED COMMERCIAL
-  VACANT-AGRICULTURE
-  INSTITUTIONAL
-  CAR PARK
-  SWIMMING POOL
-  TEMPLE
-  OPEN SPACE



LAND USE OF GONGABU LAND POOLING

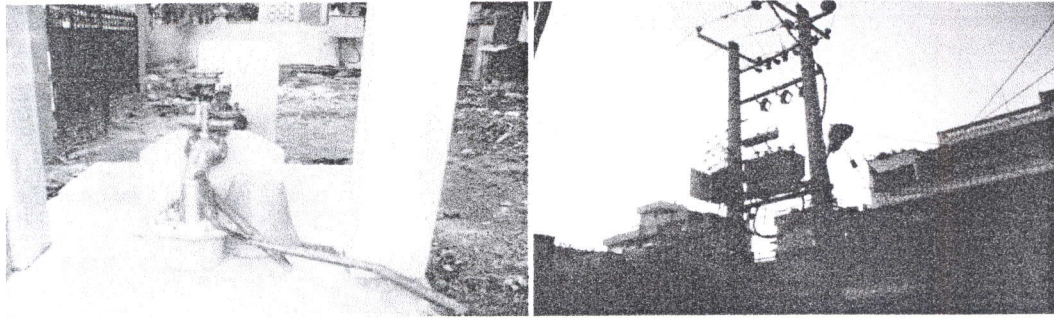


Fig 4.11 Boring and transformer in Gongabu

Project duration : 8 years	Start: 1988	Complete:1996
Area: 281-7-2-1 (14.3 ha)	No. of holdings=376	No.of plots=406
Open space= 5.2 %	Circulation =17.5%	
Commercial= 6.9%	Residential =70.4%	
Min. plot size=80m2	Average contribution=20% (max=36% and min=4%)	
Management committee headed by : Mayor		
Legal basis: TDC Act 1988.		

4.1.3 Naya Bazaar Land Pooling Project

Naya Bazaar land pooling project is located at ward number 16 and 17 of KMC. The project was conducted by Town Development Project Implementation Committee, Kathmandu. The constructed infrastructure consists of surface drain, water supply, road and electricity. The expected land for the infrastructure is 191-6-1-2. The expected expenditure for the project is 27.8 crore.



Fig 4.12 Naya Bazaar Land Pooling Project from Google

Naya Bazaar Land Pooling was implemented by municipality is utilizing its generated fund even to provide salary to the staffs involved in the project.

In case of Naya Bazaar Land Pooling Project first of all the land acquisition and plotting was conducted by KMC. Municipality was the provider of the whole fund. The generated amount from sales plots were taken by the municipality itself. In case of Naya Bazaar Land Pooling Project first of all the land acquisition and plotting was conducted by KMC. In plotting varying percentage of land were contributed according to defined norms and pole, road and side drains were constructed from the income of sales plots, those being comparatively sellable than Liwali favored by location. Selling of serviced plots are recovering all costs even the salary of concerned staff members. Naya bazaar Land Pooling Project has users' committee assisted by the Tole Sudhar Samitis in each of the fifteen blocks which can be actively involved for maintenance and further development.



Fig 4.13 Naya Bazaar Before and After Project

Project: Naya Bazaar, Khusibu Location: KMC Ward no. 16 and 17 Duration: 8yrs

Start: 1995 Complete:2003 Area: 870-0-0-0 (44.25 ha)

No. of holding: 1569

No. of plots: 1312

Open Space: 4.0 %

Circulation: 22%

Commercial use: 4%

Contribution: 30%

Residential use: 70 %

Min plot size: 80

Management committee headed by: Mayor

Legal basis: TDC Act 1988.



Fig 4.14 Open spaces,transformer, UC office and nursery in Naya Bazaar

so. Those who gave applications were got converted into raitani. Renumeration was provided to Guthi Sansthan for the conversion . The rate was decided by the sansthan and that amount had to be paid. There was delay of 9 months because of this reason. Other disputes from users made delay for 6.5 months concerning reduction of land and contributions. Although there were those delays the construction completed in 2 years and whole project completed in 5 years.

Though the project is said to be completed in short time, the performance standards for road, sewer and footpath are not attained well. This is because fund for infrastructure and services could not come continuously and in sufficient amount. Moreover, municipality was in loss. If sufficient fund was available, project might be slower.

Gongabu Land Pooling Project

Gongabu Land Pooling Project was started in 1988. Only reservation was started in 1988 for acquisition or the transaction was stopped. Actual construction was started in 2051. Delay for starting construction was because this project was the first project of the country and there was lack of experience. There was lack of decision having weak legal and decision making framework about acquisition and development in our country. Construction of water supply and both side drain (8 km) carrrying kitchen flow and sewage after treatment in septic tank took long time. Dr. Prakash Chandra Lohani had powerful effort for the project implementation who made effort from the study of Japanese land pooling. Construction work was completed in 2 years. It was completed in 1996. Hence it took 8 years to complete the project. Though it took 8 years for completion actual construction had completed in 2 years. Other main reason for delay was due to delay in administrative works. Selling of almost all of the plots had also finished in 2 years.

The area of this project is less than the area of Liwali Land Pooling project and Naya Bazaar Land Pooling Project. But it took long time. One of the underlying cause is the sale of plots within time of implementation process generating fund to develop infrastructure and services which further took time for their completion. The project location was very much suitable for selling of plots and earning for services. Continuous development occurred and took more time.

Naya Bazaar Land Pooling Project

Naya Bazaar Land Pooling Project was started in 1995. It completed in 2003. Hence it took 8 years to complete the project. Though it is said to be completed it is still incomplete in the sense that a project is said to be fully completed if 80% of land owner's certificate are provided. Landowners wanted the project to return all the plots after full development of infrastructure. 80% of the work had completed before 2001 within which most of the roads had been completed.

Resistances from land owners made delay because they were not convinced and aware of the project. It took 2 years for consensus generation. It took other 2 years because of political and administrative reason. The project had come in approach of Nepali Congress. After then came the UML party. Works stopped due to this change. After some delay the project again took speed. This was because the local government members were of UML party. There was some delay in taking permission from the TDC by the KMC.

4.2.2 Cost

Liwali Land Pooling Project

Initial estimated cost recovery of Liwali Land Pooling Project from the contributions was NRs. 6.74 crore. The cost of plots according to road types and pre-conditions of the plots are different. The contributions of these plots vary from 4 to 38 %. Similarly costs of sales plots are also different depending on road facility or road width. The costs of sales plots vary from NRs. 605,625.00 to NRs. 1,995,000.00. These are continued to be sold. After selling of all sales plots the cost recovery will become NRs. 66,943,011.21. The expected cost of management of road, sewer and footpath was estimated to be NRs. 78,919,693.35 and NRs. 577,290,564.41 has been expended till now. If the estimated cost of management is taken to be actual expenditure, then the benefit for the municipality would be the difference between the expected cost recovery from contribution and the expected cost for management of road, sewer, and footpath. However, the expected cost recovery (NRs. 66,943,011.21) is less than the estimated cost for management (NRs. 78,919,693.35) of the project; hence the municipality seem to be in loss from the project if all services were provided as expected or the project is not an income generating project for further improvements. This shows that the performance standards for infrastructure and services are not

attainable. Committee conducted implementation in amanat except for purchase of materials which was done in tender. It could reduce the cost because the 15 % of the contractor's profit could be avoided in amanat. Besides, possible low standard by contract could be avoided. Moreover, purchase of materials by amanat would create procurement problem hence tender was suitable for this process.

Gongabu Land Pooling Project

The estimated cost recovery from the selling of plots of Gongabu Land Pooling Project was NRs. 71,798,023.88. The expenditure for the project for the construction of sewer, road, water supply, electricity and community building was NRs. 67,477,006.74. From this we can see that the benefit for the project becomes NRs. 4321017.14. This benefit which has been collected in TDC , Kathmandu would be used for necessary improvement of the project. There is income from open spaces which can also be used for maintenance and improvements. After handover of the Gongabu Land Pooling Project to the Gongabu Residential Reformation Committee, it will itself use this fund for maintenance and improvements. Additional cost for the project occurred because the project area exists in lowland. Laying of 1 foot thick aggregate was done to raise the level of roads. About 90 lakhs of money was needed at the very first construction of roads for gravelling in 1988. Cost recovery could be met only after increase in land value. Moreover, initially all infrastructure were not well standard.

Naya Bazaar Land Pooling Project

Naya Bazaar Land Pooling Project was started from the loan assistance from ADB. The loan amount was 3.5 Crore granted in 1992. Loan was all paid by selling the serviced plots. The expenditure for construction and development was 27.8 crore. The area of sales plots was 4% only from which all expenses were met.

Some staff members of this project get salary from sales plots of the project. Some others get salary from the municipality or the government. There is a large amount of cost recovery continuing till now.

4.2.3 Conflict

Liwali Land Pooling Project

Liwali Land Pooling Project was launched on the farmland which was changing to an urban land. Although it was changing to an urban land use the residents were still farmers. After land pooling the plot area reduced which created conflict from farmers. They claimed that their agricultural land reduced, thereby reducing production. They did not agree with the project.

