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# Land Pooling as a Land Development Tool in Rural Context: "A Case Study of Deukhuri Dang"

by

Keshav Thapa

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# DECLARATION

I hereby declare that the thesis entitled "**LAND POOLING AS A LAND DEVELOPMENT TOOL IN RURAL CONTEXT: A CASE STUDY OF DEUKHURI DANG**", submitted to the Department of Architecture in partial fulfillment of the requirement for the degree of Masers of Science in Urban Planning, is a record of an original work done under the guidance of Prof. Dr. Sangeeta Singh, Institute of Engineering, Pulchowk Campus. This thesis contains only work completed by me except for the consulted material which has been duly referenced and acknowledged.

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## CERTIFICATE OF THESIS APPROVAL

This is to certify they have read, and recommended to the Institute of Engineering for the acceptance, a thesis report titled **"LAND POOLING AS A LAND DEVELOPMENT TOOL IN RURAL CONTEXT: A CASE STUDY OF DEUKHURI DANG"** submitted by **Mr. Keshav Thapa (078-MSUrP-005)** in the partial fulfillment of the requirements for the degree of **Masters of Science in Urban Planning.**

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# Abstract

Nepal has rapidly urbanized during the past ten years. Numerous urban areas have been designated as a result of this urban transition, and numerous land development strategies, such as Site and Services, Guided Land Development (GLD), and Land Pooling (LP), have been used. The administration wants to develop Deukhuri Valley in the Dang district as the future site of the province capital, but LP projects are facing obstacles there as well. In this study, the Deukhuri Valley is used as a case study to evaluate the viability of LP as a land development technique in a rural setting. The province government wants to develop Deukhuri Valley in Dang district as the future site of the province capital, but the initiated LP projects are facing obstacles there as well.

The research looks into the practices now in place for LP implementation, community acceptability, and the financial viability of LP projects. The study combines secondary data sources like policy papers and geographic data with primary data gathering techniques including site observation, structured questionnaires, key informant interviews, and focus group discussions. The descriptive data along with comparative analysis showed that there is a lot of skepticism about the land development initiatives among the populace, which is largely attributed to mistrust of the government, slow initiation to the project, and insufficient attempts to raise awareness. These projects' economic sustainability is also compromised because of lesser land value, and heavy reliance on grants with no assurance of funding. The study also finds that landowners are unwilling to offer their property for LP, partly because they are unsure of the government's intentions are also afraid of displacement. In conclusion, this study explores the land developing pool, land pooling. The research also identified the major challenges faced during LP projects in Nepal's rural areas, highlighting the significance of community acceptability, long-term economic viability, and strong governmental frameworks.

**Keywords:** land development, economic sustainability, community acceptance, rural context, contribution ratio

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# Abbreviations

LP- Land Pooling

PIDA- Provincial Infrastructure Development Authority

UP: Urban Planning

LP: Land Pooling

LPCC- Lumbini Province Capital City

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# 1 Introduction

## 1.1 Background

Nepal is one of the least urbanized countries in Asia. Still, rapid urbanization in the last decade has been observed as a result of multiple urban transitions (spatial, demographic, and economic) that are underway. It is one of the top ten fastest-urbanizing countries in the world (Bakrania, S 2023). Until 2013, only 17.1% of Nepal's population resided in 58 designated urban areas (UNDESA, 2014). According to (MoUD, 2017), the designation of 159 local bodies as municipalities in 2014/ 2015 led to more than 40% of Nepal's population residing in 217 designated urban areas (MoUD, 2017). The areas are, however, designated as urban on the basis of political and demographic interventions rather than the extent of development and the provision of infrastructures, for which their status is comparable to their rural counterparts. Instead of industrial or economic growth-induced urbanization, much of the urbanization in the country is rather induced by migration with a limited economic base created by the connectivity services and improved basic urban facilities compared to rural areas. As a result, there is continued out-migration from rural to urban regions, from small towns and municipalities to bigger municipalities, which has wider implications for the nation's economic growth. The issue is exacerbated by the fact that unplanned urbanization is depleting the fertile Terai or fertile Valleys, leaving much of the hinterlands of hills and Terai in need of agricultural labor. These regions exhibit declining productivity and continue to be underdeveloped or undeveloped, while metropolitan areas are struggling to meet the need for infrastructure services and jobs as a result of an increased influx of new migrants.

Land development acts as an alternate solution to a needed change in life style. In Nepal, three forms of land development have so far been adopted which are Site and Services, Guided Land development (GLD) and Land Pooling (LP) as an attempt to control the haphazard unplanned growth of the cities and provide a planned space with provision of basic infrastructure and services. In Kathmandu, all three of these land development tools have been tried with mixed success. Among these three, Land pooling has been considered the most effective of all so as to achieve well planned urban land, facilitated with necessary infrastructure and services. One of the most used land development techniques in Nepal is Land Pooling. It has emerged as a de facto urban land development technique for planned urban growth (Kusum Joshi,

2020). It is a technique for managing the planned development of urban fringe lands, whereby a government agency consolidates a selected group of land parcels, and then designs, services and subdivides them into a layout of streets, open spaces, and serviced building plots, with the sale of some of the plots for cost recovery and the distribution of the remaining plots back to the landowners to develop or to sell for development (Choda & Thinley, n.d.). Land Pooling as a technique for urban renewal is becoming a fast-growing technique worldwide to achieve effective, unbiased, and sustainable urban development (Akinyode, 2022). In the case of Nepal, land pooling is one of the fields which has good potential both in terms of development of the urban areas, by providing developed land parcels and improved infrastructure and services, and also a security of return of investments by generating revenue from sales plots. In most cases, municipalities lack a reliable partner that has both the technical and financial backstopping for such projects. Following the success of such attempts inside the valley, the practices are now being initiated throughout the country, without paying attention to the prerequisites for such endeavors.

## 1.2 Rationale of the study

### 1.2.1 Problem Statement

Land Pooling projects are very sensitive, as they are related to something very close to the people-land. The basis for land pooling as a land development technique is the reimbursement of the investment on infrastructures through the sale of plots. This requires high value of land price, for which the areas need to be situated in urban lands. Land Pooling projects are initiated through the financial backing of the government, and thus require a huge investment of taxpayer's money. Similarly, the site designated for land pooling is preceded by the impose of land moratorium, which gets extended until the project is finalized. Similarly, the foremost requirement for the successful planning and implementation of the land pooling projects is the cooperation and agreement of the landowners. Land Pooling projects are often accompanied by externalities beyond the control of the scope of the projects. The projects are often initiated without proper sensitization of the concerned stakeholders- the landowners. As a result, the projects have often experienced delays and unprecedented lags in the context of our country. Most of the land pooling projects are concentrated inside the Kathmandu Valley, out of which, few projects have been completed on time. Projects are expected to be completed 5 years from approval, but only 4 of 21 projects have

reached this goal. All other completed projects took between 7 and 12 years to reach completion. Ongoing projects have been under way between 12 and 17 years, and some are still far from being completed (Faust et al., 2020). The attempts made to initiate such projects outside the valley are very rare.

In that context, the provincial government of Lumbini Province has initiated many land pooling projects, within the Deukhuri Valley, in order to develop the newly selected provincial capital. The project area incorporates 2 wards from Sidganga Municipality, 9 wards of Rapti rural municipality and two wards of Gadhawa Rural Municipality. However, there are very few cases of rural land being developed using land pooling in the national as well as international context. So, there is skepticism regarding the successful implementation of the projects. The doubts are mainly present, regarding the self-sustaining nature of the tool, in terms of economic viability as well as community acceptance.

### 1.2.2 Research Gap

Previous research done on land pooling is mainly focused on the attempts made for land development in urban areas within the country. A comparative study of different projects has also been done, but almost no research has been done on the use of the technique for land development in rural context.

Challenges are specific to Nepal's land pooling system itself. While there is a legal and institutional framework in place, both the system as written and the system in practice have gaps as compared to systems in countries that use land pooling for larger-scale initiatives. For example, the legal framework lacks specifications for grievance redress and project timelines and overemphasizes the need for projects to be self-financing and not displace any landowners even when they wish to opt out of projects. When the external factors combine with weaknesses in the land pooling system, they lead to consequences such as delayed project implementation and land-related legal battles, and more broadly keep projects from reaching their potential to maximize land value capture and provide a high-quality urban environment that benefits all residents (ADB, 2020).

## 1.3 Research Question

The main research question of the research is:

- How appropriate is land pooling as a land development tool in rural context of Nepal?

The specific objectives are as follows:

a) To familiarize with the concept of land pooling, its use in a rural setting and the policies guiding them in the context of Nepal.
b) To identify the potential challenges in implementing land pooling in a rural setting.

## 1.4 Expected Research Outcome

The research will explore land pooling as a land development tool and identify the governing principles for its implementation in the context of Nepal. The research will also identify the challenges faced in its application in a rural context.

## 1.5 Limitations of the study

The study depends upon the availability of secondary data through LCBS, village profile etc., and the willingness of the concerned people to respond to the questions related to the study. The study does not focus on the environmental aspects of the study area. Also, the outcome of the study will be an individual effort and this thesis is being prepared as a part of partial fulfillment of the academic exercise in M.Sc. Urban Planning.

# 2 Literature Review

In response to the pressing demand for adequate housing with well-developed urban infrastructure, the conservation of valuable agricultural land and the environment, land consolidation, and planned urban expansion, municipalities facing resource constraints have turned to the concept of land pooling (LP) as a solution. This urban development technique involves the transformation of diverse and irregular land parcels within a specific area into fully developed residential plots, complete with essential amenities such as roads, drainage systems, water supply, and communal spaces (Fraust et. Al 2020). Notably, this self-financing and self-sustaining scheme requires each owner within the project area to contribute a proportionate share of their land towards public facilities and reserved land. The sale of the reserved land subsequently covers the project's costs. Although LP represents a participatory approach and offers significant benefits to urban development, particularly in developing countries like Nepal, the complexity of convincing all project beneficiaries and the time-intensive nature of implementation can present challenges. Through LP, the distribution of developed plots, which excludes the land contributed for public facilities and reserved land, is fairly allocated back to the original landowners, ensuring proportional benefits for all parties involved.

Land Pooling addresses the following urban development challenges:

- The rapid population increase and the substantial demand for developed plots.
- Efficient allocation of public and private investments.
- The creation of a favorable living environment.
- Control over uncontrolled urban expansion.
- The limitations of alternative urban development methods.
- Appropriate conversion of land use.

While the compulsory acquisition of land can be cumbersome, leading to the displacement of local residents and extended timelines, adopting the land pooling/readjustment approach proves more effective in generating resources for infrastructure development in peri-urban or developing areas. Additionally, this method is gaining traction in construction projects that require the acquisition of large land areas.

The concept of land pooling or readjustment holds a significant historical background, with its roots tracing back to President George Washington, who utilized this approach in 1791 to reach an

agreement with landowners for the development of the city that now bears his name. The inception of a legal framework for land pooling took place with the Lex Addickes in Frankfurt-am-Main, Germany, in 1902 (ESCAP 2000). This idea has been implemented across various countries for over two centuries. Different variations of land readjustment are observed in countries like China, Western Australia (land pooling), India (plot reconstitution), and Indonesia. Notably, Japan and the Republic of Korea have achieved significant success in recent times through the application of land pooling.

Land pooling serves as a vital method for managing urban land, especially in areas prone to urban sprawl in the absence of proper planning. Its primary goal is to transform irregularly developed land parcels into suitable forms in alignment with town planning requirements (Yomrliolu and Parker, 1992). Diverse definitions of land pooling have emerged from various authors and institutions, reflecting its multifaceted nature:

"Land pooling/readjustment involves a process by which a public authority gathers numerous small raw land parcels without monetary compensation to the owners, services and subdivides the land for urban use, returns most building sites to the original owners proportionate to their land contributions' value, and sells the remaining sites to recover public costs" (Doebele, 1982).

"Land readjustment is a technique for managing the urban development of urban-fringe lands, where separate land parcels are assembled for unified planning, servicing, and subdivision as a single estate, followed by the redistribution of new building lots to the original landowners" (Archer, 1992).

"The concept of land pooling/readjustment involves assembling small rural land parcels into a larger unit, providing planned infrastructure, and returning the reconstituted land to the owners after deducting infrastructure and public space costs through the sale of serviced land" (ESCAP, 2000).

Based on these definitions, the core features of land pooling are as follows:

- Involvement of a public authority.
- Assembly of multiple land plots.
- Subdivision of assembled plots.
- Provision of services to these plots.
- Allocation of land to the original owners.
- Sale of remaining land to cover costs.

To succinctly capture the essence of land pooling, it can be described as a process that consolidates separate small and irregular land parcels on the urban fringe. With the agreement of landowners, this process involves developing the land, allocating certain blocks back to the original owners, and selling the rest. This concept is termed "land pooling" because all landowners contribute their parcels into a single, larger plot. The process involves comprehensive planning and the provision of essential infrastructure such as roads, water supply, drainage, electricity, telephone services, open spaces, and community service areas. After consolidation and re-plotting of these parcels, they are returned to their respective owners. The expenses for planning and infrastructure are covered from the contributed land itself, with each landowner sharing the costs. As a result, landowners receive slightly smaller parcels, approximately 12-30%, but equipped with all the required infrastructure, including parks and open spaces. Additionally, the original irregularly shaped plots are transformed into uniform geometric shapes. In essence, land pooling is a land management technique that involves unified design, servicing, and subdivision of separate land parcels for well-planned urban development, with project costs and benefits shared among landowners, and project costs recovered through the sale of developed plots.

**Activities Involved in Land Pooling**

Implementation of Land Acquisition Process: According to the Town Development Act 2054, the Land Pooling (LP) scheme may not necessarily require land acquisition. However, to address practical issues, such as compulsory surrender of land by landowners, it is recommended to undertake the land acquisition process under the provisions given in the Land Acquisition Act 2034. Temporary transfer of land ownership for all land in the project area will be made to the Land Management Sub Committees (LMSC).

**Securing Consent from Landowners**: As per the Town Development Act, execution of the LP project requires consent from 51% of the landowners in the project area. This consent will be obtained through public notification.

**Development of Infrastructure and Open Spaces:** All parcels of land within the LP area will be pooled and developed with external and internal infrastructure, including roads, stormwater drainage, sanitary sewers, solid waste collection, and street lighting. Open spaces and service plots will also be provided according to the plan to be developed. Landowners will contribute a certain percentage of their land for the infrastructure, service plots, and open spaces. The plots will then be readjusted, considering the contributions made by the landowners.

**Community Participation and Users Committees (UCs):** The LP scheme, along with infrastructure layout plans and principles for community contribution, will be formulated with the active participation and approval of the community. Users Committees (UCs) may be formed to directly involve the community in project planning, design, implementation, and dissemination of project-related information. The consultant will coordinate with UCs throughout the planning and design phases to ensure the confidence of the beneficiaries.

**Allocation of Readjusted Plots:** Every landowner in the LP area will receive readjusted plots back. The size of the readjusted plots will be proportionate to the size of the original plots before the scheme and will consider the benefits of the developed land, including infrastructure, enjoyed by individual landowners. The service plots (reserved land) will be sold to fund infrastructure development. Landowners with land less than or equal to the minimum permissible size, or with houses in parcels where land contribution is not possible, will contribute in terms of cash.

**Cadastral Survey and Landownership Certificates:** A cadastral survey of the readjusted plots will be conducted following the Survey Department's format, and a cadastral map will be prepared, showing the boundaries of all readjusted plots, the location of internal and external infrastructures, and other relevant details of the project area. Close coordination with the Department of Survey and the Land Revenue Office will be maintained throughout all project stages. After the approval of the cadastral map and information from these agencies, landownership certificates will be issued.

**Issuance of Temporary Landowners' Certificates:** Upon completion of the LP scheme for the entire area, temporary landowners' certificates will be issued to each partner landowner of the project.

**Preparation of Land Use and Building By-Laws:** Regulations providing guidance for further construction activities within the project area will be prepared.

**Community-Driven Operation and Maintenance:** Mechanisms for the operation and maintenance of infrastructure will involve community participation and will be formulated and approved by the community.

## 2.1 Chronological Development of Land Pooling

### 2.1.1 Global Chronological Development of Land Pooling:

In the early 20th Century, the concept of land pooling emerged in Europe and North America to aggregate fragmented land parcels for more efficient and organized urban development. The concept of land pooling or readjustment holds a significant historical background, with its roots tracing back to President George Washington, who utilized this approach in 1791AD to reach an agreement with landowners for the development of the city that now bears his name (Deuskar, C 2013). The inception of a legal framework for lad pooling took place with the Lex Addickes in Frankfurt-am-Main, Germany, in 1902AD (UN ESCAP, 2004) Developers and local governments started adopting mechanisms to consolidate land for planned community development. By 1990s: Land pooling gained traction in various parts of the world, including India and parts of Asia, as a method to facilitate infrastructure development and manage urban sprawl. The model was used for city expansion and infrastructure development. Land pooling continued to evolve globally, with many countries adapting the concept to address urbanization challenges, promote sustainable development, and facilitate infrastructure projects by 2010s (UN HABITAT, 2018).

### 2.1.2 Chronological Development of Land Pooling in Nepal:

Nepal witnessed initial discussions about land pooling and its potential benefits in the context of urban planning and development during the 60s and 70s. However, implementation was limited due to various socio-political factors. During the 90s, the concept of land pooling gained more attention in Nepal, particularly as urbanization accelerated. It was seen as a possible solution to manage urban growth and provide basic infrastructure to newly developed areas. Nepal's government started exploring land pooling as a viable mechanism for urban expansion in 2000s, especially in the Kathmandu Valley. Various pilot projects and studies were conducted to assess the feasibility of implementing land pooling strategies. By 2010s, Land pooling gained significant attention in Nepal's urban planning discourse. Government policies and regulations were gradually developed to enable land pooling to address urbanization challenges, provide infrastructure, and promote planned urban development (ADB, 2020).

## 2.2 Experiences of Land Pooling in Nepal

Land development through the technique of land pooling in selected areas has far-reaching positive impacts on planned city development. Not only does it curb haphazard growth, but it also enhances the overall utility of land for individuals and society. The process leads to an increase in land value, transforming it into a more productive factor of production. This multifaceted approach serves as

a valuable tool for controlling urban sprawl, ensuring adequate land supply for housing, and providing essential infrastructure and services to foster planned development in urban areas.

The success of land pooling is evident from the experiences of various foreign countries, where the technique has led to an economic surge in the value of private lands through additional developments. Moreover, the creation of new built-up lots and the swift acquisition of public land by local authorities for installing vital services demonstrate the efficiency of the land readjustment process. Additionally, the government benefits from this approach as it presents an excellent opportunity to resurvey and demarcate land boundaries, allowing for better planning and utilization.

The Town Development Act serves as the legal foundation for these projects, with a provision for land pooling in any part of the town planning area, provided that at least 75% of the landowners agree. As a testament to its effectiveness, seventeen land pooling projects covering 300 hectares of land have been implemented in ten towns and cities across Nepal since 1990 (Fraust et al, 2020). This reflects the growing recognition of land pooling as an indispensable intervention for planned urbanization and the production of serviced plots to meet increasing demands.

Before the initiation of land pooling projects, the government had already taken measures to provide limited site and services for planned urbanization, ensuring better access to urban land for the population. The incorporation of land pooling as a major intervention was aimed at preserving prime agricultural land in urban areas and effectively curbing haphazard and uncontrolled growth. The implementation of these projects was driven by sound public policy, with the Eighth, Ninth, and Tenth development plans emphasizing the creation of a conducive environment for urban land development and serviced plot production.

Furthermore, land pooling presents a unique opportunity for public and private partnerships, becoming a self-financing method that not only provides plots for private housing and public facilities but also discourages urban sprawl by efficiently providing infrastructure and services in the most cost-effective ways. The control over the design of living environments within the project area ensures a sustainable and well-planned urban landscape.

## 2.3 Experiences of Land Pooling/Readjustment: International Context

### 2.3.1 Land Pooling in rural context

Land Pooling has always been defined as the land development tool used to convert the lands of urban and peri-urban areas to ensure planned urbanization in the future. There are very few instances of use of the tool in areas containing mainly farmlands, and where the land value is low than that is required for proper financing. The tool has been found to have been used in few such instances in India.

**Amaravathi Land Pooling**

This land pooling is one of the biggest land pooling schemes in the world in which more than 10 lakhs acres of land has been targeted for consolidation. The cost of the entire project is estimated to be about $2 billion. The government have made promise of compensation in return with commercial land post the completion of capita, annual compensation, loan waiver and government jobs to the local youths (Mahalakshmi, 2015). In the scheme, 6-Stage Consent Process was initiated and successfully implemented by involving agricultural community (land owners, tenants and landless laborer) and the Government ensuing on growth potential of economy. The scheme was extraordinarily successful as the government was able to persuade 30,572 farmers into pooling 38,581 acres of land in 60 days (Prakash, Rao, & Yasaswi, 2022).

**Magarpatta Land Pooling**

This was a privately run scheme, and this pioneer scheme in urban fringe of Pune created a model Eco-city housing about 25,000 habitants and 65,000 workforces with provision of excellent urban amenities and facilities (Prakash, Rao, & Yasaswi, 2022).. The scheme began with the idea that brought several farmers together into planning something big with their land inheritance. About 430 acres of land is owned by 120 farmer families. Together they created a development company by the name of Magarpatta Township Development and Construction Company Limited and completed the project in 7 years. They employed the Revenue Sharing Model, which helped in a tremendous appreciation of their land value (Magar, 2011).

Various countries around the world have successfully implemented land pooling and readjustment techniques to manage their lands. Japan, for instance, has used land readjustment for approximately 30% of its urban land supply, with the city of Nagoya developing an impressive 77% of its habitable land through this method (UNCHS, 2000). In the Republic of Korea, 342 land readjustment projects transformed 347.1 square kilometers of predominantly agricultural land into urban land until 1987 (UNCHS, 2000).

### 2.3.2 Experiences of Land Pooling in Japan

Land development initiatives in Japan have held a significant role in urban expansion since the early 20th century, amassing a history of nearly a century. These projects have covered an extensive area, encompassing around 364,000 hectares, which represents approximately one-third of Japan's total urban expanse (9th International Seminar on Land Readjustment and Urban Development, 1997). Throughout the extensive implementation of such land development ventures, the evolution of pertinent laws, including the Land Readjustment Law, has played a pivotal role.

In 1954, the Land Readjustment Law was enacted to formalize the procedure and legal framework concerning land readjustment endeavors. This legislation was crafted based on the accumulation of insights garnered from numerous development undertakings. In response to the need for enhancing public amenities, the purpose "to supplement and improve the provisions of public facilities" was incorporated into the law. Even today, land readjustment projects remain a vital mechanism for realizing city and town planning objectives, as stipulated in the revised City Planning Law of 1968 (Sorensen, 2000).

#### 2.3.2.1 Experiences of Land Pooling in the City of Nagoya, Japan

Nagoya, a planned city in Japan, has been a pioneer in land readjustment schemes. After World War II, Nagoya was carefully planned with public participation, and land readjustment techniques played a vital role in its transformation. The city government, with the help of land readjustment, has developed nearly 68% of its total land area, providing well-planned urbanization and setting an example for other cities. Some of the land readjustment projects in Nagoya are carried out by the private sector, further demonstrating the effectiveness of this technique.

### 2.3.3 Experiences of Land Pooling in the Republic of Korea

Land readjustment was introduced in Korea during the Japanese colonial period and continued after the Korean War to provide urban services. However, practical challenges arose in the 1980s, leading to a shift towards development by public authorities. Despite the challenges, approximately 347 square kilometers of land have been developed using land readjustment techniques in Korea since their introduction (Kresse, 2019).

Moreover, many other countries, such as India, Germany, Pakistan, and Thailand, have successfully applied land pooling techniques to improve living standards, provide better infrastructure, and ensure planned urban development.

## 2.4 Land Development Techniques/Tools

The gradual conversion of agriculture land to build up area is the main process of urbanization. There is not proper direction of growth and development, thus leading the urban sprawl. People build gradually according to their resources and incremental construction has occurred. There is not a proper drainage system and other infrastructure; the field boundaries follow the narrow and winding roads. Due to the lack of development in the planned way, there existed lot of problems, i.e., environmental, physical, services, social, etc. For example, lack of proper open spaces and public facilities, lacks land for further development than remain undeveloped due to lack of access. To overcome these problems and to improve the living environment of the city various development planning techniques have been developed. Some were done with the sole effort of government whereas some were done with the collaboration with the public. The following land development techniques programs are being carried out to increase the land accessibility and to ensure rational use of scarce land resources:

- Site and Services (Kuleshwor, Lahan, Biratnagar, Damak)
- Guided Land Development (Biratnagar, Pokhara, Bhaktapur, Nepalgunj, etc.)
- Land Pooling (Dallu, Gongabu, Nayabazar, Kamal Binayak, Saibu etc.)

All these three land development techniques have been undertaken during the last few decades. Among three techniques land pooling is only one still preferred in valley. Similarly there are other tools deployed for urban land acquisition and development. such as:

- Densification and reconstruction
- Participation
- Cross-subsidy
- Land lease.
- Build-operate-transfer (PPP Model)
- Land owners cooperatives

Here, basic concept of site and services and Guided Land development and their experienced is discussed, below:

### 2.4.1 Site and Services

It is the undeveloped raw land acquired to facilitate infrastructure, open spaces, community

areas, commercial, institutional, and residential areas. Initial investment is very high. It is a traditional form of lands developments technique in which government buys primarily the cheaper vacant sites and makes available the public land and develops them by adding necessary infrastructure services. All the investment of project cost are made by government or organized entrepreneurs and instead of this they sale the plots with justifiable profits. In site and services, Land is usually acquired with minimum compensation rate and Time schedule can be controlled if provided fund is enough, easy to implement. Sites and Services generally can have provisions for very low-income groups also. Planners can imply their plan after land acquisition without any disturbance from landowners.

This technique requires a substantial upfront budget to implement the project until the developed plots are sold. The economic viability of the project is also associated with availability of public land and the extent of the development area, which is necessary to achieve greater economies of scale to minimize the cost of the serviced plots. This can be achieved only through a sustained investment of public agencies on land banking, although this has become increasingly difficult in urban area due to expensive land prices. The result and experience of the site and services project in valley have been mixed and not satisfactory. Only Kuleshwor and Golfutar have been completed but took long period hence investment also needed more. Following are some problems of this technique:

- Needs a huge amount of initial funds to acquire land.
- Inefficient project document and lack of trained people.
- People's participation is nil.
- It will be very costly to acquire land, giving the current market price as compensation.
- Slow and lengthy process of land acquisition and low land compensation rate.
- Land acquired without the interest of landowner and plot was sold to land speculators.
- Displacement of original lands owner, mismanagement in selling of land plot and lack of capacity of landowner to build the houses.
- Weak coordination and lack of strong organization of implementation body
- Lack of resources and no time limit for the completion of the project.
- Indigenous people will be displaced partially/totally.

**Table 2-1 Site and Services in Kathmandu Valley**

| Project Name | Total Area Covered Ha | Project Start | Project Completion | Executing Agency |
|---|---|---|---|---|
| Kuleswor | 26.5 | 1978 | 1990 | KVTDC |
| Golfutar | 11 | 1982 | 1990 | KVTDC |

*Source: KYTDC*

### 2.4.2 Guided Land Development

It is the process of providing access to the inner land, improving existing roads, preparing local area plan, norms and standards for implementation. This tool is suitable for developing urban fringe. In guided land development program, the government improves the existing road networks and drainage facilities to improve the vehicular movement in the existing settlements areas.

GLD guides and strengths for urban expansion in planned way in desired direction on suitable sites through community participation. It increases land for housing for different groups through free market forces. Inner plots act as open spaces for the locality if it can be controlled and help to create rational basis for effective implementation and enforcement of land use plan and administration of building permits. In OLD, Land acquisition is not necessary because the community itself contributes free land for road extension and improvement (Shrestha, N 2012). This program has been applied in most of the peripheral wards of Kathmandu and Lalitpur. In this process people have freely contributed their 100 ropanis of land for the new road networks proposed in GLD plan. About 25 km of road have been built in urban area of valley.

Following are some problems of this technique:

- Such roads are not straight, as it has to go taking half the land from both sides as contribution.
- Plots sizes are not regular, and roads do not serve inner plots.
- Government must invest high on infrastructure development due to wandering roads.
- Difficult to convince landowners who already have access to the road, and they generally create problems by not co-operating.
- Difficult to provide wider roads & GLD cannot focus on income groups.
- Since roads alignment does not follow the uniform geometry and many times it is very difficult to implement other developmental activities.

- No provision made for compensation.
- Limited technical manpower for more accurate work and time constraints.
- Encroachment of widened road by constructing steps aprons due to non-construction of road.

However, the success of GLD Plan presents a bleak situation as only 25% of the total road designed is completed in ten years' time. Also, the plan has not been fully successful in terms of opening up new areas for urban expansion where land development activities are desirable for the accommodation of increasing urban population of the valley.

