

UPR204

INTRODUCTION TO LAND USE PLANNING



Course video is available on our app

COURSE CODE : URP 204

COURSE TITLE : Introduction to Land Use Planning

COURSE UNIT : 2 Units

Series 1: Concepts, Principles, and Importance of Land Use Planning

Series 2: Determinants and Dynamics of Land Use

Series 3: Land Use Types and Selection Criteria

Series 4: Methods, Models, and Tools for Land Use Planning

Series 5: Problems of Land Use Planning and Integrated Spatial Solutions in Nigeria

Here is the proposed outline for Series 1:

Part 1 Definitions and concepts of land and land use

- Definition of land
- Definition of land use
- Key concepts in land use planning

Part 2 Principles of land use planning

- Guiding principles of land use planning
- Relationship between principles and planning outcomes
- Application of principles in practice

Part 3 Importance of land use planning

- Economic importance
- Social importance
- Environmental importance

Part 4 Attributes of land use planning

- Characteristics of effective land use planning
- Integration of attributes into planning processes
- Examples of attributes in practice

Introduction

Land is one of the most valuable resources available to humanity, yet it is also one of the most limited. How land is used determines the quality of life in our cities, towns, and rural areas. Without proper planning, land can be mismanaged, leading to overcrowding, environmental



degradation, and inefficient development. This Series introduces you to the foundations of land use planning, helping you appreciate why it is essential for sustainable growth and balanced development.

The aim of this Series is to equip you with a clear understanding of the concepts, principles, and importance of land use planning, as well as the attributes that make planning effective. By the end of this Series, you will be able to define key terms, explain guiding principles, and evaluate the significance of land use planning in economic, social, and environmental contexts.

We shall commence this Series by exploring the definitions and concepts of land and land use, laying the groundwork for deeper study. Next, we will examine the principles of land use planning and how they shape planning outcomes. Following that, we will consider the importance of land use planning, looking at its economic, social, and environmental dimensions. Finally, we will wrap up by discussing the attributes of effective land use planning and how these attributes can be integrated into practice. This progression will provide you with a solid foundation for understanding the broader course.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **SLO 1.1** define land and land use in the context of planning,
- **SLO 1.2** explain key concepts that underpin land use planning,
- **SLO 1.3** describe the guiding principles of land use planning,
- **SLO 1.4** analyse how planning principles influence outcomes in practice,
- **SLO 1.5** evaluate the economic importance of land use planning,
- **SLO 1.6** assess the social importance of land use planning,
- **SLO 1.7** examine the environmental importance of land use planning, and
- **SLO 1.8** identify attributes of effective land use planning and illustrate how they can be integrated into planning processes.

1.1 Definitions and Concepts of Land and Land Use

1.1.1 Definition of land

Land refers to the solid surface of the earth, including soil, rocks, and all natural resources found on it. In planning, land is not only considered as a physical space but also as a resource that supports human activities such as housing, agriculture, industry, and recreation. Land is finite, meaning it cannot be expanded, which makes its management critical for sustainable development.

Fill in the blank: Land is a finite resource that cannot be _____, making its management critical for sustainable development.





Diagram showing land as a physical resource with components such as soil, vegetation, and human activities.

Figure 1.1: Definition of land as a resource

1.1.2 Definition of land use

Land use refers to the way land is utilised by humans for different purposes such as residential, commercial, agricultural, industrial, and recreational activities. It reflects the interaction between human needs and the natural environment. Land use patterns vary across regions depending on population, culture, economy, and environmental conditions.



Fill in the blank: Land use refers to the way land is _____ by humans for different purposes.

Land Use Type	Primary Purpose	Common Examples
Residential	<i>Providing living space for individuals and families.</i>	<i>Detached houses, high-rise apartments, student hostels, and housing estates.</i>
Commercial	<i>Facilitating the exchange of goods and services (profit-making).</i>	<i>Shopping malls, neighborhood markets, banks, hotels, and office complexes.</i>
Agricultural	<i>Production of food, fiber, and raw materials from the land.</i>	<i>Crop farms, poultry houses, rubber plantations, and orchards.</i>
Industrial	<i>Manufacturing, processing, and large-scale storage of goods.</i>	<i>Cement factories, oil refineries, beverage bottling plants, and warehouses.</i>
Recreational	<i>Providing space for leisure, health, and social interaction.</i>	<i>Public parks, football stadiums, botanical gardens, and golf courses.</i>
Institutional	<i>Providing essential public and community services.</i>	<i>Schools, hospitals, places of worship, and government secretariats.</i>

Table 1.1: Examples of land use types

1.1.3 Key concepts in land use planning

Land use planning is the process of organising, managing, and regulating how land is used to meet social, economic, and environmental needs. It involves balancing competing demands,



such as housing versus agriculture, or industry versus conservation. Key concepts include **sustainability** (ensuring land use meets present needs without compromising future generations), **efficiency** (maximising benefits from limited land resources), and **equity** (ensuring fair access to land and its benefits).

Fill in the blank: One key concept in land use planning is _____, which ensures land use meets present needs without harming future generations.