The farmers intended to be displaced from their original place to a place where they could get more land for more production from the selling of returned plots. If people do not want to shift they had to change their occupation but there was no employment and occupation opportunities. As normally occurs in most of the land pooling projects, there were also some disputes concerning demarcation of parcels by the landowners. There was no problem in returning any parcel.

Gongabu Land Pooling Project.

Awareness was needed for the starting of the project about the usefulness and effectiveness of the project. People who obstructed the project were assigned as member and given responsibility. Brokers tried to bring obstruction because they wanted to get and sell the land. Some people tried to motivate personally to get land at more benefitting locations. In Gongabu Land Pooling Project some club people were active for capturing public land to make club buildings but it was discouraged later by establishing GRRC.

Naya Bazaar Land Pooling Project

There were not any conflicts throughout the land acquisition to the project implementation except for some personal complains. Personal complains were about the obtaining of smaller area compared to nearer ones. Therefore to eliminate complains the project demarcated the parcels in presence of the landowners as far as possible. There were not any disputes raised between the users' committee, contractor and municipality. If some quality standard is not met by the contractor then at that situation users' committee gave information to the municipality and necessary directions were given by the municipality about the correction of the weaknesses.

4.2.4 Equity: Got From Site

No allocation of land for urban poor in any of these projects except the equitable land contribution practiced by the projects. Higher contribution and low income housing allocation process has not yet been emerged till now in our country.

4.2.5 All Better Of (Win-Win) Situation

Liwali Land Pooling Project

In Liwali Land Pooling Project; initially there was not win-win situation for municipality and farmers because the farmers did not accept for the project. Later they came to agree getting employment opportunities involving them in construction of infrastructure as road pitching, gravelling, construction of side drain, toe wall etc.

Land revenue and land measurement offices were shifted to the Liwali area for the intention to have occupation generation for the local people eg. opening of hotel, stationery, shops etc. For these offices lands were given in free of cost 3 ropani to each office. Five ropanis of land was given in contract to Bageshwori College in low price and with the condition not to sell to any other people. Establishment of this college also provided income generation opportunities as in the previous case. Moreover, Nepal Telecom is going to install its office buying land of the project which will also create employment opportunities while and after construction.

From this situation we can conclude that farmers (the land owners) and municipality are in win-win situation but attaining all the development will be substandard due to less amount of fund generated from the project. Although the project was said to be completed; the attainment of standard infrastructure could not be reached well because municipality would be in loss or it should use another source of fund to get the standard which is against the principle of land pooling. Hence the project was not fully successful.

Gongabu Land Pooling Project

In case of Gongabu Land Pooling Project TDC could get all expenditure from the project except for the seed money to be utilized from itself. Within two years of period all the plots had been sold. Though there was big efforts of several people of the particular location all plots arranged satisfactorily. Generated income is being used for various purposes of improvements and maintenance. All services can be well met since it has no budgetary constraints.

Naya Bazaar Land Pooling Project

When some misunderstandings came, members of the users' committee and the municipality members talked together and sought for the solution of those problems. Although municipality and the users' committee both are satisfied about almost all of the aspects because of being solved at the instant of problem generation except for the problem of road pitching is not at the level of satisfaction of the public. Road pitching maintenance work had been done last year in some places and other places need to be maintained.

4.2.6 Easiness to Implement

Liwali Land Pooling Project

In liwali Land Pooling Project users' committee was made of 15 members which was active for construction and management committee gave directions and support to implementation.

The people in this project area being mostly farmers they were underemployed. Land pooling implementation was not done in tender but was done in amanat by the municipality. Hence the people of the area were employed in construction of road, side drain, footpath and toe wall. Because of not having contractor, skilled and unskilled people from outside the project did not come and local people could be employed while construction. Since the process of tender was not needed it saved time. Implementation also became easy because the processes of preparation of bills, approving it and sanctioning became easier. Fund could not be generated during implementation and mobilization of other resources was needed during implementation. As usual consensus of land owners were taken in both of the land pooling projects. In Liwali Land Pooling Project there were some problems regarding updating maps and land records as it ordinarily occurs in any land pooling projects. After demarcation, the land compared to before demarcation was more. The additional land outcomes were added to sales plots and open spaces. There were some demands which were reasonable and some others not reasonable. Though the cost of amanat is less, the committee must be active throughout the construction. Compulsory demolition occurred for several small sheds. Hence the implementation was not much

4.2.7 Final Design of Infrastructures

Road

Liwali Land Pooling Project

Roads are mainly earthen and graveled only in this project. Comparative to Gongabu and Naya Bazaar there is less vehicle movement. Since there the generation of fund from the selling of plots was less there is no possibility of improvement of roads at present. Gravelling was done by the project but it was damaged due to movement of heavy vehicles and animals.

Gongabu Land Pooling Project

All the roads have been pitched. Maintenance of road is still not needed except a seal coat construction is felt to be done for all the roads since the roads are vulnerable to be damaged having substandard attained by the contractor. Fine of Rs. 5000 is allotted for passing heavy vehicles inside the land pooling area because it was seen to be deteriorating the road by those vehicles. Street light maintenance has already been done by the Gongabu Residential Reformation Committee. It is felt that narrow 4m road is not suitable in the sense that heavy vehicles cannot pass. Hence road having width more than and equal to 6m is felt needed by the committee. There is security problem of crime and rubbery having road width less than 4'. The strength requirement has not been met because the contractor and TDC made only the tack coat and left, while people could not understand what was being done. Maximum numbers of accidents occur in intersections due to not having sight visibility with coming vehicles at right angles. To avoid accident certain curvatures to road in intersections can be suggested. Visibility of roads and thus vehicles are being obstructed mostly by compound walls and some buildings themselves. In such locations the more the speed the more is the accidents.

Naya Bazaar Land Pooling Project

At start the proposal for road construction was only for gravelling. But later all pitch became possible. The widths of roads are 3m, 4m, 5m, 6m and 8m. Total length of road is 24 km. 8m sized pitched road has been damaged but others are not damaged. This is because heavy vehicles operate mostly in 8m roads. 6m and 8m road were pitched at the starting time of the project but 3m, 4m and 5m roads were completed

just before 1 year from today. Road maintenance ie. pitching was done by users' committee. Due to lack of fund Naya Bazaar Land Pooling Project is being incapable to pitch and gravel the road at present.

Sewer

Liwali land Pooling Project

The main purpose of the sewers is to take sewage to the treatment plant. There are no septic tanks in this project. Sewer sizes are sufficient and take drain water. The place of dumping is not being available and being a matter of headache.

Gongabu Land Pooling Project

There is no sewer in this project. Sewage is digested in septic tanks and soaked inside soak pits in each household.

Naya Bazaar Land Pooling Project

There are sewers at both sides of road having width of 8m. The rain water enters the sewers through gutters at both sides of the road. The 8m road consists of 6m carriageway and 1m footpath at both sides of the road. The sewers of other road sizes are also the combined types. In these other roads the sewers are placed at the centre of the roads only. The drains from sides are connected to the sewer at the centre inside the roads. The minimum size of sewer is 20cm in diameter of NP3 type and the maximum size of sewer is 120 cm in diameter of NP2 type. There are other sizes of sewers of 60cm, 70cm, 80 cm, 90 cm and 100 cm in diameter of NP3 types. When any problems regarding the sewer comes, Tole Sudhar Samitis pressure to the users' committee and then the users' committee proposes to the municipality for maintenance. In this project there is partial placement of septic tanks in contrary to Liwali where there is not any construction of septic tanks and to Gongabu where there are septic tanks in all households. The less construction of septic tanks is because of the existence of small plot sizes which cannot permit area for construction of the same.

Water Supply

Liwali Land Pooling Project

There are difficulties of water supply in many places since there is no fund or its reliable source. Water to the land pooling area comes from Nagarkot but it finishes at nearer locations. The main sources of water in this area is wells. Construction of larger wells is the demand but it is not being met due to lack of fund.

Gongabu Land Pooling Project

Water supply through pipeline comes alternatively each day. Boring was constructed by the Gongabu Land Pooling and it was taken responsibility of operation by Water Supply Corporation. It is in 8 Aana area. It is constructed in loan from ADB. There is replacement of 5 wells in Kathmandu valley out of which one is in this area. There is total of 1 crore and 60 lakhs of assistance for the construction of wells in the valley. From this we see that 55 to 60 lakhs of fund is needed for completion of one well. Pipe-supplied water flows in crooked pipeline having less supply. 2" to 3" size GI pipes are in use passing both sides which has no appropriate supply to all area which was previously sufficient. Pipeline at road centre or road sides is felt suitable. In this project pipelines are put at private land which created problem because people built buildings over pipelines and cleaning was obstructed. Previously the pressure was such that water went upto 2 floors. If water comes in sufficient pressure it would be sufficient. Congestion in pipe due to block also occurs.

Naya Bazaar Land Pooling Project

The main housing problem in Naya Bazaar land pooling area is the problem of water supply. Level of ground water is continued to go down causing the drying of wells because of the addition of wells in large numbers. Trial deep boring was done in 3 places from which large amount of gas came out because of which water could not come in sufficient quantity as was expected. Installing of piped water is available in most of the places of the land pooling area. Later on 2 deep borings could be operated adequately. The pipe size for the borings are of 1.5". However; construction of the reservoir tank has not yet been started. In ward number 17 there is 2" pipe installed

inside 8m road which carried sufficient water at the time it was installed but is not sufficient at present because of the increased population. In some places there is crisis because neither piped supply nor boring water supply could be operated at those places of both of the wards ie. 16 and 17. Boring companies installed 2" pipes inside both of the road sides but due to lack of fund in Naya Bazaar Town Planning Office water flowing in pipes from boring remains undistributed to the households.

