Chapter-3
Land Use and Town Planning
3.1 INTRODUCTION

Mankind has been using land and its resources for over centuries in the pursuit of better livelihoods. The strategy of their usage has become a serious concern (Cieslewicz, 2002) as over the period of time there has been a drift due to the development of cities as rural-urban suburbs, thus having, both, direct and indirect impact on the people residing in the vicinity and drawing upon in an avenue that amalgamates both confrontations and occasions in meeting the needs of life along with accommodation of the by-products of urbanization. While urbanization is an age old concept which comprehends an array of services such as increase in spatial demand, expansion of the service sector, employment, better housing, edification, incorporation of technology and innovation; and ready markets for agricultural, etc. Yet, the process of urbanization is one of the most deliberated topics of our generation as it is the most important dimension of economic, social and physical changes in both developed and developing nations.

Among all these traditional factors responsible for the growth of urbanism has the most important contributor for any economic activity i.e. land utilization for town planning and other purposes. Land, being both, natural immovable and non-renewable, is a distinct resource, which needs to be looked upon from the perspective of a tangible resource with supply and demand issues and also as a link in the form of land acquisition. Accordingly, land carries grave significance due to its attachment of that of a tangible and emotional value, both for its owners and for those whose livelihoods depend on it; thus, making it very important to consider the land utilization process of critical importance. Therefore, the land use pattern is not a national or local issue rather has become a global phenomenon. To address such a problem at the global level, an assessment of land use pattern and a resonating acquaintance of changes in land use have become imperative for legislators, planners, state and local officials.
The phrase “sustainable land use” is more comprehensive than “sustainable soil use”. The term "land" is used to describe a section of the earth’s surface, with all the physical, chemical and biological features that influence the use of the resource. It refers to soil, spatial variability of landscape, climate, hydrology, vegetation and fauna, and also includes improvements in land management, such as drainage schemes, terraces and other agrobiological and mechanical measures. The term “land use” encompasses not only land use for agricultural and forestry purposes, but also for settlements, industrial sites, roads and so on. Land use, in this sense, can be termed sustainable if, and only if, it achieves such a spatial distribution or configuration of the different uses as to guarantee biodiversity and preserve the eco-balance of the whole system.

Land use planning is the systematic assessment of land and water potential, alternatives for land use and economic and social conditions in order to select and adopt the best land use options. Its purpose is to select and put into practice those land uses that will best meet the needs of the people while safeguarding resources for the future. The driving force in planning should be the need for change, the need for improved management or the need for a quite different pattern of land use dictated by changing circumstances. In the process all kinds of land use are involved, namely, agriculture, forestry, wildlife conservation, urban and industrial expansions, tourism and amenities. Planning also provides guidance in case of conflict among the competing use by indicating which areas are most valuable for any particular land use. Land use planning can be viewed as an iterative and continuous process, whose aim is to make the best use of land resources by:

- assessing present and future needs and evaluating the land’s availability to meet them
- identifying and resolving conflicts among competing uses and needs
- devising alternative options and choosing those that best fit identified targets
- learning from experience

Thus, depending upon the availability of data/resources the course may have to transform keeping in consideration the task or activity pertaining to land use
undertaken. Moreover, it is the optimum and judicious utilization of land resources which should be the pivotal aim of any activity or project undertaken in the ambit of urban planning and growth.

3.2 OBJECTIVES OF LAND USE AND TOWN PLANNING

As goals and objectives are an integral process of planning, the former describes what can be the best procedure to use land at the beginning of each new product undertaken. The latter provides with an array of solutions to a conflicting situation. Another important aim of land use planning is the setting up of targets which lead to the creation and designing of practical measures to be incorporated in a given area with reference to a project. Thus, it is the targets and objectives which form the ground for the best use of land resources. Example: Among two land use patterns which are to provide the similar economic and social proceeds, it is the set of objectives between them which will determine their efficiency. Whilst, targets will while the targets will specify the process to be followed.

Thereafter, the facets of land use efficiency and precision based planning can be grouped under three main headings: efficiency, equity and acceptability and sustainability.

- **Efficiency refers to the economic viability of the land use plan:**

  The plan should yield more than it costs, so one goal of planning development is to make efficient and productive use of the land. In general terms, for any particular land use, certain areas are better suited than others. Efficiency is achieved by matching different land uses with the areas that will yield the greatest benefit at the least cost. However, it is not always clear which land use is the most profitable; this depends on the point of view. The point of view of individuals, for instance, focuses on the greatest return on capital and labour invested or on the greatest benefit from the area available. Government’s point of view is more complex: it may include improving the foreign exchange situation by producing for export or for import substitution.

- **Equity and acceptability represent the social features of land use planning:**

  The plan must be accepted by the local population; otherwise the proposed changes will not take place. Equity refers to the levelling of the living standards of the
residents. People living in the planning area are expected to gain from the land use plan, even if they do not own the land. Living standards may include levels of income, food security and housing. Planning to achieve these standards then involves the allocation of land for specific uses as well as the allocation of financial and other resources.

- **Sustainability:**

As stated before, refers to a development in land use planning that meets the needs of the present while conserving resources for future generations. This requires a combination of production and conservation, whereby, the production of the goods needed by the people now, combined with the conservation of the natural resources on which the production depends. So, for land use to be sustainable, it has to be planned for the community as a whole, because the conservation of soil, water and other land resources is often beyond the means of individual land users.

Other goals of the planning process could be:

- **Liveability and Amenity:** After the land use plan is implemented, the area should still be a suitable place to live for the inhabitants, as well as should include provisions for rendering life pleasant.