Concept	Definition	Planning Goal
Sustainability	<i>Meeting the needs of the present without compromising the ability of future generations to meet their own needs.</i>	<i>To preserve natural resources and prevent long-term ecological collapse.</i>
Efficiency	<i>Maximizing the benefits derived from limited land resources through optimal spatial organization.</i>	<i>To reduce infrastructure costs, minimize travel time, and prevent urban sprawl.</i>
Equity	<i>Ensuring fair and just access to land, services, and opportunities for all segments of society.</i>	<i>To prevent segregation and ensure that the poor have the same access to parks and jobs as the wealthy.</i>

Box 1.1: Key concepts in land use planning

- **Sustainability:** Meeting present needs without compromising the future
 - **Efficiency:** Maximising benefits from limited land resources
 - **Equity:** Ensuring fair access to land and its benefits

Pilot questions 1.1

1. Define land in the context of planning.
2. What does land use refer to?
3. State one example of residential land use.
4. Mention one key concept in land use planning.
5. Why is land considered a finite resource?



1.2 Principles of Land Use Planning

1.2.1 Guiding principles of land use planning

Principles of land use planning are fundamental rules or guidelines that shape how land is organised and managed to meet human and environmental needs. These principles ensure that planning decisions are logical, fair, and sustainable. Common guiding principles include **sustainability** (ensuring land use supports present and future generations), **efficiency** (making the best use of limited land resources), **equity** (providing fair access to land and its benefits), and **integration** (coordinating land use with social, economic, and environmental goals).

Fill in the blank: One guiding principle of land use planning is _____, which ensures fair access to land and its benefits.

<i>Principle</i>	<i>Core Objective</i>	<i>Key Planning Question</i>
<i>Sustainability</i>	<i>Protecting the ecological balance and natural resources for the long term.</i>	<i>Does this project deplete water or destroy vital ecosystems?</i>
<i>Efficiency</i>	<i>Using land and infrastructure in a way that minimizes waste and costs.</i>	<i>Is this development compact enough to be served by public transit?</i>
<i>Equity</i>	<i>Promoting social justice and equal access to the city's opportunities.</i>	<i>Does this plan provide housing and services for all income levels?</i>
<i>Integration</i>	<i>Aligning physical plans with broader social, economic, and transport policies.</i>	<i>Is the new housing estate connected to where the jobs and schools are?</i>

Box 1.2: Guiding principles of land use planning



- *Sustainability: Meeting present needs without compromising the future*
 - *Efficiency: Maximising benefits from limited land resources*
 - *Equity: Ensuring fair access to land and its benefits*
- *Integration: Coordinating land use with wider social, economic, and environmental goals*

1.2.2 Relationship between principles and planning outcomes

The principles of land use planning directly influence the **outcomes** of planning decisions. For example, applying sustainability ensures that development projects protect natural resources, while efficiency leads to reduced waste and better use of space. Equity guarantees that all social groups benefit from land use, and integration ensures that land use aligns with broader development strategies. When principles are ignored, outcomes may include environmental degradation, social inequality, or inefficient urban growth.

Fill in the blank: Ignoring sustainability in land use planning can lead to _____ degradation.