Drain

Liwali Land Pooling Project

There the drain and sewer are combined. Drains at both sides are connected to the sewer at centre under the road. Approach for the compulsory construction of septic tank is a priority of the municipality which needs consensus from the public.

Gongabu Land Pooling Project

The widths of drains are 9", 1' and 1.5'. The depths are of 3' and 6'. In rainy season, the area being in low land water from other areas come flowing here and overflow in drains occur. Thus flooding takes place. Rain water of the higher level areas also come to this area. It creates obstacle to pedestrians and others on the roads. Exercise to construct check drains on those higher lands is being done. 3 Crore 82 lakhs is allocated for this project of drain construction in collaboration with municipality and DOR. The approach is done jointly by people of 8 committees including GRRC, Ranibari, Pabitrnagar, Mitranagar, Birendra Aishwarya marga etc.

Naya Bazaar Land Pooling Project

Drain is combined with sewer in this project. By seeing the experience of sewage management in Bhaktapur done by German project GTZ, construction of sewage digestion tank for the use of sewage as manure was proposed by the people of Naya Bazaar through the users' committee but it could not be taken seriously by the municipality.

Solid Waste Management and Sanitation

Liwali Land Pooling Project

The solid waste collection of the project area is being done by the municipality itself. Road sweeping is being done by the municipality and different 'Tole Sudhar Samitis'.

Gongabu Land Pooling Project

Municipality donot dispose solid waste due to lack of manpower. Hence other organizations came into action. Municipality wants only to assist for finding new organizations. Now solid waste is being collected by 'Nepal Society Improvement and Development Centre' since 1959 BS. It takes Rs. 100 per month per household for taking away the solid waste. Road cleaning was done in 38 thousands. Road cleaning is being done only one time or two times per year. One sweeper was recruited by the committee.

Naya Bazaar Land Pooling Project

Collection of solid waste in Naya Bazaar Land Pooling area has been done by private sector. The collection is being done by 'Nepal Environment Association'. The collection is being done 3 times a week. The transport is done sometimes by carts and other times by mini trucks. Road cleaning request was submitted by the Tole Sudhar Committees to the concerned wards but was not succeeded because of lack of related staffs. However, the cleaning is being done some times by the local people.

Electricity

Liwali Land Pooling Project

Electricity has been provided by Nepal Electricity Authority. There is no disturbance by the electricity to any of the plots and houses. Electricity is well maintained and sufficient in terms of voltage except for the national electricity crisis.

Gongabu Land Pooling Project

Two transformers are added in the area to solve the problem of voltage reduction. There were 4 transformers before addition of these 2 transformers. These added

transformers have 100 KV of power. There is problem of short circuiting in distribution lines are prone to exist by being cables nearer than previously installed. Poles at private land or footpath are felt more suitable by the project to provide cleanliness and to avoid accident. It must be done during implementation.

Naya Bazaar Land Pooling Project

Users' committee is not being active in provision of electricity. Tole Sudhar Samitis are active for the management of electricity. Nepal Electricity Authority is the sole provider of electricity. Street light problem was solved by decision of Tole Sudhar Samiti by collecting charge for the same. Any problems regarding electricity such as less voltage are being solved in request of Tole Sudhar Samitis of different wards to NEA. The problem of voltage was solved 2 times from the starting of the project. 8 numbers of transformers are added after the starting of the planning. Out of these transformers 3 were of 100 KV capacity and other 5 had 200 KV capacity, all added in approach of TSSs. Due to increased housing and problem of lack of voltage tubes do not blow and televisions do not turn on.

4.2.8 Housing Emergence

Liwali Land Pooling Project

Since the people in Liwali Land Pooling Project were mostly farmers who already resided in this area and own larger parcels of land. The housing emergence takes place only after selling of their plots. Besides, the subdivision of plots takes place only when there is growing need of household expenses brought by modernization. The buyers of subdivided plots have greater chance for housing construction. People of Bhaktapur who are culturally entangled to reside in the original place do not want to shift to new place. Moreover, development shifts towards Kathmandu and not towards Liwali. Hence looking from the view of housing emergence this project does not seem to be successful at present since we can see large farmlands here. As already stated there is severe problem of water supply since it is fully tapped in its course. Road is also substandard being unsurfaced. There is severe problem of sewer and drainage. Electricity problem is common but the maintenance for solid waste and sanitation are satisfactory.

Gongabu Land Pooling Project

Gongabu Land Pooling Project is a very much successful project when compared in the basis of housing emergence. Almost every parcel of land is sold and developed except 10 parcels have not been sold till now. There is less vacant land except some open spaces. All services ie. water supply, road, sewer and drain are comparatively well met and being improved day by day. 3 plots were in conflict not being claimed by anybody. Later 12 people claimed . After this all left except one person and came in dispute. It had not been registered since 2022 BS. Hence there is chance for taking it in public property. If it becomes public property there is proposal by the public to construct a community hospital at that parcel.

Naya Bazaar Land Pooling Project

Housing emergence in Naya Bazaar Land Pooling Project is in between the Gongabu and Liwali Land Pooling Projects. The selling of plots is also in between the two projects. Solid waste and sanitation management is also in midway between the other two projects. Sewage management is also in between the other two projects in the sense that septic tank is fully practiced in Gongabu Land Pooling and the use of it is not practiced in Liwali Land Pooling whereas Naya Bazaar uses Septic Tanks wherever its construction is possible in terms of plot size. All roads are pitched in Gongabu and all roads are unsurfaced in Liwali whereas recenty pitching has been completed in Naya Bazaar Land Pooling.

4.2.9 Consensus Collection Process

Liwali Land Pooling Project

In liwali Land Pooling Project users' committee was made of 15 members. Construction was done by this committee. Management committee was also made. The committee involved personnel from land registration office, survey department, CDO, TDC members and members of users' committee. Main directions for construction were provided by the management committee itself. Primarily TDC was the only organization who implemented the land pooling project but later the need for the municipality was emerged to work alternatively. There is provision of need for prior decision of the cabinet for selecting between TDC or municipality to implement the land pooling projects. Vast discussion with local people was done before starting

the Liwali Land Pooling Project. Discussion was also done inside the project team many times. Discussion was also done in between land owners and the project team.

Gongabu Land Pooling Project

In Gongabu Land Pooling Project the procedural development before land pooling could not occur. Users' committee was not made well. Consensus of majority could not be made. Users' committee was made of 5 people only for this project. There was no management committee since the need for it came with the completion of the project. Other policies also emerged with the development of this project. Houses and land owners were not available in case of this project. Only limited suggestions came for the project. Before the decision to land pooling in this area it was allocated as a place for a park.

Naya Bazaar Land Pooling Project

In Naya Bazaar Land Pooling Project there are two types of committee in users' level. These are Tole Sudhar Samitis and the Users' Committee. There are 15 blocks in the project and one Tole Sudhar Samiti in each block. This TSS assists the Users' Committee whenever needed. One member from each TSS is involved in the formation of a Sub- committee. This sub- committee approves for the development works needed and approaches to the Users' Committee. Those development works needed are then approved by the Users' Committee and approached to the municipality for the final approval. All decisions are then made by the municipality for which program is to implement and with what priority. The UC was formed at the beginning of the project. There is no management committee as such but all management works are being done by the TSSs and UC. Discussion with land owners took several times before starting the project. Discussion was also done between land owners and the project team.

4.2.10 Degree of Success

Liwali Land Pooling Project

All services are not met in Liwali Land Pooling Project. Standards of services are also less met in this project. There is no generation of extra fund in case of Liwali Land Pooling Project. The parcels of Liwali Land Pooling Projects are larger (maximum of several ropanis) and less developed. Minimum size of plots could not be made larger

than 2.5 Aana because the existing parcels with buildings were already of smaller sizes (minimum of 1 Aana). The open spaces of Liwali Land Pooling Project are not well utilised as a source of income. Most of the open spaces are vacant. The speculation of land in the Liwali Land Pooling Project is much higher (80%). The conception of using open spaces for floriculture nursery has been emerged.

Gongabu Land Pooling Project

All services are well met in Gongabu Land Pooling Project. Standards of services are well met in this project. Extra fund is generated for maintenance and improvement of the project in case of Gongabu Land Pooling Project. All plots are comparatively small (maximum 9 Aana) and almost all are well developed in Gongabu Land Pooling Project. Open spaces of Gongabu Land Pooling Project are used for income generation. Boundary wall for open spaces of Gongabu Land Pooling Project was constructed. There is less speculation (30%) of land in case of Gongabu Land Pooling Project. Gongabu Residential Reformation Committee, and one youth club decided and local people approached to share for a co-operative. Now the fund of co-operative is 7 crore. Share was invited to the people of project area only. This is one success example.