- **Flexibility:** The plan should be flexible and leave options for using the land in different ways if needed in the future;

- **Public involvement:** Every group or individual with an interest in the plan should be allowed to participate in the process, to keep their land use from disappearing through the plan, or to be offered a new land use, as part of the plan.

“To be sustainable land use planning, should develop into an interdisciplinary, holistic approach that gives attention to all functions of the land and actively involves all land users through a participatory process of negotiation platform at national or local levels. The aim of the process is to create the conditions to achieve an environmentally sound, socially desirable and economically appropriate form of land use.”

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“Moreover, the United Nations International Conference in Rio de Janeiro (1992) through its legislation i.e. Agenda 21, the deemed body laid down some essentials to monitor and manage the accessibility and availability of resources with sustainability as its pivotal goal. This international benchmark created several guidelines for the government structures to realize that no longer the fields of environment, society and economy could be dealt on isolated terms, rather, there the nations need to weave their policies around international treaties and policies to base their future endeavours considering environmental implications of socio-economic development. Thus, as a comprehensive blueprint for a global partnership, Agenda 21 strives to reconcile the twin requirements of a high quality environment and a healthy economy for all people of the world, while identifying key areas of responsibility as well as offering preliminary cost estimates for success.”

3.3 TYPES OF LAND USE PLANNING

The expansive mode of urbanization has resulted in a tremendous pressure on the land use patterns as there is manifold increase in the demand for land and its optimum utilization has come under serious threat. Alarming issues such as need for renewable energy patterns, budding carbon markets, food security challenges, and conversion of agricultural land for non-agricultural purposes, mining, biodiversity conservation, reforestation, food production, etc. are in standoff situation to each other. This is bringing about a drastic transformation in the land use patterns as it is coupled by the diversifying interests of various stakeholders for multiple demands. The immediate solution to this problem is the development and promotion of efficient land allocation strategies which will not promote sustainable land use opportunities but also provide equilibrium in competition and usage methodology.

Some innovative procedures which can be inculcated into our system have been discussed below:

➢ “Best practice: A procedure that has been shown by research and experience to produce optimal results and that is established or proposed as a standard suitable for widespread adoption.

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2 The Rio Declaration on Environment and Development (1992), United Nations Organization
- **Ecosystem restoration**: the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed.

- **Land use planning**: The systematic assessment of land and water potential, alternatives for land use and economic and social conditions in order to select and adopt the best land use options. Its purpose is to select and put into practice those land uses that will best meet the needs of the people while safeguarding resources for the future.
  
  - Ecological land use planning
  - Integrated land use planning
  - Participatory land use planning
  - Regional land use planning
  - Rural territorial land use planning
  - Spatial land use planning.

- **Multifunctional landscapes**: Landscapes which serve different functions and combine a variety of qualities (i.e., different material, mental, and social processes in nature and society occur simultaneously in any given landscape and interact accordingly); ecological, economic, cultural, historical, and aesthetic functions co-exist in a multifunctional landscape.

- **Peri-urban zone**: area between an urban settlement and its rural hinterland. Larger peri-urban zones can include towns and villages within an urban agglomeration. Such areas are often fast changing, with complex patterns of land use and landscape, fragmented between local or regional boundaries.

- **Policy**: A course or principle of action adopted or proposed by an organization or individual. Strategies provide a means to implement policies. Actions describe specific elements within a strategy. Sustainable land use primarily involves the use of components of biological diversity in a way, and at a rate, that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.
Sustainable land management: Adoption of land use systems that, through appropriate management practices, enable land users to maximize the economic and social benefits of land, while maintaining or enhancing the ecological support functions of its resources (soil, water, vegetation and animal resources). It combines technologies, policies, and activities aimed at integrating socio-economic principles with environmental concerns, so as to simultaneously maintain or enhance production, protect the potential of natural resources and prevent (or halt) soil, vegetation and water degradation, while being economically viable and socially acceptable.  

Although, there is a nexus of land use planning and the changes in the land development patterns; yet, the development initiatives undertaken form the connection between the past and future practices. Moreover, as these patterns influence the ecology and its various constituents, its implementation must be evaluated from both positive and negative implications with its sustainability as the prime motive.

Both the zoning practices and planning patterns are the drivers of change and measures which promote environmental resonance, namely, incorporation of land use strategies which promote tackling land degradation, protection of ecosystem through rehabilitation, resolution of conflicting land use practices and initiatives warranting territorial uniformity, must not only be promoted by adhered, too.

The following image describes the drivers and pressures created on the land use system and their corroboration in the need for planning, urbanization, and agricultural intensification created upon their interaction in different political and social environment.

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FIGURE 3.1: Drivers and pressures of land use change, their underpinning the need of planning and planning as a response:

Therefore the following observations can be summarized with respect to the land use patterns and their impact:

- For the protection of natural resources, especially, land, the process of planning must ensure the support of the local government through a set of clear guidelines and objectives; to foster an integrated planning of natural resources.

- Apart from the spatial analysis of the land lost to development through the connotations of urban agglomeration, it is essentially important to have a direct and indirect study of the urban augmentation factions.

- Based upon the topographic knowledge it includes a system a tracking and evaluating of the land worth.

- It should involve the implication of the spatial land use information/ data to assess the impact of migration and its associated expansion.

To make an analysis of the quality of life factors that are influenced by the planning of land use patterns.

The changing dynamics of the land use planning and its subsequent patterns are broadly based upon the following classification:

1. **Spatial Land Use Planning**: It refers to a methods and approaches, wherein, both the public and private stakeholders influence the distribution of people and activities in various scales and places. Example: Discrete professional disciplines involving urbanization.