## 2.5 Land Development Techniques in Rural Areas

The development of rural areas has been a major topic in science and politics along with its land use management. The main motivation behind rural development is to minimize the migration from the rural areas into the cities. In the context of Nepal, the labeling of rural and urban areas is biased. However, based on observational and statistical data collection, the study area is deemed to be rural. The basis of the claim is the lack of basic infrastructure and amenities, along with most of the land being used for agriculture. To guide the land development proposed by the provincial government in the area, there is a requirement to understand how rural land development has been done in national as well as international context. There are many techniques applied to develop lands in rural areas. Few of the case appropriate techniques have been introduced below:

### 2.5.1 Land Consolidation

The food and Agriculture organization (FAO) has defined the land consolidation as the formation of single or individual farms which have enough size, structure and suitable for productive use. Land consolidation means landowner gives up their scattered parcels in order to get an equivalent area or value of land in fewer or more continuous parcels (Sendqvist & Andersson, 2006). According to the You (2010) the main tasks in land consolidation are elimination of land fragmentation, land reclamation & soil improvement, improvement of the pattern of settlement and improvement of the farm size pattern. The main objectives of land consolidation were grouping of neighbor parcels that reduce the negative effects of Parcel Fragmentation And Land Consolidation fragmentation, reduction of total agricultural production costs and enhance more effective agricultural plans and projects (Lusho & Papa, 1998). According to (Lusho & Papa,

1998), some land consolidation methods are; exchanging parcels of land, planting the whole ex-cooperation field with the same crop, farming in the groups, creating the land market. He further described the benefits of land consolidation that could help to create viable farms, improvement of the landownership structure, enlargement fragmented holdings, construction of infrastructure, avoidance of land abandonment, reduction of production cost, improvement of irrigation system and mechanization. Ahmadpour, Feali & Soltani (2013) pointed out that land consolidation is the planned readjustment of pattern of ownership & parcels, which integrates and decreases the number of parcels, and it also helps to make the proper suitable structure of farm and provides the required infrastructures including drainage network, irrigation system and road for agricultural development. Ayranci (2007) described that the farmland is scattered into very small parcels in many countries which is unfavorable for agricultural production so land consolidation is one activity or one kind of instruments or tools which can consolidate or integrate such scattered parcels. He further wrote that land consolidation is weapon that re-organizes the fragmented parcels and makes suitable structure for agricultural use, improving of parcellation, water control, accessibility and improvement of land protection or recreation of land is generally included in the land consolidation project. The main three activities that should do in land consolidation are administration, allocation and mapping. He again claimed that in land consolidation the parcellation design is very complex because it is difficult to settle the new formed parcel according to previous.

**Procedure of Land Consolidation**

The process of land consolidation is the method of reversing the action of fragmentation which is not new. Some of the earliest attempts at consolidation, as a method of land reform, took place in Scandinavia, particularly in Finland (FAO 2003), Sweden, and Denmark, in the 18th and 19th centuries. The three main land reforms in Sweden took place between 1750 and1920, resulting in severe fragmentation being replaced by land consolidation (Osterberg and Pettersson,1992). However, with the subsequent population increase subdivision leading to fragmentation has occurred thereafter (Lindskogand Millgard, 1983). In Finland the first law was passed in 1757 (King and Burton, 1982), and nearly all of the land has been consolidated at least once (Leppikangas, 1994). In Denmark the first Consolidation Act was introduced in 1781 (Binns, 1950). Legal aspects of land consolidation may be complicated by different procedures. In The Netherlands four types of land consolidation exist (Sonnenberg, 1999); in Germany five, and in

France seven (although only three are commonly used - Brussaard and Grossman, 1992). In many African societies, land remains the paramount resource base (Deng, 1988) and whether communal individual ownership forms of tenure are implemented, it is important that the peasants are encouraged to remain and work on the land (Kiamba, 2001; Törhönen and Goodwin, 2001).The major activity of land consolidation has been to bring fragmented parcels of land together to produce economic units. Additionally, during the process of land consolidation, particularly when it occurs over a large area, it is usual to undertake Parcel Fragmentation and Land Consolidation Nepalese Journal on Geoinformatics, Survey Department, Nepal Page73 major land development, which would otherwise have been uneconomic when only a few parcels were consolidated. The process of consolidation is long- term, and benefits from a continuous dialogue between government officials and the farming community. Different countries have developed different types of Land Consolidation procedures. Similarly, FAO (2003) has set out one of the more recent comprehensive procedures for land consolidation which is listed below:

- Request for initiation of a project.
- Analysis of the situation and identification of what is needed and wanted.
- Preparation of an initial concept plan that states the aims of the proposed project and approximate estimates of costs and sources of financing.
- Approval of the request by participants and the state.
- Formation of a local management team with representation from the community.

**Advantages of Land Consolidation**

The main advantages of Land Consolidation are described below.

- Improving the agricultural sector by enabling farms to become more efficient and competitive, and better integrated in agricultural chains.
- Encouraging alternative ways of agricultural production such as the implementation of agro-environmental measures and good agricultural practices.
- Strengthening the rural economy by promoting broad-based growth, including supporting non-farm activities and providing access to credit, markets and infrastructure support.
- Improving social conditions by promoting employment opportunities and providing increased access to social services, water and sanitation.
- Providing greater protection of natural resources and for their sustainable management.

- Ensuring greater participation in the development process by those usually left out of it.
- Improvement of agricultural land division.
- Improvement of property division in village centres.
- Re-allotment of leasehold areas.
- Enlargement of the farm size.
- Land use planning in village centres.
- Acquisition of land for the municipality/state in village centres.
- Readjustment of building land (homestead areas) in village centres.
- Improvement of road network in the land consolidation area.
- Improvement of drainage network in the land consolidation area.
- Implementation of environment and nature conservation projects, etc.
- Promotion of regional development projects.

### 2.5.2 Community Land Cooperatives

One of the major concerns in conversion of rural fragmented land into usable developed plots is the fear of displacement of the means of livelihood at such places – farming. With regard to such interests of the landowners, community land cooperatives model has been influential and effective in many cases. As in the case of our case study, the intent of converting the existing rural area into planned urban region is for the sake of withstanding the urban stress coming along with the capital declaration. So, the infiltration urban-sponsored developments in such regions, the rural villages have found to be more cooperating when a bottom-up institutional change was initiated in the best interest of the rural communities (Zhu & Guo, 2014) analyzed the effectiveness of such an autonomous institution in Nanhai region of China. A cooperative is a voluntarily union of autonomously associated people that aims to fulfill a common economic, social and cultural needs and aspirations through an 'enterprise' that is jointly owned and democratically controlled. This approach can help the landowners make autonomous decisions and jointly develop their owned land for urban expansion.

In the realm of rural land development, a dynamic and inclusive strategy has been gaining momentum: the Community Land Cooperative method. This innovative approach puts community

members at the forefront of shaping the destiny of their surroundings, emphasizing collaboration, sustainability, and local identity preservation.

**Empowering Community Decision-Making:** At the heart of the Community Land Cooperative method lies the empowerment of residents. Instead of top-down development imposed by external parties, community members actively participate in the planning, design, and execution of projects. This grassroots involvement ensures that the development aligns with the unique needs and aspirations of the community.

**Pooling Resources for Greater Impact:** In a Community Land Cooperative, individuals pool their resources, skills, and knowledge to amplify their impact. The synergy generated from combining various strengths enables the cooperative to tackle complex challenges, implement efficient infrastructure, and even explore innovative solutions that might otherwise be out of reach for individual landowners.

**Sustainability at Its Core:** One of the hallmarks of a Community Land Cooperative is its commitment to sustainability. Cooperatives often emphasize eco-friendly practices, efficient resource utilization, and the preservation of natural habitats. By designing developments that minimize their environmental footprint, these cooperatives contribute to a greener, healthier future for both the community and the land.

**Cultural Heritage and Identity Preservation:** A Community Land Cooperative values the local culture and heritage that have shaped the community over time. By incorporating elements of the area's history, architecture, and traditions into the development, these projects become living testaments to the past, present, and future of the community's identity.

**Equitable Benefits for All:** Unlike traditional developer-driven projects, where profits may be concentrated among a few, a Community Land Cooperative ensures that the benefits are equitably distributed among its members. This approach promotes social cohesion, economic fairness, and a sense of shared ownership that resonates throughout the development.

**Community Stability and Long-Term Vision:** By actively participating in the development process, community members invest not only in their land but also in their collective future. This sense of ownership fosters long-term stability and commitment to the project's success, ensuring that the development remains vibrant and sustainable for generations to come.

**Navigating Challenges Together:** While the Community Land Cooperative method offers numerous advantages, it's not without challenges. Decision-making can sometimes be complex, financial resources might be limited, and conflicts may arise among members. However, these challenges are approached as opportunities for growth, collaboration, and learning, with the community's collective wisdom guiding the way forward.

In conclusion, the Community Land Cooperative method represents a transformative approach to rural land development. By empowering communities, fostering sustainability, and celebrating local identity, these cooperatives pave the way for harmonious growth that balances progress with preservation. Through collaboration, shared resources, and a commitment to equitable benefits, the Community Land Cooperative method showcases the potential of human ingenuity when harnessed for the betterment of both people and the land they inhabit. However, this method also has some shortcomings like those mentioned below:

**Disadvantages:**

- **Decision-Making Challenges:** In larger cooperatives, decision-making can become complex and time-consuming. Conflicts might arise among members with differing viewpoints, potentially leading to delays in development.
- **Limited Expertise:** Cooperative members might lack the expertise required for effective land development, which can result in suboptimal planning, design, and execution.
- **Financing Difficulties:** Funding large-scale development projects can be challenging for cooperatives, as they might struggle to secure the necessary capital from members or external sources.
- **Risks of Mismanagement:** Poor management or governance can lead to inefficiencies, delays, and even financial losses for the cooperative members.
- **Slow Development Process:** Cooperative decision-making processes can slow down the development timeline, especially when consensus is required on significant decisions.
- **Conflicting Interests:** Different members might have conflicting interests, making it difficult to reach agreements on key aspects of development.

- **Lack of Professional Guidance:** Without professional guidance from urban planners, architects, and other experts, cooperative development might not achieve the desired level of quality and functionality.
- **Ownership Transfers:** Transferring ownership of cooperative shares or units can be complex and might involve legal and administrative challenges.
- **Regulatory and Legal Issues:** Cooperative development might face legal and regulatory hurdles that could complicate the planning and approval processes.

In summary, community land cooperatives offer the potential for community-driven, sustainable, and locally-sensitive rural land development. However, they also come with challenges related to decision-making, expertise, financing, and management. The success of this approach depends on the commitment and collaboration of the community members, as well as their ability to address the disadvantages effectively. Proper governance, clear communication, and a well-structured organizational framework are essential for mitigating these challenges and maximizing the benefits of cooperative land development.

### 2.5.3 Other Rural land development tools

Apart from the mentioned methods, there are other techniques to develop rural lands, but most of them focus on small scale undertakings. Some of the techniques at disposal are:

- **Land Readjustment:**
    - Like land pooling, but more focused on redistributing land among existing landowners.
    - Landowners exchange their current plots for new plots in the planned urban area, with improved infrastructure and amenities.

- **Land Swapping:**
    - Landowners voluntarily exchange their rural agricultural land for plots of land in the future urban area.
    - It provides landowners with the opportunity to benefit from urban development without pooling their lands.

- **Land Leasing and Joint Ventures:**

  - Developers lease agricultural land from rural landowners for a specified period, during which the developer can prepare the land for urbanization.
  - Landowners can retain ownership and receive a share of the profits when the land is developed.

- **Incremental Development:**

  - Instead of large-scale land pooling, encourage gradual development on individual parcels of land.
  - This approach can allow for more organic growth while minimizing disruption to existing agricultural activities.

- **Land Fragmentation and Ownership Consolidation:**

  - Fragmented rural lands can be consolidated by offering incentives for landowners to exchange their scattered parcels for larger contiguous plots.
  - This consolidation can make it easier to plan and implement urban development without a complete land pooling process.

- **Agricultural Transition Zones:**

  - Designate specific zones where agricultural activities gradually transition to urban uses.
  - This approach allows for a controlled shift from farming to development over time.

- **Phased Development Agreements:**

  - Developers and landowners agree to develop specific portions of rural land in phases over time.
  - This helps manage the pace of development while allowing agricultural activities to continue until development is ready.

- **Conservation Development:**

- Focus on preserving ecologically sensitive areas and consolidating development in specific zones, leaving the rest of the land as open space or agricultural land.

- **Land Trusts for Development:**

  - Establish a trust that holds agricultural land for the purpose of future urban expansion.
  - The trust can collaborate with developers while ensuring sustainable land use practices.

- **Density Transfer and TDR Programs:**

  - Allow landowners to transfer development rights from rural lands to designated urban areas.
  - This approach enables landowners to benefit from development while preserving agricultural land.

## 2.6 Review Of Land Pooling related plans and policies

### 2.6.1 National Urban Development Strategy (NUDS)

The National Urban Development Strategy (NUDS) has put emphasis on basic infrastructure services and investments on large regional cities and inter-urban connectivity liking hinterlands to capitalize on potential of these centers, Other strategies include improving governance and capacities of local bodies in improving service delivery and creating enabling environment for urban economic activities to thrive on, NUDS has estimated investment requirement of NRs 2385 billion in infrastructures by 2030. It includes an investment of NRs 890 billion by 2021 which is about 10% of the total investment of NRs 8683 billion required in the service and industrial sectors in the same period.

The national urban development strategy is formulated with a time horizon of 15 years. Strategies have been conceived to achieve desirable conditions in each major theme – infrastructure, environment, economy, and finance – but also indicate the social, economic and cultural vision of urban areas reflecting the highest values of society. Each strategy is backed by several activities recommended for each lead and supportive agencies within the different

Objectives:

- Develop and elaborate the medium/long term strategic vision of a desirable and realistic national/regional urban system based on existing trends and resource potentialities and proposed strategic initiatives.
- Establish benchmarks and standards for urban infrastructure, urban environment, urban planning and management, and urban governance.
- Identify key issues and prioritized initiatives and investment (projects) required about:
    - Urban infrastructure
    - Urban environment
    - Realizing comparative advantages based on resource potentials.
- Identify key issues with respect to investments for urban development and strategies to augment urban financing and implementation.
- Suggest institutional framework and legal instruments to facilitate implementation and monitoring of NUP and proposed urban development strategies.

NUDS is expected to:

- Complement the national urban policy vision and facilitate periodic review and appropriate changes.
- Provide strategic directions for the newly formed Ministry of Urban Development.
- Define the scope of urbanization and urban development and to that extent indicate the areas that logically come under the ambit of the Ministry.
- Inform and facilitate sectorial activities of other agencies of the government that bear on urban development including inter alia transport, agriculture, industry, trade, education and health, environment, water and sanitation services, culture, tourism, local development etc.

### 2.6.2 PIDA Establishment and Operation Act, 207

Provincial Infrastructure Development Authority (PIDA), an autonomous body established according to the Lumbini Province Act 2077 for planning, designing, construction and maintenance of infrastructure in the province.

Roles, Duties and Rights of PIDA

- To make land use plan and identify infrastructures required accordingly along with formulation of regulations and standards and within any area of Lumbini Province.
- Preservation of religious, cultural, historical, socio-economic and tourism related infrastructures through relatable projects.
- Implementation of land development project
- Identification of probable sources of funding for different projects under Province Infrastructure Development Authority
- Carry out programs and projects as directed by the Province Government

Infrastructure Development Committee Formulation

PIDA shall formulate Infrastructure Development Committee as per Article 13, the committee shall comprise of:

1. Chief Minister- President
2. Minister, Physical Infrastructure Development - Vice President
3. Chief Secretary, Province Government- Member
4. Secretary, Ministry of Economic Activities and Planning- Member
5. Secretary, Physical Infrastructure Development-Member
6. Member from Province Planning Commission- Member
7. 2 Officials nominated by Province Government (at least one Female Official)-Members
8. Chief Administrative Officer- Member Secretary

The committee shall be assigned to the planning and implementation of policies regarding Province Infrastructure Development along with monitoring and evaluation of programs and projects under PIDA.

There are other policies reviewed for this assignment that include:

- National Urban Policy 2007
- National Land Use Policy 2012
- Tourism Policy 2008
- Industrial Policy 2011
- National Transport Policy 2001
- Nepal Urban Road Standards
- National Urban Development Strategy

### 2.6.3 Review On Related Laws, Acts, Policies, Guidelines and Literatures

The land administration in Nepal is governed by various acts and regulations that play a crucial role in urban development. Some of these important legislations include:

**Muluki Ain (land related articles):** This law covers various aspects of land-related matters in Nepal.

**Trustee (guthi) Corporation Act:** This act governs the management and administration of guthis, which are traditional trusts or endowments that hold land and assets for religious and cultural purposes.

**Land-related act 2021 BS:** This act pertains to land-related matters and was enacted in the year 2021 of the Bikram Sambat calendar (corresponding to 1964 AD).

**Land survey act 2019 BS:** This act was passed in 2019 BS (1962 AD) and deals with land surveying procedures.

**Land revenue act 2034 BS:** Enacted in 2034 BS (1977 AD), this act governs land revenue matters, including taxation and assessment.

**Land survey regulation, 2058:** This regulation provides guidelines and procedures for land surveying.

**Land revenue regulation, 2036 BS:** This regulation complements the Land Revenue Act and provides further details and guidelines for its implementation.

**Land related regulations, 2021 RS:** These regulations cover various aspects of land administration and management.

The effectiveness of urban development efforts in Nepal heavily relies on government policies and the availability of a robust legal framework. Some key policies and acts that directly influence urban development include:

- **Town Development Act - 1988 (2045):**

The Town Development Act empowers a committee constituted by the government to engage in formulating and implementing land development schemes, enforcing land use regulations, and exercising the authority to freeze land and acquire any immovable property. Additionally, the Act imposes restrictions on land use. Clause 12.1.2 allows for the implementation of LP (Land Pooling) schemes in an area with the agreement of 75% of the landowners. Furthermore, the Act grants Local Bodies the power to undertake similar development schemes within their respective constituencies.

Enacted in 1989, the Town Development Act (TDA) is not only comprehensive legislation for planned urban development in urban areas, but it also stands as the most significant Act to date concerning urban land management. Its primary objectives revolve around executing physical development, redevelopment, and reconstruction of existing town areas and establishing new towns. It involves the preparation of land use and comprehensive plans while enforcing planning norms and regulations.

Sector 12 of the Act empowers the Town Development Committee to initiate and implement land development programs focused on urban housing and development. These programs include Guided Land Development (GLD), Sites and Services (S&S), and Land Pooling. In addition, Section 16 of the Act provides the provision to utilize existing Land Acquisition Acts for public land acquisitions. The Act also outlines guidelines for the participation of various stakeholders in the urban land development process.

Key features of the Town Development Act of 1988 include facilitating the development and expansion of towns with the provision of necessary facilities and services. It also involves determining land utility zones and regulating land use and natural resources for effective town development. Furthermore, the Act encourages the initiation of land development programs geared towards urban activities. Moreover, it addresses concerns related to public health by regulating and

controlling activities that could have adverse impacts on the environment, while also permitting the issuance of orders to demolish constructions that do not meet established standards.

- **Land Acquisition Act - 1977 (2034):**

The Land Acquisition Act empowers the government to acquire private properties for public purposes. This Act serves as one of the principal legal provisions for executing urban development schemes, and it holds particular significance as approximately 75% of the country's total land is owned by private individuals. The Nepal Constitution specifically grants individual freedom to utilize their land as they see fit. While this allows individuals to exercise their rights over their property, it also places responsibility on planning authorities to regulate land use for the overall benefit of the community.

Nonetheless, the Land Acquisition Act does allow for some planning considerations. According to the Act, both public and private land can be acquired, and proper compensation must be provided to the landowners. The District Administration Office has been vested with the authority to acquire land on behalf of the implementing body.

Some key features of the Land Acquisition Act of 1977 are as follows:

Empowerment of the government through public notification to acquire private land for the welfare of the public or for purposes related to international organizations or diplomatic missions.

Acquisition of private land to safeguard public property or to address any other emergency. Compensation for the acquisition of land is provided to the landowners, either in cash or, if the owner prefers, in the form of other governmental land.

The Act does not specify a timetable for the payment of compensation, leaving it to the discretion of the authorities.

Land acquisition through expropriation is primarily governed by the Land Acquisition Act of 1977, and the authority for land acquisition lies with the Chief District Office of the respective district.

- **Local Self Governance Act - 1999 (2055)**.

The Central government introduced the Local Self Governance Act (LSA) in 1999 as part of its decentralization policy. This policy aimed to empower local bodies, particularly municipalities, as self-governing and autonomous urban entities. The goal was to enable these local bodies to actively

contribute to the overall development of urban areas and to improve the living conditions of the residents.

Under the LSA, municipalities in urban areas were granted the authority to engage in land development activities. According to Section 111(2) of the Act, while formulating periodic and annual development plans for the municipal area, the Municipality is required, as needed, to introduce plans related to land-use, land pooling, and guided land development. These provisions were put in place to ensure that the development of the municipal area would be well-balanced and carefully planned. However, it is important to note that the control of unplanned settlements within the municipal area and the undertaking of land development activities were not made mandatory functions and duties for the municipality. Instead, these activities were listed as optional functions in Subsections 2d and 2e of Section 96. Consequently, the prioritization of land development work as an optional function might not receive the necessary attention and focus in the municipality's action plan (Uprety, 2002). This could potentially lead to challenges in effectively managing and regulating urban development, especially in the context of unplanned settlements and land use.

- **Land Reform Act 1964:**

In 1964, the Government of Nepal introduced the Land Reform Act to regulate all types of land throughout the country. The Act aimed to address the complex dynamics between land buyers, landowners, and land tenants in the urban land market, especially in the greater Kathmandu area. Notably, it recognized that individuals could have multiple roles, not just as buyers or owners, but also as tenants of land.

The Act became particularly significant due to the predominant land ownership system known as "Raikar Ownership" or private land ownership. According to Karki (1991), this ownership system covered a vast portion of the cultivated land, accounting for around 94% of the cultivated land area or 76% of the valley area. Consequently, the prevalence of dual ownership, where individuals can simultaneously hold different rights to the same land, posed a considerable challenge in resolving land access issues. This situation persisted even as the country experienced a rapid conversion of agricultural land to urban use since the Act's enactment in 1964. The shift from agricultural to urban land use intensified the complexities arising from dual ownership, making it even more difficult to navigate land-related matters. Over time, the Land Reform Act has remained in force, and its provisions continue to shape land-related activities in Nepal. As urbanization and

development efforts persist, addressing the issues stemming from dual land ownership remains a critical aspect of land administration and management in the country.

- **National Shelter Policy - 2012:**

The National Shelter Policy of Nepal was formulated and implemented for the first time in 1996, following a comprehensive housing survey conducted in 1991 with technical support from UN HABITAT. The government's stance on the shelter sector is explicitly outlined as an "enabler and facilitator" for achieving shelter targets, with a significant emphasis on the private sector's role in both formal and informal housing sectors (Lamsal, 2008). In essence, the government of Nepal sees its role as that of a facilitator, aiming to encourage private sector investment in housing by formulating necessary acts and regulations and providing basic infrastructure services.

Regarding the provision of housing for low-income individuals, the policy focuses on constructing cost-effective shelters for the shelter-less, disadvantaged groups, and low-income people. The policy also emphasizes the allocation of smaller plots of land for constructing dwelling units and providing essential services and facilities (Ministry of Housing and Physical Planning, 1996). While the policy does not explicitly mention "urban poor," it indirectly includes squatters and homeless urban poor families within the category of shelter-less families.

To improve the housing situation in the country, the National Shelter Policy proposes several key instruments. These include the provision of serviced land through land development programs, such as land pooling, site and services, and guided land development programs. The policy also focuses on promoting housing finance, developing construction materials and technology, increasing the production of dwelling units, and undertaking repair and maintenance of existing housing stocks.

The National Shelter Policy, through its housing survey, identified a pressing need for approximately 2.5 million new dwelling units between 1996 and 2006 (with 433,600 units, or 17%, to be developed in urban areas). Additionally, the policy aims to renovate 731,900 dwelling units (8% of which are in urban areas) by the end of 2006. In the context of urban land development, the 2012 National Shelter Policy explicitly mentions extending urban land development programs and introducing legislation and regulations for land use plans.

- **National Urban Policy – 2007**

This policy aims to achieve balanced urban development, promote industrial development, and attract foreign investment under public-private partnerships.

It is important to note that these policies and legislations should consider the participation of all segments of society, including the urban poor and marginalized communities, to ensure inclusive and sustainable urban development in Nepal.

# 3 Methodology

## 3.1 Research Paradigm

### 3.1.1 Ontological Claim

The main argument put forth in this thesis is based on a social constructivist viewpoint, which suggests that land pooling, as a method of rural land development in Deukhuri Dang relies on constructed meanings and interactions among different stakeholders. The study acknowledges that the nature of land pooling is not fixed but rather influenced by the perspectives, values and power dynamics of the community government institutions and other involved parties. It recognizes that there are realities at play and aims to investigate how these individual understandings of land pooling impact its execution and results. By adopting an approach this research aims to unravel the social processes and negotiations surrounding land pooling in order to gain a comprehensive understanding of its viability, within the specific rural context of Deukhuri Dang.

### 3.1.2 Epistemological claim

The main idea of this thesis is based on a perspective called positivism, which aims to find measurable evidence to assess how effective land pooling is, as a tool for developing areas in Deukhuri Dang. The research takes an approach. Uses quantitative methods like surveys and statistical analysis to gather reliable and valid information about the impact of land pooling on achieving sustainable rural development goals. By following the principles of empiricism and logical positivism the study aims to establish a connection between land pooling practices and their socioeconomic effects providing a basis, for making decisions backed by evidence and suggesting policies.

## 3.2 Research Strategy

Utilizing a case study approach to focus on Deukhuri Dang as a specific rural context offers a detailed and context-specific investigation of the suitability of land pooling as a land development tool. This method allowed me to gain an in-depth understanding of the area's unique characteristics, challenges, and potential for land pooling implementation. The case study involves the following components:

In adopting a case study research method, I sought to delve deeply into the specific context of a specific region within Deukhuri valley, capturing its unique features, challenges, and potentials concerning land pooling. The state of physical infrastructures of the area was examined to understand how land pooling would impact the overall landscape and urbanization process. Simultaneously, the study investigated the socio-economic aspects, exploring how land pooling initiatives would influence the livelihoods, economic opportunities, and social dynamics of the communities present there. An essential focus of the research was to identify the tangible benefits and drawbacks of land pooling as a land development tool in the rural context of Deukhuri valley. By analyzing the initial response to the proposal of implementing land pooling, I aimed to draw meaningful insights into the effectiveness of land pooling as a solution to urban problems.

Moreover, the study critically evaluated various policies relevant to land pooling to assess their effectiveness and implementation challenges. This analysis aimed to identify key tactics and strategies that could be employed to ensure the successful development of the planned residential area. By exploring policy nuances, the research aimed to make evidence-based recommendations to enhance the efficiency and impact of future land pooling projects in the region.

Overall, this case study research strategy was designed to provide a comprehensive understanding of the implications of land pooling on the physical, social, and economic aspects of the Deukhuri valley. Through the in-depth analysis of land use, socio-economic perspectives, and policy considerations, the study aimed to contribute valuable insights that could inform more effective land pooling practices and sustainable urban development in the area.

### 3.2.1 Conceptual Framework:

A conceptual framework was developed to enhance the study's structure and guide the in-depth analysis of related issues. This framework established systematic relationships among various components, facilitating a comprehensive understanding of the thesis's output. By creating a checklist of required data and information, the study was further organized to effectively address the impact of land pooling in Deukhuri Valley.

**Table 3-1 Conceptual Framework**

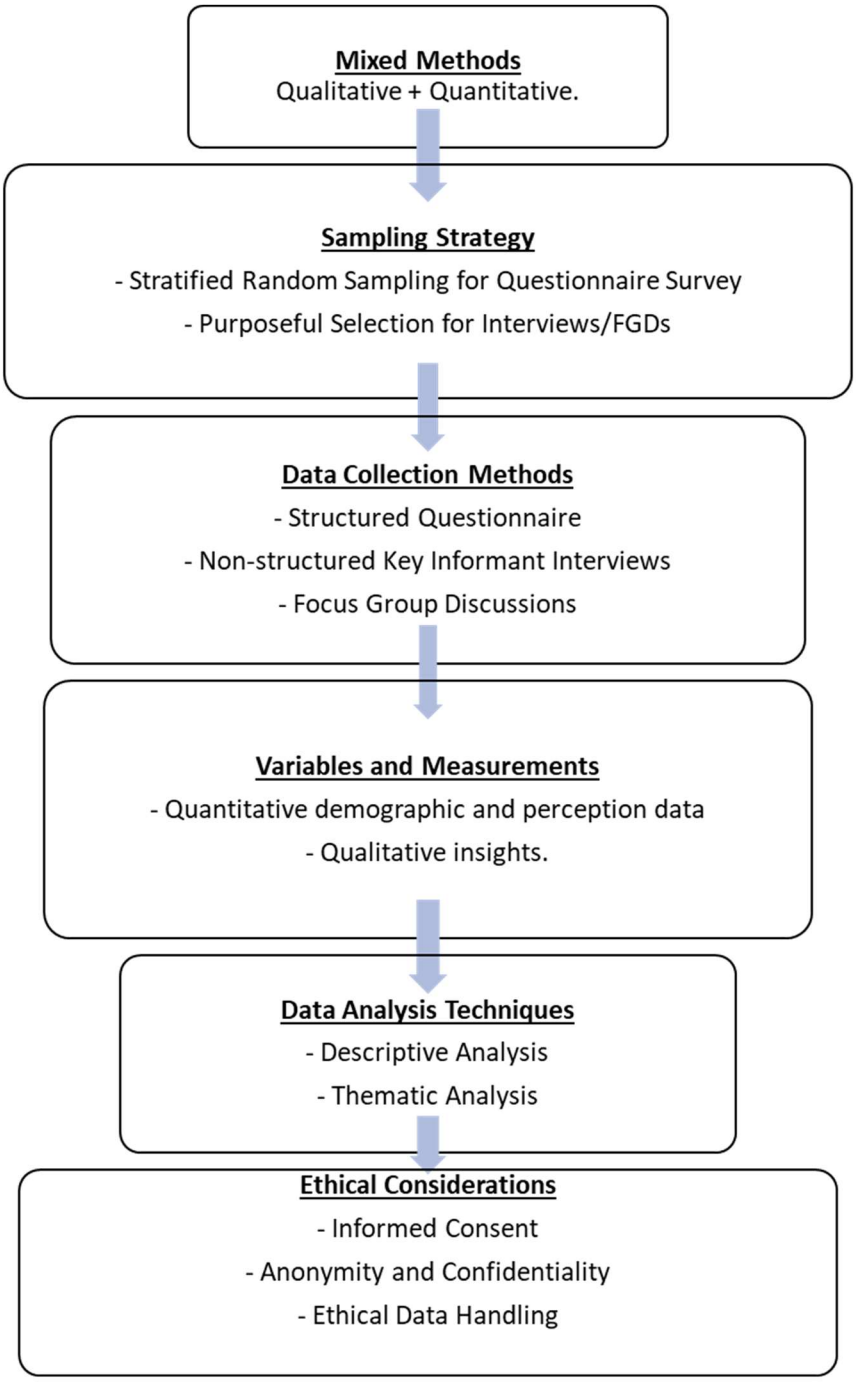
| Main Research Question | Specific Objectives | Variables or Research Questions | Data Sources |
|---|---|---|---|

| | | | |
|---|---|---|---|
| How appropriate is land pooling as a land development tool in rural context of Nepal? | To familiarize with the concept of land pooling, its use in a rural setting and the policies guiding them in the context of Nepal. | • Concept of land pooling<br>• Types of rural land development strategies<br>• National and international initiatives | • Literature Review<br>• Case studies |
| | To identify the potential challenges in implementing land pooling in a rural setting. | • Community's perception<br>• Land Value<br>• Social sustainability<br>• Land Use of Study Area<br>• Attitude and behavior related to the initiation of Land Pooling | • Map Study/ Satellite images<br>• Quantitative data collection<br>• Qualitative Insights<br>• Case Studies |

### 3.2.2 Methodological Framework

On the basis of the concept visualization, a methodological framework has been prepared, as shown in the figure below:

**Figure 1 Methodological Framework**




### 3.2.3 Selection of Study Area

The proposed area for land pooling in ward-4 of Rapti Rural Municipality was selected as the study area. The goal was to obtain the insights of the stakeholders and the existing financial aspects of

the proposed project. The huge undertaking of land pooling within the Deukhuri Valley was tried to be represented through this study area.