Naya Bazaar Land Pooling Project

All the services could not be well met. There is crisis of water supply in some areas of both the wards. Cleaning problems in sewer is existed because of the difficulty in opening the manholes at the right time of cleaning. The roads do not have footpaths. Because of no sale of plots allocated, the generation of investment fund is lacking and hence the structures are of substandard. Major housing elements of road and septic tank are not well succeeded. If primary approval from users' committee was made before approval from municipality; septic tank and all other services could be well arranged because there is still some fund available from the selling of the plots. Although the minimum standard size of plots is 2.5 Aana there is already existence of plot having area of 1.5 Aana. Maximum size of plot in this project is 2 Ropani at present. Open spaces could not be utilized as the source of income generation but are utilized as recreational places. One open space is used as Judo hall in assistance with Japanese government. One of the open spaces is used in construction of a building for boring to supply drinking water. Another open space is utilized as a site for

community building. Remaining three open spaces are out of use. The speculation of land is in between that in Gongabu and Liwali land Pooling Projects and is 60%.

4.3 Uses of Open Spaces

Liwali land pooling project has total of 6 open spaces. Out of these open spaces one open space is used for Khwopa Engineering College undertaken by the municipality. All the earnings from the college goes to the municipality. Another open space is used as a nursery to have earnings by the municipality. Other open spaces are vacant.

Gongabu land pooling project has total of 13 open spaces including small open spaces out of which 5 open spaces are vacant. Out of other 8 open spaces one is used for parking and social function which has monthly income of Rs. 2000 per month. Other three open spaces are used for nursery which have monthly income of Rs. 15000 per month. One open space used as swimming pool has income of Rs. 8000. Other two open spaces are used as temple for socio-cultural activities. Minimum size of open space in this site is 2.5 Aana which is vacant and nobody knows whether it is open space or not which can be converted to a sales plot.

Naya Bazaar land pooling project has total of 6 open spaces. Out of them one open space located in B-block has been used for community building. One open space situated in M-block has been used for installing boring. Another open space is situated in L-block which is used for Judo hall, the income of this goes to municipality itself. The hall was established in coordination with KMC and Japanese embassy. A competitor who scores highest position in Judo is selected to send to Japan every year. Open spaces situated in A-block, I-block and E-block are all vacant.

4.4 Development Experiences

4.4.1 Experiences in Gongabu Land Pooling Area

Founder general secretary of GRRC, Mr. Maheshwor Shrestha has seen many people who have developed their living status. He has provided his experiences herein. His own land of 0-5-1-2 before land pooling had cost of NRs. 70,000 but after land pooling, though the land reduced to 0-4-1-0 by 25% contribution, has a cost of 18 lakhs per Aana. Moreover; some area of the parcel of 0-5-1-2 would have to be left for road (previously footpath) if there was no land pooling. This would further reduce the cost of his parcel from NRs. 70,000 to some less amount. He and his neighbors

would have to pay for other services such as sewer, water supply and electricity from community side participation.

Land pooling in this area promoted house transaction which drastically changed living level of some people. Some people constructed houses, sold them and became benefited. Narayan Bikram Shah, Narayan Ranjit, Shyam Singh Rana Magar, Mahendra Shrestha and Ram Hari Panta are some examples for construction of houses and transaction to get benefit.

Narayan Ranjit was very poor previously who could not use gas stove and used to use kerosene stove for cooking and bicycle for movement. He bought land, constructed a house and sold. He again constructed a bigger house from income and again sold. Several number of houses were constructed and transacted by him. He now uses car, has own house which has changed his life.

Another person Mahendra Shrestha constructed 2 houses at start. He went on selling more and more houses. He has sold 10 houses till now. His living level has also increased. He also owns a car and an own house.

Mr. Shrestha adds that land pooling has provided much comfort and easiness to stay and has a different prestige living in town planning area.

4.4.2 Experiences in Naya Bazaar Land Pooling Area

Mr. Aasha Kaji Maharjan , president of 'Khusibu Tole Sudhar Samiti' says that before land pooling the area was all agricultural land. There were only footpaths instead of roads. Average cost of land per Ropani was NRs. 40,000 in 1986. He says mostly outside people came to this place after land pooling to buy land who constructed houses of 3-4 stories and sold to pay loan. Thus the obtained income was used to buy land in other cheaper place where they constructed houses and settled there.

Rabindra Maharjan was a poor man who used to sell vegetables for income. He had 2 plots which had no access before planning. His neighbors accused him of having misbehavior with them and did not provided access. Planning provided road for both plots. Mr. Maharjan adds that there are many examples of the problems of this type. Rabindra has now established a shop. His son and daughter are getting education in a good school which would not be possible otherwise.

Surendra Maharjan and Shyam Maharjan have other two brothers also who have earnings for survival working as mason but these two brothers had no occupation. All lived together who had 2 Ropanis of land and 14 people to survive. Land pooling provided road access. These 2 brothers constructed shades and established a grocery shop by one and a small hotel by the other. These poor brothers can now survive well.

Bal Krishna Dangol is another person who was benefitted from land pooling. He had land previously but he added 3 Ropanis of land before land pooling. His land was situated at the chowk (intersection) because of land pooling. He constructed a 2 storied building and gave it in rent to a school. Later he added other 2 stories from the income. He made so much income from this land at intersection that he sent his son to study in Australia. All four brothers were well facilitated. If there were no land pooling these people would not be accessed to the costly education.

4.5 Physical Patterns and Overall Observations

All three land pooling sites are not in accordance to the planning patterns practiced by the previous time. The patterns fit to the existing shape of the project areas. According to the site condition the length, intensity and inclination of the grids vary. However; the harmony of the grids perfectly fits with location of the open spaces. The major and minor grids perfectly join to the city grids. The centralities or foci of open spaces are well arranged.

There were always delays in total completion of projects; though most of the works were completed in less time. Delay may be the cause of lack of expertise throughout project, political change, delay due to administration, land registrations and convincing land owners. Hence time frame for land pooling may range several years if it is well managed which is supported by self sustaining nature of the project. From study of the three projects we can conclude that time for consensus collection may range from one year for a small project to two years for a large project since the Naya Bazaar project took two years though being a large one. If there is no administrative delay and project runs smoothly time frame for total completion of a small project having locational similarity with Gongabu (14.3 ha) can be only three years. A project having area and location similar to Liwali (34.54 ha) can be completed in four years. A project having area and locational similarity to Naya Bazaar (44.25 ha) can be completed in five years. Moreover, the time frame may not be in proper ratio

according to area which may be dependent to other factors like topography, participation of land owners and users' committee etc. Japanese land pooling procedure can be supportive for reducing time frame. Strong legal and decision making framework about acquisition and development is necessary. Experience in land pooling projects has been increased in short time interval since starting of land pooling in Nepal has not been lasted long. Delay in selling of sales plots causes delay for completion of the project.

If there is proper technical and social feasibility study for a project cost recovery can easily be achieved otherwise plots will remain substandard. Source for seed money should be defined before the project. If we can manage properly open spaces in land pooling of dense areas can provide income which can be used for maintenance and improvements.

Land pooling in areas of agro-dependent economy but urban emerging nature is most challenging and for these areas seeking for employment opportunity is essential which is properly practiced in Liwali. Brokers are always obstructions for any land pooling projects. Users' committees should always be strong enough to coordinate with users and the agency concerned. Users' committee should be inclusive of people from different related fields, communities and gender. Contribution criteria should always be transparent. Prices for plots should be reasonably fixed otherwise selling does not become easy.

Sufficient members of users' committee is essential for easy implementation. Construction in amanat needs more supervision but the construction in tender may yield substandard for road and other structures. There are evidences of road damages for the above cause. There may be need for forced demolition and concerned agency should be prepared for it.

Roads should not be narrow which does not yield welfare of future population and road becomes more promoting place for crimes. Street lighting should be provided. Prior study for sewage disposal places ie. self treatment plants or the connection possibility to the city network of sewer should be done. Topographical condition for flow of sewage, drain and water supply should be studied.

Problem of decreasing head of piped water is experienced hence proper projection of source demand should be done. Level of ground water and hence that of wells is going down day by day. Deep boring may be the solution but this disobeys the right for water for other people.

Collection of solid waste is not being possible by government and other non-government organizations are being active for it. Road cleaning is being done mostly by the users. The increasing demand of electricity is being met by adding transformers. Concerned agency should be careful for the possibility of short circuiting in high tension which may create dangerous situations.

A project cannot be succeeded if there is not proper housing emergence which is basically the cause of improper service conditions. If plots can be sold in course of time then future of a project will not be worse and living level of people of that project will rise.

Open spaces has varying uses. It can be used for financial benefits. Uses can be institutional such as college in Liwali and community building in Naya Bazaar, recreational as swimming pool and sports grounds in Gongabu and a Judo hall in Naya Bazaar, commercial like nursery use in Gongabu and Liwali and parking place in Gongabu. Further, open spaces can be used as bus park or as public gathering places and religious place as temples, mosques, churches etc.

4.6 Adaptation of Bye-Laws and Specific Bye-Laws

4.6.1 Bye-Laws in Liwali Land Pooling Project

Open spaces are made as larger as possible compensating for smaller areas. Principally the number of open spaces can be in any number but the number is decided by the need for population, area and centrality which are adopted in this project. Minimum size and width of open spaces are well adopted.