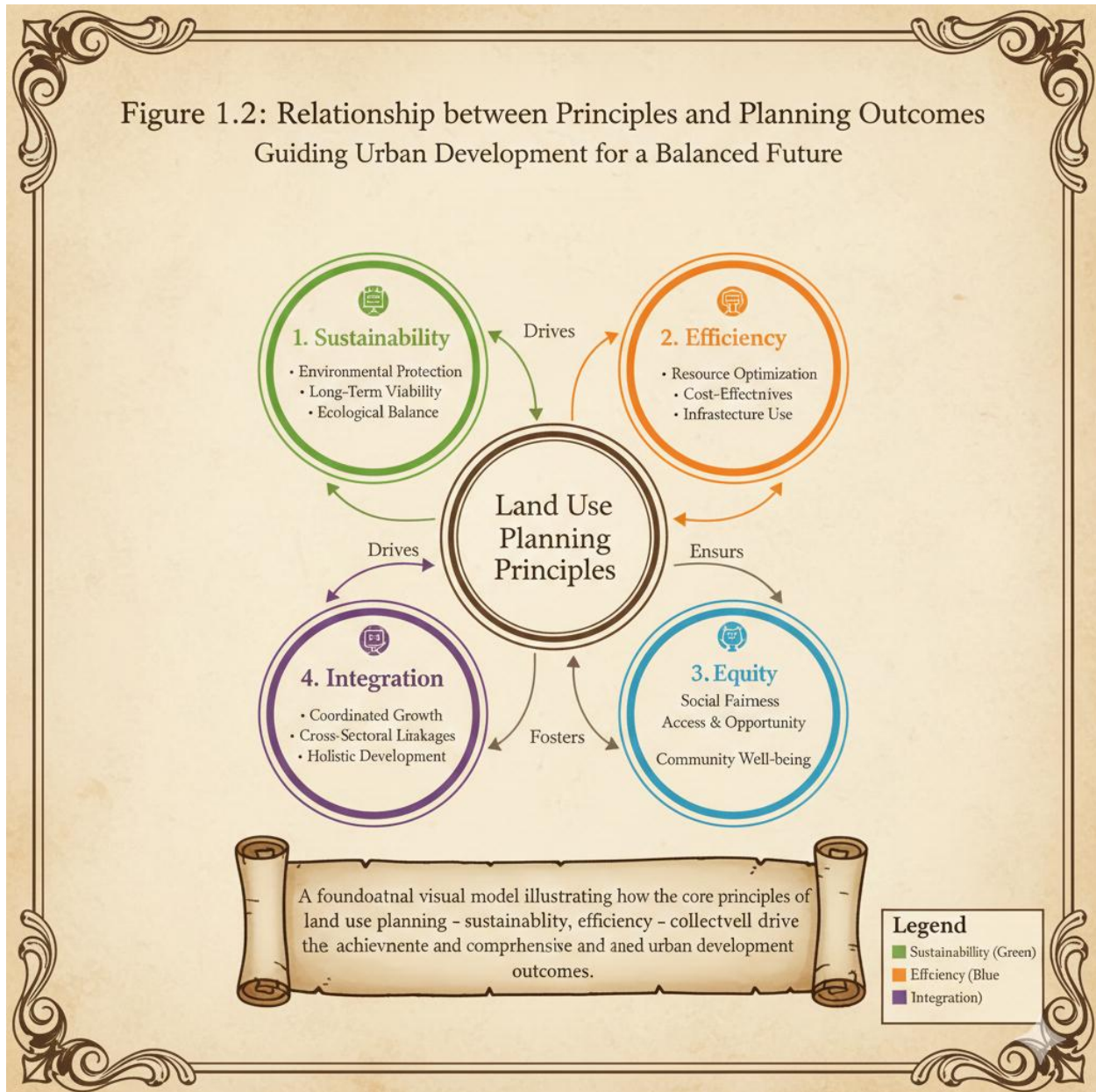


Diagram showing the relationship between principles (sustainability, efficiency, equity, integration) and planning outcomes (environmental protection, resource optimisation, social fairness, coordinated growth).

Figure 1.2: Relationship between principles and planning outcomes

1.2.3 Application of principles in practice

Applying principles of land use planning in practice involves translating them into policies, regulations, and projects. For instance, sustainability may be applied through zoning laws that protect green spaces, efficiency through compact city designs, equity through affordable housing schemes, and integration through regional development plans. These applications ensure that land use planning is not just theoretical but practical and impactful.



Fill in the blank: Compact city designs are an example of applying the principle of _____ in land use planning.

Principle	Tool of Application	Real-World Example
Sustainability	Conservation Zoning	<i>Protecting "Wetlands" or "Forest Reserves" from being paved over, ensuring the city has natural flood protection and clean air.</i>
Efficiency	In-filling & Density Controls	<i>Encouraging development on empty lots within the city (in-filling) rather than expanding into the outskirts, which saves on road and pipe costs.</i>
Equity	Social Housing Quotas	<i>Requiring a developer to reserve 20% of a new luxury apartment block for "Affordable Housing" to ensure diverse neighborhoods.</i>
Integration	Master & Regional Plans	<i>Coordinating a new industrial park with a proposed railway extension so that goods can be moved without clogging local roads.</i>

Table 1.2: Application of principles in practice

Pilot questions 1.2

1. State one guiding principle of land use planning.
2. Which principle ensures fair access to land and its benefits?
3. What outcome results from applying efficiency in land use planning?
4. Give one example of applying sustainability in practice.
5. What may happen if principles of land use planning are ignored?



1.3 Importance of Land Use Planning

1.3.1 Economic importance

Economic importance refers to the role land use planning plays in supporting economic growth and development. By allocating land for industries, commerce, agriculture, and infrastructure, planning ensures that resources are used efficiently to generate income and employment. Proper land use planning also reduces costs associated with congestion, poor transport systems, and environmental damage.

Fill in the blank: Allocating land for industries and commerce through planning helps generate _____ and employment.