**Problem Identification:** The problems in the research area were identified through field observation during my employment period. The existence of mostly farm areas and rural scenario is what instigated the concern regarding the possibility of success of the project.

**Formulation of Objectives:** The objectives were formulated such that an investigation could be conducted in the existing framework of land pooling in national context, and its suitability in the rural context. The objectives mainly focused on the financial and social aspects of the initiated land pooling project to determine the success probability.

### 3.2.4 Data Collection Methods

A thorough literature review was conducted to gain insights into various aspects of land pooling. Extensive research materials, scholarly journals, articles, and relevant literature related to similar topics were collected and analyzed to understand the issues, problems, and prospects associated with land pooling. Additionally, federal as well as provincial government plans and policies concerning land management were examined to comprehend the regulatory framework in the study area. This review helped identify crucial indicators of land pooling, which served as the basis for developing a set of questionnaires for data collection.

Data collection played a pivotal role in capturing the existing reality of the study area. Field visits were conducted to gather data and information directly from the ground, synthesizing it for subsequent analysis. The research methodology employed both qualitative and quantitative approaches. Structured questionnaires were utilized during field surveys to generate a wide range of information on issues concerning land pooling. In-depth interviews and focus group discussions were also conducted with local residents, resource persons, and key informants to gain deeper insights and perspectives on the post-evaluation of land pooling. As the researcher was present in-situ throughout the project duration as a consultant, observational data collection were also made as a basis for analysis- both qualitative and quantitative.

#### 3.2.4.1 Secondary Data Collection:

Secondary data was collected from various sources, including census data, maps, and internet resources. Data from the Department of Urban Development and Building Construction, Central Bureau of Statistics, and the local body profiles were examined to supplement the study. Aerial

photographs and CBS data were particularly useful in identifying changes in land use patterns over time.

**Policy Document Analysis**

Various documents, including official reports, policy documents, land records, and development plans, are analyzed to understand the historical context and the existing legal and institutional framework related to land development in Deukhuri Dang.

### 3.2.4.2 Primary Data Collection:

Quantitative and qualitative research methodologies were employed to gather primary data. I utilized structured questionnaires to collect quantitative data on the social and economic aspects of land pooling. Information regarding road conditions, energy and water supply, access to transportation, open spaces, and communication facilities were obtained through the observational technique. In addition, focus group discussions and in-depth interviews were conducted to obtain more nuanced and context-specific information. These interactions provided valuable insights into various issues such as the impact of even the proposal of land pooling on the local community, livelihoods, and the surrounding area. The methods used to gather primary data were:

#### *Site Observation*

Researcher was engaged in field observations to gain firsthand insights into the current land use patterns, agricultural practices, and infrastructure conditions in the area and land value data. Observations provided valuable context and provided support for the interpretation of interview data.

#### *Structured Questionnaires*

The structured questionnaire method was used to collect the insights of the concerned stakeholders. A stratified random sampling technique was used to identify the respondents. The following questions were selected to get insight into the communal perspective in regard to the land pooling. The identified parameters for Questionnaire survey are listed below, and the questionnaire used in present in ANNEX I.

- Demographic Data
    - Gender
    - Age
    - Education

  - Occupation
  - Family Size
  - Land Details
  - Income and Expenses
- Perception Data
  - Knowledge about Land Pooling (Yes/No)
  - Attitude towards Land Pooling as a Land Development tool (Likert Scale)
  - Willingness to contribute land for Land Development (Yes/No)
    - If willing, what percent of land? (Categorical)

### *Key Informant Interview*

Key Informant Interviews (KIIs) are a qualitative research technique commonly used in urban planning to gather in-depth insights from individuals who possess specialized knowledge or expertise about a particular topic. These individuals are often considered "key informants" due to their roles, experiences, or positions that make them well-informed about the subject being studied (Akhter, S, 2022) In the context of urban planning, KIIs can provide valuable perspectives and information from various stakeholders, including planners, policymakers, community leaders, and experts.

The researcher conducted one-on-one or group interviews with key stakeholders, with primary focus to the government officials and local representatives. These interviews delve into their experiences, beliefs, and attitudes towards land pooling and its potential as a land development tool.

### *Focus Group Discussion*

A Focus Group Discussion is a qualitative research method that involves a small group of participants who engage in an open and interactive discussion about a specific topic (Saynajoki, E et.al, 2014). In urban planning research, FGDs are often conducted to gather insights, opinions, and perspectives from diverse stakeholders such as residents, experts, policymakers, and community members. This method allows researchers to explore complex issues, understand different viewpoints, and uncover nuances that might not be captured through quantitative methods alone. The discussions are typically guided by a moderator who facilitates the conversation and encourages participants to share their thoughts and experiences. The outcomes of FGDs can

provide valuable qualitative data that can complement and enhance the understanding of urban planning challenges and solutions.

The researcher was involved in FGDs organized in moderation of PIDA, LPA and the local representative.

**Figure 2 FGD moderated by ward chairman of Rapti RM, ward-04**

**Figure 3 FGD organized in ward office**

**Figure 4 PIDA vice-chairman conducting FGD in 'Naya gaun'**

A simple descriptive analysis is conducted in the thesis in which the outcomes of the survey data is reviewed to have an understanding of the site area. Similarly, the insights of the interviews and discussions are compared with the descriptive data to find out the key insights of the entire data collection process.

# 4 Study Area

## 4.1 Site Description

### 4.1.1 Introduction to the site

Deukhuri valley refers to the stretch of plain lands in between Dandwa range that border India to the South and Dang subrange to the North, situated in Dang district. It covers an approximate area of 600 sq. km and is characterized by Rapti river flowing approximately E-W through the valley. This area was designated as the provincial capital of Lumbini Province on 6$^{th}$ of October, 2020 (Gautam, 2023).

**Figure 5 Satellite Map of Deukhuri Valley**


*Source: Google Earth 2023*

The case area is selected as ward-04 of Rapti Rural Municipality. In accordance to conduct a land pooling in all of the wards of the Rapti RM, I have selected the potential land pooling area in this ward. On the basis of KII, I found that the government has proposed to develop about 100 bighas of land in this ward during the first phase. So, I arbitrarily selected a site within the ward as a potential land pooling site for the sake of the research.

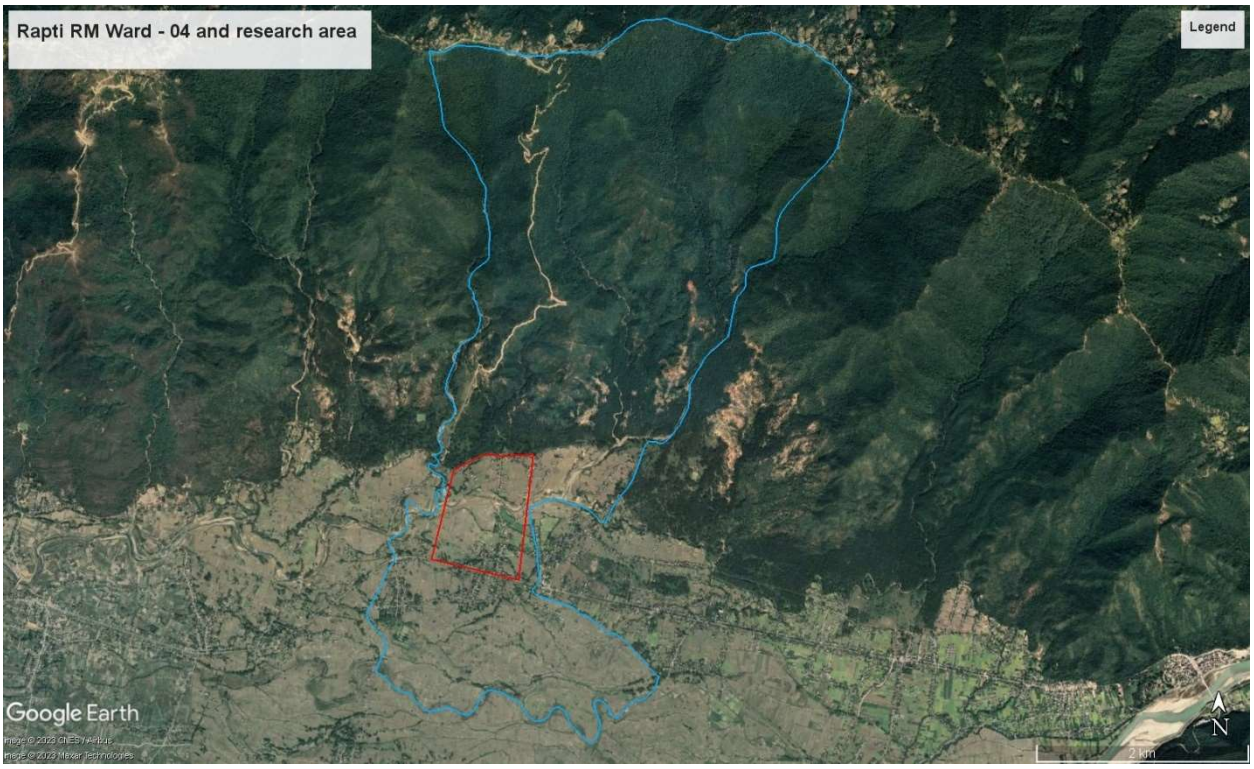
**Table 4-1 Population and Area of Rapti RM-04**

| Ward no | Area | CBS 2011 | | | CBS 2021 | | |
|---|---|---|---|---|---|---|---|
| | | Male | Female | Total | Male | Female | Total |
| 4 | 15.8 | 2452 | 2805 | 5257 | 3137 | 3687 | 6824 |

*Source CBS 2011 and CBS 2021*

**Figure 6 Rapti RM Ward No. 4 with research site area**

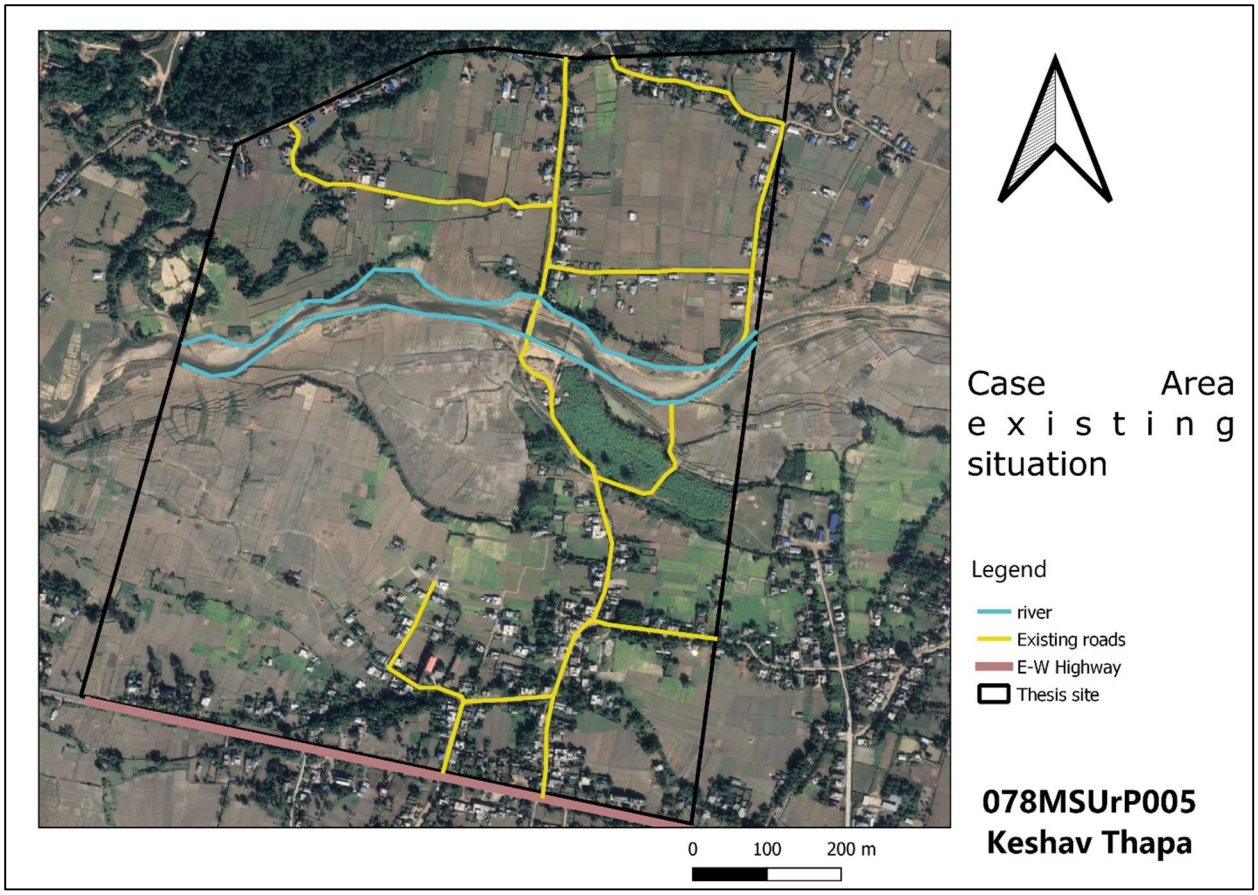
I




*Source: Google Earth (2023)*

The selected site has an area of 82.9 hectares. It comprises of plain land with a river passing through the center. There are few irrigation canals and roads present. Almost all of the roads are earthen in nature, with some parts black topped. The north part of the site is bounded by the community forest, while the East West Highway forms the south border. The site is mostly agricultural lands with built-up area present along the roads in linear order.

**Figure 7 Existing condition of the site area**




### 4.1.2 Existing Infrastructures

**Road Networks**

The research site is bordered by East West Highway to the south, and the roads that provide access to the site by 2 routes, one from Sri Narayan Chowk and other through Serene Valley School. There are some lateral roads present as well, but alignment of most of them is curved and uneven. Some sections of the roads nearer to the Highway are graveled and the rest of them are earthen. Few Culverts and bridges are also present to cross the canal and river respectively.

**Figure 8 East-West Highway**


**Figure 9 A typical road within the site area**

**Electricity and Street Lighting**

Electricity facilities are present but provision of street lighting only on a few stretches of access road leading to the site.

**Drinking Water Supply**

There is no provision of municipal water supply and people are dependent on individual bores and handpumps.

**Irrigation Facility**

Two irrigation canals run through the LP site, and most of the land towards south are irrigated abundantly, but the cultivable land to the north are mostly dependent on rainwater.

**Drainage and Sewerage**

No facilities for drainage and sewerage.

**Solid Waste Management**

Improper management of solid waste by burning.

**Public Transportation**

No facility of public transportation in the area, and people dependent on private tempos for travel or private vehicles from E-W highway.

**Open Space and Playground**

Large open space available, but apart from the school grounds, no area has been designated for making a playground.

# 5 Results and Findings

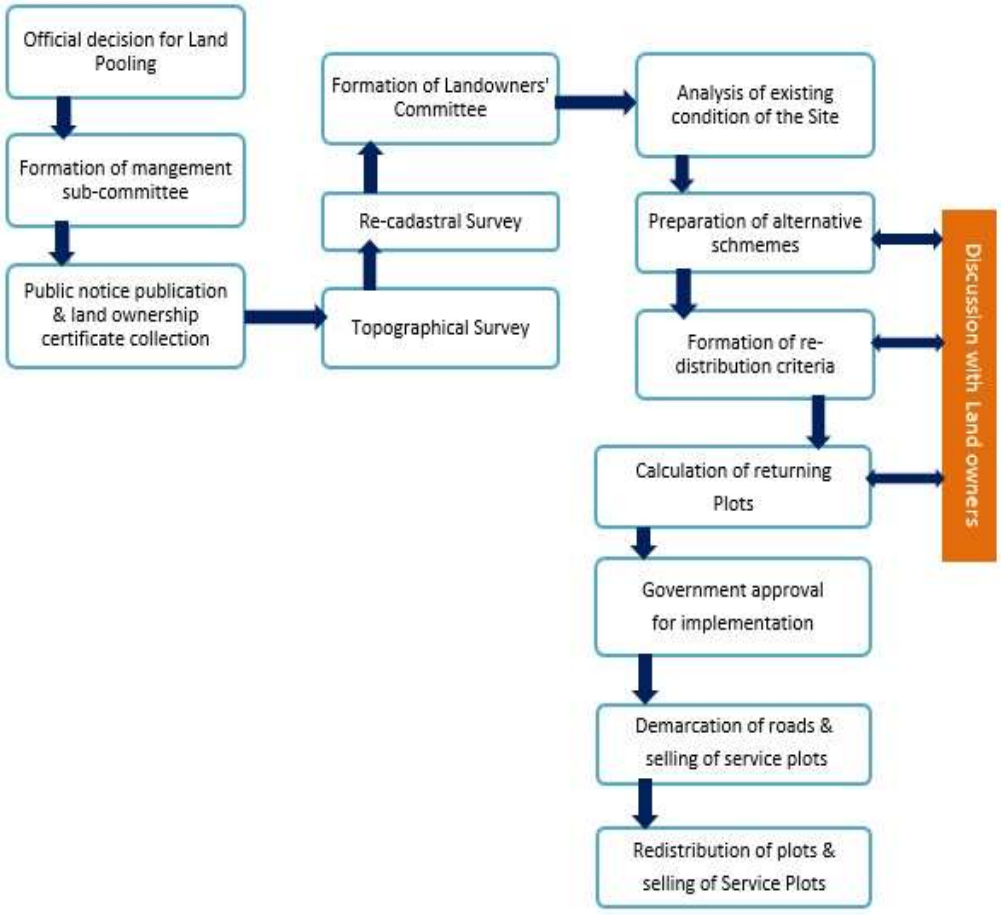
## 5.1 Policy Review Findings

### A. Land Pooling Reference Manual, 2072 B.S

- Land Pooling Process and Guideline

Land Pooling is regarded as one of the best land development tools for urban management in Nepal. It can be either implemented by government level directly as per the need of that area or with the initiation of landowners themselves with approval of at least 50%. Under land pooling projects, the numbers of fragmented land pieces are consolidated into one big plot and returned by providing all the infrastructure facilities. A certain percentage of land is also left as an open space area under this tool. The value of land ultimately increases after land pooling even though the landowners need to contribute their 12-30% of land during the process. A typical flow chart of the Land Pooling process is illustrated in a figure (6) below.

**Figure 10 Flow chart of land pooling procedure. Source: GoN, land pooling manual 2061, revised 2072.**




In Nepal, the urbanization is taking place rapidly and since the past few decades, the Government of Nepal has been forming and implementing various Acts and By-laws. Land Pooling is one of the tools for urban management and its effective implementation; there has been an issue of a guidelines manual, published in the year 2061 B.S. by Department of Urban Development and Building Construction with the support of Japan International Cooperation Agency (JICA). Surya Bhakta Sangachein and Girija Prasad Gorkhali have written this manual and there are guidelines under various design topics and techniques. The manual even contains the sample of long sheet and field book to be filled during various stages in the site.

**Engineering Standard and Design**

a. Road Types & standard Cross Section:
    - Arterial Roads, high traffic volume (30 m, 27m, 24m, 22m)

- Arterial Roads, moderate traffic volume (24m, 21m, 16m)
- Connector Road, high traffic volume (21m, 20m, 16m, 14.5m)
- Feeder Roads, moderate/low traffic volume (16m, 15m, 14m, 11m)
- Local Roads, minor traffic volume (9m, 6.5m, 6.25m, 5.25m)

b. Surface Drainage System (storm retention tank).
c. Sewerage system (individual septic tank and soak pit system or community septic tank & soak pit for 50-60 houses).
d. Drinking water supply.
e. Open spaces development (3-6%, minimum area of 300 m2, minimum width 12m).
f. Electricity (50 % investment by organization committee and 50 % by electricity authority).
g. Telecommunication.
h. Investment return process (Up front Budget from following sources).
    - Nepal Government Fund.
    - Investment of local level government.
    - Different line agencies of Nepal Government (electricity, drinking water, road, telecom).
    - Various loans.
    - Loan from Bittiya Sansthan (nagar bikash kosh, karmachari sanjaya kosh & banijya Bank).
    - 9. Trust of city development committee.
    - 10. Budget from service plots.

**Block plan and land pooling techniques**

a. For land facilitated by road networks & sewerage/drainage lines.
    - 1.1 In commercial, industrial & institutional area minimum road width = 8 m
    - 1.2 In residential zone road width = 6m
b. Block size: perfect rectangular shape with Length = 130-140 m and breadth= 35-40 m (If the plot is less than mentioned size, either length or breadth then more land area will be deducted while road construction).
c. Plot frontage-depth Ratio and minimum area:
    - 3.1 Frontage not less than 6 m and Depth not less than 12 m.
    - 3.2 Ratio of Frontage: Depth should be 1:2.5 to 1:3

- 3.3 Minimum Plot size according to income rate
  - Low income group (80-125 m2)
  - Medium Income Group (150- 250 m2)
  - High Income Group (400- 500 m2)

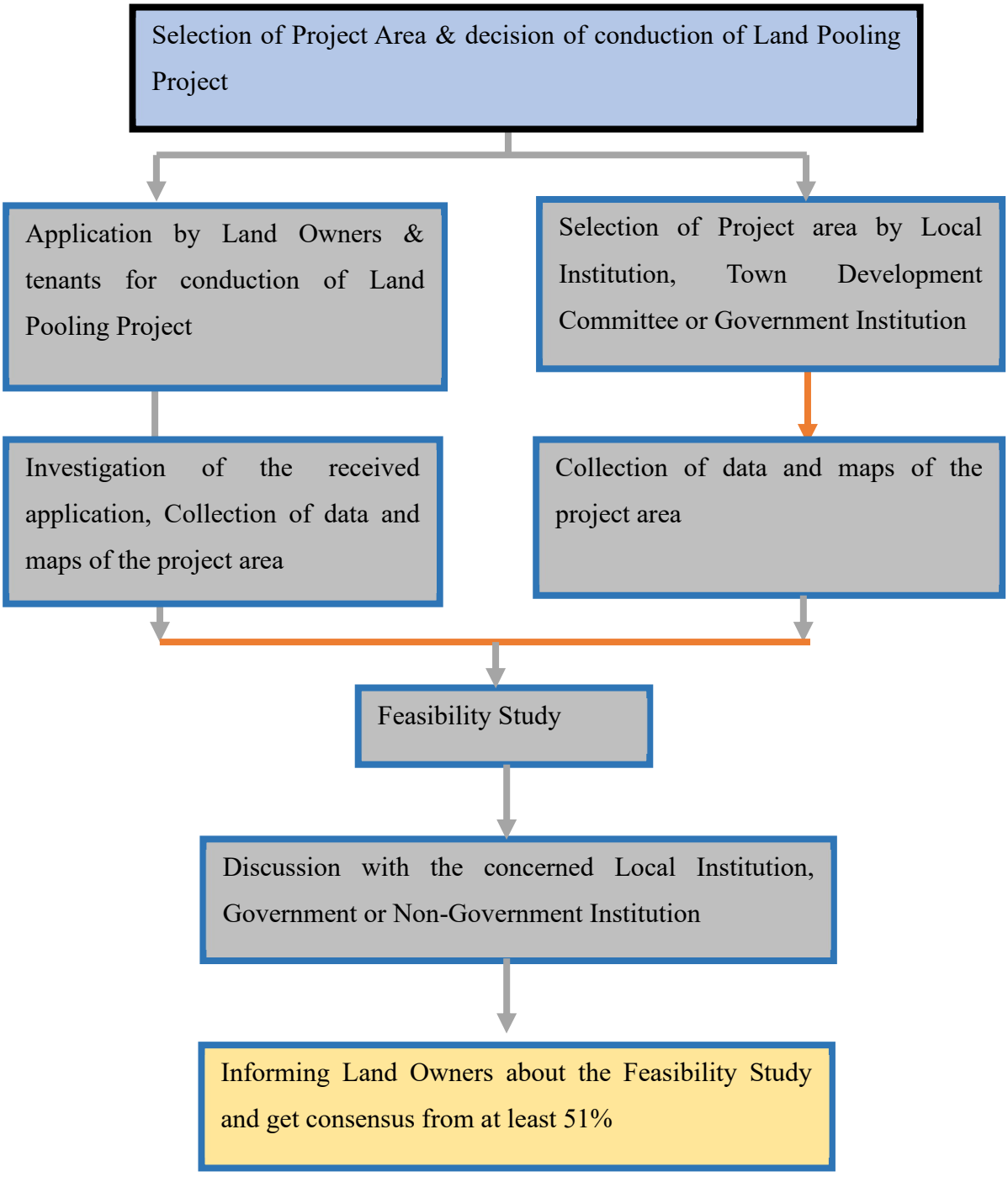
d. Minimum area for Open space 300 m2 and width not less than 12 m.
e. For Kathmandu valley, minimum plot area= 80 m2; frontage = minimum 6 m; Depth = 13-14 m.
f. For high population density area (500 ppl/ha), minimum Land plot size = (2.5 – 4) aana.
g. For low population density area (100-200 ppl/ha), minimum Land plot size = 1 ropani; Frontage = 16 m.
h. For medium population density area (200 – 500 ppl/ha), minimum land plot size = 8 aana-1 ropani; Frontage = 10-15 m.
   - If any re-plotted land is less than minimum land size then in that case, the land owners need to buy the required additional land and if the land owner is not capable of purchasing the additional land then in such case, the project committee themselves will purchase his/her land.
   - Formation of "Upobhokta Samittee "minimum 7 and maximum 15 no. of people in the committee. Register this committee in Jilla Prasasann Karyalaya.
   - Municipality's relative ward president – Adhyachya Samyojak
   - Municipality's relative ward member – member
   - Representatives from land owners and Mohi (3 each) total 6 – members
   - Social workers/intellects from the project area, 2 people – members
   - Female Land owner's representative – 1 member

**Land return policy**

a. Land plots are tried to return in same place as much as possible.
b. While re-plotting the land there is criteria of minimum land size i.e. 80 m2.
c. Minimum plot area 0-2-2-0 (Ropani-Aana-Paisa-Daam).
d. While plotting corner plot, sabik corner plot is given priority.
e. While plotting the land with existing building, 1.5 m set back is kept towards opening façade and 1 m is left on the road side.
f. Land within 18 m depth is considered as within 1st plot depth land.

g. If any land lies half within the project boundary and half outside the boundary, then half land will be considered which is within the boundary and will be provided with relative road services.
h. If any land owners own up to 6 aana lands separately then those lands are converted to one single plot and is provided to the owners. Example: if A owns 2 aana, 5 aana and 8 aana lands separately then 2 aana and 5 aana lands are combined as one single plot and will be returned.
i. Plot next to open spaces need to contribute extra 1% land. Similarly, plots opposite to road of open spaces need to contribute 0.5% extra (if the road is more than 8 m then this rule will not imply).
j. Service plots must not be plotted less than area fixed by organization committee.
k. However, the feasibility study for land pooling process from its initiation to project formulation is illustrated in a diagram below:

**Figure 11 Feasibility Study process for land pooling project. Source: GoN, Land Pooling Manual, 2061.**




**Land Contributions Strategies**

The public participation and consultation among local government organizations plays important role in the development of the proposed land pooling area. It is aimed at developing the area

without acquiring the land from the individuals. The land required to develop physical infrastructures like roads, open spaces and other development cost and management cost has to be recovered through land contribution allocating it as a reserved plot.