2. **Integrated Land Use Planning**: It is a type of planning which seeks to strike a balance between the social, economic and cultural opportunities in a given area. Moreover, to maintain the integrity of the ecosystem the stakeholders come together to discuss the decision making process to enhance the sustainability of the vicinity. Example: Canada

3. **Participatory Land Use Planning**: It is a process, wherein, the localized community can have a dialogue for the management of land and its associated resources. This is undertaken by the creation of bye-laws, rules and development of future land use plans. Example: Africa
4. **Regional Land Use Planning:** A land use process which aims to plan for the activities i.e. housing, transportation, working places, etc. for a given region from a wider perspective of a single municipality. It acts as an important tool of decision-making for various stakeholders. Example: Finland

5. **Eco-System Based Land Use Planning:** A methodology in which expanded land use planning is developed to promote and support community forestry involvement in planning for broad-scale environmental and social issues. Example: United States of America

6. **Urban Land Use Planning:** It is a land use pattern in which a plan is created for compatible and harmonious arrangement of land use in urban areas with the aim of providing a type of platform which amalgamates functionally well-integrated land use schemes to fosters social and economic development. Example: India (Urban hubs)

7. **Territorial/ Ecological Land Use Planning:** A type of land utilization scheduling which applies a practical approach with the inclusion of environmental factors in land use planning. The pivotal aim of this approach is to combine the ecological capacity of a region to suit its socio-economic manifestations. Example: Jalopa region, Mexico

In consensus, sustainability is a valid trait to be integrated in the management of land use as it will aid in yield in filling gaps, amplify buoyancy disasters; thus, fostering human development in the context of well-being, health and security, for immemorial times. Thereafter, the world needs to initiate an interface to study the array of diverse urban trends and their impact on land utilization techniques. Furthermore, it is also necessary that a categorization of facets under scrutiny should be effectively dealt with by empowering the policy makers and planners to foster a community environment.

### 3.4 INTERNATIONAL BEST PRACTICES IN LAND USE PLANNING

Moreover, the good governance structure fosters accountable land use patterns with simultaneous management of policies and strategies. Amplification of land use
patterns has positive outcomes with its proportionate effect on urban services and their delivery. An overview of various land use models, adopted globally, which have are creating a benchmark of urban planning vide assuring urban planning are discussed, hereunder:

1. **European Spatial Development Perspective:** The framework considered by the European Union is an amalgamation of spatial land use policies to incorporate the changes adopted and influenced by planning systems (in action) through centralized and decentralized juncture. Also, these approaches have an amalgamation of strategies such as regional economic planning (France, Portugal and Germany), comprehensive integrated approaches (Nordic countries and Austria), land management oriented planning (United Kingdom, Ireland and Belgium) and urban planning focused approach (Mediterranean nations). Such variant methodologies have been able to provide effective horizontal multi-sectoral coordination between various national, state and local institutions, a deposit of planning processes being applied at variant platforms with legal connotations. Thus, fostering environmental and socio-economic sustainability with multi-stakeholder engagement.

2. **Land Administrative Law of the People’s Republic of China:** A national comprehensive land regulating, classifying and zoning policy fostering conservation and protection of natural resources aka land has been incorporated in China. The prime focus of the land use master planning is to underpin communal farmlands, land use efficiency, to develop an all-inclusive apparatus for the organization of different land use patterns, environmentally sustainable land use to strike a balance between various demands. The country follows a two tier planning system of implementation, wherein, the ministry of land and resources produces the land usage strategy/plans which are later implemented by the second administrative tier relating to sectoral plans; therefore, planning takes place through vertical integration.

3. **Land Conservation and Development Act (Oregon State) United States of America:** Through this Act it has been notified that all States will prepare an inclusive land use policy with unwavering 19 goals mentioned in it; wherein, these goals are an expression of national policies on land use patterns and
urban planning. Furthermore, a land conservation and development commission administer the process undertaken. There is a strong emphasis on the coordination and interconnectivity between the land planning, programmes undertaken and goals set up. The process fosters an effective vertical and horizontal integration through efficient citizen participation with lawful usage of land ensuring social and economic sustainability.

4. **Spatial Planning and Land Use Management Act 16 (2013) South Africa:** The pivotal goal of this Act is the development of a wide ranging framework which not only acts as a link between the national initiatives of spatial land use system but also incorporates the land use management system with the principles of planning (i.e. sustainability, equity, efficiency, integration and good governance). The amalgamation of such technicalities aid in the promotion consistency, participatory citizen and administration network, with the simultaneous cultivation of decentralized planning. Thus, through this legislation the nation ensures the creation of a financial link to create a sustainable, social and economic bridge between the means and the ends.

5. **Concept Plan 2011 (Singapore):** The Concept Plan for land use outlines the approaches of physical capacity to match the sustainability of resources with the simultaneous provision of high quality of life to its populace. Thus, undermining the growth and development prospect for the expectant cohort it weeds away certain unfruitful and negating land preferences beyond 2030; which include the inclusion of greenery into the living environment, enhanced transport connectivity, sustaining a vibrant economy with suitable employment opportunities. Most importantly, Singapore’s land scarcity has made planning imperative with the integration of Concept Plan with Master Plans; also making public consultation an important aspect of the policy making (a review is done in every 10 years in consensus with the Ministry of National Development); thereby, collaborating the major needs with the available land resources.

Thereafter, through an analysis of the above case studies in anticipation to the land use policies as adopted across the globe to match the growing needs of urbanization have the following implications:
1. To promote the development of land use options those reunite conservation and development objectives.