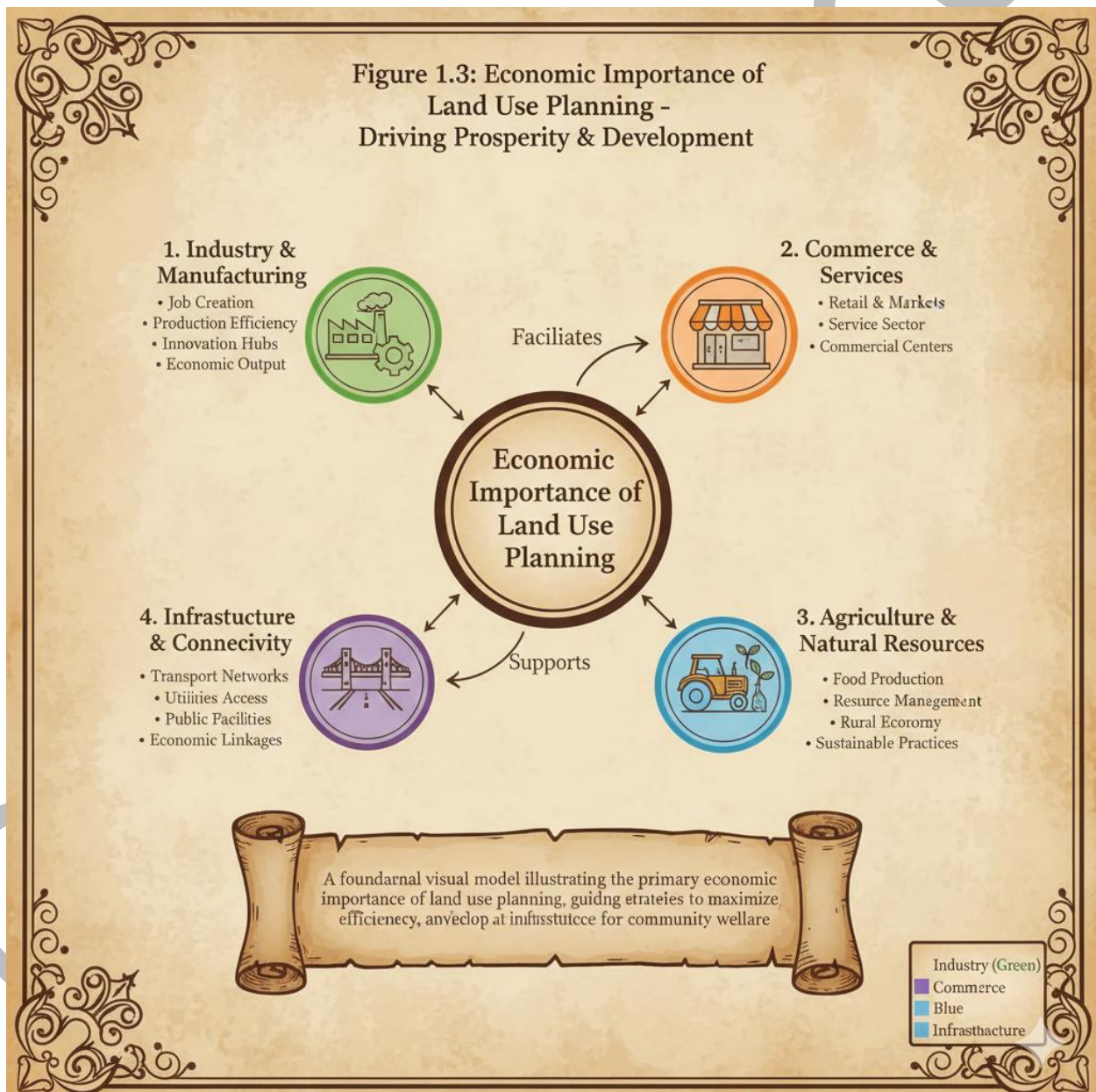


Diagram showing economic importance of land use planning, including industry, commerce, agriculture, and infrastructure.

Figure 1.3: Economic importance of land use planning

1.3.2 Social importance

Social importance highlights how land use planning improves the quality of life for communities. It ensures access to housing, education, healthcare, and recreational facilities. Planning also promotes social equity by providing fair distribution of resources and preventing overcrowding. Well-planned settlements foster community cohesion and reduce social problems such as slums and informal settlements.

Fill in the blank: Land use planning promotes social _____ by ensuring fair distribution of resources.

Aspect	Contribution to Society	Planning Strategy
Housing	<i>Provides adequate, safe, and affordable shelter for all.</i>	<i>Implementing Inclusionary Zoning to mix low-cost and market-rate housing.</i>
Education	<i>Ensures access to schools and learning facilities within neighborhoods.</i>	<i>Using Catchment Area Analysis to place schools within safe walking distance of homes.</i>
Healthcare	<i>Allocates land for hospitals, clinics, and emergency services.</i>	<i>Ensuring "Health Corridors" exist so ambulances can reach any part of the city quickly.</i>
Recreation	<i>Provides parks, sports grounds, and leisure spaces for mental and physical health.</i>	<i>Reserving Public Open Space (POS) in every residential layout.</i>



Equity	<i>Promotes fair distribution of resources and prevents social segregation.</i>	<i>Mandating that essential services are equally distributed across both rich and poor districts.</i>
---------------	---	---

Table 1.3: Social importance of land use planning

1.3.3 Environmental importance

Environmental importance refers to the role of land use planning in protecting natural resources and promoting sustainability. Planning helps conserve forests, wetlands, and biodiversity by designating protected areas. It also reduces pollution and environmental degradation by controlling industrial zones and managing waste disposal. Integrating green spaces into urban areas improves air quality and enhances resilience against climate change.

Fill in the blank: Integrating _____ spaces into urban areas improves air quality and supports sustainability.

Aspect	Contribution	Strategic Action
Conservation	<i>Protects forests, wetlands, and biodiversity from urban encroachment.</i>	<i>Designating Environmentally Sensitive Areas (ESAs) where building is strictly prohibited.</i>
Pollution Reduction	<i>Minimizes air, water, and soil contamination.</i>	<i>Using Zoning to separate industrial "nuisance" uses from residential "sensitive" areas.</i>
Waste Management	<i>Ensures the safe and efficient disposal/treatment of urban waste.</i>	<i>Allocating land for modern landfills, recycling hubs, and wastewater treatment plants.</i>



Green Spaces	<i>Integrates parks and urban forests into the city fabric.</i>	<i>Creating Green Belts to mitigate the "Urban Heat Island" effect and provide "lungs" for the city.</i>
Climate Resilience	<i>Adapts the built environment to survive extreme weather events.</i>	<i>Restricting development on floodplains and mandating Sponge City infrastructure.</i>

Box 1.3: Environmental importance of land use planning

- *Conservation of forests, wetlands, and biodiversity*
- *Reduction of pollution and degradation through zoning*
 - *Management of waste disposal systems*
 - *Integration of green spaces in urban areas*
- *Climate change resilience through sustainable practices*

Pilot questions 1.3

1. State one economic importance of land use planning.
2. How does land use planning promote social equity?
3. Mention one contribution of land use planning to healthcare.
4. What environmental benefit comes from integrating green spaces into urban areas?
5. Why is land use planning important for economic growth?

1.4 Attributes of Land Use Planning

1.4.1 Characteristics of effective land use planning

Attributes of land use planning are the distinctive features that make planning processes successful and impactful. Effective land use planning is characterised by **clarity** (plans must be easy to understand and communicate), **flexibility** (plans should adapt to changing circumstances), **participation** (involving stakeholders in decision-making), and **enforceability** (plans must be supported by laws and regulations). These attributes ensure that planning is practical and responsive to real-world needs.