The details on individual land contribution sectors are described below:

**Proposed Road**

For appropriate planning of the area 8m, 12m, 14m and wider roads will be provided according to the existing situation and need to be identified by the technical team analysing the future growth of the proposed site. The contribution of proposed roads is up to 19% of the total project area.

**Public Open Spaces**

The land allocated for the public open space will be nearly 6% of the total site area. Area of the open space can be negotiated considering the planning norms and comfort of the community. This open space allocated will even act as an emergency response area during times to disasters.

**Re-plotting Criteria**

Re-plotting design refers to the re-allocation of landowners, less contributed land, within a project area using specific guidelines. A re-plotted parcel must "correspond" to its pre-project plotting with regards to location, acreage, and soil condition, accessibility to water supply, land usage and environment. During the re-plotting, the size of the plot must not be less than 85 m2 (5 Dhur) and every owner needs to contribute from 15-55% of land depending upon situation while re-plotting of land. Each parcel is subjected to a "contribution ratio" or required contributable portion of land.

### B. Land Pooling Regulation, 2079 (Lumbini Province)

The regulation has been enacted by the Government of Lumbini Province for regulating any land pooling activities within the province based on articles 10 and 30 of Infrastructure Development Authority Act, 2077. It contains of 7 paragraphs with regulations related respectively as given below:

**Paragraph 1**: This paragraph contains some preliminary information about different terms used in the regulations and their meanings.

**Paragraph 2:** This paragraph provides information about the process formulation of the project and the required permission as well as the formation of directional committee and their duties and rights.

**Paragraph 3:** This paragraph contains information about the project implementation.

**Paragraph 4:** This paragraph contains information about land management, setting and implementing standards related to landuse and building construction, fixing of the minimum price, process of distribution of developed land plots, responsibility of the project to the infrastructure development authority, removal of physical structures etc.

**Paragraph 5:** This paragraph contains regulation about project implementation committee's formulation, their rights and responsibilities, their meetings and decision, formation of sub-committees, user committees, establishment of office, selection of project head and his/her rights and duties etc.

**Paragraph 6:** This paragraph contains information about the fund, financial management and audit of the project.

**Paragraph 7:** This paragraph contains miscellaneous information about submission of report, staffs, rules to be followed, international contacts and coordination by local bodies etc

It contains 10 annexes which are as follows:

**Annex 1-** This annex contains the format for the application form that asks for Land Pooling by the land owners.

**Annex 2-** This Annex contains the format for the details regarding the land pooling project that contains the borders, area details, landuse and landuse details after planning, land contribution as well as estimation. It also contains standards, legal procedures, project time frame etc.

**Annex 3-** This annex contains the format for notice regarding restriction of land breakdown and construction in the land pooling project timeframe.

**Annex 4-** This section gives format for the temporary land owners certificate to be provided during the project.

**Annex 5-** This section gives detailed present landuse details and proposed landuse after project succession.

**Annex 6-** This section provides the agreement format between land owners and project regarding maintaining standards to be maintained.

**Annex 7-** It contains table format for filling details regarding land pooling project land use.

**Annex 8-** This section contains the format for the cost estimation for the project development.

**Annex 9-** This section provides format for detailed contribution for different land plots according to their proximity to the different width roads.

**Annex 10-** This section contains format regarding the application for the formation of user's committee.

## 5.2 Site Observation

To identify the challenges present in implementing the land pooling strategy in the rural context, the researcher observed the selected study area. The researcher identified two key problems in the site area, they are:

- Negative public perception
- Financial unsustainability

To further investigate the root cause of the problems, and to have a better understanding, the data collection tools and analysis were applied as follows:

### 5.2.1 Negative public perception

To have an in-depth understanding of the perception of the landowners regarding the perception of people towards the land pooling initiation, the researcher conducted key informant survey, focus group discussions and Questionnaire Survey.

#### 5.2.1.1 KII and FGD Findings

The key informant interview was conducted by the researcher with one of the officials overlooking the project. The questions were mainly focused on the potential success of the huge undertaking within the valley. The response was that the financial constraints experienced in the case were planned to be tackled by the help of government funded incentives, that would be overlooked by PIDA. PIDA plans to gather funds from donors for the infrastructure development, even if the sales plot cannot fully recover the costs. So, he also agrees that there was a requirement of modifications in the existing policies that govern land pooling projects and are centered around 'financial self-sustainability'. Similarly, he also agrees that there is a requirement to address the institutional requirements of the projects. There is a huge involvement of Survey Department and Land Revenue Department as they are responsible for providing the planners with the land ownership details along with the plot details. He assures to recommend changes in the policy, about providing incentives even to the government offices involved unofficially in the land pooling projects. There was also a possibility of establishing a miniature version of departments within the land pooling office to cover only the project requirements. Other factor discussed was the extent of sensitization

efforts by the concerned authorities regarding improve the acceptance of the landowners and concerned authorities. He mentioned that 'based on the success of the first phase of projects, we plan to initiate further projects. The target is to develop the entire valley as an urban center through land pooling'. Regarding the concern of the public acceptance of the projects he added, "The provincial government implemented land moratorium to halt unplanned development but made no initiation for these kinds of endeavors for 2 years. The backlashes being faced right now is a result of it. The local people are also skeptical about the authenticity of the intent of the government as the government itself is volatile and keeps on changing. We have made many attempts regarding awareness and sensitization of the concerned stakeholders regarding land pooling. It will take some time, but people should eventually accept this. We plan to keep implementation on hold until we get the majority acceptance. We need to build trust gradually, and I am positive that over time, we shall be successful".

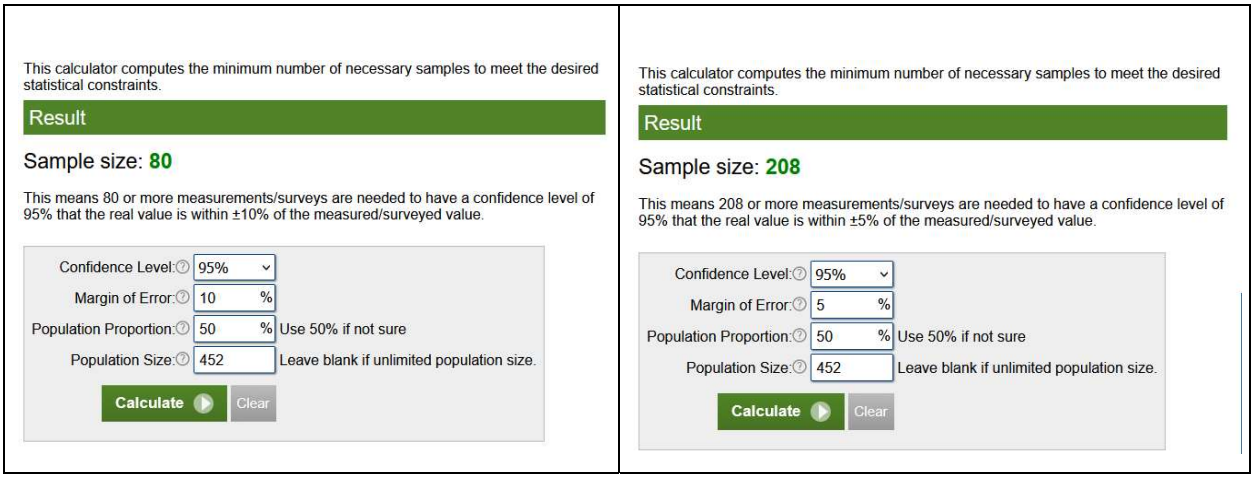
Similarly, the researcher interviewed Mr. Bir Bahadur Chaudhary, ward president of Rapti RM 4. His professional background is related to land development, so he had an utmost positive attitude towards the initiation. He was moderating all the FGDs and meetings concerning land pooling and trying his best to minimize the opposition. In response to the opposition in places, he said "This is a positive undertaking. We must understand the investment made by the government in our place. People are only concerned with physical development and instant results; they are not patient enough to invest in a more prosperous future for the coming generations. This can be a missed opportunity if they do not garner consensus to accept the projects". He insists that the people are really skeptic towards the government and frustrated by the inability to make land transactions to fulfill the economic needs. He also thinks that the lack of education in the locality and a smaller number of young people, who might have been able to convince societies are the major reasons for the backlash. He also suggests an authoritative approach if required, because he is certain that implementation of the project in his tenure will cement his contribution for ages. He says, "The people have not yet grasped the essence of this undertaking, I can understand the negative attitude and doubt to the government. However, the undertaking is overlooked by PIDA, an autonomous authority. So, they need to be more supportive and give the officials a chance to present them with in-depth knowledge of LP". KII also gave an insight into the land prices of the land before development and possible price after development.

The researcher was also involved in various FGDs conducted in moderation with officials and local representatives. The FGDs were concentrated in resolving conflicts arising during the planning phase of the land pooling method of land development. The concerns of people were mostly concentrated in the doubt of successful implementation, the contribution proportion, the possibility of displacement of agricultural fields and the concerns of the landowners with lands lesser than the minimum designated plot size of 14 dhur. The discussions were focused in addressing the problems by concerned authorities, in moderation of local representative. The FGDs also gave light to the land prices and the extent of acceptance of the public. These discussions also gave way to the investigation of the economic and social self-sustainability of land pooling as a development tool in these rural areas.

#### 5.2.1.2 Questionnaire Survey Findings

Sample size was determined using a sample size calculator. The total HH of Ward no 4, Rapti Rural Municipality, Dang was 1509 for 15.24 sq.km. The study area under this research was found to be 455 HH.

**Figure 12 Sample Size Calculator**



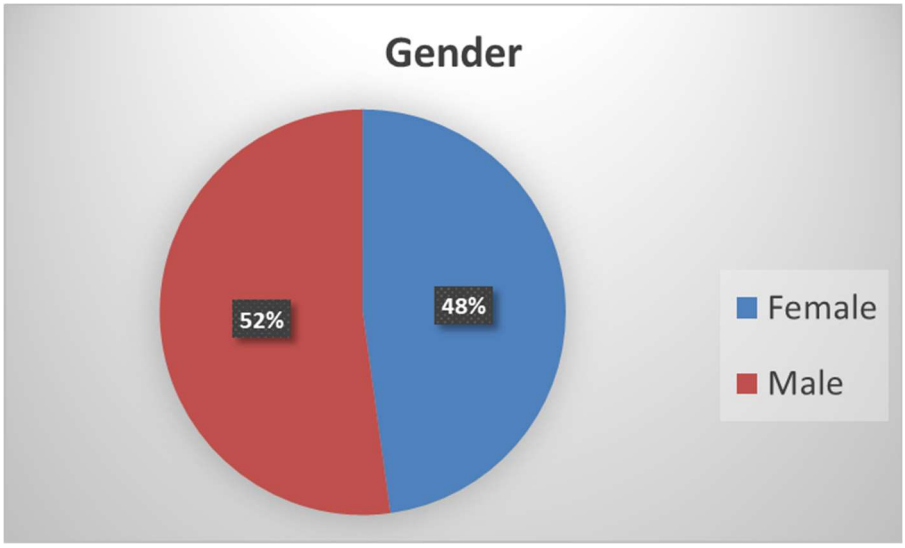

Due to social constraints and a lack of respondent's positive attitude towards Land Pooling, only 137 samples were taken for the questionnaire survey.

The **descriptive statistics** of the research are presented below:

*Gender*

The researcher tried to maintain gender balance as much as possible while taking the survey. So, the proportion was almost half. Out of the 138 respondents, 66 were female and 72 were male, as presented in the chart given below.

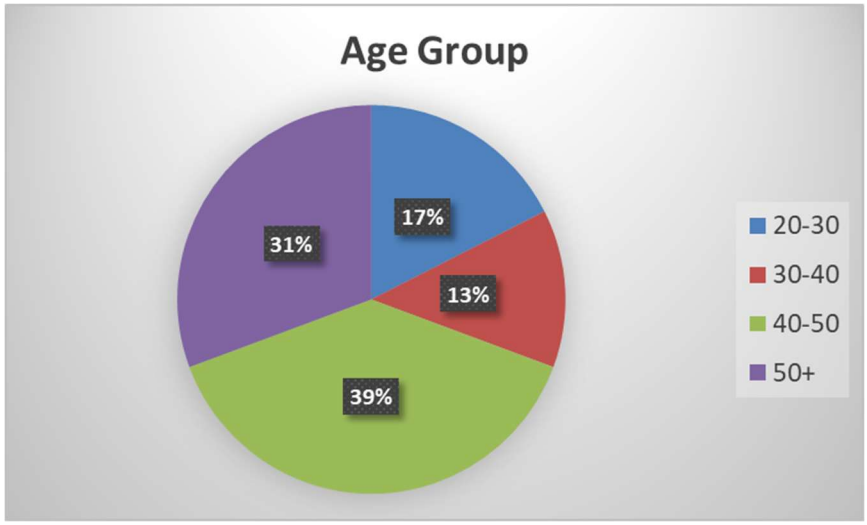
**Figure 13 Gender**




*Age*

The researcher tried to make the age group as even as possible by selecting respondents based on appearance of age. 24 of the respondents were found to have age between 20 and 30. Similarly, the number of students older than 30 and younger than 40 is 18. 53 of the respondents were over the age of 40 and less than 50, 39 of them were over 50 and 3 of them were over 60. The older respondents were not willing to talk about land pooling.

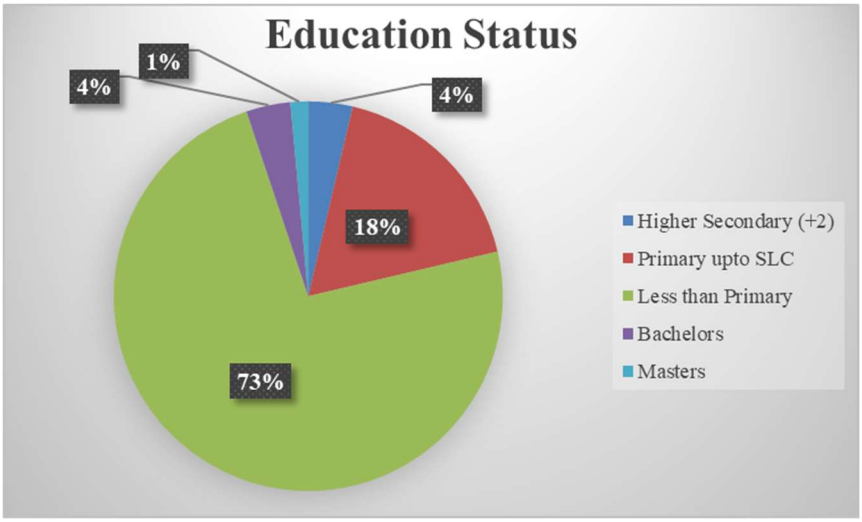
**Figure 14 Age Distribution**




*Education Status*

Out of the 137 respondents, most of them had education lower than primary level. Some had studied up to SLC and lesser had education higher than that.

**Figure 15 Education Status of the Respondents**

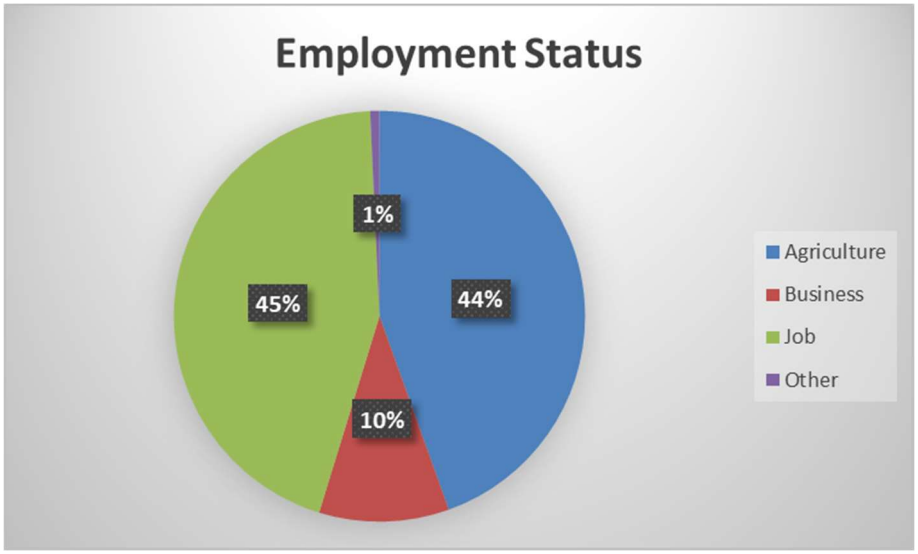



*Job Status*

Although most of the residents of the Rural Municipality are involved in agriculture, in the case of this project area, there were same number of families based on jobs and agriculture among the respondents. Only about 14 households were involved in business. The following graph

summarizes our findings. In terms of earnings, most of the families involved in agriculture earned Rs 30000-40000 monthly. The same goes for families involved in business and jobs.

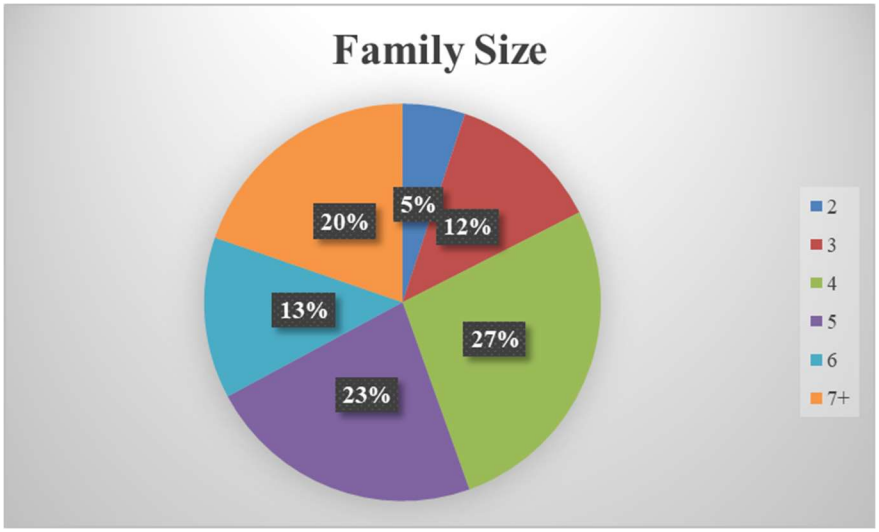
**Figure 16 Employment Status**




*Family Size*

There was a large variation in the family size of the respondents. The numbers ranged from 2 to 13. The largest number of families had a size of 4, followed by 5. There were about 20% of families with family size greater than 7. The families had in average 2.64 women and 2.602 men per household respectively.

**Figure 17 Family Size**



*Knowledge about Lumbini Capital City Master Plan and Land Development Plan*

It was found that 96 out of 137 respondents had an idea about the prepared Master Plan of the Lumbini Capital City Master Plan along with the Land Development Plan implementation by the Provincial Government. However, in response to the desire to participate in the land pooling project or agreement with the plan, almost all of the respondents gave negative responses.

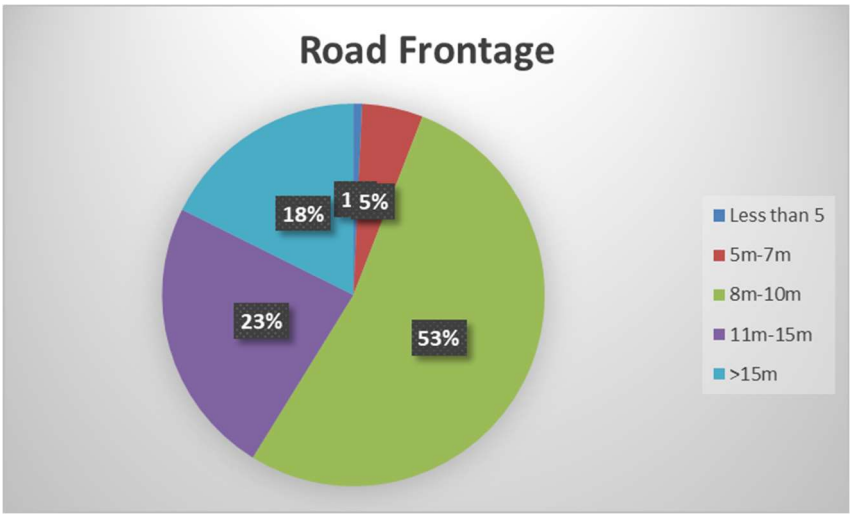
*Land Size*

In the survey, it was found that 23 respondents had land area less than or equal to 12 dhur. About 10 had land between 12 dhur and 1 kattha. About 45 had land area in between 1 to 2 katthas. Similarly, about 17 respondents had land less than 3 katthas and greater or equal to 2 katthas. About 28 respondents had land ownership from 3 katthas to 6 katthas. About 6 of them had more than 6 katthas and rest did not disclose their ownership.

*Land Frontage*

One of the respondents had 1m land frontage, 7 had 5-7m. Similarly, 72 of them responded to having frontage between 8-10m. 32 of the respondents said to have frontage between 11-15m and about 24 of them respondents had road frontage greater than 15m.-

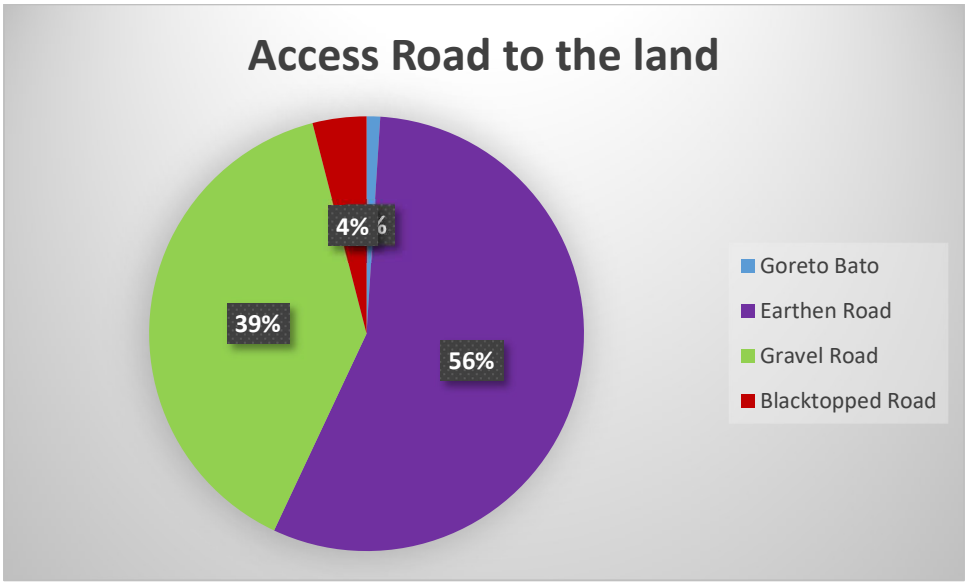
**Figure 18 Road Frontage**




*Access Road*

About 5 of the respondent's land had access to black topped roads, about 2 of them had only walkable road. Similarly, 53 of the respondents had access to gravel road and 77 of them had access to earthen or RCC roads.52

**Figure 19 Type of access road to land**




*Status of Land*

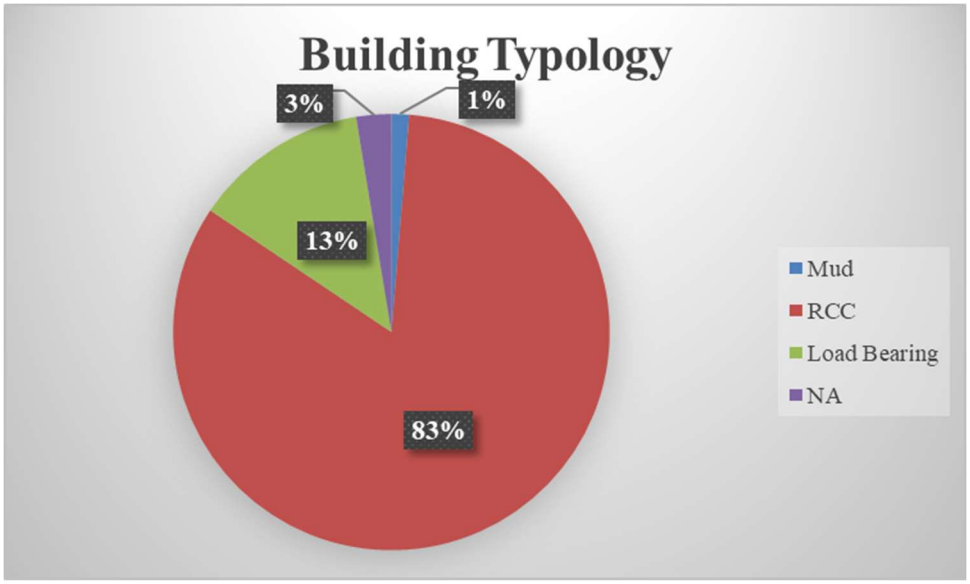
55 of the participants of the survey had bought the land while the rest claimed to have inherited it. Among the people that bought land, 12 of them had bought it before 2049, 11 of them after 2050 and before 2060Bs, 22 of them bought in between 2060-2070 and 10 of them bought it after 2070. Similarly, about 4 of the participants responded to having land different from the land certificate and the reasons stated were that one of them had land in different location than the certificate, one of their lands was being used by Police camp and 2 of them had unregistered land. All of the respondents had made use of them by themselves. One of the respondent's lands had **Mohi** in it while others did not. Similarly, all the respondents claimed to have no legal dispute regarding the land status. Regarding mortgaging land, 10 of the respondents had kept land in mortgage. About ownership, all of the land of the respondents was personally owned. Similarly, regarding passing the map of houses, only 15 of them had done it, while the rest were living in unregistered houses. No land among the respondents had the problem of water logging and landslide.

*Typology of house*

Most of the houses of the respondents are RCC designed, with some having load bearing structure. Some of the houses are mud. Regarding roofing, 2 of the RCC and 5 of the load bearing houses have iron roofing. In regard to expenses for constructing houses, 53 of them spent less than 20

lakhs, 20 of them spent 20-40 lakhs and a single respondent had spent more than that, while the rest of the respondents did not answer.

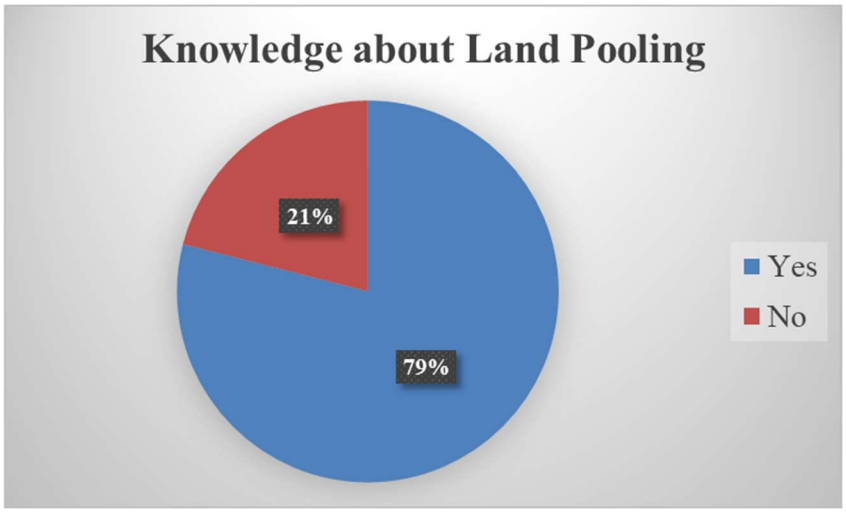
**Figure 20 Building Typology**




*Knowledge about Land Pooling*

Most of the respondents had an idea about what type of land development tool Land Pooling was, owing to the sensitization and introduction attempts made by the concerned bodies. More than 75% of the respondents had an idea about it, while the rest had never heard about it. The result is presented below:

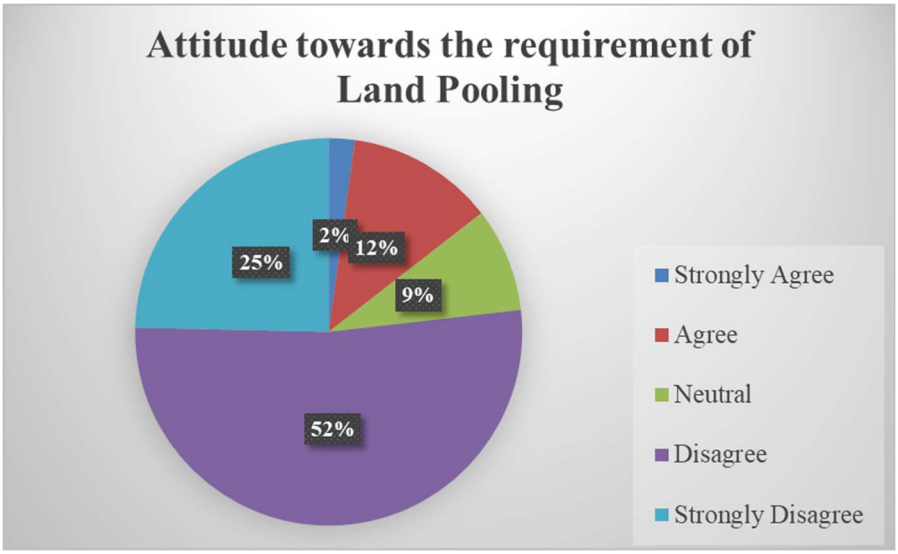
**Figure 21 Knowledge about Land Pooling**



*Attitude towards the Land Pooling Initiation*

One of the most important questions asked during the survey was whether you are in support or oppose of the land Pooling initiative. Most of the respondents showed disagreement towards the requirement of land pooling to develop their lands. The intent was measured by the use of Likert Scale. The result is presented below:

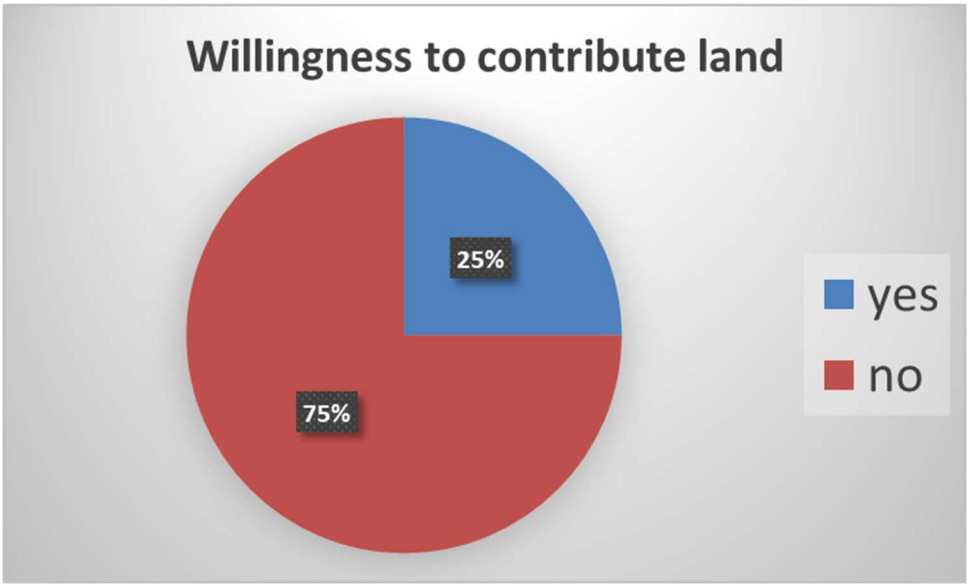
**Figure 22 Attitude towards Land Pooling**




*Willingness to contribute land*

The respondents were asked whether or not where they were willing to contribute their land for the land pooling project. Most of the respondents were not willing to contribute land for the sake of investments in infrastructure development. The reasons presented by them were skepticism towards the government, to have as much land as possible for agriculture purposes etc. The results are presented below:

**Figure 23 Willingness to contribute land**




### 5.2.1.3 Comparative Analysis

The descriptive quantitative data from the questionnaire survey and the qualitative data from the KII and FGDs were compared using comparative chart.