2. To develop a multi-sectoral synchronization amongst actors with an articulation in the land use policy.

3. To consider sustainable land management as a pivotal aspect of the land use process.

4. To ensure planning and management of land resources as a natural asset, thus, abstaining their exploitation.

5. To widen vertical and horizontal integration of government agencies with the local agencies to promote land as a natural asset.

6. To provide technical and practical guidance for local and state level planning with the optimum utilization of capacity building of the human capital.

7. In many nations, there is a centralized approach of the land use strategies through the incorporation regional and local structures involved in the process of planning.

8. To ascertain governmental control over various aspects of land use patterns, thus, conforming their sustainability in socio-economic connotations.

Furthermore, nearly two decades ago, a comprehensive action plan was undertaken globally, popularly known as Agenda 21, by the United Nations Organization and its constituents; to study the impact of human interactions on the environment. It was analyzed that through an integrated physical approach towards land use management a more practical, effective and efficient system of land use patterns can be developed. Moreover, the essence of such an inclusive advancement finds its best expression in coordination of the sectoral planning and land management activities concerned with various usages of land, both, as a resource and entity.

**3.5 THE INDIAN SCENARIO OF LAND UTILIZATION**

The above discussion signifies land as a limited yet indispensable resource to meet the social, economic and environmental needs of the society. The development of the Indian society associated with the growing industrialization and urbanization has created an unprecedented pressure on the land and its utilization patterns. However,
this unexpected and random growth has had a negating impact on land use with conflicting patterns adopted by the society, thus, threatening the over exploitation of resources, alarming pollution levels, unexpected climatic changes, acute disasters (both natural and artificial) and social concerns arising particularly due to the drift of agricultural land for non-agricultural purposes.

The land area of India is 328.73 million hectares with a population of about 1.2 billion (2011). The land use break-up of India (refer Table below), shows that during 2010-11, as compared to 1950-51, the net sown area in the country has increased from 41.77% to 46.28%, the forest area has increased from 14.24% to 22.89%, and the area under non-agriculture use, which includes industrial complexes, transport network, mining, heritage sites, water bodies, and urban and rural settlements, has increased from 3.29% to 8.67%. These increases of land use have lead to reduction of land use elsewhere. During the same period (1950-51 to 2010-11), the barren and uncultivable land, other uncultivated land, and fallow lands have drastically decreased by nearly half from 40.7% to 22.17%.

A detailed description of the above explanation, namely, the land use patterns in India from 1950 to 2011, is displayed in the table below:

\[\text{Table: Land Use Patterns in India (1950-51 to 2010-11)}\]

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### TABLE 3.1: BREAK-UP DETAILS OF LAND USE IN INDIA
(area in million hectares)\(^6\)

<table>
<thead>
<tr>
<th></th>
<th>1950-51</th>
<th>1990-91</th>
<th>2000-01</th>
<th>2009-10</th>
<th>2010-11</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Area</strong></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Forest</td>
<td>40.48</td>
<td>67.81</td>
<td>69.84</td>
<td>69.99</td>
<td>70.01</td>
</tr>
<tr>
<td>Area under non-agricultural uses</td>
<td>9.36</td>
<td>21.09</td>
<td>23.75</td>
<td>26.28</td>
<td>26.51</td>
</tr>
<tr>
<td>Barren and uncultivable land</td>
<td>38.16</td>
<td>19.39</td>
<td>17.48</td>
<td>17.05</td>
<td>17.05</td>
</tr>
<tr>
<td>Other uncultivated land excluding fallow land</td>
<td>49.45</td>
<td>30.22</td>
<td>27.74</td>
<td>26.50</td>
<td>26.17</td>
</tr>
<tr>
<td>Fallow Lands</td>
<td>28.12</td>
<td>23.37</td>
<td>25.04</td>
<td>26.84</td>
<td>24.59</td>
</tr>
<tr>
<td>Net Area Sown</td>
<td>118.75</td>
<td>143.0</td>
<td>141.34</td>
<td>139.18</td>
<td>141.58</td>
</tr>
<tr>
<td>Total reporting area for land utilisation statistics</td>
<td>284.32</td>
<td>34.86</td>
<td>305.19</td>
<td>305.83</td>
<td>305.90</td>
</tr>
<tr>
<td>Total geographical area</td>
<td>328.73</td>
<td>328.73</td>
<td>328.73</td>
<td>328.73</td>
<td>328.73</td>
</tr>
</tbody>
</table>

Thus, with the extensive expansion of urbanization there is a drastic pressure on the use of land, both as a source of entity and as a resource; thus, making the finite land a scarce reserve. The land use requirement comes from various sectors with major existing usage upon the agricultural activities (60% of India’s population depends on agro economy), rural-urban drift, industrial sector, mining, transportation and environmentally frail ecosystems (forest covers). Another aspect of this pressure on land is evident through the ambitious plans as undertaken by the government to boast the economic growth. Moreover, this planning must ensure a quality life for its

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\(^6\) Pocket Book on Agricultural Statistics 2013, Directorate of Economics & Statistics, Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India
citizens, poverty reduction and an environmentally sustainable society. For example, the 12th Five Year Plan will boast an economic growth from 9 to 9.5% during the Plan period (2012-2017); the government is aiming to create 220 million jobs till 2025, thereby, increasing the share of the industrial sector in the Gross Domestic Product from 16 to 25%; the government intends to create a major industrial corridor in India which will amalgamate both foreign and domestic investors, thus, transforming the Cities drastically.

All the above developmental changes will surely ensure growth and prosperity but are we planned for such an expansion vide the physical resources. There is an increasing pressure on the land utilization strategies which will be further mounting with severe challenges on the consumption of land.