Fill in the blank: One attribute of effective land use planning is _____, which ensures plans can adapt to changing circumstances.



Characteristic	Definition	Why It Matters
Clarity	<i>Plans are presented in simple language and clear visual maps.</i>	<i>Reduces confusion for developers and helps citizens understand how their neighborhood will change.</i>
Flexibility	<i>The plan includes mechanisms to adapt to new technologies or economic shifts.</i>	<i>Prevents the plan from becoming obsolete if, for example, a new industry emerges that wasn't predicted.</i>
Participation	<i>All stakeholders—residents, businesses, and NGOs—are involved in the process.</i>	<i>Increases "public buy-in" and ensures the plan addresses the actual needs of the community.</i>
Enforceability	<i>The plan is backed by a strong legal framework and competent authorities.</i>	<i>Ensures that "illegal" developments are stopped and that the master plan is not ignored by powerful interests.</i>

Box 1.4: Characteristics of effective land use planning

- **Clarity:** Plans are easy to understand and communicate
- **Flexibility:** Plans adapt to changing circumstances
- **Participation:** Stakeholders are involved in decision-making
- **Enforceability:** Plans are supported by laws and regulations

1.4.2 Integration of attributes into planning processes

For land use planning to be meaningful, attributes must be integrated into the planning process. For example, clarity is achieved by using maps and diagrams, flexibility by revising plans when conditions change, participation by holding community consultations, and enforceability by aligning plans with legal frameworks. Integration ensures that attributes are not abstract ideas but practical elements guiding everyday planning activities.

Fill in the blank: Holding community _____ is an example of integrating participation into land use planning.



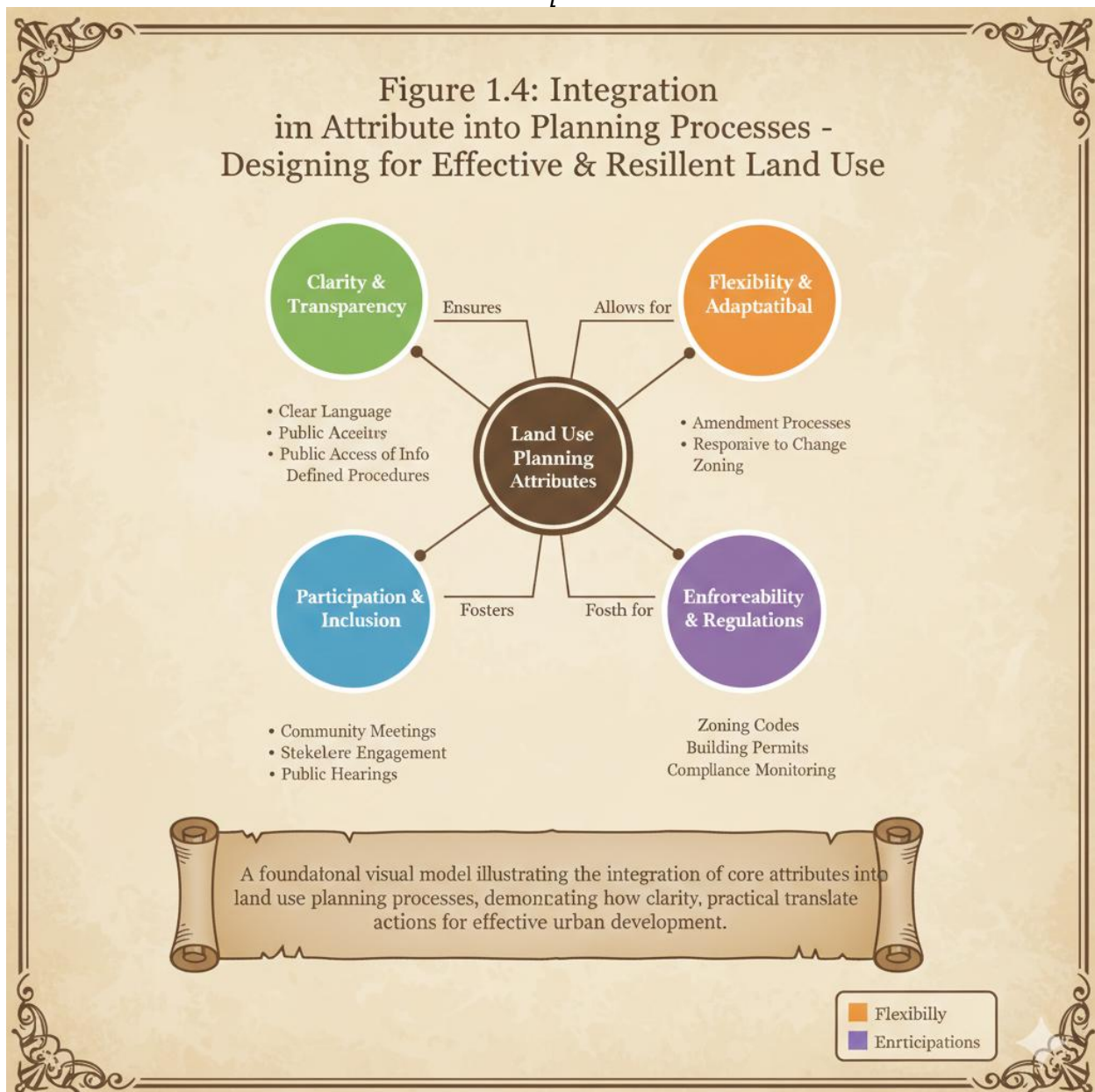


Diagram showing integration of attributes into planning processes, linking clarity, flexibility, participation, and enforceability to practical actions.