<table>
<tr><th colspan="2">Quantitative Data from questionnaire survey</th><th>Qualitative data from KII and FGDs</th></tr>
<tr><td colspan="2"><table>
<tr><th>Education Level</th><th>Percentage</th></tr>
<tr><td>Lower than Primary</td><td>73</td></tr>
<tr><td>Primary upto SLC</td><td>18</td></tr>
<tr><td>Higher Secondary</td><td>4</td></tr>
<tr><td>Bachelors</td><td>4</td></tr>
<tr><td>Masters</td><td>1</td></tr>
</table></td><td>The people are not well educated, and it will be difficult to make them aware.</td></tr>
<tr><td colspan="2"><table>
<tr><th>Age group</th><th>Number</th></tr>
<tr><td>20-30</td><td>24</td></tr>
<tr><td>30-40</td><td>18</td></tr>
<tr><td>40-50</td><td>53</td></tr>
<tr><td>50+</td><td>42</td></tr>
</table></td><td>The lack of younger people also makes it difficult to convince them</td></tr>
</table>

| Access to road type | Number | Attitude Towards land pooling | Number | People require land development, but do not trust the government to accept the project |
|---|---|---|---|---|
| Goreto Road | 2 | Strongly Agree | 3 | |
| Earthen Road | 77 | Agree | 17 | |
| Gravel Road | 53 | Neutral | 12 | |
| Blacktopped Road | 5 | Disagree | 72 | |
| | | Strongly Disagree | 34 | |

| Source of income | Percentage(%) | People are afraid of displacement over concerns of loss of agricultural lands |
|---|---|---|
| Agriculture only | 44 | |
| Agriculture and job/foreign employment | 45 | |
| Business | 10 | |
| other | 1 | |

| Land ownership | Number | Some people have lesser land, who are the loudest opposition |
|---|---|---|
| Less than or equal to 12 dhur | 23 | |
| 12 dhur to 1 kattha | 10 | |
| 1 kattha to 2 katthas | 45 | |
| 2 katthas to 3 katthas | 17 | |
| 3 katthas to 6 katthas | 28 | |
| more than 6 katthas | 6 | |

| Willingness to contribute | | Even the positive people are not willing to contribute the land due to lack of financial security |
|---|---|---|
| Yes | 104 | |
| No | 34 | |

**Key Insights Identified:**

- People want development, but do not trust the government
- There is lack of awareness in the local people
- The attitude of people is primarily negative towards the project
- People are skeptical as land is something very close to people's heart as well as livelihood

### 5.2.2 Financial Unsustainability

Land pooling is a self-financing tool which uses certain developed plots as sales plots, which are used to finance the administrative costs, along with the development of infrastructure. Similarly, a chunk of land is used up to develop roads and designate open spaces. This requires the contribution of land, which is called the contribution ratio. For the investigation of the self-sustaining nature of the land pooling tool, through calculation of the contribution ratio, some data was collected through secondary sources and site observation. Some terms defined to assess the financial sustainability of the land pooling scheme are as follows:

**Site Potential Ratio:** It is defined as the ratio of average land price before and after the development project.

**Viable Land:** The land usable for development of plots

**Non-viable land:** Land used by roads, rivers etc., that cannot be used as developed plots.

**Site Feasibility Index:** A Site Feasibility Index is a quantitative or qualitative measure used in urban planning, real estate development, and land-use analysis to assess the suitability and viability of a particular site for a proposed project, development, or land use.

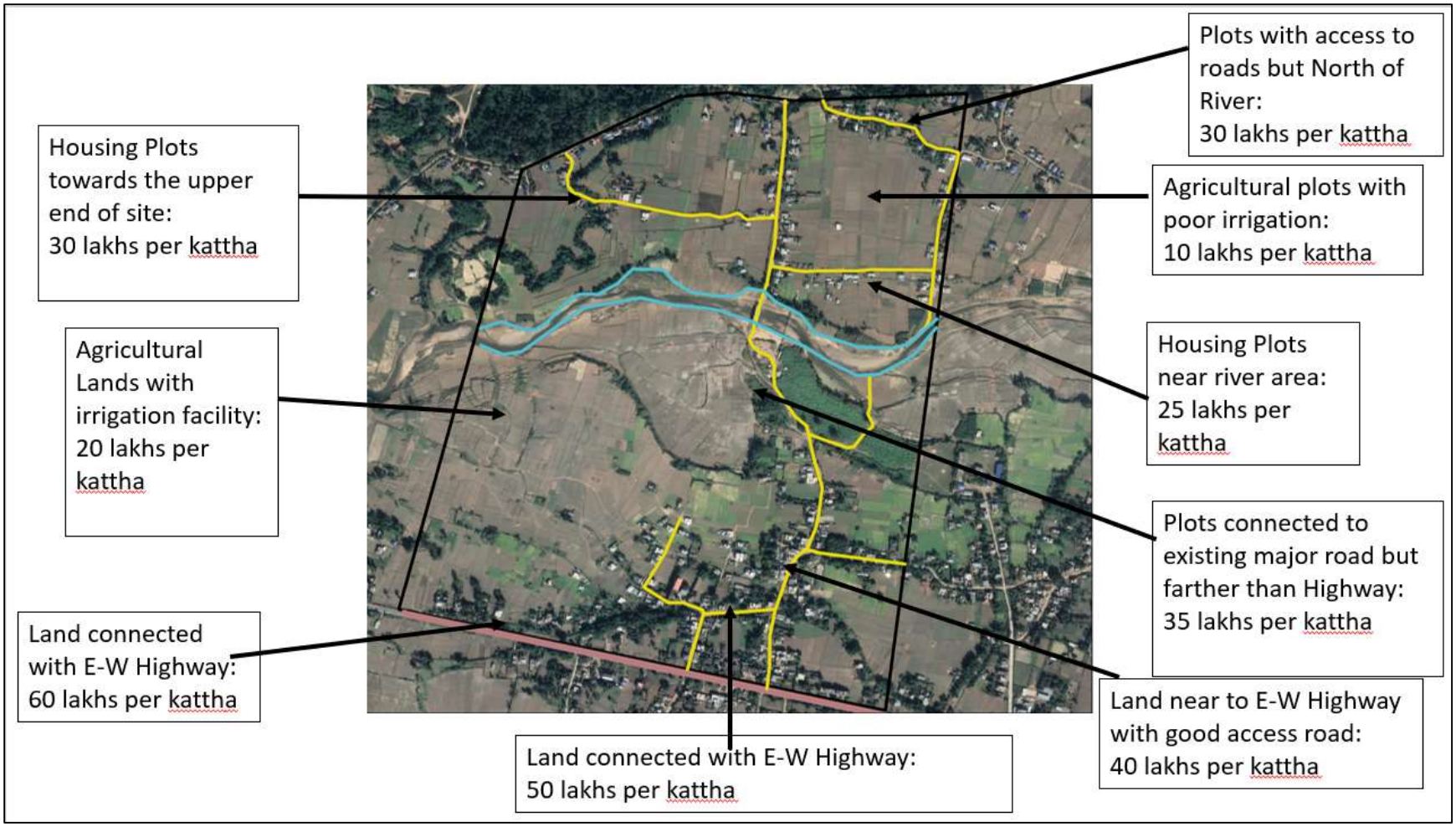
**Contribution Ratio:** It is defined as the land to be contributed by the landowners that is sold as sales plot to recover the cost of land preparation and infrastructure development.

Based on **Land Pooling Reference Manual, 2072 B.S**, the contribution ratio was calculated. For the calculation, some data were collected through various sources:

#### 5.2.2.1 Land Value

Along with site observation and findings from key informant interviews, the land values were determined. Land Value is a volatile term and is loosely based on perception and intent of people regarding the sale of land. Based on local consultations, FGDs and KII, the tentative land price in existing conditions is presented below:

**Figure 24 Land Price Descriptiaon**

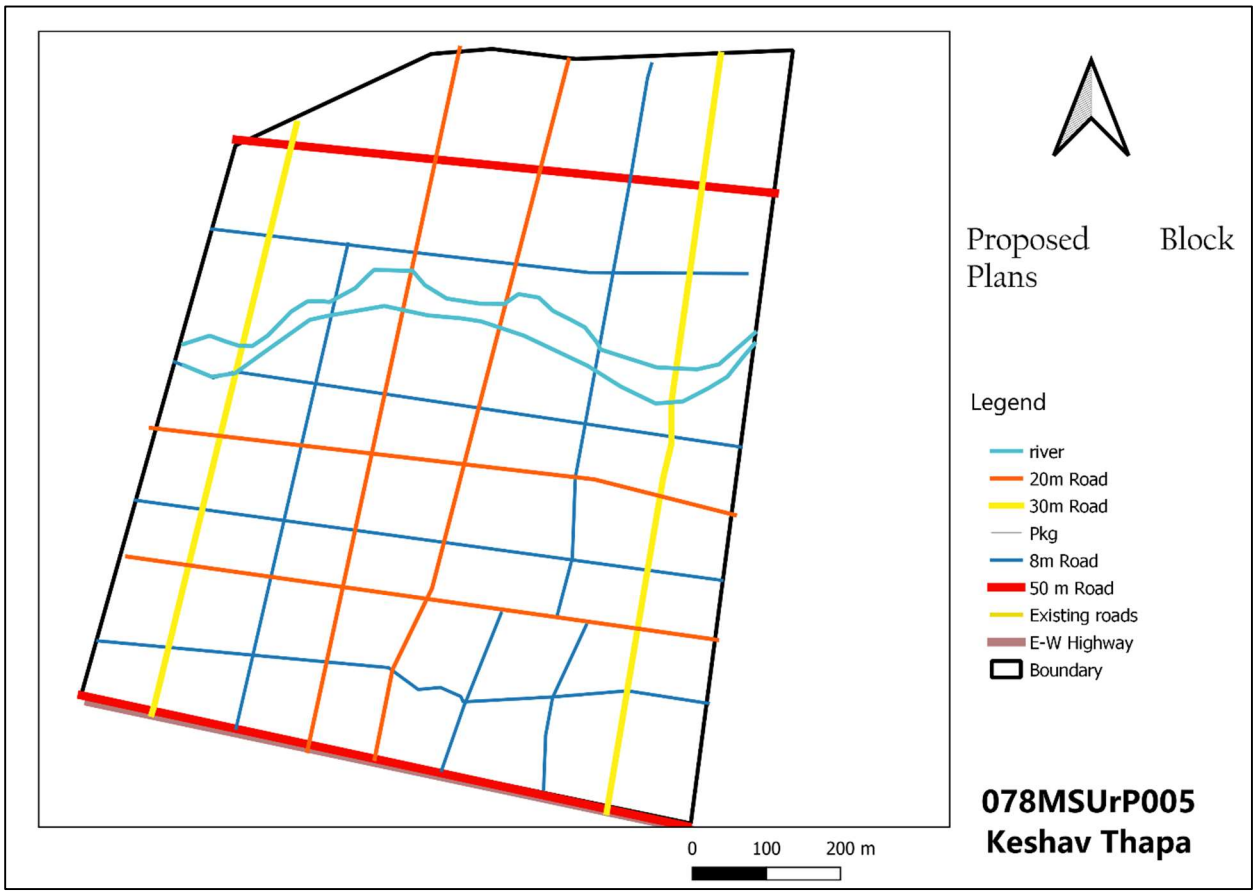



With an overlook on the land market price, it can be stated that the average land price in the area is about 25 lakhs per kattha tentatively.

### 5.2.2.2 Block Plan

The researcher then made an arbitrary block plan to quantify the data for the investigation of economic self-sustainability of the land pooling project. The road widths drawn were closely based on the Lumbini Provincial Capital City **(LPCC)** Master Plan, insights to which was provided through KII.

**Figure 25 Tentative Block Plan of the study Area**




### 5.2.2.3 Estimation

The researcher then prepared the cost estimates required to develop the land based on the prepared block plan. Rate analysis was done in accordance with the prevalent district rates. The estimate was made based on road lengths needed to properly fragment the land, the water supply lines required, drainage and electrification. The cost for construction of bridges is not included.

**Table 5-1 Land Pooling Estimate**

| Summary of Cost |
|---|

| S.N. | Particulars | Quantity | Unit | Rate | per | Amount |
|---|---|---|---|---|---|---|
| | **INFRASTRUCTURE COSTS** | | | | | |
| **A** | **Road** | | | | | |
| **1** | 50m Road | 731 | m | 118,650.28 | m | 86,733,356.36 |
| **2** | 30m Road | 2076 | m | 88,961.89 | m | 184,712,457.97 |
| **3** | 20m Road | 3788 | m | 62,978.46 | m | 238,579,113.65 |
| **4** | 8m Road | 5263 | m | 30,627.34 | m | 161,197,126.08 |
| **5** | 6m Road | | m | 14,477.99 | m | - |
| | **Sub-Total of A** | | | | | **671,222,054.06** |
| **B** | **Water Supply** | | | | | |
| **1** | 50m Road-160mm/HDPE-Laying and Jointing | 731 | m | 1,637.08 | m | 1,196,705.48 |
| **2** | 30m Road-125mm/HDPE-Laying and Jointing | 2076 | m | 1012.22 | m | 2,101,682.51 |
| **3** | 20m Road-110mm/HDPE-Laying and Jointing | 3788 | m | 808.72 | m | 3,063,645.67 |
| **4** | 8m Road-63mm/HDPE-Laying and Jointing | 5263 | m | 309.39 | m | 1,628,374.64 |
| **5** | 6m Road-63mm/HDPE-Laying and Jointing | 0 | m | 309.39 | m | - |
| **6** | 50m Road-160mm/HDPE-Pipeline Trench | 731 | m | 227.63 | cum | 166,397.53 |
| **7** | 30m Road-125mm/HDPE-Pipeline Trench | 2076 | m | 227.63 | cum | 472,630.45 |
| **8** | 20m Road-110mm/HDPE-Pipeline Trench | 3788 | m | 204.87 | cum | 776,101.85 |
| **9** | 8m Road-63mm/HDPE-Pipeline Trench | 5263 | m | 204.87 | cum | 1,078,267.28 |
| **10** | 6m Road-63mm/HDPE-Pipeline Trench | 0 | m | 204.87 | cum | - |
| **11** | Pipe Fittings | 1 | L.S. | 799,040.83 | L.S. | 799,040.83 |
| **12** | House Connection | 450 | No | 3,417.41 | No | 1,537,834.50 |
| | **Sub-total of B** | | | | | **12,820,680.73** |
| **C** | **Sewer Network with MH per 50m** | | | | | |
| **1** | 50m Road-1000mm DWC | 731 | m | 109,856.50 | m | 80,305,104.80 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **2** | 30m Road-800mm DWC | 2076 | m | 100,113.96 | m | 207,867,613.27 |
| **3** | 20m Road-600mm DWC | 3788 | m | 92,007.41 | m | 348,548,457.75 |
| **4** | 8m Road-300m DWC | 5263 | m | 83,349.12 | m | 438,681,249.00 |
| **5** | 6m Road-300mm DWC | 0 | m | 83,349.12 | m | - |
| | **Sub-total of C** | | | | | **1,075,402,424.81** |
| **D** | **Electrification** | | | | | |
| **1** | 50m Road | 731 | m | 3,150.30 | m | 2,302,865.95 |
| **2** | 30m Road | 2076 | m | 3,150.30 | m | 6,540,989.87 |
| **3** | 20m Road | 3788 | m | 3,150.30 | m | 11,934,153.86 |
| **4** | 8m Road | 5263 | m | 3,150.30 | m | 16,580,565.52 |
| **5** | 6m Road | 0 | m | 3,150.30 | m | - |
| | **Sub-total of D** | | | | | **37,358,575.21** |
| **E** | **TOTAL INFRASTRUCTURE COST (A+B+C+D) :** | | | | | **1,796,803,734.81** |
| **E** | **Provisional Sum (PS)** | | | | | **5,909,000.00** |
| 1 | **Total (without PS)** | | | | | 1,796,803,734.81 |
| | **Total (with PS)** | | | | | 1,802,712,734.81 |
| 2 | **VAT 13%** | | | | | 234,352,655.53 |
| 3 | **Contigencies 4%** | | | | | 72,108,509.39 |
| 4 | **Physical Contingencies 10%** | | | | | 180,271,273.48 |
| 5 | **Price Adjustment Contingencies 10%** | | | | | 180,271,273.48 |
| | **Grand Total** | | | | | **2,469,716,446.69** |

#### 5.2.2.4 Contribution Ratio

The contribution required by the landowners was then calculated based on financial analysis guided by Land Pooling Reference Manual, 2072 B.S. The researcher assumed the average land price after development to be around 40 lakhs per kattha. (roughly based on price before and after land development, and the potential cost of infrastructure). The viable land and non-viable land was calculated based on google maps and assumptions. The tentative contribution ratio for the case area was determined as follows:

**Table 5-2 Financial Analysis**

| FINANCIAL ANALYSIS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Type of Land | Before Development | | | | After Development | | | |
| | | SQM | Kattha | % | | SQM | Kattha | % | |
| | Non-Viable Land | 89953.53 | 265.64 | 10.85% | | 313019.07 | 924.37 | 37.76% | |
| | Viable Land | 739045.70 | 2182.46 | 89.15% | | 515980.16 | 1523.73 | 62.24% | |
| | Total | 828999.23 | 2448.10 | 100.00% | | 828999.23 | 2448.10 | 100.00% | |
| | | | | | | | | | |
| A | Average Land Price Before Development | | | | = | Rs. | 2,500,000.00 | per kattha | |
| B | Average Land Price After Development | | | | = | Rs. | 4,000,000.00 | per kattha | |
| C | Total Site Value Before Development | | | | = | Rs. | 6,120,243,554.91 | | |
| D | Total Site Value After Development | | | | | Rs. | 9,792,389,687.86 | | |
| | | | | | | | | | |
| E | Readjustment Cost | | | | = | Rs. | 2,469,716,446.69 | | |
| | | | | | | | | | |
| F | Required Financial Land (Sales Plot) | | | | = | 617 | | Kattha | |
| | | | | | = | 208934.71 | | SQM | |
| | Site Potential Ratio {B/A} | | | | = | 1.60 | | | |
| | Site Feasibility Index {D/C} | | | | = | 1.60 | | | |

| | | | | | |
|---|---|---|---|---|---|
| Db | Total Development Benefit {C-D} | = | Rs. | 3,672,200,000.00 | |
| G | Maximum Area for Financial Benefit {Db/B} | = | 918 | | Kattha |
| | | | | | |
| H | Site Value of Financial Land (Sales Plot) {BxF} | = | Rs. | 2,468,000,000.00 | |
| | | | | | |
| K | Index (K) {(D-C)/H} | = | 1.20 | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | Non-Viable Land Contribution Ratio | = | (Non-Viable After Dev.. - Non-Viable Before Dev.) | | |
| | | | Viable Before Development | | |
| dp | Non-Viable Land Contribution Ratio | = | 30.18% | | |
| | | | | | |
| dr | Financial Land Contribution Ratio | = | 28.27% | | |
| | | | | | |
| **d** | **Total Contribution Ratio {dp+dr}** | **=** | **58.45%** | | |
| | | | | | |
| | | | | | |
| | **Present Project Scenario** | | | | |
| | Total Cost of the Project | = | Rs. | 2,469,716,446.69 | |
| | Financial Land (Sales Plot) | = | 617 Kattha | | |
| | | | 30.85 Bigha | | |
| | | | 208934.71 SQM | | |
| | Non-Viable Land Contribution Ratio (dp) | = | 30.18% | | |
| | Financial Land Contribution Ratio (dr) | = | 28.27% | | |
| | Total Contribution Ratio (d) | = | **58.45%** | | |

# 6 Conclusion

The important insights from the policy review of the concerned manuals and guidelines are as follows:

- PIDA can take grants in coordination with the provincial government with various organizations and other bodies, if required for the land pooling project
- There is the requirement of 51% of acceptance from the landowners to initiate the land pooling projects.
- The minimum plot size to be maintained is 12 dhur
- The Authority can arrange loans with subsidies for the households with lesser land than minimum required or reimburse them according to the prevalent market rates after development of the land.

There are various policies governing the land pooling in the country, like the national and provincial policies. Similarly, the scheme is also affected by the landuse policies, building codes etc. which also vary from one local government to another. So, an integrated regulation is required, or the policies need to be properly aligned to each other.

The findings from various sources, visual and comparative analysis showed that the major challenges in implementing such projects and the reasons are as follows:

**A. Poor Community Acceptance**

The different reasons that the local people do not want to participate in the land pooling schemes are as follows:

- Distrust towards the provincial government

The government imposed a ban on land sale 2 years prior to the initiation of the land development projects. The land development projects initiated way past the intended schedule. This incompetency from the government side caused severe economic difficulties for the locals. This anger was also directed towards the land pooling schemes. Similarly, the provincial government has been changing multiple times before the intended period, this has raised doubts about the stability of the government which in turn affects the land pooling projects.

- Lack of awareness among the local people

The people do have knowledge regarding the intention of the government to develop lands appropriately. However, due to lack of conscious young people, poor education status, skepticism towards the government etc., the people are not willing to participate in the projects.

There was also the prevalence of hoax that the government would snatch the land ownership, which was widely believed due to the lack of awareness as well. Similarly, despite the efforts of the concerned official bodies to sensitize the locals, actual landowners were not influenced and informed properly.

- Fear of loss of livelihood

As most of the local people depend on agriculture as the major source of livelihood, the land pooling project was believed to convert the cultivable lands into plots for commercial and residential use. Similarly, there were many people who already had less land.

**B. Poor financial security**

For the land pooling project to live up to its name as a self-financing project, the cost recovered through the sale of plots need to cover for the administrative and infrastructural development. The calculation done in the previous section shows that the **contribution ratio** in the selected site area is tentatively **58.45%.** This ratio does not consider the requirements of the LPCC master plan, which includes large 30m and 50m roads. This means that the figure can substantially increase. This figure is greater than the acceptable extreme (40%, based on some discussions). Apart from this, the people are concerned that the PIDA has not yet managed the initial funds required for the land development, which would be paid after the completion of the project through sales plot. The government has not allocated specific funds for the land development, as the funds are only available for planning purposes.

# 7 Recommendations

There are some recommendations based on the findings of the research.

To improve the public acceptance, following are the recommendations:

- **A better sensitization model**

The authority didn't seem to employ a systematic order of sensitization programs to gain the consensus of the people. It was not pre-determined, and they went for haphazard gatherings and public hearing. The 6-stage Consent Process is an example of a systematic model that ensured success in convincing the farmers of a similar scenario in Amravati. Thus, well-prepared, thorough awareness and informative sessions need to be developed in the future.

- **A better participatory approach**

The 51% consensus requirement suits fine in the case of an urban landscape where the opposition is based on personal interests rather than lack of awareness. In the rural context, the consensus of about 90% is required to smoothly run such programs, and for the rest 10, an authoritative approach may be employed by imposing the Land Acquisition Act, as in the case of Amarvati LP scheme (Ravi & Mahadevan, 2018). Similarly, the formation of user committee has always been influenced by political interests rather than capturing the true interests of the concerned stakeholders. So, transparent and informative approach needs to be employed to make sure that the people are well informed and, are motivated to participation.

- **A better financial commitment**

In the areas like the case area, where the land value is not enough to cover the costs with minimal sales plot that ensures the financial self-sustainability, the concerned authorities need to beforehand guarantee the availability of funds for appropriate subsidies. Apart from the subsidies in the project, the people need to be assured of retaining of agricultural lands through techniques like Land Transfer etc. They also need to be provided with employment opportunities and reimbursement in terms of crops production, irrigated or non-irrigated lands as done in the case of Amarvati Land Pooling (Podile. 2019).

- **A better feasibility study**

Based on existing policies and guidelines, a better feasibility study should have been done before initiating the projects. The requirement of a better financial plan, a better convincing approach etc. could have been identified prior to the initiation of the project. In case of other such endeavors, a great prioritization should be shifted towards properly studying the viability of such areas.

- **Exploration of other land development techniques**

The success of similar endeavor was achieved in the development of the new capital city of Andra Pradesh, India. The effort required a very huge investment initially, along with a prolonged series of subsidies and income provided to the landowners. Those kinds of funds may be very difficult to prepare in the context of a country like ours. So, to develop rural lands of the country, where the land value is not appropriate, other land development techniques need to be explored. Techniques like Land Consolidation and Community Land Cooperative need to be researched and tried in developing similar areas, to ensure a greater chance of success.
The policy changes should be made based on the above recommendations. Also, the policies need to be properly aligned for the national and provincial context. Other bye-laws and plans also need to be properly integrated.

This research was done to assess the suitability of an already employed technique of land development-land pooling, to develop the land for the new provincial capital of Lumbini Province, Deukhuri. The rural area required urgent attention, as the land parcels being used for just farming could very soon be developed into urban areas without proper planning. The research looked at the tool itself and studied its prior application in the context of Nepal and in a similar rural scenario. The potential major problems were identified and studied thoroughly. From previous experiences, it was found that to achieve success in such an effort, there are some key requirements. A proper Master Plan need to be developed in the beginning, then a comprehensive Land Pooling policy and procedures need to be formulated. A well-reputed and transparent authority needs to be present to ensure the landowners of success, from the initiation to completion of the project. Then a proper feasibility study, a comprehensive plan and proper allocation of funds. In the case of the study area, a proper provincial master plan had been prepared, an autonomous authority overlooking the actions has also been established. The major flaws lay in the policy, as it was not revised in accordance with the requirement of the rural areas of the intended capital city. Similarly, a poor feasibility analysis of the project and improper planning caused various obstacles that could have been properly dealt with in the beginning. So, the conclusion and recommendations of this research should be well considered before initiating a land pooling scheme in a similar area.

T

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# Annexes

## Annex I- Questionnaire for Survey

Thesis Questionnaire for MSc Urban Planning Thesis

Keshav Thapa

071MSUrP005

मिति :-

yyy-mm-dd

१. परिचयात्मक जानकारी

**क) अन्तर्वार्ता दिने व्यक्तिको नाम :-**

---

ख) लिङ्ग

- ○ पुरुष
- ○ महिला

ग) उमेर

- ○ २०-३०
- ○ ३०-४०
- ○ ४०-५०
- ○ ५०+

घ) शिक्षाको अवस्था

- ○ प्राथमिक तहभन्दा कम
- ○ प्राथमिक तह देखि एस.एल.सी सम्म
- ○ उच्च माध्यमिक सम्म
- ○ स्नातकोत्तर सम्म
- ○ स्नातक सम्म

ङ) रोजगारीको अवस्था

- ○ कृषि
- ○ व्यापार
- ○ जागिर
- ○ अन्य

च) परिवार संख्या

- ○ २
- ○ ३
- ○ ४
- ○ ५
- ○ ६
- ○ ७+

छ) लुम्बिनी प्रदेश राजधानी र जग्गा विकास योजना बारे जानकारी छ?

- ○ छ
- ○ छैन

२. जग्गा समबन्धि जानकारी

क) तपाईको जग्गा कति छ?

- ○ १२ धुर वा सो भन्दा कम
- ○ १२ धुर देखि १ कठ्ठा सम्म
- ○ १ देखि २ कठ्ठा सम्म
- ○ २ देखि ३ कठ्ठा सम्म
- ○ ३ कठ्ठा देखि ६ कठ्ठा सम्म
- ○ ६ कठ्ठा भन्दा बढी

ख) तपाईको जग्गाको मोहोडा कति छ?