3.6 CHALLENGES IN LAND USE MANAGEMENT

Thereafter, there is a stern requirement for solutions which not only ensure optimum utilization of resources with the simultaneous usage of scientific and technical application of planning principles. Some of the core issues in the land utilization/planning in India over the years have been discussed, hereunder:

1. **Unregulated Land Use Shifts:** “The stretch of the area is limited i.e. s 3.287 million sq. km. (328.73 million Ha) with west to east extent of approx. 3,000 km and north to south extent of approx. 3,200 km.”

2. **Reducing Per Capita Land Resource:** Due to the populace explosion in India and with the population making a contribution of 17.9 percent of the total world populace by 2030, land requirements for the country will further narrow down.

3. **Demands of the Rural and Agricultural Sector:** Though the GDP contribution of the agricultural sector accounts for only 14 percent yet it is the main livelihood source of the rural populace and provides the base for the food resources of the country. Currently India produces 245 million tons of food

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7 National Land Utilization Policy : Framework for Land Use Planning and Management (2013), Department of Land Resources, Ministry of Rural Development, Government of India
grains which are expected to rise to 307 million tons by 2020; thus, the stark question is that will the land be able to bear such pressures.

4. **Protection of the Lands Under Natural Resources and Ecosystem Services:** India as a country is blessed with a rich heritage of natural and physical resources, however, with the booming urbanization and consumption of possessions (the number of urban agglomerations having a population of one million has rocketed from being 5 in 1951 to 53 in 2011) has threatened the very existence of them.

5. **Meeting Urban Demands:** As per the projections of the United Nations 55 percent of India’s population will be urban by 2050, thereafter, keeping the limited availability of physical resources it is an alarming situation as to how will the expansive populace be accommodated.

6. **Booming Industrial Sector:** The Twelfth Five Year Plan (2012-2017) proposes that the country needs to reach at least an economic growth of 8 percent, thus, ushering in industrial development as a pivotal tool of growth and development. However, industrial development is accompanied by several advancements such as housing areas, transportation, trade, commercial hubs, solid waste management, etc. which require a considerable amount of land.

7. **Mining Sector Demands:** The rich assets of India provide a growing platform for the mining industry which further has a network of contribution in the economic development, jobs creation, industrial growth, etc. However, mining industry has a negating impact upon the ecological balance of land.

8. **Transport sector:** The growing parameters of urbanization has led to the massive growth of connectivity supported by a variety of transportation tools, wherein, these require proper planning and management to the dependency quotient of the populace on them.

9. **Protection of Heritage:** A nation with several architectural and historical landscapes has succumbed to the apathy of urbanization have left a scathing impact on the national heritage.
10. **Protecting Social Interests:** As the diversity of India has significant socio-economic manifestations, thereby, there lies an urge to protect the interest of the marginalized with respect to land acquisition or developmental activities which give rise to daunting land use issues.

Thereafter, there is a stern requirement for solutions which not only ensure optimum utilization of resources with the simultaneous usage of scientific and technical application of planning principles.

All the above changes, both retrogressive and progressive, will surely ensure growth and prosperity but are we planned for such expansions vide the physical resources. There is an increasing pressure on the land utilization strategies which will be further mounting with severe challenges on the consumption of land. In consensus, there is a stern requirement for solutions which not only ensure optimum utilization of resources with the simultaneous usage of scientific and technical application of planning principles in the land utilization strategies.

India, as the seventh largest nation, globally, has 17 percent of the total world’s population and 2.4 percent of the world’s geographical area and with the progressive goals undertaken to match the global phenomenon of development; it becomes imperative for the government to take stringent measures to ensure protection and judicious utilization of land as a finite source.

The nation builders during the framing of the Constitution of India, considering the supremacy of the latter have incorporated the following provisions in the Constitution:

- “According to Entry No. 18 of the Seventh Schedule (State List), land including assessment and collection of revenue, maintenance of land records, land management and alienation of revenues, etc falls under the purview of the State subject.

- As per Article 39 of the Constitution……

- The ownership and control of the material resources of the Country should be distributed as best to serve for the common good.
• The operation of the economic system should not result in the concentration of wealth or a means to production of common detriment

➢ As per Article 243ZD (1) of the Constitution, there shall be the constitution at every State in the district level a District Planning Committee to consolidate the plans of the Panchayats and the Municipalities.”

➢ Also, certain legislations enacted in this avenue are

• During the 1970s all the States collaborated to form the State Land Use Boards, to coordinate policy directions in the field of land resource utilization.

• The National Commission on Agriculture (1976) emphasized upon the scientific land use planning for achieving food security, self-reliance and enhanced livelihood.

• In the 1980s the Government of India launched a centrally sponsored programme aka Computerization of Land Records (CLR) and Strengthening of Revenue Administration and Updating of Land Records (SRA & ULR) to improve the squalid state of land records.

• Under the Environmental Protection Act (1986) certain areas were declared as eco-sensitive and eco-friendly zones; thus, making it imperative for the State governments to formulate their respective Master Plans accordingly.

• The National Land Use Policy Guideline and Action Point (1988) is seven principle document which manifested certain imperatives aimed at fostering optimum land utilization strategy.

• The Urban Development Plan Formulation and Implementation (1996) emphasized an integrated approach for urban development planning systems.

• The National Policy for Farmers (2007) has recommended the revival of existing Land Use Boards and provision of quality and proactive advice to farmers on land use strategies.

• The Committee on State Agrarian Relations and Unfinished Task in Land Reforms (2009) has also emphasized the need for land use planning in India.
• **The National Manufacturing Policy (2011)** encourages the creation of an integrated industrial township, i.e. *National Investment and Manufacturing Zones (NIMS)* and underlines the preparation of environment friendly development plans.