In this project the bye-law for FAR is not applied except for official buildings. Though FAR is not applied one can construct a building upto 5 storey. Bye-law for ground coverage has just changed from 2 months ago. According to it ground coverage upto 4 Aana is 80%, for 4 to 8 Aana it is 70 %, for 8 to 12 Aana it is 60% and for more than 12 Aana it is 50%. Building height of 45' is strictly applied. For

Bhaktapur municipality setback of 1m has not been changed . Floor height is adopted according to bye-law.

This project specifically made rule to expose brick wall of commercial area to bring homogeneity in facing of buildings but it could not be practiced because of opposition of the local people.

There is specific rule for placing of window for Bhaktapur municipality and thus in Liwali. Though buildings constructed in Kathmandu valley and VDCs tending to be urbanized can provide window if the average distance available at centre of face of the building to the edge of the plot is more than 5 feet but in Liwali this 5 feet should be met at the narrower side. Bye-law for staircase is followed only in design and drawing.

Management of all amenities according to bye-laws are not met. The project has provided land in minimum cost for Khwopa Engineering College and a health post. Community building is constructed by the project. Other amenities and commercial facilities are provided by approach of local people.

In this project bye-laws for width of road is well adopted; road types being 9m, 7m and 5m. Width of plots are according to bye-laws. Since old buildings could not be destroyed, minimum plot area of 2.5 Aana could not be applicable. Depth of plots which should be between 6m to 18m could not be followed ; some depths being 20, 22, 24m. Percentage of road cover, open space and residential plots are followed.

4.6.2 Bye-Laws in Gongabu Land Pooling Project

In this project also the number of open spaces are well adopted according to area, population and centrality. Minimum percentage of open space is well met. Minimum width of open space is well followed.

Planning itself had to manage facilities such as educational institutes, health services, commercial facilities , police, fire brigade, amenities, social, community and cultural facilities which cannot be seen provided except the project can provide spaces for these purposes. Land has been provided for community approached schools, health post, community building, telecom in subsidized cost. Local people can work for different facilities from the permission of TDC as was done for swimming pool according to need felt by them.

Bye-law for staircase is not seen to be followed since it is adopted in design and approval of drawing only. It needs to be well supervised. The widths of road for Gongabu are all according to buy-law that being 8m, 6m and 4m. The law for Cul-De-Sac is well adopted. Bye-law for plot width is followed and that for plot area is strictly followed. In case the plot area were smaller than 2.5 Aana , they were increased . Percentage of road cover, open space and residential plots are all followed. Setback used in the project was 1.0 and is the same till now. Now this has revised to 1.5 for KMC, LSMC, KMc and other urbanizing VDCs. Bye-law stating FAR to use 2 for residential buildings and 3 for commercial buildings if not to be adopted then there needed government decision. FAR of 3 is specifically used in planning boundary only and for other places FAR of 1.75 is seen to be adopted.

4.6.3 Bye-laws in Naya Bazaar Land Pooling Project

Bye-laws of minimum size and minimum width of open spaces are well adopted. Minimum percentage of open space is also well followed.

Planning itself has not managed education institutes, health services, commercial facilities, police, other amenities and facilities but a Judo hall has been established in provision of site from open space by the project. Besides, users' committee building is established in open space from the income of sales plots. This building is still under construction and functions as place for gathering and parties etc.

Bye-law for staircase has not been followed which is followed in drawings only. Supervision is not being done by KMC and project itself. Setback of 1.0 was adopted previously and has changed to 1.5 for remaining plots after its revision. FAR of 2 for project area and 1.75 for other residential area are adopted instead of bye-law stating 2 for residential and 3 for commercial area.

4.7 Fault in Bye-Law

Norms for plot depth cannot be followed and this has to be revised.

According to bye-law,

Minimum plot width =6m

Minimum plot area =2.5 Aana =79.5 m²

Then, minimum depth becomes, depth = 79.5/ 6 m =13.25m.

According to bye-law, minimum depth = 1.5 * width

$=1.5*6 =9$ m. which is less than 13.25 m.

Thus, minimum plot area becomes, plot area = $9*6 =54$ m² which is less than 79.5 m² (2.5 Aana).

This shows that minimum plot depth should be more than $1.5*$ width.

4.8 Land Pooling: Experience and Learning

There was generation of a situation such that people relying on agriculture were intended to be displaced from their original place because the project returned less land and this less land would give less production and they were compelled to have a land with a larger area in less cost got from selling of returned plot. If people do not want to shift they had to change their occupation but there were no employment and occupation opportunities. To provide employment local people were involved in construction of infrastructure as road pitching, gravelling, construction of side drains, toe walls etc. which were provided by the project.

Here, we see that there was lack of proper social feasibility study. This situation may arise in other projects also if there is not interest of land owners for land pooling projects and have to face problems similar to that in Liwali land pooling project. The project felt the need of 'cross visit' according to which visit to succeeded and non-succeeded projects prior to project formulation is utmost needed. The visit to such types of projects should be done before the construction and at mid period. Moreover; in general, use of highly productive agricultural land for housing purpose should not be encouraged.

To create environment for employment opportunity for the local people, opening of hotel, stationery, shops etc. can be promoted by shifting of different government and non-government offices in the project area. For these offices lands could be given in free of cost as was given by Liwali Land Pooling Project to Land revenue and registration offices , 3 ropanis to each office. Five ropanis of land was given in contract to Bageshwori college in low price and with the condition not to sell to any other people. Establishment of this college also provided income generation opportunities as in the previous case. Moreover, Nepal Telecom is going to install its office buying land of the project which will also create employment opportunities while and after construction.

4.9 Issues and Problems in Land Pooling

From the study of the three land pooling areas, it is apparent that land pooling, as a tool of land management, although effective, is not without problems and issues. Although some of the problems are similar in the sites considered above, the problems are to some extent also different depending upon the nature of the project.

4.9.1 Inadequate information dissemination

It is observed that the landowners are not properly informed about the benefits of the project. There is lack of information dissemination regarding the project proposal and the project performance, which is necessary for raising public awareness, especially among the landowners as well as the people around the project area, the local government representatives, political leaders and the other concerned line agencies.

4.9.2 Inadequate project cost and revenue

The basic concept of land pooling project is self-sustaining. The project cost i.e. technical, administration and construction all should be generated from the project itself by selling the service plots contributed by the landowners. But in practice, the development costs charged to the project were limited mainly to the construction of road and side drains, compensation for the demolition of existing structure and some estimated amount of the administrative costs. But in reality these cost doesn't represent the true cost of the project, because the costs of supplying water, and electricity, and probable interest payable for any market borrowing for initial financing of the project were not taken into consideration. This means that the project financial deficit in the project often occurs. On the other hand there are also a number of serious gaps on the revenue side. If the project would have sold all plots available to it as per calculated, it could have generated the estimated revenue. This can be expected to cover all probable project costs.

4.9.3 Hinderance caused by vested interest groups

Vested interest groups always have the tendency of misleading the project. These interest groups are generally the land brokers. Others are the people holding the public land having no land ownership certificates and those landowners who occupy more land than that in the landownership certificates. Because of the fear of losing unauthorized land ownership these landowners oppose the project and try to mislead the innocent landowners. The land brokers who hold the frontage land do not provide

access to the backside of land, so as to obtain it in a cheaper rate. This behavior also indirectly creates problems to the project.

4.9.4 Financial implications of the project

Almost all land pooling project have financial implications during the implementation stage. Although the seed money of these projects is provided as a loan, this is not quite enough for completion of the project. Some fund is required before getting back revenue by selling the reserved plots. The current arrangement of seed funds is not sufficient to run a number of projects at the same time. The delay in project completion increases the cost of the project.

4.9.5 Unrealistic pricing policy

The proper economic analysis of the project, considering different parameters, is not carried out prior to the implementation in order to arrive at a more realistic price determination. Often this aspect is ignored in the project and pricing is relatively high with over reflecting the speculative motives in the market. There is also possibility of misuse of authority and the prevalence of corruption due to faulty pricing policy. Later, it makes impractical to sale the serviced plots at predetermined price. Value of the developed plots depends on the demand of plots. Current trend of decline land value will negatively effect on the revenue generation and hence it's self-sustainability.

4.9.6 Inadequate project preparation

Lack of seriousness in initial preparation of the project creates confusion in the procedure to follow during selection of the project, its implementation and subject to undue pressure from the landowners and the local politicians. Often decisions are made on adhoc basis. Lack of consistent policy in project management lengthens the project period and increases the project cost.

4.9.7 Lack of inter-agency coordination

The effects of the pronounced lack of inter-agency coordination in any development activity is openly known and demonstrated publicly. Lack of coordination among line agencies such as road, water supply, electricity, telephone etc. is also no wonder in the land pooling projects often delaying the progress of the project regardless of the basic principle of self sufficiency.

4.9.8 Lack of landowners' active participation

Although the land pooling project was run with the involvement of the concerned landowners, there was clear lack of their active participation. Formation of Users' committees and its duties and responsibilities are not clearly defined in Town Development Act. Formation of two or more separate Land Management Sub Committee for various blocks for one project has made difficulty in the implementation process. Hence there is certain practice of formation of a Central Users' Committee working for all sub-committees. Lack of local support is observed in the field during survey and construction delaying the project. Some of the landowners have been still occupying their original land and they are reluctant to leave their land.

4.9.9 Inadequate legal provision

Town Development Act 1988 (with amendments) only describes land pooling by a simple definition. It lacks sufficient rules and regulations for land pooling projects. The arrangement of temporary transfer should be made easier; similarly the act should explicitly describe about the re-allocation of plots.