- ○ ५ मि भन्दा कम
- ○ ५ मि देखि ७ मि सम्म
- ○ ८ मि देखि १० मि सम्म
- ○ ११ मि देखि १५ मि सम्म
- ○ १५ मि भन्दा बढी

ग) तपाईको जग्गामा कुन प्रकारको सडकको पहुँच छ?

- ○ गोरेटो सडक

○ कच्ची सडक

○ ग्रेभेल सडक

○ कालो पत्रे सडक

घ) तपाईको जग्गाको स्वामित्वको प्रकार के हो?

○ पैत्रिक

○ किनबेच

i. किनबेच हो भने कुन शालमा गर्नुभएको?

_____

ङ) तपाईको लालपुर्जामा लेखेको र भोगचलन गरेको जग्गा फरक छ?

○ छ

○ छैन

ii. छ भने कारण के हो?

---

च) तपाईको जग्गामा मोही लागेको छ?

○ छ

○ छैन

छ) तपाईको जग्गामा झैं झगडा, मुद्दा मामिला लागेको छ?

○ छ

○ छैन

ज) तपाईले जग्गा धितो राख्नु भएको छ?

○ छ

○ छैन

झ) तपाईको जग्गामा बाढी र पहिरोको समस्या छ?

○ छ

○ छैन

ञ) तपाईको जग्गामा घर बनेको छ?

○ छ

○ छैन

iii. यदि छ भने कुन बनावटको छ?

- ○ पिल्लर
- ○ गारो
- ○ पिल्लर वा जस्ताको छानो
- ○ पिल्लर नभएको जस्ताको छानो
- ○ कच्ची घर

**३. जग्गा एकीकरण सम्बन्धि जानकारी**

क) के तपाईलाई जग्गा एकीकरण बारे जानकारी छ?

- ○ छ
- ○ छैन

ख) तपाईको जग्गा एकीकरण बारे के धारणा छ?

- ○ बलियो समर्थन
- ○ समर्थन
- ○ तटस्थ
- ○ विरोध
- ○ बलियो विरोध

ग) के तपाई जग्गा एकीकरणका लागि केहि जग्गा योगदान गर्न चाहनु हुन्छ?

- ○ छ
- ○ छैन

# Annex II- Survey Results

| क्र.स | अन्तरवार्ता दिने व्यक्तिको नाम :– | लिङ्ग | उमेर | शिक्षाको अवस्था | रोजगारी को अवस्था | परिवार संख्या | तुम्बिनी प्रदेश राजधानी र जग्गा विकास योजना बारे जानकारी छ? | २. के तपाईलाई जग्गा विकास कार्यक्रम थाहाछ? | ३. के तपाई जग्गा विकास कार्यक्रममा सहभागी हुन इच्छुक हुनुन्छ? | ४. जग्गा विकास कार्यक्रममा तपाई कत्तिको सहमत हुनुन्छ? | जग्गा क्षेत्रफल (बिघा/कठ्ठा/धुर) | जग्गाको मोहडा (मीटर) | जग्गा सम्म पुग्ने बाटो | जग्गाको स्वामित्वको प्रकार | खरिद गरेको साल (वर्ष) | घरको बनोट | जग्गा एकीकरण बारे जानकार छ? | तपाईको जग्गा एकीकरण बारे के धारणा छ? | के तपाई जग्गा योगदान गर्न चाहनु हुन्छ? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Abinash Acharya | m | 42 | माध्यमिक भन्दा कम | कृषि | 7 | छु | छु | छैन | सहमत छैन | 0.4.0 | 40 | कच्ची बाटो | किनबेच | 2070 | पिल्लर | छ | बलियो विरोध | छैन |
| 2 | Amar bdr kumal | m | 53 | माध्यमिक भन्दा कम | नोकरी | 6 | छैन | छैन | छैन | सहमत छैन | 0.2.0 | 10 | ग्रावेल | पैत्रिक | | लोड बियारिंग | छैन | समर्थन | छ |
| 3 | Ananta Raj Acharya | m | 52 | माध्यमिक भन्दा कम | कृषि | 5 | छु | छु | छैन | सहमत छैन | 0.4.0 | 20 | कच्ची बाटो | किनबेच | 2049 | पिल्लर | छ | विरोध | छैन |
| 4 | Anil Acharya | m | 32 | माध्यमिक भन्दा कम | नोकरी | 4 | छु | छु | छैन | सहमत छैन | 0.1.0 | 10 | ग्रावेल | किनबेच | 2072 | पिल्लर | छ | विरोध | छैन |
| 5 | Anil khatri | m | 49 | माध्यमिक (SLC) सम्म | व्यापार | 7 | छैन | छैन | छैन | सहमत छैन | 0.0. 12 | 9 | कच्ची बाटो | किनबेच | 2069 | पिल्लर | छैन | बलियो समर्थन | छ |
| 6 | Anita bk | f | 29 | माध्यमिक भन्दा कम | कृषि | 5 | छु | छु | छैन | सहमत छैन | 0.1.10 | 7 | कच्ची बाटो | किनबेच | 2035 | पिल्लर | छ | बलियो विरोध | छैन |
| 7 | Auma gharti | f | 45 | माध्यमिक भन्दा कम | नोकरी | 4 | छैन | छैन | छैन | सहमत छैन | 0.1.0 | 8 | ग्रावेल | दान/बकस | | लोड बियारिंग | छैन | समर्थन | छ |
| 8 | Auma kumari | f | 33 | माध्यमिक (SLC) सम्म | कृषि | 4 | छु | छु | छैन | सहमत छैन | 0.1.0 | 10 | कच्ची बाटो | किनबेच | 2065 | पिल्लर | छ | बलियो विरोध | छैन |
| 9 | Avisak khadka | m | 48 | माध्यमिक भन्दा कम | नोकरी | 4 | छैन | छैन | छैन | सहमत छैन | 0.1.0 | 8 | कच्ची बाटो | किनबेच | 2073 | पिल्लर | छैन | समर्थन | छ |
| 10 | Babu ram kumal | m | 44 | माध्यमिक (SLC) सम्म | व्यापार | 5 | छु | छु | छैन | सहमत छैन | 0.1.10 | 15 | कच्ची बाटो | पैत्रिक | 2053 | लोड बियारिंग | छ | विरोध | छैन |
| 11 | Bagam kumalni | m | 45 | माध्यमिक भन्दा कम | कृषि | 5 | छैन | छैन | छैन | सहमत छैन | 0.2.0 | 15 | ग्रावेल | पैत्रिक | | पिल्लर | छ | तटस्थ | छ |
| 12 | Balesara Buda magar | m | 43 | माध्यमिक भन्दा कम | कृषि | 5 | छैन | छैन | छैन | सहमत छैन | 0.1.16 | 10 | ग्रावेल | किनबेच | 2065 | पिल्लर | छ | तटस्थ | छ |
| 13 | Basanta gc | f | 24 | माध्यमिक भन्दा कम | नोकरी | 5 | छु | छु | छैन | सहमत छैन | | 16 | ग्रावेल | किनबेच | 2073 | पिल्लर | छ | विरोध | छैन |
| 14 | Basanta khanal | m | 49 | माध्यमिक (SLC) सम्म | कृषि | 11 | छु | छु | छैन | सहमत छैन | 0.3.11.52 | 25 | कच्ची बाटो | किनबेच | 2047 | पिल्लर | छ | बलियो विरोध | छैन |
| 15 | Basanti Gupta | f | 29 | माध्यमिक भन्दा कम | नोकरी | 3 | छैन | छैन | छैन | सहमत छैन | 0.1.0 | 8 | ग्रावेल | किनबेच | | पिल्लर | छैन | समर्थन | छ |
| 16 | Basanti kumal | f | 41 | माध्यमिक भन्दा कम | कृषि | 5 | छैन | छैन | छैन | सहमत छैन | | 10 | ग्रावेल | पैत्रिक | | कच्ची घर | छ | विरोध | छैन |
| 17 | Bhagwoti Acharya | f | 47 | उच्च माध्यमिक (+2) सम्म | नोकरी | 4 | छु | छु | छैन | सहमत छैन | 0.0.10 | 10 | ग्रावेल | किनबेच | 2071 | पिल्लर | छ | विरोध | छैन |
| 18 | Bhagwoti bk | f | 27 | माध्यमिक भन्दा कम | नोकरी | 7 | छु | छु | छैन | सहमत छैन | 0.0.10 | 11 | कच्ची बाटो | किनबेच | 2068 | पिल्लर | छ | विरोध | छैन |
| 19 | Bifali kumala | m | 29 | माध्यमिक भन्दा कम | कृषि | 3 | छैन | छैन | छैन | सहमत छैन | 0.2.0 | 8 | कच्ची बाटो | पैत्रिक | | कच्ची घर | छ | विरोध | छैन |
| 20 | Bijay bk | m | 54 | माध्यमिक भन्दा कम | नोकरी | 4 | छु | छु | छैन | सहमत छैन | 0.2.0 | 18 | कच्ची बाटो | पैत्रिक | | पिल्लर | छ | विरोध | छैन |
| 21 | Bim bdr chaudhary | m | 45 | माध्यमिक भन्दा कम | कृषि | 8 | छैन | छैन | छैन | सहमत छैन | 0.1.10 | 10 | ग्रावेल | किनबेच | 2049 | लोड बियारिंग | छ | तटस्थ | छ |
| 22 | Bimala ghimire | f | 33 | माध्यमिक (SLC) सम्म | नोकरी | 3 | छु | छु | छैन | सहमत छैन | 0.1.10 | 7 | कच्ची बाटो | किनबेच | 2073 | पिल्लर | छ | विरोध | छैन |
| 23 | Bimala Roka | f | 47 | माध्यमिक भन्दा कम | नोकरी | 4 | छु | छु | छैन | सहमत छैन | 0.0.10 | 14 | कच्ची बाटो | किनबेच | 2065 | पिल्लर | छ | विरोध | छैन |
| 24 | Binod belbase | m | 45 | स्नातक | नोकरी | 4 | छु | छु | छैन | सहमत छैन | 0.1.0 | 20 | ग्रावेल | किनबेच | 2071 | पिल्लर | छ | विरोध | छैन |
| 25 | Binod ghimire | m | 34 | माध्यमिक (SLC) सम्म | नोकरी | 4 | छु | छु | छैन | सहमत छैन | 0.1.10 | 9 | कच्ची बाटो | किनबेच | 2066 | पिल्लर | छ | विरोध | छैन |
| 26 | Binod pun magar | m | 53 | माध्यमिक भन्दा कम | नोकरी | 3 | छु | छु | छैन | सहमत छैन | 0.0.19 | 14 | ग्रावेल | किनबेच | 2069 | पिल्लर | छ | विरोध | छैन |
| 27 | Binod saru | m | 28 | माध्यमिक भन्दा कम | कृषि | 4 | छैन | छैन | छैन | सहमत छैन | 0.1.0 | 9 | ग्रावेल | किनबेच | 2058 | पिल्लर | छ | विरोध | छैन |
| 28 | Bisnu darlami | m | 28 | माध्यमिक भन्दा कम | कृषि | 3 | छैन | छु | छैन | सहमत छैन | 0.2.0 | 20 | कच्ची बाटो | पैत्रिक | 2047 | पिल्लर | छ | विरोध | छैन |
| 29 | Bisnu ghimire | m | 56 | माध्यमिक भन्दा कम | नोकरी | 4 | छु | छु | छैन | सहमत छैन | 0.1.4 | 10 | कच्ची बाटो | किनबेच | 2055 | पिल्लर | छ | विरोध | छैन |
| 30 | Buddiram kumal | m | 52 | माध्यमिक भन्दा कम | नोकरी | 6 | छैन | छैन | छैन | सहमत छैन | 0.3. 0 | 9 | कच्ची बाटो | किनबेच | 2057 | लोड बियारिंग | छैन | समर्थन | छ |
| 31 | Chura mani subedi | m | 57 | माध्यमिक भन्दा कम | कृषि | 8 | छु | छु | छैन | सहमत छैन | 0.2. 0 | 40 | कच्ची बाटो | किनबेच | 2044 | गारो (पिल्लर नभएको) | छ | विरोध | छैन |
| 32 | Dhan bdr Buda magar | m | 55 | माध्यमिक भन्दा कम | नोकरी | 5 | छु | छु | छैन | सहमत छैन | 0.1.6 | 12 | कच्ची बाटो | किनबेच | 2062 | पिल्लर | छ | विरोध | छैन |
| 33 | Dhan bdr rana | m | 28 | माध्यमिक भन्दा कम | कृषि | 6 | छु | छु | छैन | सहमत छैन | 0.5.20 | 30 | कच्ची बाटो | किनबेच | 2048 | पिल्लर | छ | बलियो विरोध | छैन |
| 34 | Dhana adkhari | m | 47 | माध्यमिक (SLC) सम्म | नोकरी | 4 | छु | छु | छैन | सहमत छैन | 0.3.10 | 13 | कच्ची बाटो | किनबेच | 2063 | पिल्लर | छ | विरोध | छैन |
| 35 | Dhana bhusal | m | 48 | माध्यमिक भन्दा कम | नोकरी | 5 | छु | छु | छैन | सहमत छैन | 0.3.4 | 12 | कच्ची बाटो | किनबेच | 2069 | लोड बियारिंग | छ | विरोध | छैन |
| 36 | Dhanisara sunar | f | 27 | उच्च माध्यमिक (+2) सम्म | नोकरी | 6 | छैन | छैन | छैन | सहमत छैन | 8 m. | 8 | ग्रावेल | किनबेच | 2072 | पिल्लर | छैन | समर्थन | छ |
| 37 | Dhurba belbase | m | 65 | माध्यमिक भन्दा कम | कृषि | 7 | छु | छु | छैन | सहमत छैन | 0.0.10.5 | 8 | कालो पत्रे | किनबेच | 2072 | पिल्लर | छ | बलियो विरोध | छैन |
| 38 | Dil bdr adkhari | m | 35 | माध्यमिक भन्दा कम | कृषि | 7 | छैन | छैन | छैन | सहमत छैन | 0.1.0 | 9 | कच्ची बाटो | किनबेच | 2065 | पिल्लर | छ | विरोध | छ |
| 39 | Dina acharya | f | 53 | माध्यमिक भन्दा कम | कृषि | 5 | छु | छु | छैन | सहमत छैन | 0.1.0 | 8 | कच्ची बाटो | किनबेच | 2057 | पिल्लर | छ | विरोध | छैन |
| 40 | Durga bdr kami | f | 48 | माध्यमिक (SLC) सम्म | नोकरी | 6 | छैन | छैन | छैन | सहमत छैन | 5. 00 | 5 | ग्रावेल | किनबेच | 2063 | पिल्लर | छैन | समर्थन | छ |
| 41 | Gayetri davi | f | 49 | माध्यमिक भन्दा कम | कृषि | 2 | छु | छु | छैन | सहमत छैन | 0.0.15 | 10 | कच्ची बाटो | किनबेच | 2062 | पिल्लर | छ | बलियो विरोध | छैन |
| 42 | Gitanjali subedi | f | 25 | माध्यमिक भन्दा कम | नोकरी | 6 | छु | छु | छैन | सहमत छैन | 0.3.2 | 12 | कच्ची बाटो | किनबेच | 2062 | पिल्लर | छ | विरोध | छैन |
| 43 | Gokul parsad subedi | m | 45 | माध्यमिक भन्दा कम | कृषि | 5 | छु | छु | छैन | सहमत छैन | 0.3.0 | 10 | कच्ची बाटो | किनबेच | 2042 | गारो (पिल्लर नभएको) | छ | बलियो विरोध | छैन |
| 44 | Hari bdr bitalu | m | 48 | माध्यमिक भन्दा कम | कृषि | 10 | छैन | छैन | छैन | सहमत छैन | 0.1.10 | 15 | ग्रावेल | पैत्रिक | | लोड बियारिंग | छैन | तटस्थ | छ |
| 45 | Hari chaudhary | m | 51 | माध्यमिक भन्दा कम | नोकरी | 11 | छु | छु | छैन | सहमत छैन | 0.5.0 | 25 | ग्रावेल | दान/बकस | | लोड बियारिंग | छ | विरोध | छैन |
| 46 | Hari gc | m | 33 | माध्यमिक भन्दा कम | कृषि | 9 | छु | छु | छैन | सहमत छैन | 0.4.0 | 46 | ग्रावेल | किनबेच | 2074 | पिल्लर | छ | बलियो विरोध | छैन |
| 47 | Hima khacha kc | f | 23 | स्नातक | नोकरी | 6 | छु | छु | छैन | सहमत छैन | 0.0.10 | 10 | ग्रावेल | किनबेच | 2078 | पिल्लर | छ | विरोध | छैन |
| 48 | Himlal Acharya | m | 35 | माध्यमिक भन्दा कम | कृषि | 4 | छु | छु | छैन | सहमत छैन | 0.4.0 | 8 | कच्ची बाटो | पैत्रिक | 2054 | पिल्लर | छ | बलियो विरोध | छैन |
| 49 | Himlal bhusal | m | 43 | माध्यमिक (SLC) सम्म | व्यापार | 3 | छु | छु | छैन | सहमत छैन | 0.1.10 | 15 | कच्ची बाटो | किनबेच | 2066 | पिल्लर | छ | विरोध | छैन |
| 50 | Hira gm | f | 40 | माध्यमिक भन्दा कम | नोकरी | 6 | छु | छु | छैन | सहमत छैन | 0.1.0 | 9 | कच्ची बाटो | किनबेच | 2058 | पिल्लर | छ | विरोध | छैन |
| 51 | Huma bitalu | f | 48 | माध्यमिक भन्दा कम | नोकरी | 6 | छैन | छैन | छैन | सहमत छैन | | 10 | कच्ची बाटो | पैत्रिक | | गारो (पिल्लर नभएको) | छैन | समर्थन | छ |
| 52 | Huma Davi pun magar | f | 57 | माध्यमिक भन्दा कम | अन्य | 3 | छु | छु | छैन | सहमत छैन | 0.1.0 | 10 | कच्ची बाटो | किनबेच | 2064 | पिल्लर | छ | बलियो विरोध | छैन |
| 53 | Indra kumal | m | 59 | माध्यमिक भन्दा कम | नोकरी | 5 | छैन | छैन | छैन | सहमत छैन | 0.2. 0 | 10 | ग्रावेल | पैत्रिक | | लोड बियारिंग | छैन | बलियो समर्थन | छ |
| 54 | Ishwor bdr kc khatri | m | 28 | माध्यमिक भन्दा कम | नोकरी | 3 | छु | छु | छैन | सहमत छैन | 0.0.13.58 | 10 | ग्रावेल | किनबेच | 2064 | पिल्लर | छ | विरोध | छैन |
| 55 | Ishwora Davi Acharya | f | 57 | माध्यमिक भन्दा कम | कृषि | 10 | छु | छु | छैन | सहमत छैन | 0.1.0 | 10 | कच्ची बाटो | किनबेच | 2071 | पिल्लर | छ | विरोध | छैन |
| 56 | Jagat adkhari | m | 56 | माध्यमिक भन्दा कम | व्यापार | 6 | छु | छु | छैन | सहमत छैन | 0.18.3 | 23 | कच्ची बाटो | पैत्रिक | 2039 | पिल्लर | छ | विरोध | छैन |
| 57 | Jamuna Davi ghimire | f | 51 | स्नातक | नोकरी | 3 | छु | छु | छैन | सहमत छैन | 0.1.10 | 7 | कच्ची बाटो | पैत्रिक | 2048 | अन्य | छ | विरोध | छैन |
| 58 | Janak Maya bhandari | m | 48 | माध्यमिक भन्दा कम | कृषि | 11 | छु | छु | छैन | सहमत छैन | 0.4.0 | 30 | ग्रावेल | किनबेच | 2030 | पिल्लर | छ | बलियो विरोध | छैन |
| 59 | Jhabi Lal subedi | m | 29 | माध्यमिक भन्दा कम | व्यापार | 4 | छु | छु | छैन | सहमत छैन | 0.1.1 | 10 | कच्ची बाटो | किनबेच | 2062 | पिल्लर | छ | विरोध | छैन |
| 60 | Jivan khanal | m | 48 | माध्यमिक (SLC) सम्म | व्यापार | 4 | छु | छु | छैन | सहमत छैन | 0.0.11 | 10 | ग्रावेल | किनबेच | 2072 | पिल्लर | छ | विरोध | छैन |
| 61 | Joti pokhrel | f | 31 | माध्यमिक भन्दा कम | कृषि | 7 | छु | छु | छैन | सहमत छैन | 0.0.10 | 8 | ग्रावेल | किनबेच | 2075 | पिल्लर | छ | बलियो विरोध | छैन |
| 62 | Judda bdr thapa | m | 54 | माध्यमिक भन्दा कम | कृषि | 3 | छु | छु | छैन | सहमत छैन | 0.4.8 | 25 | कच्ची बाटो | किनबेच | 2057 | लोड बियारिंग | छ | विरोध | छैन |
| 63 | Kalpana adhikari | f | 28 | माध्यमिक भन्दा कम | कृषि | 4 | छु | छु | छैन | सहमत छैन | 0.0.16 | 16 | ग्रावेल | किनबेच | 2071 | पिल्लर | छ | बलियो विरोध | छैन |
| 64 | Kamala Acharya | f | 58 | माध्यमिक भन्दा कम | कृषि | 13 | छु | छु | छैन | सहमत छैन | 0.5.0 | 14 | कच्ची बाटो | किनबेच | 2055 | पिल्लर | छ | विरोध | छैन |
| 65 | Kamala adhikari | f | 57 | माध्यमिक भन्दा कम | कृषि | 3 | छु | छु | छैन | सहमत छैन | 0.2.0 | 14 | कच्ची बाटो | पैत्रिक | 2042 | गारो (पिल्लर नभएको) | छ | विरोध | छैन |
| 66 | Kamala balbasi | f | 42 | माध्यमिक (SLC) सम्म | कृषि | 7 | छु | छु | छैन | सहमत छैन | 0.0.13 | 8 | कच्ची बाटो | किनबेच | 2049 | पिल्लर | छ | बलियो विरोध | छैन |
| 67 | Kamala bote | f | 36 | माध्यमिक भन्दा कम | नोकरी | 6 | छु | छु | छैन | सहमत छैन | 0.0.8 | 8 | कच्ची बाटो | किनबेच | 2064 | पिल्लर | छ | विरोध | छैन |
| 68 | Kamala kumal | f | 48 | माध्यमिक भन्दा कम | कृषि | 9 | छैन | छैन | छैन | सहमत छैन | 0.5.0 | 10 | कच्ची बाटो | किनबेच | 2057 | लोड बियारिंग | छैन | तटस्थ | छ |
| 69 | Kamala Sharma | f | 55 | माध्यमिक भन्दा कम | नोकरी | 8 | छु | छु | छैन | सहमत छैन | 0.0.10 | 9 | ग्रावेल | किनबेच | 2063 | पिल्लर | छ | विरोध | छैन |
| 70 | Khim bahadur darlami | m | 48 | माध्यमिक भन्दा कम | व्यापार | 4 | छु | छु | छैन | सहमत छैन | 0.0.13 | 12 | कच्ची बाटो | किनबेच | 2057 | पिल्लर | छ | विरोध | छैन |
| 71 | Khim bdr kumal | m | 33 | माध्यमिक भन्दा कम माध्यमिक | नोकरी | 4 | छैन | छैन | छैन | सहमत छैन | 0.0.10 | 14 | ग्रावेल | दान/बकस | | कच्ची घर | छैन | समर्थन | छ |
| 72 | Khubi ram poudel | m | 59 | उच्च माध्यमिक (+2) सम्म | नोकरी | 4 | छु | छु | छैन | सहमत छैन | 0.0.10 | 9 | ग्रावेल | किनबेच | 2068 | पिल्लर | छ | विरोध | छैन |
| 73 | Khule gharti | m | 43 | माध्यमिक भन्दा कम | कृषि | 6 | छैन | छैन | छैन | सहमत छैन | 0.5.0 | 20 | ग्रावेल | दान/बकस | 2057 | लोड बियारिंग | छ | तटस्थ | छ |
| 74 | Khum Lal bhandari | m | 45 | माध्यमिक भन्दा कम | कृषि | 7 | छु | छु | छैन | सहमत छैन | 0.2.0 | 9 | ग्रावेल | किनबेच | 2070 | पिल्लर | छ | बलियो विरोध | छैन |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75 | Krishna kumal | m | 36 | माध्यमिक भन्दा कम | नोकरी | 5 | छु | छु | छैन | सहमत छैन | 0.1.0 | 8 | कालो पत्रे | किनबेच | | लोड बियारिंग | छ | बलियो विरोध | छैन |
| 76 | Kul Raj | m | 32 | माध्यमिक (SLC) सम्म | कृषि | 4 | छु | छु | छैन | सहमत छैन | 0.4.7 | 15 | कच्ची बाटो | पैत्रिक | 2043 | पिल्लर | छ | बलियो विरोध | छैन |
| 77 | Kumari dilmaya gharti | f | 29 | माध्यमिक (SLC) सम्म | कृषि | 2 | छु | छु | छैन | सहमत छैन | 0.0.10 | 9 | ग्रावेल | किनबेच | 2074 | पिल्लर | छ | बलियो विरोध | छैन |
| 78 | Laxmi malla | f | 45 | माध्यमिक भन्दा कम | नोकरी | 9 | छैन | छैन | छैन | सहमत छैन | 0.1.0 | 8 | कच्ची बाटो | किनबेच | 2071 | पिल्लर | छैन | समर्थन | छ |
| 79 | Madhav Sharma | m | 43 | स्नातक | नोकरी | 9 | छैन | छैन | छैन | भन्न सक्दिन | 0.1. 0 | 5 | कच्ची बाटो | किनबेच | 2072 | अन्य | छैन | समर्थन | छ |
| 80 | Mamata | f | 53 | माध्यमिक (SLC) सम्म | नोकरी | 4 | छु | छु | छैन | सहमत छैन | 0.2.6.75 | 10 | कच्ची बाटो | पैत्रिक | 2063 | पिल्लर | छ | विरोध | छैन |
| 81 | Man Kumari kumal | m | 48 | माध्यमिक भन्दा कम | कृषि | 5 | छु | छु | छैन | सहमत छैन | 0.2.0 | 15 | कच्ची बाटो | किनबेच | 2046 | पिल्लर | छ | बलियो विरोध | छैन |
| 82 | Manu kanta Acharya | f | 56 | माध्यमिक भन्दा कम | कृषि | 6 | छु | छु | छैन | सहमत छैन | 0.0.17 | 10 | ग्रावेल | किनबेच | 2075 | पिल्लर | छ | बलियो विरोध | छैन |
| 83 | Mina devi kumal | f | 49 | माध्यमिक भन्दा कम | कृषि | 6 | छु | छु | छैन | सहमत छैन | 0.3.0 | 12 | ग्रावेल | पैत्रिक | 2020 | लोड बियारिंग | छ | बलियो विरोध | छैन |
| 84 | Mina Kala Acharya | f | 35 | माध्यमिक भन्दा कम | नोकरी | 3 | छैन | छैन | छैन | सहमत छैन | 0.1.12 | 10 | ग्रावेल | किनबेच | 2057 | पिल्लर | छैन | समर्थन | छ |
| 85 | Muna khawos | f | 46 | माध्यमिक (SLC) सम्म | नोकरी | 3 | छैन | छैन | छैन | सहमत छैन | 0.0.15 | 8 | कालो पत्रे | पैत्रिक | | गारो (पिल्लर नभएको) | छ | विरोध | छैन |
| 86 | Namraj poudel | m | 43 | माध्यमिक (SLC) सम्म | नोकरी | 5 | छु | छु | छैन | सहमत छैन | 0.1.0 | 8 | ग्रावेल | किनबेच | 2073 | पिल्लर | छ | विरोध | छैन |
| 87 | Narayani subedi | m | 29 | माध्यमिक भन्दा कम | कृषि | 4 | छु | छु | छैन | सहमत छैन | 0.5.0 | 15 | कच्ची बाटो | किनबेच | 2034 | गारो (पिल्लर नभएको) | छ | बलियो विरोध | छैन |
| 88 | Narmata kumal | f | 42 | माध्यमिक भन्दा कम | कृषि | 5 | छैन | छैन | छैन | सहमत छैन | 0.9.0 | 20 | कच्ची बाटो | पैत्रिक | | पिल्लर | छ | तटस्थ | छ |
| 89 | Nasayani wagle | m | 45 | माध्यमिक भन्दा कम | कृषि | 6 | छु | छु | छैन | सहमत छैन | 0.1.0 | 13 | ग्रावेल | किनबेच | 2067 | पिल्लर | छ | बलियो विरोध | छैन |
| 90 | Natra parsad | m | 53 | माध्यमिक भन्दा कम | कृषि | 6 | छु | छु | छैन | सहमत छैन | 0.0.10 | 9 | ग्रावेल | किनबेच | 2073 | पिल्लर | छ | बलियो विरोध | छैन |
| 91 | Niketa kumal | f | 54 | माध्यमिक भन्दा कम | नोकरी | 5 | छैन | छैन | छैन | सहमत छैन | 0.0.10 | 8 | कालो पत्रे | दान/बकस | | लोड बियारिंग | छ | विरोध | छैन |
| 92 | Nim bdr darlami magar | m | 29 | माध्यमिक (SLC) सम्म | कृषि | 4 | छु | छु | छैन | सहमत छैन | 0.2.2 | 17 | कच्ची बाटो | पैत्रिक | 2048 | पिल्लर | छ | बलियो विरोध | छैन |
| 93 | Nima nanda acharya | f | 52 | माध्यमिक भन्दा कम | व्यापार | 5 | छु | छु | छैन | सहमत छैन | n | 9 | कच्ची बाटो | किनबेच | 2072 | पिल्लर | छ | विरोध | छैन |
| 94 | Nirmala bitalu | f | 44 | माध्यमिक भन्दा कम | कृषि | 4 | छैन | छैन | छैन | सहमत छैन | | 15 | कच्ची बाटो | पैत्रिक | | लोड बियारिंग | छैन | तटस्थ | छ |
| 95 | Numa bhusal | f | 29 | माध्यमिक (SLC) सम्म | व्यापार | 4 | छु | छु | छैन | सहमत छैन | 0.4.0 | 16 | कच्ची बाटो | किनबेच | 2059 | गारो (पिल्लर नभएको) | छ | विरोध | छैन |
| 96 | Om bdr saru | m | 48 | माध्यमिक (SLC) सम्म | नोकरी | 4 | छु | छु | छैन | सहमत छैन | 0.1.10 | 9 | ग्रावेल | किनबेच | 2058 | पिल्लर | छ | विरोध | छैन |
| 97 | Parbata acharya | f | 45 | माध्यमिक (SLC) सम्म | नोकरी | 5 | छु | छु | छैन | सहमत छैन | 0.2.0 | 15 | कच्ची बाटो | किनबेच | 2064 | पिल्लर | छ | विरोध | छैन |
| 98 | Parbata naupani | f | 56 | माध्यमिक भन्दा कम | नोकरी | 5 | छु | छु | छैन | सहमत छैन | 0.1.0 | 11 | कच्ची बाटो | किनबेच | 2063 | पिल्लर | छ | विरोध | छैन |
| 99 | Parbati kami | f | 61 | माध्यमिक भन्दा कम | नोकरी | 5 | छु | छु | छैन | सहमत छैन | 0.10.18.6 | 18 | ग्रावेल | किनबेच | 2065 | पिल्लर | छ | विरोध | छैन |
| 100 | Pujan kumal | m | 51 | माध्यमिक भन्दा कम | कृषि | 2 | छैन | छैन | छैन | सहमत छैन | 0.1.0 | 8 | कच्ची बाटो | पैत्रिक | | गारो (पिल्लर नभएको) | छैन | तटस्थ | छ |
| 101 | Rakha kumal | f | 32 | माध्यमिक भन्दा कम | नोकरी | 5 | छैन | छैन | छैन | सहमत छैन | 0.1.0 | 8 | ग्रावेल | दान/बकस | | लोड बियारिंग | छैन | समर्थन | छ |
| 102 | Rakha panday | f | 33 | माध्यमिक भन्दा कम | कृषि | 2 | छैन | छैन | छैन | सहमत छैन | 0.2.11.83 | 10 | कच्ची बाटो | किनबेच | 2062 | पिल्लर | छ | विरोध | छैन |
| 103 | Ramesh | m | 42 | स्नातकोत्तर | नोकरी | 3 | छु | छु | छैन | सहमत छैन | 0.1.0 | 9 | कच्ची बाटो | पैत्रिक | 2057 | पिल्लर | छ | विरोध | छैन |
| 104 | Ramlal poudel | m | 45 | माध्यमिक भन्दा कम | कृषि | 11 | छु | छु | छैन | सहमत छैन | 0.11.0 | 30 | कच्ची बाटो | किनबेच | 2048 | गारो (पिल्लर नभएको) | छ | बलियो विरोध | छैन |
| 105 | Rashmi | f | 39 | माध्यमिक भन्दा कम | व्यापार | 4 | छु | छु | छैन | सहमत छैन | 0.1.04 | 18 | कच्ची बाटो | किनबेच | 2060 | पिल्लर | छ | विरोध | छैन |
| 106 | Rim Kala acharya | f | 59 | माध्यमिक भन्दा कम | नोकरी | 4 | छु | छु | छैन | सहमत छैन | 0.3.0 | 15 | गोरेटो बाटो | किनबेच | 2064 | पिल्लर | छ | विरोध | छैन |
| 107 | Rita pokherl | f | 53 | स्नातक | नोकरी | 2 | छु | छु | छैन | सहमत छैन | 0.0.8 | 7 | ग्रावेल | किनबेच | 2074 | पिल्लर | छ | विरोध | छैन |
| 108 | Rita Rana kumal | f | 52 | माध्यमिक भन्दा कम | नोकरी | 5 | छैन | छैन | छैन | सहमत छैन | | 10 | ग्रावेल | पैत्रिक | | लोड बियारिंग | छैन | समर्थन | छ |
| 109 | Rudra parsad subedi | m | 45 | माध्यमिक भन्दा कम | व्यापार | 5 | छु | छु | छैन | सहमत छैन | 0.0.12 | 9 | कच्ची बाटो | किनबेच | 2077 | पिल्लर | छ | विरोध | छैन |
| 110 | Sabitra kumal | f | 43 | माध्यमिक भन्दा कम | कृषि | 3 | छैन | छैन | छैन | सहमत छैन | 0.0. 10 | 12 | ग्रावेल | दान/बकस | | कच्ची घर | छ | तटस्थ | छ |
| 111 | Salilk ram subedi | m | 45 | माध्यमिक भन्दा कम | व्यापार | 4 | छु | छु | छैन | सहमत छैन | 0.17.6 | 50 | कच्ची बाटो | किनबेच | 2043 | पिल्लर | छ | विरोध | छैन |
| 112 | Santa bhusal pokherl | f | 24 | माध्यमिक भन्दा कम | व्यापार | 4 | छैन | छैन | छैन | सहमत छैन | 0.0.6 | 5 | ग्रावेल | किनबेच | 2073 | पिल्लर | छैन | बलियो समर्थन | छ |
| 113 | Sarada sharma | f | 32 | माध्यमिक भन्दा कम | नोकरी | 3 | छु | छु | छैन | सहमत छैन | 0.4.5.91 | 15 | कच्ची बाटो | किनबेच | 2064 | पिल्लर | छ | विरोध | छैन |
| 114 | Saraswota kc | f | 54 | माध्यमिक भन्दा कम | नोकरी | 4 | छु | छु | | सहमत छैन | 0.0.10 | 10 | ग्रावेल | किनबेच | 2075 | पिल्लर | छ | विरोध | छैन |
| 115 | Sarita bhattrai | f | 53 | उच्च माध्यमिक (+2) सम्म | नोकरी | 4 | छु | छु | छैन | सहमत छैन | 0.0.10 | 9 | ग्रावेल | किनबेच | 2066 | पिल्लर | छ | विरोध | छैन |
| 116 | Sarmila poudel | f | 45 | माध्यमिक भन्दा कम | कृषि | 8 | छु | छैन | छैन | सहमत छैन | 0.2.0 | 8 | ग्रावेल | किनबेच | 2072 | पिल्लर | छ | बलियो विरोध | छैन |
| 117 | Sarshota khanal | f | 56 | माध्यमिक भन्दा कम | कृषि | 2 | छु | छु | छैन | सहमत छैन | 0.1.0 | 14 | ग्रावेल | किनबेच | 2070 | पिल्लर | छ | विरोध | छैन |
| 118 | Sasiram kumal | m | 28 | माध्यमिक भन्दा कम | नोकरी | 11 | छैन | छैन | छैन | सहमत छैन | 0.5.6 | | गोरेटो बाटो | पैत्रिक | | कच्ची घर | छैन | समर्थन | छ |
| 119 | Shiba bhusal | m | 27 | माध्यमिक भन्दा कम | नोकरी | 5 | छु | छु | छैन | सहमत छैन | 0.1.10 | 16 | कच्ची बाटो | किनबेच | 2071 | पिल्लर | छ | विरोध | छैन |
| 120 | Shiba thapa | m | 48 | माध्यमिक भन्दा कम | कृषि | 4 | छैन | छैन | छैन | सहमत छैन | | 1 | ग्रावेल | किनबेच | 2070 | पिल्लर | छैन | तटस्थ | छ |
| 121 | Shiva Raj sarma ghimire | m | 43 | माध्यमिक भन्दा कम | कृषि | 2 | छु | छु | छैन | सहमत छैन | 0.1.10 | 9 | कच्ची बाटो | किनबेच | 2048 | पिल्लर | छ | बलियो विरोध | छैन |
| 122 | Shyam Kumari chaudary | m | 62 | माध्यमिक भन्दा कम | कृषि | 6 | छैन | छैन | छैन | सहमत छैन | 0.5.17 | 10 | ग्रावेल | पैत्रिक | | लोड बियारिंग | छैन | तटस्थ | छ |
| 123 | Siser kumal | m | 56 | माध्यमिक भन्दा कम | कृषि नोकरी | 6 | छैन | छैन | छैन | सहमत छैन | 0.2.10 | 15 | ग्रावेल | पैत्रिक | | लोड बियारिंग | छैन | समर्थन | छ |
| 124 | Sita | f | 27 | माध्यमिक भन्दा कम | कृषि | 7 | छु | छु | छैन | सहमत छैन | 0.0.13 | 13 | कच्ची बाटो | किनबेच | 2066 | पिल्लर | छ | बलियो विरोध | छैन |
| 125 | Sita bhusal | f | 45 | माध्यमिक भन्दा कम | कृषि | 5 | छु | छु | छैन | सहमत छैन | 0.1.0 | 10 | ग्रावेल | किनबेच | 2075 | पिल्लर | छ | बलियो विरोध | छैन |
| 126 | Sita panday kadel | f | 42 | उच्च माध्यमिक (+2) सम्म | नोकरी | 3 | छु | छु | छैन | सहमत छैन | 0.0.10 | 8 | ग्रावेल | किनबेच | 2074 | पिल्लर | छ | विरोध | छैन |
| 127 | Srijana bhandari | f | 52 | माध्यमिक (SLC) सम्म | नोकरी | 8 | छैन | छैन | छैन | सहमत छैन | 0.4.8 | 15 | कालो पत्रे | किनबेच | 2063 | पिल्लर | छ | विरोध | छैन |
| 128 | Subash khanal | m | 52 | माध्यमिक भन्दा कम | व्यापार | 5 | छु | छु | छैन | सहमत छैन | 0.0.10 | 8 | कच्ची बाटो | किनबेच | 2070 | पिल्लर | छ | विरोध | छैन |
| 129 | Sudan sunar | m | 28 | माध्यमिक भन्दा कम | कृषि | 7 | छु | छु | छैन | सहमत छैन | 0.1.0 | 10 | कच्ची बाटो | किनबेच | 2063 | पिल्लर | छ | बलियो विरोध | छैन |
| 130 | Suma Acharya | f | 32 | स्नातकोत्तर | नोकरी | 5 | छु | छु | छैन | सहमत छैन | 0.1.0 | 10 | कच्ची बाटो | किनबेच | 2064 | पिल्लर | छ | विरोध | छैन |
| 131 | Sumitra kumal | f | 42 | माध्यमिक भन्दा कम | नोकरी | 5 | छैन | छैन | छैन | सहमत छैन | 0.2.10 | 9 | कच्ची बाटो | किनबेच | 2058 | पिल्लर | छैन | समर्थन | छ |
| 132 | Surya bd rana | m | 55 | माध्यमिक (SLC) सम्म | कृषि | 4 | छु | छु | छैन | सहमत छैन | 0.3.20 | 15 | कच्ची बाटो | पैत्रिक | 2048 | पिल्लर | छ | विरोध | छैन |
| 133 | Surya narayan | m | 53 | माध्यमिक (SLC) सम्म | कृषि | 4 | छु | छु | छैन | सहमत छैन | 0.0.12.84 | 9 | कच्ची बाटो | पैत्रिक | 2062 | पिल्लर | छ | विरोध | छैन |
| 134 | Susila b k | f | 52 | माध्यमिक भन्दा कम | नोकरी | 4 | छु | छु | छैन | सहमत छैन | 0.1.10 | 10 | कच्ची बाटो | पैत्रिक | 2038 | पिल्लर | छ | विरोध | छैन |
| 135 | Tara regmi | f | 46 | माध्यमिक भन्दा कम | कृषि | 5 | छु | छु | छैन | सहमत छैन | 0.3.10 | 15 | कच्ची बाटो | पैत्रिक | | पिल्लर | छ | बलियो विरोध | छैन |
| 136 | Thulsi ram | m | 42 | माध्यमिक (SLC) सम्म | कृषि | 4 | छु | छु | छैन | सहमत छैन | 0.1.10 | 8 | कच्ची बाटो | पैत्रिक | 2048 | पिल्लर | छ | बलियो विरोध | छैन |
| 137 | Tilaka nepali | m | 27 | माध्यमिक भन्दा कम | नोकरी | 5 | छु | छु | छैन | सहमत छैन | 0.1.0 | 9 | कच्ची बाटो | पैत्रिक | | लोड बियारिंग | छ | विरोध | छैन |