• **The National Land Use Policy (2013):** A legislation which ensures the optimum usage of the limited land resources whilst achieving sustainable development. Also, it aims to secure the socio-economic and environmental manifestations, wherein, the States are working to formulate respective land utilization policies undermining specific needs.

• **Real Estate and Regulation Act (2016):** Through this act the Parliament of India has laid the foundational stone of authenticating the commercial and residential constructions undertaken by the real estate developers within a stipulated time period. Moreover, a deemed authority was set up for adjudicating the dispute resolution mechanism.

“Furthermore, land and agricultural administration are two different entities in both the central and state governments. While this helps to monitor non-agricultural land use separately from agriculture lack of integration creates uneasy administrative regimes. There are a number of departments that look into various aspects of land policy and virtually independently. These include land revenue, survey settlement, land administration, land data, and land legislation. The Department of Land Resources in the Union Ministry of Rural Development addresses the issues pertaining to land administration, particularly degraded lands, and has a range of programs that set the national framework. These programs are passed on to the state governments as guidelines but more frequently as the final design. At the state level there are the Land Development Boards.”

In a nutshell, although these legislations have managed to provide certain areas of development in the ambit of land utilization approaches, however, conflicting and competing land uses strategies has led to reasons of divergence between the population and the authorities.

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3.7 LAND USE PLANNING IN PUNJAB

In India, as a State, Punjab is a highly productive area with extensive capacity of growth in terms of a well-developed infrastructure, highly prolific land and high human capital index with assiduous, meticulous and capitalist skills. Accounting for nearly 1.53 percent of India’s geographical land and 2.37 percent of the country’s populace the State exemplifies a ground for fast growing economy with strong agricultural base despite certain socio-economic odds. This has resulted in a sturdy base of per capita income of the State with development being an outcome of physical, political, economic, demographic and geographic factors; moreover, being a border State, both external and internal factors have contributed extensively. “Punjab is urbanizing rapidly and its future seems to be urban. With urbanization standing at 33.95%, Punjab is ranked fifth major urbanized state of India after Tamil Nadu (43.86%), Maharashtra (42.40%), Gujarat (37.35%) and Karnataka (33.98%) and most urbanized states in the northwest region of the country. The percentage of urban population in Punjab has been on the rise continuously.”

It has been observed that there has been a spatial pattern of urban growth in Punjab with the concentration of urban populace being high in comparison to the rural areas, thus, by 2011 it was analyzed that 40 percent population of the State of Punjab inhabited the urban areas with two out of every five Punjabis being an urban resident. This has also led to a polarization of the Class I cities of Punjab, namely, Amritsar, Ludhiana, Jalandhar, Patiala, etc.; making their share of urban contribution the highest. This has further resulted in the concentration of resources in the Class I cities, wherein, both due to migration and urbanization, land use planning and strategizing its optimum usage has become a daunting task.

Punjab has an excellent record of enacting various Acts and Legislations as mandated by the Government of India for implementing certain reforms at the state level. The Government of Punjab was amongst the first states in the country to constitute the State Finance Commission as required under Article 243-1 of the Constitution of India as per the 73rd and 74th Constitutional Amendments in 1992. The State Finance Commission looks into matters relating to state finances including the transfer of funds from the state government to the Panchayati Raj Institutions (PRIs) and Urban

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Local Bodies (ULBs) and ways to generate more resources for these institutions. The GOP declared industrial policies in 1992, 1996, 2003 and 2009 to facilitate industrialization in the State and to attract not only domestic private capital but also foreign capital in tune with the national policies. The focus of the policies has been on hassle free investments in Punjab with various incentives to certain categories of investors like the Information Technology (IT) and IT enabled services (ITes), agro-industrial development, uninterrupted power supply and location of industries in the border areas, etc. The Punjab Information Technology Policy, 2001 was specifically designed to meet the growth requirements of the IT sector in the State. There is a separate Tourism Policy, 2003 meant to tap the tourism potential in Punjab. The Punjab State Special Economic Zones (SEZ) Act, 2009 is the sixth SEZ policy at the state level in India. There also exists a Punjab Industrial Facilitation Act, 2005 to further simplify the procedures related to industrialization in the State.\textsuperscript{10}

Therefore, the area undertaken in this study is the city of Ludhiana in the state of Punjab; wherein, the State is undoubtedly a flourishing ground for urban growth and development both in socio-economic connotations face the following defiant in land use planning:

\begin{itemize}
  \item \textbf{Limited Land Availability}: The city is spread over an area of 159.37sq km and houses 17 lac populace.
  \item \textbf{Industrial Hub}: Out of 28\% of the industrial growth of Punjab it accounts for 24\% contribution.
  \item \textbf{Urbanization}: The city with highest rate of urbanization in the state.
  \item \textbf{Agricultural Land}: The city has nearly 85.15\% agricultural land.
  \item \textbf{Heritage City}: One of the oldest cities formed in 1451-526 AD with nearly 917 villages under it, presently.
\end{itemize}

The daunting task of land use planning, record maintenance, town and country planning and adopting sustainable strategies for equitable land use has been entrusted to an organization structure known as “Punjab Urban Development Authority (PUDA)” and since its inception in 1965 it has been involved in prudent land use planning in the state with the following objectives undertaken:

- To carry out integrated planning and physical development of affirmed urban areas.
- To formulate the submission of development and capital investment plans.
- To formulate the implementation of land use policy.
- To develop environmental standards and schemes for movement of urban areas.
- To provide technical planning services.
- To prepare and implement regional plans master plans, new township plans and town improvement schemes.
- To promote research and development of new techniques in city planning, urban development and housing construction.
- To promote and secure better planning and development standards in the State.
- To create affordable housing with the simultaneous use of environment friendly and cost effective technologies.
- To shape the urban structures create self-sustaining self-contained residential areas.
- To select projects whilst focusing urban planning and development, thus, creating state of the art structures.
- To ensure optimum utilization of vacant government land areas, wherein, additional resources are generated to foster redevelopment and regeneration of the infrastructure.
- To create a culture of conservation to foster holistic development of the State.
Furthermore, the growing sphere of the parent organization i.e. PUDA was subdivided into six sub-units, namely,

- Amritsar Development Authority (ADA)
- Bathinda Development Authority (BDA)
- Greater Ludhiana Area Development Authority (GLADA)
- Greater Mohali Area Development Authority (GMADA)
- Jalandhar Development Authority (JDA)
- Patiala Development Authority (PDA)

Thereafter, the deemed organization with the abovementioned objectives works for the achievement of a cogent, included, comprehensive and methodical development of land use in Punjab by improving the planning, management and delivery competence of the urban centers to match the social, economic, residential, commercial and industrial needs of the dynamic populace and available land assets in Punjab.
As the scope of the study undertaken revolves primarily around the city Ludhiana and to supervision of the task of town planning and land use planning has been assigned to an organization known as “Greater Ludhiana Area Development Authority (GLADA)” which was created in 2006 to ensure proper development and relocation of the city, Ludhiana; also to work upon the conferred powers by Section 29 (1) of the Punjab Regional and Town Planning & Development Act, 1995. The organization has the following administrative structure:

GLADA (Organizational Structure)

![Organizational Structure of GLADA](image)

3.8 REASONS FOR SHIFT IN LAND USE PATTERNS

1. **Globalizing economy**: Despite its poor housing conditions but due to a wide array of industries brimming from all fields, the city is considered to be real estate magnet. Thus, there is a transformation from industry to consumer oriented services which has led to the absorption of land. This is accompanied by significant changes viz. low high rise density prototype, multiplication of spontaneous inhabited spaces and crowded road and rail network does not allow for any change.
2. **New Residential Area:** Nearly 143 new projects have been initiated out of which 89 are under private ownership and rest through public sector involvement.

3. **New spatial arrangements:** Although the city of Ludhiana has a limited area of 1271.22 square km. yet it has widened beyond the confines of the local administration. Also, with coverage of 301 villages and 5 urban centres under its *Local Planning Area (LPA)*. This is influenced by activities such as corridor development, wherein, new residential areas are build along the Highways, establishment of new links due to new urban activities, shift from agricultural land to land for non-agricultural practices; and regional development, wherein, planning policies are focused on projects and not them making any benefits,

4. **Planning regions and not Cities:** In a city with such an enormous there is an urgent requirement of lungs to the city in the form of open spaces/ parks; with only the regional importance of a policy and not its impact upon the environment of the City.

**3.9 DATA ANALYSIS**

In reference to the study conducted in the area selected, the Officials from the organization entrusted with the responsibility of distribution of land use in the city, namely, GLADA, PUDA and the Office of Town Planner (Ludhiana) were interviewed and after the processing of data, the test applied was the Mann-Whitney Test (as discussed in detail in Chapter I). In the data collected for the aforesaid study, aka to assess the status of land usage patterns, along with the role of the various operating agencies through a structured questionnaire and formal/informal interview from a sample size of 300 i.e. 150 officials and 150 citizens, using the RensisLikert 5-Point Scale, the data was analyzed using the Mann-Whitney Test.

**3.10 MATRIX SUMMING UP THE TESTING OF HYPOTHESIS**

**HYPOTHESIS:**

Due to poor implementation of policies by the operating agencies there is an increase in the diversion of agricultural land for non-agricultural purposes
### 3.2 TABULAR REPRESENTATION OF THE DATA ANALYSIS

#### Ranks

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
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<td>Official</td>
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<td>101.25</td>
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<td></td>
<td>Citizen</td>
<td>150</td>
<td>199.75</td>
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<td>Total</td>
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<tr>
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<td></td>
<td>Citizen</td>
<td>150</td>
<td>137.75</td>
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<tr>
<td></td>
<td>Total</td>
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<td></td>
</tr>
<tr>
<td>q8</td>
<td>Official</td>
<td>150</td>
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<td>Citizen</td>
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</tr>
<tr>
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<td></td>
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<tr>
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<tr>
<td></td>
<td>Total</td>
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<td></td>
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</tbody>
</table>

#### Test Statistics

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<tr>
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<th>q26</th>
<th>q8</th>
<th>q10</th>
<th>q6</th>
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</thead>
<tbody>
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<td>9338.000</td>
<td>1000.000</td>
<td>4424.000</td>
<td>1650.000</td>
</tr>
<tr>
<td>Asymmetric p. Sig. (2-tailed)</td>
<td>.0001</td>
<td>.002</td>
<td>.0001</td>
<td>.0001</td>
<td>.0001</td>
</tr>
</tbody>
</table>

a. Grouping Variable: Group
**FINDINGS:**

The test so conducted had two independent variables i.e. the Officials and the Citizens, whereby, the results upon analysis depicted the following observations:

Through the test the mean rank of five (5) questions was carried out with the following observations:

- The mean rank of the responses is ordinal.
- As the p value (significance) is less than 0.05 then the data analyzed is significant.
- The two groups considered for analyses have different opinion for the given question.
- As the p –value is <0.05, the difference of both the groups is not same, hence, their distribution patterns are different.
- In Questions 31, 8, 10 and 6 the mean values of the citizens is greater than that of the officials, thereby, signifying that the citizens are more dissatisfied than the officials.
- In Question 26 the mean value of the officials group is greater than that of the citizen group, signifying that the officials are more dissatisfied than the citizens.