4.9.10 Inability to tap the development spillovers

The impacts and benefits of these projects have already begun to spillover the surrounding areas. The land prices outside the project sites have begun to increase. These benefiting landowners of surrounding areas have contributed nothing for making possible such a price hike and the land pooling projects were unable to tap these development spillovers.

4.9.11 Faulty plot distribution policy

Faulty plot distribution policy is often related with the location of the existing and the returned plot, length and width ratio of plot. Some landowners are given a final serviced plot, which was more in area than the portion of an original land parcel, included in the project. While many landowners either received plots which were smaller than their share of land or they received no plots if their lands were smaller in area. Another fault in the distribution policy is that the land returned to landowners is not in proximity to the location of their original land. Faulty plot size also increases the infrastructure cost which finally overrun the initially targeted cost.

4.9.12 Inability to meet the project intention

Inadequate project preparation, legal inadequacy, implementation problems and delays, and lack of landowners' representation in project management have all contributed in the land pooling projects' inability to realize their major intentions. Inefficiency in the project, opposition from landowners themselves, political pressure etc. is quite common and responsible for the inability to meet project intentions.

Chapter 5 | ANALYSIS

5.1 Comparison of Projects

Table 5.1 Comparison of different particulars of the projects

Particular	Gongabu Land Pooling	Liwali Land Pooling	Naya Bazaar Land Pooling
Project area	281-7-2-1 (14.3 ha)	678-8-1-0 (34.54 ha)	870 (44.25 ha)
Contribution %	30	32.5	30
Open space %	4.9 (13 nos)	2.7 (6 nos)	4(6 nos)
Space for greenery %	No space	2.26% (15-5-2-0)	No space
Space for bus park %	No provision	0.67% (4-9-1-2)	No provision
Road types(width-m)	8,6,4	10,9,7,5,4,2.5	8,6,5,4,3
Total road length km	3.7	8.85	24
Surfacing of road	All pitched	All graveled	All pitched recently
Drainage and sewer	Side drain and septic tank	Side drain and sewer	Side drain, septic tank and sewer
Water supply	Road side pipeline provided by generated fund	Implemented with surplus money	Road side pipeline insufficient supply
Electricity	Implemented	Implemented	Implemented
Telecommunication	Implemented	Implemented	implemented
Financial mechanism	Funded by TDC/generated fund	Funded by Mc /generated fund&own budget	Funded by Mc/ genera fund & own budget
Estimated cost recovery	NRs.6.74Crore	NRs.6.34 Crore	Not estimated
Expected cost recovery	NRs.7.17 Crore	NRs. 6.69 Crore	Not calculated
No.of houses	356	828	1538
Vacant plot	66	509	231
handover	Handover to community	No handover	No handover

5.2 Comparison of Indicators

Time frame		
Liwali LPP	Gongabu LPP	Naya Bazaar LPP
Actual construction took 3 yrs & total completion in 5 yrs. Delay due to Guthi land.	Actual construction in 2 yrs but total construction in 8 yrs. Delay due to lack of experience for decisions and delay in administrative works.	Total completion in 8 yrs, 80% works completed in 6 yrs. Delay by – 2 yrs in consensus collection, 2 yrs by political change and administrative works.

Cost		
Liwali LPP	Gongabu LPP	Naya Bazaar LPP
Cost recovery will become NRs 6.69 crore. Seed money from BMC. Expenditure for development was NRs 7.89 crore. No income for improvements.	Cost recovery was NRs 7.17 crore. Seed money from TDC, Kathmandu. Expenditure for development was NRs 6.74 crore. Income from open spaces More cost for low level road	Not estimated but continued cost recovery. Seed money of NRs.3.5 crore granted from ADB to KMC. Expenditure for development was NRs. 27.8 crore.

Conflict and consensus collection		
Liwali LPP	Gongabu LPP	Naya Bazaar LPP
Reduced plot area to create conflict from farmers- create employment or shift.	Awareness needed to start, brokers to obstruct.	No problem of awareness, TSSs and UCs active.
Some conflicts while demarcation	Some conflicts while demarcation for getting more land.	Some conflicts while demarcation-personal confusion.
Vast discussion with local people at start.	Limited discussion before project.	Discussion at different level.

Win-win situation		
Liwali LPP	Gongabu LPP	Naya Bazaar LPP
Job opportunities at construction period-win win for both parties	Plots sold within 2 yrs in reasonable price.	Problems solved through TSSs, UCs and KMC; easy access.
Different offices established generated income opportunities to farmers.	Income generated for improvements.	
Municipality not in benefit; hence services substandard.	All services well met.	Less maintained road and people unsatisfied and crisis in water supply.

Easiness to Implement		
Liwali LPP	Gongabu LPP	Naya Bazaar LPP
Easily implemented with the help of UC and management committee.	Implementation challenge for UC with 5 members only.	Easily implemented through a board committee and UC.
Committee needed more attention throughout construction in Amanat.	Tender awarded hence less attention was sufficient.	Tender awarded hence less attention was sufficient.
Several shades demolition with ease.	No demolition of structures.	Demolition of structures is very few, shifted were constructed similarly, few forced demolition using graders.

Design of infrastructure		
Road		
Liwali LPP	Gongabu LPP	Naya Bazaar LPP
Roads are graveled	All roads pitched but not strong enough.	All pitched in course of time.
No improvement possibility.	Seal coat is going to be done, street light maintained.	Some pitching done by UC.
Heavy vehicles damaged graveled road.	Fine of NRs. 5000 for entry of heavy vehicles.	Heavy vehicles damaged 8 m sized road.
	Crime at narrow roads.	

<i>Sewer and Drain</i>		
Liwali LPP	Gongabu LPP	Naya Bazaar LPP
No ST, place of dumping not available.	All used STs.	Partly STs and partly sewer.
Combined sewer used.	No sewer.	Combined sewer used.
Sewer at road centre.	Flooding and overflow of drain being checked by a project.	Approach for digestion tank by UC.

<i>Water supply</i>		
Liwali LPP	Gongabu LPP	Naya Bazaar LPP
No piped supply.	Pipe water in alternate days.	Only pipeline but not water for most of the places.
Wells for all households.	Decreasing head of piped water.	Level of wells going down.
Demand of boring not met having no fund.	Deep boring was done to meet demand.	2 deep borings operated adequately but do not cover all area.

<i>Solid waste and Sanitation</i>		
Liwali LPP	Gongabu LPP	Naya Bazaar LPP
Sw collection by Mc.	'Nepal Society Improvement and Development Centre' collects sw.	'Nepal Environment Association' collects sw, 3 times a week.

Road sweeping being done by Mc.	Road cleaning 1-2 times a year, one sweeper recruited by GRRC.	No sweeper but cleaning by local people at some interval.
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<i>Electricity</i>		
Liwali LPP	Gongabu LPP	Naya Bazaar LPP
NEA provides electricity. Sufficient in terms of voltage.	NEA provides electricity. 6 transformers to meet voltage demand. Possibility of short circuiting in high tension is observed.	NEA provides electricity. 8 transformers added after the starting of planning. There is still some voltage problem.

<i>Housing emergence</i>		
Liwali LPP	Gongabu LPP	Naya Bazaar LPP
People of this project are local and less emergence of houses. No shift of people to this area due to lack of water supply and sewer facilities.	Mixed community and houses constructed in almost all plots. Shift of people to this area due to well met services.	Mixed community and houses emergence in between Liwali LPP and Gongabu LPP. Shift of people to this area can be seen in considerable extent.

<i>Degree of success</i>		
Liwali LPP	Gongabu LPP	Naya Bazaar LPP
Standard services could not be met, no fund for improvement.	Standard services met, fund generated for improvement.	All services could not be met with standard, crisis of water supply, continued improvement having some fund.
Larger well developed plots.	Smaller well developed plots.	Average sized plots developed.
No income generating open spaces.	Income generating open spaces.	Recreational and utilitarian open spaces.
80% speculation of land.	30% speculation of land.	60% speculation of land.
	Co-operative installed having fund of 7 Crore.	

5.3 SWOT Analysis for Different Indicators of Selected Sites

5.3.1 Time Frame

<p>Strengths</p> <ul style="list-style-type: none"> Construction work of Liwali project could be completed in short period of 3 years. Gongabu project could be completed in 2 years regarding the construction works. Hence time frame for land pooling may range several years if it is well managed. Projects could be completed in 	<p>Weaknesses</p> <ul style="list-style-type: none"> There was lack of framing for the consensus generation programs for convincing ignorant people against brokers and some politicians which took more time. There was delay mostly due to administrative works. Delay may occur also in case of availability of sufficient fund to implement
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<p>short period because of the self sustaining nature of the project.</p> <ul style="list-style-type: none"> • Time frame could be made short by studying Japanese land pooling procedure by concerned people. 	<p>due to this reason.</p> <ul style="list-style-type: none"> • Delay was because of the lack of experienced personnel. • Weak legal and decision making framework about acquisition and development made delay. • Delay occurred in case of political changes.
<p>Opportunities</p> <ul style="list-style-type: none"> • Land pooling process has gained fruitful experience for short period completion inside and outside the country which could help to complete in minimum time frame. • There is increase in experienced personnel to conduct land pooling. 	<p>Threats</p> <ul style="list-style-type: none"> • To complete project in expected time, delaying factors before the project and during the project should be found and eliminated. • Some obstructions to delay were unforeseen for which awareness was necessary and there were always some disputes about contribution which took extra time. • Reasonable prices of plots were needed to sell in time and complete the project in time. • Development process should run together with the generation of fund from sales plots otherwise it may take long time.