# Annex III- IOE GC conference paper

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Date: November 26, 2023

**To Whom It May Concern:**

This is to certify that the paper titled "***LAnd Pooling as a Land Development Tool in Rural Context: A Case Study of Deukhuri Dang***" (Submission# **440**) submitted by **Keshav Thapa** as the first author has been accepted after the peer-review process for presentation in the 14th IOE Graduate Conference being held during Nov 29 to Dec 1, 2023. Kindly note that the publication of the conference proceedings is still underway and hence inclusion of the accepted manuscript in the conference proceedings is contingent upon the author's presence for presentation during the conference and timely response to further edits during the publication process.

Bhim Kumar Dahal, PhD
Convener,
14th IOE Graduate Conference

# LAND POOLING AS A LAND DEVELOPMENT TOOL IN RURAL CONTEXT: A CASE STUDY OF DEUKHURI DANG

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**Abstract**
Nepal has rapidly urbanized during the past ten years. Numerous urban areas have been designated as a result of this urban transition, and numerous land development strategies, such as Site and Services, Guided Land Development (GLD), and Land Pooling (LP), have been used. The administration wants to develop Deukhuri Valley in the Dang district as the future site of the province capital, but LP projects meet obstacles there as well. In this study, the Deukhuri Valley is used as a case study to evaluate the viability of LP as a land development technique in a rural setting. It looks into the practices now in place for LP implementation, community acceptability, and the financial viability of LP projects. The study combines secondary data sources like policy papers and geographic data with primary data gathering techniques including site observation, structured questionnaires, key informant interviews, and focus group discussions. According to preliminary studies, there is a lot of skepticism about local initiatives among the populace, which is attributed to mistrust of the government, a slow start to the project, and insufficient attempts to raise awareness. These projects' economic sustainability is also in doubt because they mainly rely on grants with no assurance of funding. The study also finds that landowners are unwilling to offer their property for LP, partly because they are unsure of the government's intentions and need to keep some of their land for farming. In conclusion, this study illuminates the difficulties and complexity involved in putting LP projects into practise in Nepal's rural areas, highlighting the significance of community acceptability, long-term economic viability, and strong governmental frameworks.

**Keywords**
Land Pooling. Land development, community sensitivity, financial sustainability, contribution ratio, rural context

## 1. Introduction

### 1.1 Background

Nepal is one of the ten least urbanised countries in the world. However, it is also one of the top ten fastest urbanising countries [1]. Rapid urbanization in the last decade has been observed as a result of multiple urban transitions (spatial, demographic, and economic) that are underway. It is one of the top ten fastest-urbanizing countries in the world [2]. Until 2013, only 17.1 (%) of Nepal's population resided in 58 designated urban areas. The designation of 159 local bodies as municipalities in 2014/ 2015 led to more than 40 (%) of Nepal's population residing in 217 designated urban areas [3]. Land development acts as an alternate solution to a needed change in lifestyle. In Nepal, three forms of land development have so far been adopted which are Site and Services, Guided Land development (GLD), and Land Pooling (LP) as an attempt to control the haphazard unplanned growth of the cities and provide a planned space with the provision of basic infrastructure and services. In Kathmandu, all three of these land development tools have been tried with mixed success. Among these three, Land pooling has been considered the most effective of all so as to achieve well planned urban land, facilitated with necessary infrastructure and services. One of the most used land development techniques in Nepal is Land Pooling. It has emerged as a de facto urban land development technique for planned urban growth [4]. It is a technique for managing the planned development of urban fringe lands, whereby a government agency consolidates a selected group of land parcels, and then designs, services and subdivides them into a layout of streets, open spaces, and serviced building plots, with the sale of some of the plots for cost recovery and the distribution of the remaining plots back to the landowners to develop or to sell for development [5]. Land Pooling as a technique for urban renewal is becoming a fast-growing technique worldwide to achieve effective, unbiased, and sustainable urban development [6]. In the case of Nepal, land pooling is one of the fields which has good potential both in terms of development of the urban areas, by providing developed land parcels and improved infrastructure and services, and also a security of return of investments by generating revenue from sales plots. In most cases, municipalities lack a reliable partner that has both the technical and financial backstopping for such projects. Following the success of such attempts inside the valley, the practices are now being initiated throughout the country, without paying attention to the prerequisites for such endeavors.

### 1.2 Study Area

Deukhuri valley refers to the stretch of plain lands in between Dandwa range that border India to the South and Dang subrange to the North, situated in Dang district. It covers an approximate area of 600 sq. km and is characterized by Rapti river flowing approximately E-W through the valley. This area was designated as the provincial capital of Lumbini Province on 6th of October, 2020 [7], satellite image of which is shown in figure 1.


**Figure 1:** Satellite map of the study area [8]

### 1.3 Problem Statement

Land pooling projects are sensitive and require significant government investment and cooperation from landowners. They are based on the reimbursement of infrastructure investments through the sale of plots, often in urban areas. Most of the land pooling projects are concentrated inside the Kathmandu Valley, out of which, few projects have been completed on time. Projects are expected to be completed 5 years from approval, but only 4 of 21 projects have reached this goal. All other completed projects took between 7 and 12 years to reach completion [9]. Ongoing projects have been underway between 12 and 17 years, and some are still far from being completed [9]. The provincial government of Lumbini Province has initiated numerous land pooling projects in the Deukhuri Valley to develop the provincial capital. However, there is skepticism about the successful implementation of these projects, particularly regarding the self-sustaining nature of the tool, economic viability, and community acceptance.

### 1.4 Objectives

The main objective of the research is: To determine the suitability of land pooling as a tool for land development in rural context The specific objectives are:

a To identify existing policies for the implementation of LP

b To understand the communal sensitization and acceptance in regard to the proposed land pooling projects in Deukhuri Valley, Dang.

c To examine the economic self-sustainability of the land pooling project

## 2. Literature Review

### 2.1 Land Pooling

In response to the pressing demand for adequate housing with well-developed urban infrastructure, the conservation of valuable agricultural land and the environment, land consolidation, and planned urban expansion, municipalities facing resource constraints have turned to the concept of land pooling (LP) as a solution. This urban development technique involves the transformation of diverse and irregular land parcels within a specific area into fully developed residential plots, complete with essential amenities such as roads, drainage systems, water supply, and communal spaces. While the compulsory acquisition of land can be cumbersome, leading to the displacement of local residents and extended timelines, adopting the land pooling/readjustment approach proves more effective in generating resources for infrastructure development in peri-urban or developing areas. Additionally, this method is gaining traction in construction projects that require the acquisition of large land areas. The concept of land pooling or readjustment holds a significant historical background, with its roots tracing back to President George Washington, who utilized this approach in 1791AD to reach an agreement with landowners for the development of the city that now bears his name [10]. The inception of a legal framework for land pooling took place with the Lex Addickes in Frankfurt-am-Main, Germany, in 1902AD [11]. Land pooling serves as a vital method for managing urban land, especially in areas prone to urban sprawl in the absence of proper planning. Its primary goal is to transform irregularly developed land parcels into suitable forms in alignment with town planning requirements [12].

### 2.2 Land Development in Rural Areas

#### 2.2.1 Land Consolidation

[13] has defined the land consolidation as the formation of single or individual farms which have enough size, structure and suitable for productive use. Land consolidation means landowner gives up their scattered parcels in order to get an equivalent area or value of land in fewer or more continuous parcels [9]. Similarly, [14] pointed out that land consolidation is a strategic adjustment of ownership patterns and parcels, enhancing farm structure and infrastructure like drainage networks, irrigation systems, and roads for agricultural development.

#### 2.2.2 Community Land Cooperatives

The fear of displacement of livelihood means in rural land conversions is a major concern. Community land cooperatives model has been effective in addressing this issue. In urban-sponsored developments, rural villages tend to cooperate more when bottom-up institutional changes are initiated in their best interest [15].

## 3. Methods and Procedures

### 3.1 Conceptual Framework

The framework designed in accordance to the objectives has been presented in figure 2. The variables need to be addressed to fulfill the objectives has been presented along with the probable data sources to acquire it.

### 3.2 Data Collection Methods

#### 3.2.1 Primary Data Collection

1. Site Observation The selected site was ward number 4 of Rapti Rural Municipality the map to which is shown in 3. The researcher was engaged in field observations to gain firsthand insights into the current land use patterns, agricultural practices, and infrastructure conditions in the area and land value data. Observations provided valuable

| Main Objective | Specific Objective | Variables or Research Questions | Data Sources |
|---|---|---|---|
| To determine the suitability of land pooling as a tool for land development in the rural context | To identify existing policies for the implementation of LP | • Types of rural land development strategies<br>• Socio economic factors related to rural lands<br>National and international initiatives | • Literature Review Case studies |
| | To understand the communal sensitization and acceptance in regard to the proposed land pooling projects. | • Community's perception<br>• Social sustainability<br>• Land Use of Study Area<br>• Attitude and behavior related to the initiation of Land Pooling | • Map Study/ Satellite images<br>• Questionnaire Survey<br>• Literature<br>• Stakeholder Analysis<br>• Qualitative observational data collection |
| | To examine the economic self-sustainability of the land pooling project | • Land Value<br>• National and international case studies<br>• Existing economic policy framework in land pooling | • Key Informant Interview<br>• Rural Municipality profile and data<br>• Policy review<br>• Quantitative observational data collection |

**Figure 2:** Conceptual Framework

**Figure 3:** Site Area

context and provided support the interpretation of interview data.

2. Structured Questionnaire The structured questionnaire method was used to collect the insights of the concerned stakeholders. The following are some of the questions asked in order to get insight into the communal perspective in regard to the land pooling.

   (a) Does your land have access to roads? If yes, which type?

   (b) What is your perception towards the initiated land pooling?

   Sample size was determined using sample size calculator. The total HH of Ward no 4, Rapti Rural Municipality, Dang was 1509 for 15.24 sq.km. The study area under this research was found to be 455 HH. Due to social constraints and lack of respondent's positive attitude towards Land Pooling, only 137 samples were taken for the questionnaire survey.

3. Key Informant Interview Key Informant Interviews (KIIs) are a qualitative research technique commonly used in urban planning to gather in-depth insights from individuals who possess specialized knowledge or expertise about a particular topic. These individuals are often considered "key informants" due to their roles, experiences, or positions that make them well-informed about the subject being studied [16]. In this case, the researcher conducted KII with ward president Mr. Bir Bahadur Chaudhary and an undisclosed project official, who were asked questions regarding public perception and obstacles in implementation of the land pooling projects.

4. Focus Group Discussions A Focus Group Discussion is a qualitative research method that involves a small group of participants who engage in an open and interactive discussion about a specific topic [17]. In urban planning research, FGDs are often conducted to gather insights, opinions, and perspectives from diverse stakeholders such as residents, experts, policymakers, and community members. The outcomes of FGDs can provide valuable qualitative data that can complement and enhance the understanding of urban planning challenges and solutions. Figure 4 represents an instance of such discussion organized in regard to discussion about land pooling in the site area.

**Figure 4:** FGD organized in ward no. 3, Rapti Rural Municipality

#### 3.2.2 Secondary Data Collection

The researcher studied about the study area secondarily using various sources, such as:

a Policy Documents

b Google Maps

c Periodic Plans

d Village profile

## 4. Results and Findings

### 4.1 Site Observation

The observation of the site provided insights into valuable data regarding the land value. A tentative plot size was selected to carry out more specific analysis on the various parameters of land pooling. A block plan was also prepared. The existing infrastructures were also recorded to tally the land price scientifically. A detailed estimate for the development of infrastructures in the area was done for the financial analysis. The cost was estimated using the latest district rates. The total cost for the development of roads, water supply, sewer network and electrification on the plot was calculated to be around **NRs. 2,469,716,446.69 (In words: Two billion Four hundred Sixty Nine Million Seven hundred and Sixteen thousand Four hundred Forty Six rupees and sixty nine paisa)** and is shown in figure 5. This figure was used to determine the sales plot

| S.N. | Particulars | Amount |
|---|---|---|
| | INFRASTRUCTURE COSTS | |
| A | Road | 671,222,054.06 |
| B | Water Supply | 12,820,680.73 |
| C | Sewer Network with MH per 50m | 1,075,402,424.81 |
| D | Electrification | 37,358,575.21 |
| E | TOTAL INFRASTRUCTURE COST (A+B+C+D) : | 1,796,803,734.81 |
| E | Provisional Sum (PS) | 5,909,000.00 |
| | Grand Total with contingencies and VAT | 2,469,716,446.69 |

**Figure 5:** Summary of Cost

required to create a self-financing system within the site abiding by the guiding principles and policy. It was found that 58.45(%) average contribution of land was required. This was way more than what the local people had anticipated.

### 4.2 Key Informant Survey and FGD findings

The interviews shed light to following:

a One of the main reasons for the dissatisfaction of the local people towards the project is the lack of trust towards it, and the subsequent unstable nature of the government itself.

b There was the implementation of land moratorium for the past 2 years, and the initiation of the intended land development scheme was late.

c The financing mechanism is based on the expectation of the provision of grants to the Project Infrastructure Development Authority by the provincial government through multiple sources, i.e, there is no allocation of funds for the complete application of the projects.

d The lack of awareness and poor education status is also responsible for the opposition by the local people.

The researcher was a participant in FGDs organized by the local government, in coordination with the **Provincial Infrastructure Development Authority** with the concerned landowners and stakeholders related to the initiated land pooling schemes, who expressed their opinions as follows:

a There is a hoax spread that the government intends to conduct forceful acquisition of the lands.

b The sensitization programs have majorly focused on the local leaders rather than the actual land owners.

c People are skeptical about the government's intention owing to the delay in project initiation and improper sensitization.

### 4.3 Questionnaire Survey Findings

#### 4.3.1 Demographic Data

Out of the 138 respondents, 65 were female and 73 were male. Similarly, 32 of the respondents were found to have age between 20 and 30. Similarly, the number of students older than 30 and younger than 40 is 37. 34 of the respondents were over the age of 40 and less than 50, 34 of them were over 50 and 3 of them were over 60. In regard to the education status, 73(%) had education lesser than primary, 18(%) had primary upto SLC and very less numbers with higher secondary and more. Although, most of the residents of the Rural Municipality are involved in agriculture, in the case of this project area, there were same number of families based on jobs and agriculture among the respondents. Only about 14 households were involved in business. The following graph summarizes our findings. In terms of earnings, most of the families involved in agriculture earned Rs 30000-40000 monthly. The same goes for families involved in business and jobs. The data regarding the family size is presented in figure 6

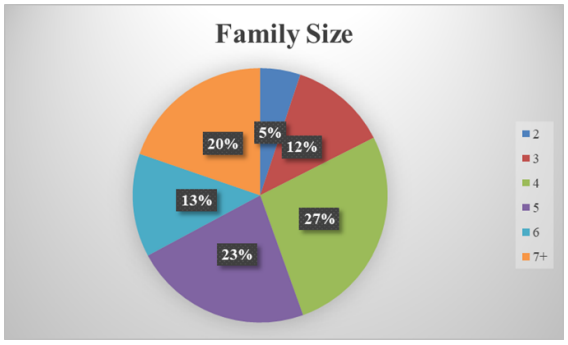


**Figure 6:** Family size distribution

#### 4.3.2 Land Data

In regard to the knowledge about Lumbini Lumbini Capital City Master Plan and Land Development Plan, it was found

that 96 out of 137 respondents had an idea about the prepared Master Plan of the Lumbini Capital City Master Plan along with the Land Development Plan implementation by the Provincial Government. Regarding the land frontage,the data is shown in

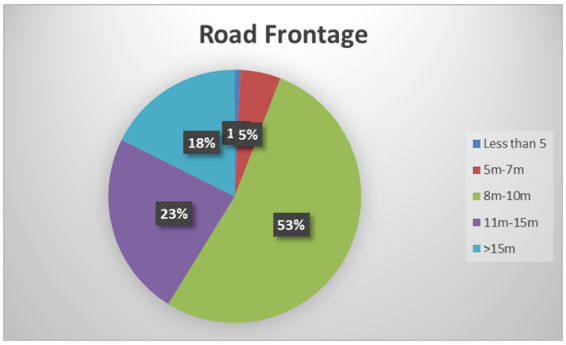


**Figure 7:** Road Frontage

figure 7. The road access to the land was not satisfactory. About 5 of the respondent's land had access to black-topped roads, and about 2 of them had only walkable roads. Similarly, 53 of the respondents had access to gravel roads and 77 of them had access to earthen or RCC roads. The survey found that 55 respondents bought land, while the rest inherited it. Only 15 households had certificated house plans, and none had problems with water logging or landslide.

#### 4.3.3 Perception Data

Most of the respondents had an idea about what type of land development tool Land Pooling was, owing to the sensitization and introduction attempts made by the concerned bodies. More than 75(%) of the respondents had an idea about it, while the rest had never heard about it. One of the most important questions asked during the survey was whether you are in support or oppose of the land Pooling initiation, response to which is shown in figure 8 The respondents were also asked

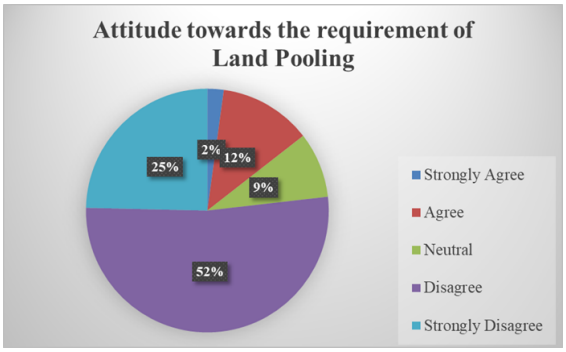


**Figure 8:** Attitude towards land pooling

whether or not where they willing to contribute their land for the land pooling project. Most of the respondents were not willing to contribute land for the sake of investments in infrastructure development. The reasons presented by them was skepticism towards the government, to have as much land as possible for agriculture purposes etc.