A bar chart or bar graph is a chart or graph that presents categorical data with rectangular bars with heights or lengths proportional to the values that they represent. A grouped bar chart, also known as clustered bar graph, multi-set bar chart, or grouped column chart, is a type of bar graph that is used to represent and compare different categories of two or more groups. As the categories are grouped and arranged side-by-side, the bar clusters make easy to interpret the differences inside a group, and even between the same categories across groups.
Through a bar chart the percentage value of their responses of the two groups i.e. the Officials and the Citizens have been calculated, which have the following observations:

A.

- In the first bar chart, nearly 90 percent officials agree that there are mechanisms of communication between the state and the local authorities in reference to the objectives of the land use policies.
- However, 60 percent and less has been the response of the citizens about the same.

B.

- In the second bar chart, nearly 80 percent officials agree that there are mechanisms of communication between the state and the local authorities in reference to the objectives of the land use policies.
- However, 40 percent and less has been the response of the citizens about the same.

**FIGURE 3.4**

*In the first bar chart, nearly 90 percent officials agree that there are mechanisms of communication between the state and the local authorities in reference to the objectives of the land use policies.

**FIGURE 3.5**

*In the second bar chart, nearly 80 percent officials agree that there are mechanisms of communication between the state and the local authorities in reference to the objectives of the land use policies.*
• In the second bar chart, nearly 78 percent of the citizens agree that there is an impact of unplanned management on the land use methodology/approach in the city.

• Also, 65 percent officials also respond to the same.

C.

FIGURE 3.6

○ In the third bar chart, nearly 70 percent of the officials agree to the fact that there is conformity in the local administration about the land distribution strategies adopted.

○ However, the citizens have a non-agreeable response to the same below 40 percent representation.

D.

FIGURE 3.7
In the fourth bar chart, have responded to the presence of a policy framework for the optimum utilization of land resources with a 55 percent and 38 percent response.

The citizens agree with a 35 percent response and do not agree to the same with a 45 percent response.

E.

![Bar Chart](image)

**FIGURE 3.8**

In the last bar chart the officials have agreed to the presence of an authority which manages the land distribution, allocation and utilization in the city with an 80 percent response.

The citizens have a mixed approach towards the administering approach of the authority with 77 percent (agree) and 25 percent (do not agree) and 25 percent (unaware)

**STATUS OF THE HYPOTHESIS: Accepted**

### 3.11 CONCLUDING OBSERVATION

The following concluding observations have been inferred on the basis of testing and analysis of data to validate the hypothesis.

**ANALYSIS**

Land though being a limited source, yet is an indispensable resource for meeting the social, economic and environmental demands and targets. The growing development
is associated with the expansive population with its roots embedded in the dynamics of industrialization; thus, fostering urbanization and growth. This has an adverse effect on the natural resources of a given area, especially, land as an entity, which is limited in its usage. Thus, due to an unprecedented, uncontrolled, unplanned and haphazard use of land resources is posing serious threats to its sustainability, thereby, making it an alarming issue. These aspects magnify in developing countries like India, which houses 17 percent of the world’s urban population in only 2.6 percent of the world’s geographical area.

The rapid influx of population has always been proportionate to the scenario of urban growth in a given milieu and Punjab as a state is no alien to the concept of urban poverty. Urban poverty, a global phenomenon is clearly evident in the city of Ludhiana. The Master Plan of the city recognizes it as a hub of ever encompassing rapid industrial growth which is the greatest factor of the shift of agricultural land to non-agricultural practices. The city size is increasing very fast as there is 307 per cent increase in the total land use of the city from 2008 to 2017 (City Master Plan, 2021). Thus, the threat over its large agricultural area has increased, making the role and responsibility of the Local Planning Authority even more prominent. There has been an enhanced growth in the city’s industrial base from 253.6 to 659.4 percent in the last decade; thus, multiplying the demand for land for both industrial and residential purposes. The area under commercial is also proposed to increase 522.1 per cent while area under traffic and transportation is proposed to increase only 139.7 per cent. There is proportional increase for area under utilities, public and semi-public and recreational activities.

However, over population growth has resulted in a stagnant industrial growth over the years as this unprecedented growth has attracted a large scale migratory population which has found shelters in unplanned and haphazard colonies, popularly known as slums. The Master Plan of Ludhiana has identified the urban population to be 1398467 comprising 268700 households. The slum population was 314904 comprising 61822 households, which is 22.52 percent of the total urban population. Presently there are nearly 209 slums inhabitated by the City.

With nearly 143 housing projects approved by the state authorities as developed and planned residential accommodation, 84 registered organizations performing in the real
estate sector, with 59 of them part of the national or global network; the condition of land use further worsens. A majority of these projects have flourished in the last decade, thus, intensifying the Real Entrepreneurs base in the city.

Although, there has been a repeal of the Urban Land Ceiling Act but this has not hindered the investment pace of private sector in land as an economic spread. The Master Plan of Ludhiana is the only policy document which provides an illustration of the proposed land use patterns in the city. Moreover, the plan does not suggest any strategy to acquire land for agricultural purposes, demarcate the industrial periphery, and limit the circumference of private sector and incorporation of the Public Private Partnership Model. Thus, in the ambit of the above mentioned scenario, the land as a resource in Ludhiana undergoing a negating condition which is expected to deteriorate further with the pace of uncontrolled urbanization knocking at the doorstep of the city.