Figure 1.4: Integration of attributes into planning processes

1.4.3 Examples of attributes in practice

Examples of attributes can be seen in real-world planning projects. For instance, clarity is demonstrated in city master plans that use clear maps and zoning codes. Flexibility is evident in adaptive reuse projects where old buildings are repurposed for new uses. Participation is shown in community-driven housing schemes, while enforceability is reflected in strict building regulations. These examples highlight how attributes make planning effective and relevant.



Fill in the blank: Repurposing old buildings for new uses is an example of applying the attribute of _____.

Attribute	Tactical Application	Real-World Example
Clarity	<i>Use of Geographic Information Systems (GIS).</i>	<i>A Digital Zoning Map accessible to the public, where a developer can click on a plot and immediately see its permitted height and land use.</i>
Flexibility	Incentive Zoning & Adaptive Reuse.	<i>Transforming an abandoned industrial warehouse into a vibrant "Tech Hub" or artist lofts without needing a multi-year legal battle to change the zone.</i>
Participation	Stakeholder Workshops.	<i>A "Town Hall" meeting where residents vote on the location of a new public park or the route of a proposed bus rapid transit (BRT) lane.</i>
Enforceability	Development Control Units.	<i>The use of Building Permits and regular site inspections to ensure that a structure does not exceed its approved floor area or encroach on a road.</i>

Table 1.4: Examples of attributes in practice

Pilot questions 1.4

1. State one attribute of effective land use planning.
2. Which attribute ensures stakeholders are involved in decision-making?
3. Give one example of integrating clarity into planning processes.
4. What attribute is demonstrated by adaptive reuse projects?
5. Why is enforceability important in land use planning?



Series Summary

This Series has introduced you to the foundations of land use planning, emphasising its purpose and relevance in shaping sustainable, equitable, and efficient development. By exploring the basic definitions and concepts of land and land use, we established a clear understanding of the resource itself and how it is utilised. We then examined the guiding principles of land use planning, considering how sustainability, efficiency, equity, and integration influence planning outcomes. Following that, we discussed the economic, social, and environmental importance of land use planning, highlighting its role in supporting growth, improving quality of life, and protecting natural resources. Finally, we looked at the attributes of effective land use planning, such as clarity, flexibility, participation, and enforceability, and how these can be integrated into practice.

In line with the Series Learning Outcomes, you should now be able to define land and land use, explain key concepts, describe and analyse the principles of land use planning, evaluate its economic, social, and environmental importance, and identify attributes that make planning effective. These skills provide you with a strong foundation for understanding the broader course and for applying land use planning knowledge in practical and professional contexts.

Glossary of Terms

- **Attributes of land use planning:** The distinctive features that make planning effective, such as clarity, flexibility, participation, and enforceability.
- **Clarity:** An attribute of land use planning where plans are easy to understand and communicate.
- **Efficiency:** A principle of land use planning that ensures the best use of limited land resources to maximise benefits.
- **Enforceability:** An attribute of land use planning where plans are supported by laws and regulations to ensure compliance.
- **Equity:** A principle of land use planning that promotes fair access to land and its benefits for all groups.
- **Flexibility:** An attribute of land use planning that allows plans to adapt to changing circumstances.
- **Integration:** A principle of land use planning that coordinates land use with wider social, economic, and environmental goals.
- **Land:** The solid surface of the earth, including soil, rocks, and natural resources, which supports human activities.
- **Land use:** The way land is utilised by humans for purposes such as housing, agriculture, industry, commerce, and recreation.
- **Land use planning:** The process of organising, managing, and regulating how land is used to meet social, economic, and environmental needs.
- **Participation:** An attribute of land use planning that involves stakeholders in decision-making processes.
- **Principles of land use planning:** Fundamental rules or guidelines, such as sustainability, efficiency, equity, and integration, that shape planning decisions.
- **Sustainability:** A principle of land use planning that ensures land use meets present needs without compromising future generations.



Concept Check Questions [Series 1]

Objective Questions

Which of the following best defines land?

- a) A limitless resource available for human use
- b) The solid surface of the earth including soil, rocks, and natural resources
- c) A space used only for agriculture
- d) An area reserved exclusively for housing

1. (Linked to SLO 1.1)

Land use refers to:

- a) The way land is utilised by humans for different purposes
- b) The natural state of land without human interference
- c) The ownership rights of land
- d) The geological composition of land

2. (Linked to SLO 1.2)

Which principle of land use planning ensures fair access to land and its benefits?

- a) Sustainability
- b) Efficiency
- c) Equity
- d) Flexibility

3. (Linked to SLO 1.3)

Which attribute of land use planning ensures plans can adapt to changing circumstances?