## 5. Conclusion

This research aimed to assess the suitability of LP as a land development tool in rural contexts, with a specific focus on the Deukhuri Valley. Regarding the policies governing land pooling in Deukhuri Valley, it was found that minimum 12 dhur of plot size was to be maintained for all the landowners. The roads also ought to be planned in accordance with the provincial capital master plan which requires several wide roads in certain intervals, which in turn will affect the land contribution more. Regarding the perception of land pooling on the local landowners, it was found that most of them showed skepticism and distrust towards the project and were opposed to the implementation. The data is based on the questionnaire survey, KII and FGDs. The major reasons for the distrust are:

1. **Trust and Government Stability:** Dissatisfaction among local residents in the Deukhuri Valley toward LP projects primarily stemmed from a lack of trust in the government and concerns about its stability. The implementation of a land moratorium and delays in project initiation exacerbated these issues.

2. **Fear of displacement:** The survey showed that the economic status of the residents was not satisfactory, and the major source of income was agriculture. The locals feared that their agricultural lands would be replaced by residential plots, casting doubts over the means of income. Similarly, lack of awareness fueled the hoax that state that the government would take the land forcefully later on.

3. **Awareness and Education:** Limited awareness and low levels of education among local residents contributed to opposition to LP initiatives. Sensitization efforts often focused on local leaders rather than landowners, contributing to misunderstandings.

4. **Land Pooling Support:** Most respondents disagreed with the concept of LP for developing their lands, citing skepticism toward the government and a desire to retain land for agricultural purposes.

## 6. Recommendation

Despite the challenges, LP remains a viable strategy for planned urbanization and infrastructure development in Nepal. To ensure its success, several recommendations can be made:

1. **Community Engagement:** Effective and targeted community engagement programs should be developed to inform and educate landowners about LP projects, addressing their concerns and fostering trust in the government's intentions.

2. **Financial Planning:** A more robust financial plan that includes clear allocation of funds for LP projects should be established to ensure their self-sustainability and timely completion. For that, extensive subsidies need to be provided by the government for the infrastructure development, rather than basing all the expenditure on the expected income through the sales plots.

3. **Transparent Policies:** Clear and transparent policies for LP implementation should be developed, taking into account the specific needs and circumstances of rural areas.

4. **Local Capacity Building:** Efforts to enhance local capacity in project management and implementation should be prioritized to ensure successful LP projects in rural contexts.

5. **Adaptation to Local Context:** LP projects should be adapted to the unique characteristics and needs of rural areas, considering factors such as land use patterns, agricultural practices, and community dynamics.

In conclusion, while challenges exist, LP remains a valuable tool for land development in Nepal's areas. With careful planning, transparent policies, and effective community engagement, LP can contribute to well-planned urban growth, improved infrastructure, and enhanced living standards for the residents of Deukhuri Valley and similar regions in Nepal. Similarly, the government might also need to reconsider the alternative to LP in the cases of rural areas of the country. Techniques like land consolidation and community land cooperatives can be used to convert the unplanned rural areas into well planned agricultural zones, rather than urban space abruptly.

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# Annex IV- Final Report Presentation

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
PULCHOWK CAMPUS

# LAND POOLING AS A LAND DEVELOPMENT TOOL IN RURAL CONTEXT: A CASE STUDY OF DEUKHURI DANG

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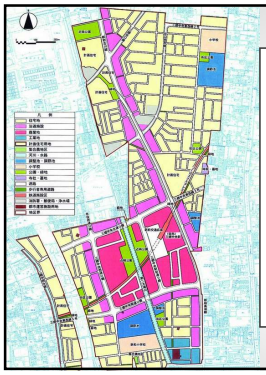
Lastly, I would like to thank ward chairman of Rapti RM-3 Mr. Bir Bahadur Chaudhary for his valuable insights, which proved to be immensely important in the context of the thesis.

## TABLE OF CONTENTS

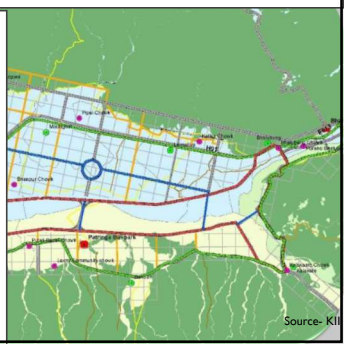




# I. INTRODUCTION

## BACKGROUND

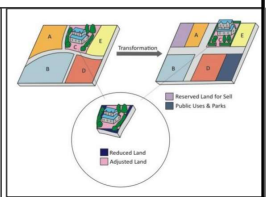
- Nepal is one of the least urbanized countries in Asia.
- Urbanization has been rapid over the last decade, and Nepal is also one of the 10 fastest urbanizing nation (Bakrania, S 2023).
- Lumbini Province Capital Master Plan prepared in 2022
- Plan to develop 480 sq. km LPCC area according to Master Plan
- 14 packages were called in 2023
- The researcher was involved in one of the projects




## INTRODUCTION

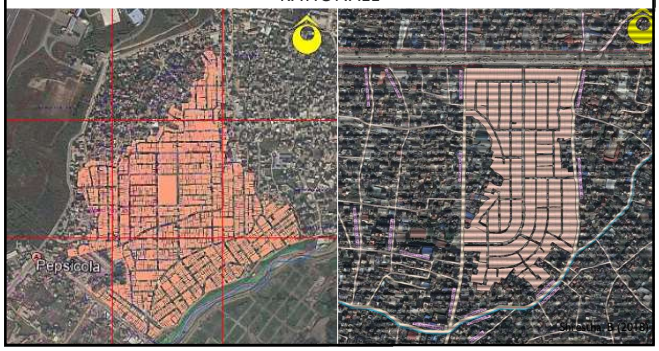
**Land Pooling**

- a technique for managing planned development
- Government Agency/Group of Land Owners select a group of land parcels.
- Convinces the land owners for contribution
- Subdivides into layout of streets, open spaces and serviced building plots
- Sales some of them to recover cost
- Distributes the remaining plots back to the owners - Choda, J; Thinley, J (2022)




Source: Minh VG. N; et.al (2018)

## RATIONALE




## RATIONALE

- LP system in written and in practice differs.
- Delayed Project Implementation
- Land-related Legal Battles

(ADB, 2020)

- Not very practical for rural land development

Research Gap

- Previous research on land pooling focused in
  - the efficiency of implementation
  - comparative study of projects
- Almost no research found on land pooling as a land development tool in rural areas.

## RESEARCH QUESTION

How appropriate is land pooling as a land development tool in rural context of Nepal?

Specific Objectives:

a) To familiarize with the concept of land pooling, its use in a rural setting and the policies guiding them in the context of Nepal.
b) To identify the potential challenges in implementing land pooling in a rural setting.

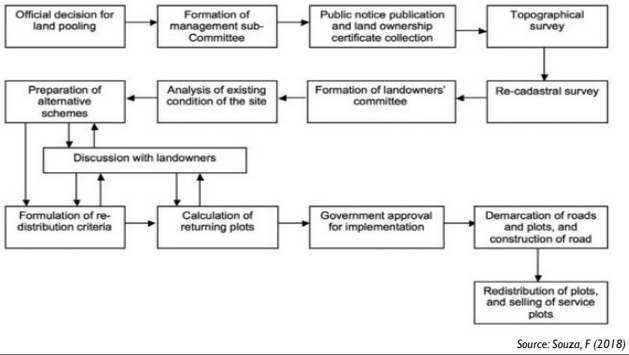
## LIMITATION OF THE STUDY

- Individual Effort, and inconsistency of data.

# 2. LITERATURE REVIEW

## LITERATURE REVIEW

| LAND POOLING | LAND DEVELOPMENT TECHNIQUES | LAND DEVELOPMENT IN RURAL AREAS |
|---|---|---|
| Land Consolidation is accepted as primary instrument for rural development. (GUR et. Al 2003) | | |
| In Asia, lack of more innovative financing mechanisms constrained the potential of land pooling (Farrin et.al 2019) | | |
| LP technique in urban renewal in developing countries serves as the best alternative in urban renewal. ( Akinyode 2022) | | |
| LP projects in Nepal are affected by poor project appraisal, lack of clear commitment for funding, and difficulty in getting consensus from landowners. (Neupane, 2020) | | |
| Build consensus, resolve disputes early, and develop mechanisms for non-consenting landowners. (Faust et.al, 2020)(ADB) | | |
| Make legal and regulatory changes to facilitate an urban infrastructure financing plan. (Farrin et al, 2019) | | |
| Need of mandatory and realistic inclusionary program, need of Government subsidy, need to exclude involvement of private consultancy in crucial stage. (K.C, N 2015) | | |




*Source: Souza, F (2018)*

## LITERATURE REVIEW

LAND POOLING | LAND DEVELOPMENT TECHNIQUES | LAND DEVELOPMENT IN RURAL AREAS

**Chronological Development**

**International**

- the first tangible example of a major land readjustment project for urban planning was from developing Washington, DC, in the United States in the 1790s *(Deuskar, C 2013)*
- 1800s - Germany developed a legal framework
- 1930s - it was introduced in the Republic of Korea

*(De Souza, Ochi, and Hosono, 2018)*

**National**

- 60s and 70s – Initial Discussions
- 90s – The concept of LP garnered attention
- 2000s – Govt. used LP as a viable mechanism of land development
- 2010s – The most popular land development technique

*(ADB 2020)*

## LITERATURE REVIEW

LAND POOLING | LAND DEVELOPMENT TECHNIQUES | LAND DEVELOPMENT IN RURAL AREAS

**Site and Services**

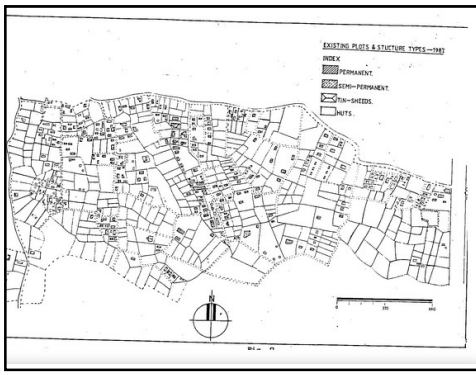
- Undeveloped raw land is acquired
- Infrastructure, commercial and residential area etc, are facilitated
- Government buys cheaper vacant sites
- Usually have provisions for low-income groups
- Requires substantial upfront budget

| Project Name | Total Area Covered Ha | Project Start | Project Completion | Executing Agency |
|---|---|---|---|---|
| Kuleswor | 26.5 | 1978 | 1990 | KVTDC |
| Golfutar | 11 | 1982 | 1990 | KVTDC |

*Source: KYTDC*

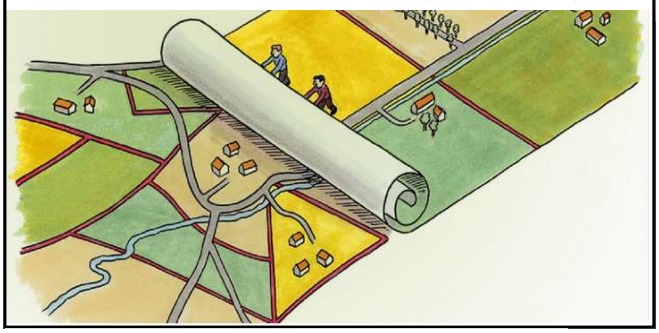
**Problems of this method**

- Needs a huge amount of initial fund to acquire land.
- Inefficient project document and lack of trained people.
- People's participation is nil.
- Lack of resources and no time limit for the completion of the project.
- Indigenous people will be displaced partially/totally




Source:
Islam, M.R (1984)

## LAND CONSOLIDATION (AGROECONOMICS 2023)



## LITERATURE REVIEW

LAND POOLING | LAND DEVELOPMENT TECHNIQUES | LAND DEVELOPMENT IN RURAL AREAS

**Community Land Cooperative**

Features

- Empowering Community Decision-Making
- Pooling Resources for Greater Impact
- Sustainability at Its Core
- Cultural Heritage and Identity Preservation
- Equitable Benefits for All
- Community Stability and Long-Term Vision
- Navigating Challenges Together

Disadvantages

- Decision-Making Challenges
- Limited Expertise
- Financing Difficulties
- Risks of Management
- Slow Development Process
- Conflicting Interests
- Lack of Professional Guidance
- Ownership Transfers
- Regulatory and Legal Issues

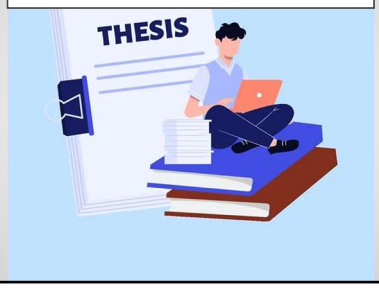
## LITERATURE REVIEW

LAND POOLING | LAND DEVELOPMENT TECHNIQUES | LAND DEVELOPMENT IN RURAL AREAS

**Other Tools**

- **Land Readjustment**
- **Land Swapping**
- **Land Leasing and Joint Ventures**
- **Incremental Development**
- **Agricultural Transition Zones**
- **Phased Development Agreements**
- **Land Trusts for Development**
- **Density Transfer and TDR Programs**

# 3.RESEARCH METHODOLOGY




## RESEARCH METHODOLOGY

**Ontological Claim**

- **Social Constructivist perspective**
- Requires socially constructed meanings and interactions among stakeholders
- Not fixed reality – based on perception

**Epistomological Claim**

- **Positivist**
- Concerned with the evaluation of the land development tool
- Surveys, analysis are required

*https://researcher.life/blog/article/what-is-a-research-paradigm-types-examples/*

| | | | |
|---|---|---|---|
| | **To identify the potential challenges in implementing land pooling in a rural setting.** | • **Community's perception**<br>• **Land Value**<br>• **Social sustainability**<br>• **Land Use of Study Area**<br>• **Attitude and behavior related to the initiation of Land Pooling** | • **Map Study/ Satellite images**<br>• **Quantitative data collection**<br>• **Qualitative Insights**<br>• **Case Studies** |

## RESEARCH METHODOLOGY

Nature of the problem in this research requires a qualitative and quantitative research approaches

The **first** objective includes the review of existing definition and scenario of policies concerning LP.

- To gain this objective, an **interpretation** of the literature is required – **qualitative approach** is applied.

The **second** objective requires the collection of data to explore the existing challenges, and have in-depth understanding.

- To gain this objective, a **method of structured questionnaire, along with FGDs and KII** is required – **quantitative approach** is applied.

## RESEARCH METHODOLOGY

**Selection of Study Area**

- ward no. 4 of rapti rural municipality

**Problem Identification**

- identified through field observation during the researcher's employment period.
- the existence of mostly farm area and rural scenario

**Formulation of Objectives**

- Major focus the potential challenges in the implementation of land pooling schemes in rural context.

## RESEARCH METHODOLOGY

**Data Collection Method**

**Primary Data Collection**

- **Focus Group Discussions**
  - Qualitative Research method
  - Open and interactive discussion about a specific topic
  - Researcher participated in FDGs regarding land pooling challenges

## RESEARCH METHODOLOGY


## RESEARCH METHODOLOGY

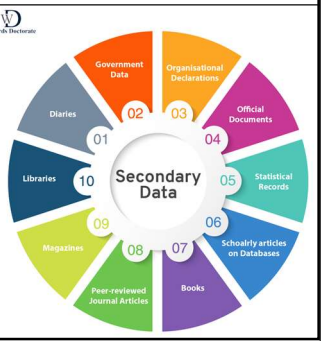
### Data Collection Method

### Secondary Data Collection

- Department of Urban Development and Building Construction
- Central Bureau of Statistics
- local body profiles
- Google Earth

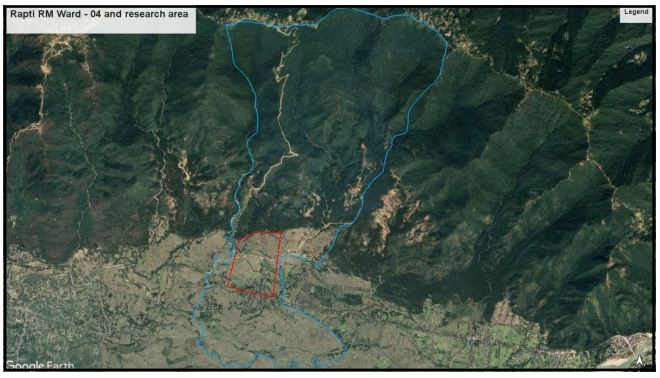
**Policy Document Analysis**

- Official Reports
- Land Records
- Development Plans



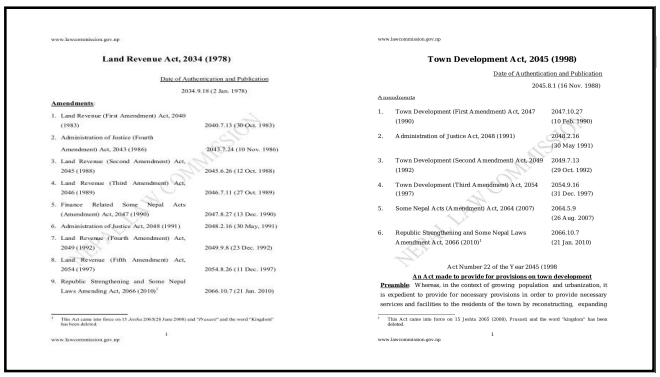


## 4. SITE AREA





## 5. RESULTS AND FINDINGS



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**Land Revenue Act, 2034 (1978)**

Date of Authentication and Publication
2034.9.18 (2 Jan. 1978)

**Amendments:**

1. Land Revenue (First Amendment) Act, 2040 (1983) — 2040.7.13 (30 Oct. 1983)
2. Administration of Justice (Fourth Amendment) Act, 2043 (1986) — 2043.7.24 (10 Nov. 1986)
3. Land Revenue (Second Amendment) Act, 2045 (1988) — 2045.6.26 (12 Oct. 1988)
4. Land Revenue (Third Amendment) Act, 2046 (1989) — 2046.7.11 (27 Oct. 1989)
5. Finance Related Some Nepal Acts (Amendment) Act, 2047 (1990) — 2047.8.27 (13 Dec. 1990)
6. Administration of Justice Act, 2048 (1991) — 2048.2.16 (30 May, 1991)
7. Land Revenue (Fourth Amendment) Act, 2049 (1992) — 2049.9.8 (23 Dec. 1992)
8. Land Revenue (Fifth Amendment) Act, 2054 (1997) — 2054.8.26 (11 Dec. 1997)
9. Republic Strengthening and Some Nepal Laws Amending Act, 2066 (2010)[1] — 2066.10.7 (21 Jan. 2010)

[1] This Act came into force on 15 Jestha 2065(28 June 2008) and "Pradesh" and the word "Kingdom" has been deleted.

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**Town Development Act, 2045 (1998)**

Date of Authentication and Publication
2045.8.1 (16 Nov. 1988)

Amendments

1. Town Development (First Amendment) Act, 1990 — 2047.10.27 (10 Feb. 1990)
2. Administration of Justice Act, 1991 — 2048.2.16 (30 May. 1991)
3. Town Development (Second Amendment) Act, 1992 — 2049.7.13 (29 Oct. 1992)
4. Town Development (Third Amendment) Act, 1997 — 2054.9.16 (31 Dec. 1997)
5. Some Nepal Acts (Amendment) Act, 2064 (2007) — 2064.5.9 (26 Aug. 2007)
6. Republic Strengthening and Some Nepal Laws Amendment Act, 2066 (2010)[1] — 2066.10.7 (21 Jan. 2010)

Act Number 22 of the Year 2045 (1998

**An Act made to provide for provisions on town development**

**Preamble** Whereas, in the context of growing population and urbanization, it is expedient to provide for necessary provisions in order to provide necessary services and facilities to the residents of the town by reconstructing, expanding

[1] This Act came into force on 15 Jestha 2065 (2008). Pradesh and the word "Kingdom" has been deleted.

www.lawcommission.gov.np 1

## RESULTS AND FINDINGS

LITERATURE REVIEW | SITE OBSERVATION | KII & FGD | STRUCTURED QUESTIONNAIRE

**Land Pooling Reference Manual, 2072 B.S**

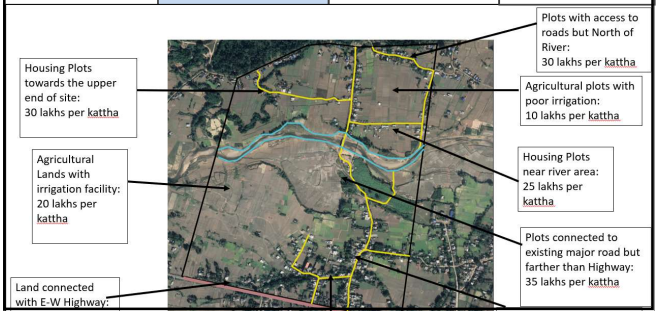
- Up Front Budget from
  - Nepal Govt. Fund
  - Local Level Govt.
  - Various loans etc
- Replotting Criteria
- Land Return Policy
  - Minimum plot size not less than 85 sqm.
  - Contribution ratio = 15-55%

**Land Pooling Regulation, 2079 (Lumbini Province)**

- PIDA responsible the finance management for the project
- 51% landowners need to agree for project implementation
- Prioritization to the residents with minimal income

## RESULTS AND FINDINGS

LITERATURE REVIEW | SITE OBSERVATION | KII & FGD | STRUCTURED QUESTIONNAIRE

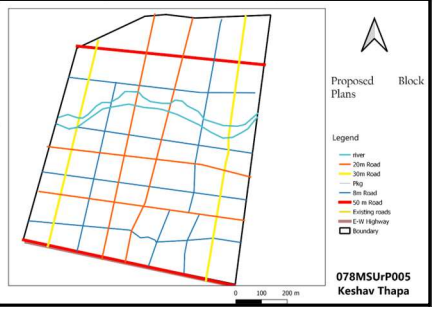



## RESULTS AND FINDINGS

POLICY REVIEW | SITE OBSERVATION | KII & FGD | STRUCTURED QUESTIONNAIRE

**Block Plan**

- For the sake of financial evaluation, the researcher prepared a block plan with roads of width as proposed by the LPCC Master Plan




## RESULTS AND FINDINGS

POLICY REVIEW | SITE OBSERVATION | KII & FGD | STRUCTURED QUESTIONNAIRE

**Estimation**

- For the sake of financial evaluation, the researcher also prepared the cost estimation of the infrastructures in the selected area, with appropriate rate analysis.

| S.N. | Particulars | Amount |
|---|---|---|
| A | Road | 671,222,054.06 |
| B | Water Supply | 12,820,680.73 |
| C | Sewer Network with MH per 50m | 1,075,402,424.81 |
| D | Electrification | 1,075,402,424.81 |
| Grand Total | | 2,469,716,446.69 |

## RESULTS AND FINDINGS

POLICY REVIEW | SITE OBSERVATION | KII & FGD | STRUCTURED QUESTIONNAIRE

**Contribution Ratio**

- Financial evaluation was done to evaluate various financial parameters that might assist in investigating the financial self-sustainability of the project.

| S.N. | Particulars | Value |
|---|---|---|
| A | Readjustment Cost | 2,469,716,446.69 |
| B | Required Financial Land (Sales Plot) | 617 katthas |
| C | Total Contribution Ratio | 58.45% |

## RESULTS AND FINDINGS

POLICY REVIEW | SITE OBSERVATION | KII & FGD | STRUCTURED QUESTIONNAIRE

**FGD provided valuable insights to:**

- People's dissatisfaction because of no trust in government
- Education as well as practical analysis is very weak among the people
- People are afraid of displacement
- Members of opposing political parties are in opposition
- There is a spread of fake news
- People are irritated by the land mortarium
- People want immediate result and blame the procedure of not being participatory.

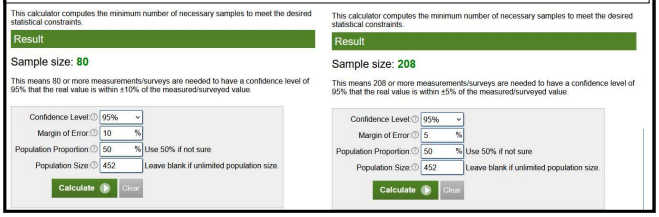
**KII provided valuable insights like:**

- There is requirement of better institutional arrangement
- The plan is to develop entire area, one phase at a time.
- People will eventually accept and assist in the implementation of land pooling.
- People need to be more farsighted and not dwell in for immediate results.
- Some people trust PIDA, as it is an autonomous authority
- Provided refinement to the land prices

## RESULTS AND FINDINGS

POLICY REVIEW | SITE OBSERVATION | KII & FGD | STRUCTURED QUESTIONNAIRE

The number of respondents required was calculated on the basis of the margin of acceptable error, and the confidence level. On the basis of 1509 households for the entire ward area, by proportion, 452 are the tentative number of peple.

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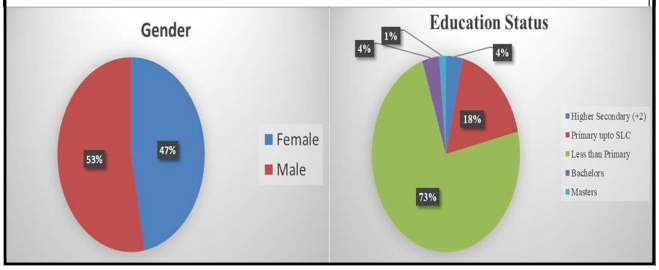
## RESULTS AND FINDINGS

POLICY REVIEW | SITE OBSERVATION | KII & FGD | STRUCTURED QUESTIONNAIRE

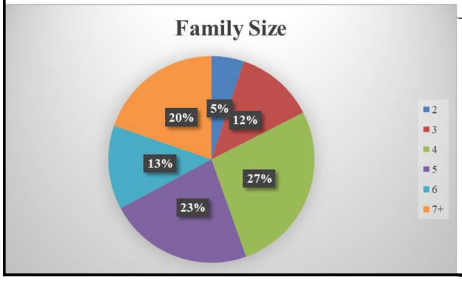
**Descriptive Statistics: Demographics**




## RESULTS AND FINDINGS

POLICY REVIEW | SITE OBSERVATION | KII & FGD | STRUCTURED QUESTIONNAIRE

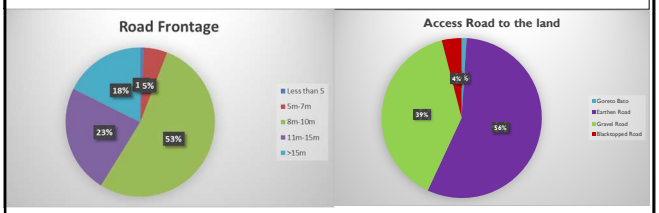
**Descriptive Statistics: Demographics**




## RESULTS AND FINDINGS

POLICY REVIEW | SITE OBSERVATION | KII & FGD | STRUCTURED QUESTIONNAIRE

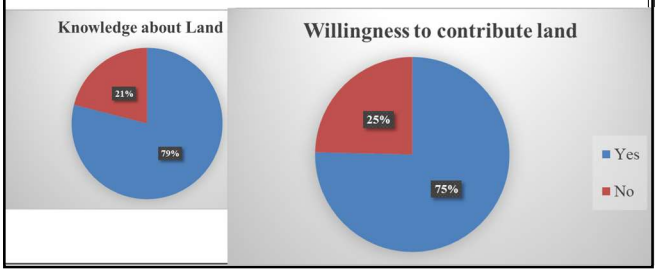
**Descriptive Statistics: Land Data**



## RESULTS AND FINDINGS

POLICY REVIEW | SITE OBSERVATION | KII & FGD | STRUCTURED QUESTIONNAIRE

**Descriptive Statistics: Perspective Data**




## RESULTS AND FINDINGS

**Comparative analysis:**

| Quantitative Data from questionnaire survey | | Qualitative data from KII and FGDs |
|---|---|---|
| **Land Ownership** | **Number** | Even the positive people are not willing to contribute the land due to lack of financial security. |
| Less than or equal to 12 dhur | 23 | |
| 12 dhur to 1 kattha | 10 | |
| 1 kattha to 2 katthas | 45 | |
| 2 katthas to 3 katthas | 17 | |
| 3 katthas to 6 katthas | 28 | |

## CONCLUSION

- Land Pooling is a suitable tool for land pooling in areas with proper land value and better community understanding
- There are multiple layered governing policies, with varying standards, for central and provincial levels.
- The land use policies and building codes also vary, creating poor integration.
- Two major problems faced in implementation of land pooling in rural areas are:
  - Poor community Acceptance
  - Poor Financial security

## CONCLUSION

### Poor community Acceptance

The various identified reasons for this are:

- Distrust towards the provincial government
- Lack of awareness among the local people
- Fear of loss of livelihood

### Poor Financial security

- The concerned authority have not identified reliable source of funding for the project
- The project's contribution ratio without the consideration of LPCC requirements is over 55%

## RECOMMENDATIONS

Considering all the problems and shortcomings in implementing land pooling for land development in rural areas, the following recommendations can be made:

- A better sensitization model
- A better participatory approach
- A better financial commitment
- A better feasibility study
- Exploration of alternative techniques

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