5.3.2 Cost

<p>Strengths</p> <ul style="list-style-type: none"> • All the cost for the projects were generated from the sales plots or the projects were self-sustaining. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Sufficient fund for the provision of all services could not be got from the sales plots in case of
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<ul style="list-style-type: none"> • Maintenance and improvement costs could also be generated from the sales plots and rents of some open spaces . • Costs of the plots including sales plots were increased very high and in a large range. • Though the initially calculated income from the sales plots at the start of project was less, the increased cost with time could cover for the expenses of the services. 	<p>Liwali and Naya Bazaar projects. Hence the standard of services are of substandards. Mainly water supply problem is severe with lack of investment capital.</p> <ul style="list-style-type: none"> • In Liwali project municipality seem to be in loss from the project or it failed to be 'extra fund generating project' for maintenance.
<p>Opportunities</p> <ul style="list-style-type: none"> • 15% of contractor's profit could be eliminated through project executed in Amanat. Besides, possible low standard by contract could be avoided. • There were opportunities of income generation which could be acutely be applied for further improvement. 	<p>Threats</p> <ul style="list-style-type: none"> • Seed money is always necessary and minimum affordable prices for sales plots should be adopted for which cost for services should be clearly calculated to get standard for the same. • Topography study should be done. Project area may be low land which needed extra budget to raise the level of road. Plane land with high level was suitable for the project to reduce project cost. • Prior social survey for the cost recovery was utmost needed.

5.3.3 Conflict Resolution and Consensus Collection

<p>Strengths</p> <ul style="list-style-type: none"> • Conflict created emergence of new ideas for how to solve the problems created by reduction in 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Land pooling in farmland created conflict from farmers who were not ready to agree with the project
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<p>farmland (Liwali) and other various problems regarding different issues and consensus collection.</p> <ul style="list-style-type: none"> • People could be convinced by meetings in different stages regarding consensus collection, land acquisition up to project implementation except for some personal complains. • The project demarcated the parcels in presence of the land owners as far as possible. This is strength for not occurring conflicts. • There were not any disputes raised between users' committee, contractor and municipality. • People followed the users' committee because they believed its members. 	<p>because agricultural area was decreasing.</p> <ul style="list-style-type: none"> • Less developed sites had less occupation opportunities after project. • Some landowners became convinced with brokers who tried to bring obstruction by demotivating them while consensus collection.
<p>Opportunities</p> <ul style="list-style-type: none"> • Different offices agreed to be shifted to provide employment opportunities to avoid conflict. There were opening of hotels, stationeries and other shops by local farmers because of these offices. (Liwali). • If some quality standard was not met by the contractor then at that situation users' committee gave information to the municipality 	<p>Threats</p> <ul style="list-style-type: none"> • To avoid conflict, challenge for employment generation was created. • Land had to be provided free of cost to shift different offices to the land pooling site. (Liwali). • Disputes always came while demarcation of parcels. • Awareness was always needed for the starting of the project about the usefulness and effectiveness of

<p>and necessary directions were given by the municipality about the correction of the weaknesses.</p> <ul style="list-style-type: none"> • Conflicts could be resolved with ease because users' committees were made with participation of personnel from different related fields. 	<p>the project.</p> <ul style="list-style-type: none"> • People who obstructed the project were assigned as members and given responsibilities to grasp involvement to eliminate conflict. • Consensus collection and awareness development period should be separated before project to have sufficient discussions. • Some people tried to motivate personally to get land at more benefiting locations.
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5.3.4 Win-win Situation

<p>Strengths</p> <ul style="list-style-type: none"> • There were strong co-ordination among TDC or municipality and users' committee for the benefit of both sides. • There was participation of local people as skilled and unskilled human resources which increased living level of locals (Liwali) and this led win-win situation. • Municipalities and TDC were keen and had active involvement for solving problems. There were some key persons who actively participated throughout the projects. • Win-win situation could be created for different government 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Implementing agencies could not be satisfied because all the sales plots could not be sold. • For all the projects less attainment of housing development in terms of houses themselves were not satisfactory because of speculation of 80%,60% and 30% in Liwali, Naya Bazaar and Gongabu projects respectively. • Attainment of infrastructure could be sub-standard if the plots could not be sold in time and in sufficient extent. This hindered the win-win situation for the agency and the landowners themselves.
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<p>offices and local people if exercises like that in Liwali could be adopted.</p> <ul style="list-style-type: none"> • Win-win situation could be created if users' committee and implementation agency talked together for solution of problems. 	
<p>Opportunities</p> <ul style="list-style-type: none"> • Unemployed people could get job opportunities while land development in different levels. • Farmers could get alternate jobs after establishing different offices such as hotels, stationeries, retail shops etc. • Some technicians of implementing agency (For Naya Bazaar) could get job and thus salary from the generated fund of the land pooling project. 	<p>Threats</p> <ul style="list-style-type: none"> • All the plots should be sold within project period and in appropriate cost which lets the project to succeed and landowners and other concerned people also became satisfied. • Income should be generated to have maintenance and improvement to the satisfaction of agencies and land owners but contribution may not be sufficient for some projects because of their nature and and location; hence prior survey was needed. • There were big efforts of several people for obstruction in plots distribution.

5.3.5 Easiness to Implement

<p>Strengths</p> <ul style="list-style-type: none"> • There were users' committees in Liwali, Gongabu and Naya Bazaar land pooling projects. Further, Naya Bazaar had sub-committees in each of the 15 blocks which were active for 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Construction in Amanat needed increased involvement of agency making implementation more complex though it had some other benefits. • All plots could not be sold
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<p>construction which made implementation easy.</p> <ul style="list-style-type: none"> • All people needed for construction were readily available. • Amanat could reduce working for documentation for tendering and the processes of preparation of bills, approving it and sanctioning became easier. • All the projects were started at almost the vacant lands and compulsory demolition was not much needed except for some sheds and walls. 	<p>continuously except for Gongabu land pooling project making implementation difficult.</p>
<p>Opportunities</p> <ul style="list-style-type: none"> • There was generation of innovative ideas because of political changes using knowledge of changing personnel which made implementation easy and effective in case of Naya Bazaar land pooling project. 	<p>Threats</p> <ul style="list-style-type: none"> • Updating of maps and land records was always felt needed. Land came out to be more after demarcation in all the three projects and the out coming more land needed to be properly managed and utilized. • There were always some demands in which some were reasonable and some others were not reasonable. • Users' committee should always be active throughout the construction. • There is always challenge to

	<p>manage disputes from the users regarding plot contribution.</p> <ul style="list-style-type: none"> • Involvement of genuine people in users' committee is utmost needed. • There was always need of source of seed money for the starting of projects.
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5.3.6 Design of Infrastructure

<i>Road</i>	
<p>Strengths</p> <ul style="list-style-type: none"> • Charge of NRs. 5000 has been allocated for entry of heavy vehicles in Gongabu to protect road from damage. • Street light maintenance has been done by Gongabu Residential Reformation Committee. • There are varying sizes of roads. • Road maintenance was done by users' committee in Naya Bazaar. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Roads in Liwali are earthen. Roads could not be improved and have no possibility to improve having lack of fund. • Roads of Gongabu are surfaced but are substandard (in terms of strength) of only tack coat constructed. • There are narrow roads of 4m and less in all the projects which are not appropriate for heavy vehicles.
<p>Opportunities</p> <ul style="list-style-type: none"> • Proposal of graveled road became possible to be upgraded as pitched road in Naya Bazaar project. It was unforeseen opportunity. 	<p>Threats</p> <ul style="list-style-type: none"> • Roads in Gongabu, Liwali and Naya bazaar are required to be well improved not to damage it by heavy vehicles and animals. • There is security problem in the area of 4m roads being possibility of crime and robbery in Gongabu.

	<ul style="list-style-type: none"> • Maximum number of accidents occur in intersections due to not having sight visibility with coming vehicles at right angles in Gongabu.
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<i>Sewer and Drainage</i>	
<p>Strengths</p> <ul style="list-style-type: none"> • Septic tanks in all households has been constructed in Gongabu land pooling project. • In other projects sewer sizes are sufficient to take drain water (min. of 20 cm and max. of 120 cm dia. in Naya Bazaar) • Width and depth of drains in Gongabu are sufficient for its area. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Construction of septic tanks in each households could not be possible in Naya Bazaar with small plot sizes and Liwali has all sewage connected to disposal lines. • Public is not agreeing for construction of septic tank (Liwali)
<p>Opportunities</p> <ul style="list-style-type: none"> • Problems regarding sewers are solved by approach from the users' committee to the municipality in both the projects ie. Liwali and Naya Bazaar. • 3 crore and 82 lakhs is allocated for diverting drain water from higher leveled area by Municipality and DOR from the approach of local committees. 	<p>Threats</p> <ul style="list-style-type: none"> • Construction of treatment plant is needed in the projects of Liwali and Naya Bazaar where separate and combined sewer exist respectively. • Place of dumping is not being available in Liwali. • Flooding takes place because of flowing of water from higher levels to its area in Gongabu creating obstacle.