- a) Clarity
- b) Flexibility
- c) Participation
- d) Enforceability

4. (Linked to SLO 1.8)

Allocating land for industries and commerce through planning helps generate:

- a) Pollution
- b) Employment and income
- c) Overcrowding
- d) Environmental degradation

5. (Linked to SLO 1.5)

Short-Answer Questions

- 6. Define land in the context of planning. (Linked to SLO 1.1)
- 7. State one example of residential land use. (Linked to SLO 1.2)



8. Explain the principle of sustainability in land use planning. (Linked to SLO 1.3)
9. Mention one economic importance of land use planning. (Linked to SLO 1.5)
10. Identify one attribute of effective land use planning. (Linked to SLO 1.8)

Long-Answer Questions

11. Describe the guiding principles of land use planning and analyse how they influence planning outcomes. (Linked to SLO 1.3, SLO 1.4)
12. Evaluate the economic, social, and environmental importance of land use planning. (Linked to SLO 1.5, SLO 1.6, SLO 1.7)
13. Discuss the attributes of effective land use planning and illustrate how they can be integrated into planning processes. (Linked to SLO 1.8)

Answers to Concept Check Questions [Series 1]

Objective Questions

1. b) The solid surface of the earth including soil, rocks, and natural resources
2. a) The way land is utilised by humans for different purposes
3. c) Equity
4. b) Flexibility
5. b) Employment and income

Short-Answer Questions

6. Land is the solid surface of the earth, including soil, rocks, and natural resources, which supports human activities.
7. Housing estates or apartments.
8. Sustainability ensures land use meets present needs without compromising the ability of future generations to meet theirs.
9. It supports economic growth by generating income and employment through industries, commerce, and agriculture.
10. One attribute is clarity, which makes plans easy to understand and communicate.

Long-Answer Questions

Basic response: The guiding principles of land use planning include sustainability, efficiency, equity, and integration. These principles influence outcomes by ensuring environmental protection, resource optimisation, social fairness, and coordinated growth.

11. **Value-added response:** Outstanding learners may add that these principles also guide policy-making, promote resilience against climate change, and encourage participatory governance, thereby strengthening long-term development strategies.

Basic response: Land use planning is economically important for generating income and employment, socially important for improving quality of life through housing, education, and healthcare, and environmentally important for conserving resources and reducing pollution.

12. **Value-added response:** Advanced learners may evaluate how these dimensions interact, for example, how economic growth must be balanced with environmental sustainability, or how social equity prevents marginalisation in rapidly urbanising regions.



Basic response: Attributes of effective land use planning include clarity, flexibility, participation, and enforceability. These can be integrated into processes through clear maps, adaptive reuse projects, community consultations, and legal frameworks.

13. **Value-added response:** Outstanding learners may illustrate with case studies, such as participatory housing schemes or adaptive city master plans, and discuss how integrating these attributes enhances resilience, inclusivity, and compliance in planning practice.

Answers to Pilot Questions [Series 1]

Part 1.1 Definitions and concepts of land and land use

- Land is the solid surface of the earth, including soil, rocks, and natural resources, which supports human activities.
- Land use refers to the way land is utilised by humans for different purposes such as housing, agriculture, industry, commerce, and recreation.
- One example of residential land use is housing estates or apartments.
- One key concept in land use planning is sustainability, which ensures land use meets present needs without compromising future generations.
- Land is considered a finite resource because it cannot be expanded, making its management critical for sustainable development.

Part 1.2 Principles of land use planning

- One guiding principle of land use planning is efficiency.
- Equity ensures fair access to land and its benefits.
- Applying efficiency in land use planning results in reduced waste and better use of space.
- An example of applying sustainability in practice is zoning laws that protect green spaces.
- If principles of land use planning are ignored, outcomes may include environmental degradation, social inequality, or inefficient urban growth.

Part 1.3 Importance of land use planning

- One economic importance of land use planning is generating income and employment through industries and commerce.
- Land use planning promotes social equity by ensuring fair distribution of resources.
- One contribution of land use planning to healthcare is allocating land for hospitals and clinics.
- Integrating green spaces into urban areas improves air quality and supports sustainability.
- Land use planning is important for economic growth because it ensures efficient allocation of resources and reduces costs associated with congestion and poor infrastructure.

Part 1.4 Attributes of land use planning

- One attribute of effective land use planning is clarity.
- Participation ensures stakeholders are involved in decision-making.



- An example of integrating clarity into planning processes is using maps and diagrams in city master plans.
- Adaptive reuse projects demonstrate the attribute of flexibility.
- Enforceability is important in land use planning because it ensures compliance with laws and regulations, making plans practical and effective.

References and Attributions [Series 1]

The following references and attributions cover all sources, illustration placeholders, and suggested OER materials used in **Series 1: Foundations of Land Use Planning: Concepts, Principles, and Importance**. The referencing style applied here follows APA guidelines for clarity and consistency.

General References

- Food and Agriculture Organization (FAO). (2017). *Land use planning for sustainable development*. Rome: FAO.
- United Nations Human Settlements Programme (UN-Habitat). (2020). *Land use planning and management*. Nairobi: UN-Habitat.
- World Bank. (2019). *Urban land use and planning strategies*. Washington, DC: World Bank.

Illustration Placeholders and Attributions

- *Figure 1.1: Definition of land as a resource*
 - AI-generated prompt: "Create a labelled diagram showing land as a physical resource with soil, vegetation, and human activities."
 - Suggested OER search string: "definition of land diagram OER."
- *Table 1.1: Examples of land use types*
 - AI-generated prompt: "Create a table showing examples of land use types such as residential, commercial, agricultural, industrial, and recreational."
 - Suggested OER search string: "examples of land use types OER table."
- *Box 1.1: Key concepts in land use planning*
 - AI-generated prompt: "Create a text box summarising key concepts in land use planning such as sustainability, efficiency, and equity."
 - Suggested OER search string: "key concepts in land use planning OER summary."
- *Box 1.2: Guiding principles of land use planning*
 - AI-generated prompt: "Create a text box summarising guiding principles of land use planning such as sustainability, efficiency, equity, and integration."
 - Suggested OER search string: "principles of land use planning OER summary."
- *Figure 1.2: Relationship between principles and planning outcomes*
 - AI-generated prompt: "Create a labelled diagram showing how principles of land use planning influence outcomes such as environmental protection, resource optimisation, social fairness, and coordinated growth."
 - Suggested OER search string: "principles and outcomes of land use planning diagram OER."
- *Table 1.2: Application of principles in practice*
 - AI-generated prompt: "Create a table showing examples of how principles of land use planning are applied in practice."