<i>Water supply</i>	
<p>Strengths</p> <ul style="list-style-type: none"> • Wells are providing water to meet daily need in Liwali. • 2 deep borings could be operated in Naya Bazaar land pooling area. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Project is not being capable to get reliable source and collect sufficient fund. Water finishes in its way. (Liwali). • Water comes in alternate days in Gongabu and naya Bazaar but is insufficient. • There is need of a reservoir to collect boring water in naya Bazaar. • There is neither piped supply nor boring water in some places of Naya Bazaar. • Trial deep boring were constructed in 3 places in Naya Bazaar but water could not come sufficient.
<p>Opportunities</p> <ul style="list-style-type: none"> • Boring is being constructed in Gongabu in loan from ADB one out of 5 in this area. • Boring companies installed 2” pipes inside both of the road sides. 	<p>Threats</p> <ul style="list-style-type: none"> • Construction of deep boring is demanded in Liwali. • Pipelines below private land at sides of roads are creating difficulty in cleaning because of construction of new structures. • Drying of wells because of the addition of these in large numbers in Naya Bazaar.

<i>Solid waste and sanitation</i>	
<p>Strengths</p> <ul style="list-style-type: none"> • Tole Sudhar Samities are active in road sweeping and solid waste collection by municipality in Liwali. • Private organizations are collecting solid waste in Gongabu. • One sweeper was recruited by Gongabu land pooling. • 'Nepal Environment Association' is collecting solid waste 3 times a week in Naya Bazaar. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Private organizations always take some charge for solid waste collection.
<p>Opportunities</p> <ul style="list-style-type: none"> • Other organizations came into action to collect solid waste and municipality is assisting to find them. 	<p>Threats</p> <ul style="list-style-type: none"> • Manpower in municipality is needed for disposal of solid waste.

<i>Electricity</i>	
<p>Strengths</p> <ul style="list-style-type: none"> • Electricity has been provided by NEA. • There is no disturbance by the electric lines to any of the plots and houses. • Voltage problem was solved 2 times after starting of project in Naya Bazaar. • Charge could be collected for 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Users' committee in Naya Bazaar is not being active in provision of electricity. • Due to increased housing and problem of lack of voltage tubes do not blow and television do not turn on.

<p>solving street light problem in Naya Bazaar.</p>	
<p>Opportunities</p> <ul style="list-style-type: none"> • 2 transformers were added in Gongabu and 8 in Naya Bazaar, capacity ranging from 100 kv to 200 kv. 	<p>Threats</p> <ul style="list-style-type: none"> • Tole Sudhar Samitis (orUCs) need to assess for the voltage problems and co-ordinate with NEA.

5.3.7 Housing Emergence and Degree of success

<p>Strengths</p> <ul style="list-style-type: none"> • Housing emergence in Gongabu and Naya Bazaar could take in speed through land pooling because of locational benefits. Most of the plots has been sold. • There are no vacant land in Gongabu. • All services and their standard are comparatively well met in Gongabu but it is in between Gongabu and Liwali for the Naya Bazaar project. • Extra fund is generated in case of Gongabu and Naya Bazaar. • Boundaries for open spaces in Gongabu are constructed 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Housing emergence could not take place well because the plots are owned by local people in Liwali and plots could not be easily sold. • People of Bhaktapur like to reside compactly but do not want to shift in open area. • There is no generation of extra fund in Liwali. • Parcels of Liwali are larger and less developed. Lesser subdivision means lesser chance of housing emergence. • The speculation of land is 80%,60% and 30% in Liwali, Naya Bazaar and Gongabu respectively.
<p>Opportunities</p> <ul style="list-style-type: none"> • Because of outcome of more land after demarcation it could be utilized as community space or 	<p>Threats</p> <ul style="list-style-type: none"> • Water supply problems in Liwali and Naya Bazaar are in crisis.

<p>recreational space.</p> <ul style="list-style-type: none">• Open spaces of Gongabu generate income and open spaces in Naya Bazaar provide recreational places and places for utilities. There is proposition of floriculture nursery construction in Liwali project.• GRRC, one youth club and local people shared for a co-operative which now has fund of 7crore.	<ul style="list-style-type: none">• Sewerage problem in Liwali and Naya Bazaar are severe.• Road surfacing and improving are also needed.
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5.4 Trend Analysis

From the general study of literature of some completed land pooling projects and the case study areas we can see that the first land pooling project was Gongabu Land Pooling Project started in 1988. Although the area of Naya Bazaar is the largest(44.25 ha with 1312 plots)the longest time period for for completion was taken by Dallu and Sainbu. The smallest project is Kamalvinayak with7.3 ha and 205 plots but the minimum time was taken by Liwali and Lubhu which is 3 years having areas of 34.54 ha and 13.5 ha respectively. The smallest project of Kamalvinayak took 4 years for total completion. Maximum cost occurred was for Sinamangal which is 10.91 crore although it being the second largest of all the compared projects. Minimum cost occurred was for Bagmati corridor which is 0.96 crore although it being the third smallest of all the compared projects. Percentage of number of holdings over number of plots is highest in Naya Bazaar being 96.72 % and lowest in case of Dallu having 65.1%. Hence the possibility of maximum density is in Naya Bazaar and minimum in Dallu regardless of the factors affecting speed trend for housing emergence in other projects.

Three land pooling projects namely kamalvinayak, Dallu and Sainbu were started in 1991,one in 1992, one in 1993 and four projects in 1995. This shows positive indication for the increase in number of land pooling projects and we can expect the increase in number which can be supported by now developed experienced personnel having overall idea for program starting from feasibility and ending at the handover.

Chapter 6 | **RECOMMENDATIONS**

Following major recommendations can be suggested from the research of the three land pooling sites for the success of any land pooling projects.

- The conditions of infrastructure like road, water supply, sewer, drain, electric supply etc. should be according to requirements of services which can be met if project can easily earn from the project itself. Hence the project place is required to be in easily sellable location.
- Prior study of availability of source of water supply, sewerage treatment and disposal location, access to the project location and topography (low and slopy land) have to be done.
- Prior awareness against obstruction from brokers is necessary.
- Constant supervision for the construction of roads, borings, electrical installations and other structures must be done by local people to know how construction is being done and warn for quality because substandard structure may be constructed e.g. roads may become unusable to heavy vehicles and deteriorate in short time.
- Extra income is always necessary for maintenance and improvement for all services to meet growing need of them together with the urbanization.
- Capacity and quality of services like width and visibility of roads, water supply quality, source and pipe sizes, voltage capacity of transformers, sewer and drain size etc. should be designed to meet the growing urbanization by proper projections.
- Construction of septic tanks in 2.5 Aana and other small plots should be encouraged. This is not impossible being succeeded in Gongabu land pooling project.
- Sewers can be constructed under both sides for major roads.
- Committees for different blocks for a comparatively large project provide easy access for approach with main user committee to coordinate with the concerned agency. The committee should work for getting assistance from different organizations.
- Water supply pipelines should not be installed under private land.

- Ground water extraction should be discouraged specially in densely populated areas.
- Road cleaning and other small works should be encouraged through local people participation in terms of physical involvement or cash involvement.
- Percentages of open spaces together with circulation, commercial and residential use should follow bye-laws otherwise there would be problem of ventilation through unsafe tall buildings and location of open space and greenery should be appropriately provided.
- Land pooling should follow certain city form as far as possible to make the city pleasant and beautiful.
- Environmental improvements should be incorporated through land pooling which would improve health of residents and eventually increasing capacity for physical and mental activities gaining happiness together with cultural and economic returns.
- Possible delaying factors should be studied and solved prior to the projects.
- The involvement of private sector as skilled and unskilled workers in a project of agricultural economy base can be increased through execution in amanat.
- Land pooling should be done in built up area. Attraction and establishment of different offices in land pooling of agricultural area will check the shift of people to other areas for farming.
- Approved agreements and action plan should be exhibited before the public as is done for two weeks in Japanese system of land pooling.
- Mechanism for reducing returning percentage may be induced in our case also as 42 per cent of the land has been returned to the landowners to provide cross-subsidy in the latest land readjustment projects in Korea. This contributed amount which is more than the need for services provision can be used to provide serviced land for the construction of housing units for low-income groups at 50 per cent of the price of other sites as is practiced in Korea.
- Measures to control land values and to eliminate speculative profits should be practiced to function in favor of urban poor to some extent.
- Out of total number of residential plots proposition of 50 percent to go to low income group, 30 percent to middle income and 20 percent to high income

group can be practiced as is done in India. Further; the subsidy for 50% plots can be recovered from the other plots.

- If there is availability of large chunk of land in public holding then land pooling can be done before providing land in very much subsidized rate to cope with the need of the urban poor. In doing this contributions from land owners do not become needed. Land price can be fixed by the government only to get income needed for providing services which becomes affordable to urban poors.
- Proper range of plot types should be provided to match the paying capacity of different income groups, particularly responding to the demand of the lower income groups.
- Urban planners and urban designers should be involved in land pooling together with civil engineers who could discourage the tendency of increasing number of selling plots and negotiate for quality of other services and open spaces.

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