- Suggested OER search string: “application of land use planning principles OER table.”
- **Figure 1.3: Economic importance of land use planning**
 - AI-generated prompt: “Create a labelled diagram showing the economic importance of land use planning, including industry, commerce, agriculture, and infrastructure.”
 - Suggested OER search string: “economic importance of land use planning diagram OER.”
- **Table 1.3: Social importance of land use planning**
 - AI-generated prompt: “Create a table summarising the social importance of land use planning, including housing, education, healthcare, recreation, and equity.”
 - Suggested OER search string: “social importance of land use planning OER table.”
- **Box 1.3: Environmental importance of land use planning**
 - AI-generated prompt: “Create a text box summarising the environmental importance of land use planning, including conservation, pollution reduction, waste management, green spaces, and climate resilience.”
 - Suggested OER search string: “environmental importance of land use planning OER summary.”
- **Box 1.4: Characteristics of effective land use planning**
 - AI-generated prompt: “Create a text box summarising the characteristics of effective land use planning such as clarity, flexibility, participation, and enforceability.”
 - Suggested OER search string: “attributes of effective land use planning OER summary.”
- **Figure 1.4: Integration of attributes into planning processes**
 - AI-generated prompt: “Create a labelled diagram showing how attributes of land use planning are integrated into processes, linking clarity, flexibility, participation, and enforceability to practical actions.”
 - Suggested OER search string: “integration of attributes in land use planning diagram OER.”
- **Table 1.4: Examples of attributes in practice**
 - AI-generated prompt: “Create a table showing examples of attributes of land use planning in practice, including clarity, flexibility, participation, and enforceability.”
 - Suggested OER search string: “examples of attributes of land use planning OER table.”



COURSE CODE : URP 204

COURSE TITLE : Introduction to Land Use Planning

COURSE UNIT : 2 Units

Series 1: Concepts, Principles, and Importance of Land Use Planning

Series 2: Determinants and Dynamics of Land Use

Series 3: Land Use Types and Selection Criteria

Series 4: Methods, Models, and Tools for Land Use Planning

Series 5: Problems of Land Use Planning and Integrated Spatial Solutions in Nigeria

Here is the proposed outline for Series 2:

Part 2.1 Physical determinants of land use

- Climate and weather conditions
- Topography and soil characteristics
- Availability of water resources

Part 2.2 Socio-economic determinants of land use

- Population growth and distribution
- Economic activities and employment patterns
- Infrastructure and technological development

Part 2.3 Political and institutional determinants of land use

- Government policies and regulations
- Land tenure systems and ownership rights
- Institutional frameworks and planning authorities

Part 2.4 Dynamics of land use change

- Urbanisation and settlement expansion
- Agricultural intensification and decline
- Environmental pressures and climate change impacts

Introduction

Land use is never static. It changes constantly in response to physical conditions, social needs, economic pressures, and political decisions. For example, a rural area may gradually transform into an urban settlement due to population growth and infrastructure development.

Understanding what drives these changes is essential for planners, as it helps them anticipate



future demands and manage land resources more effectively. This Series therefore focuses on the determinants and dynamics that shape how land is used and how it evolves over time.

The aim of this Series is to equip you with the knowledge to identify and explain the key factors influencing land use, and to analyse the processes that drive land use change. By the end of the Series, you will be able to evaluate how physical, socio-economic, and political determinants interact, and how these interactions result in dynamic patterns of land use.

We shall commence this Series by examining the physical determinants of land use, such as climate, topography, and water resources. Next, we will explore socio-economic determinants, including population growth, economic activities, and infrastructure development. Following that, we will consider political and institutional determinants, focusing on policies, land tenure systems, and planning authorities. Finally, we will wrap up by analysing the dynamics of land use change, looking at urbanisation, agricultural shifts, and environmental pressures. This progression will provide you with a comprehensive understanding of the forces and processes that shape land use.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **SLO 2.1** describe the physical determinants of land use, including climate, topography, soil, and water resources,
- **SLO 2.2** explain socio-economic determinants of land use such as population growth, economic activities, and infrastructure development,
- **SLO 2.3** analyse political and institutional determinants of land use, focusing on policies, land tenure systems, and planning authorities, and
- **SLO 2.4** evaluate the dynamics of land use change, including urbanisation, agricultural shifts, and environmental pressures.

2.1 Physical Determinants of Land Use

2.1.1 Climate and weather conditions

Climate refers to the long-term patterns of temperature, rainfall, humidity, and wind in a region, while **weather** describes short-term atmospheric conditions. Climate strongly influences land use because it determines what crops can be grown, the suitability of areas for settlement, and the types of industries that can thrive. For example, tropical climates support agriculture such as cocoa and oil palm, while arid climates limit farming but may encourage pastoralism.

Fill in the blank: Climate refers to the long-term patterns of _____, rainfall, humidity, and wind in a region.



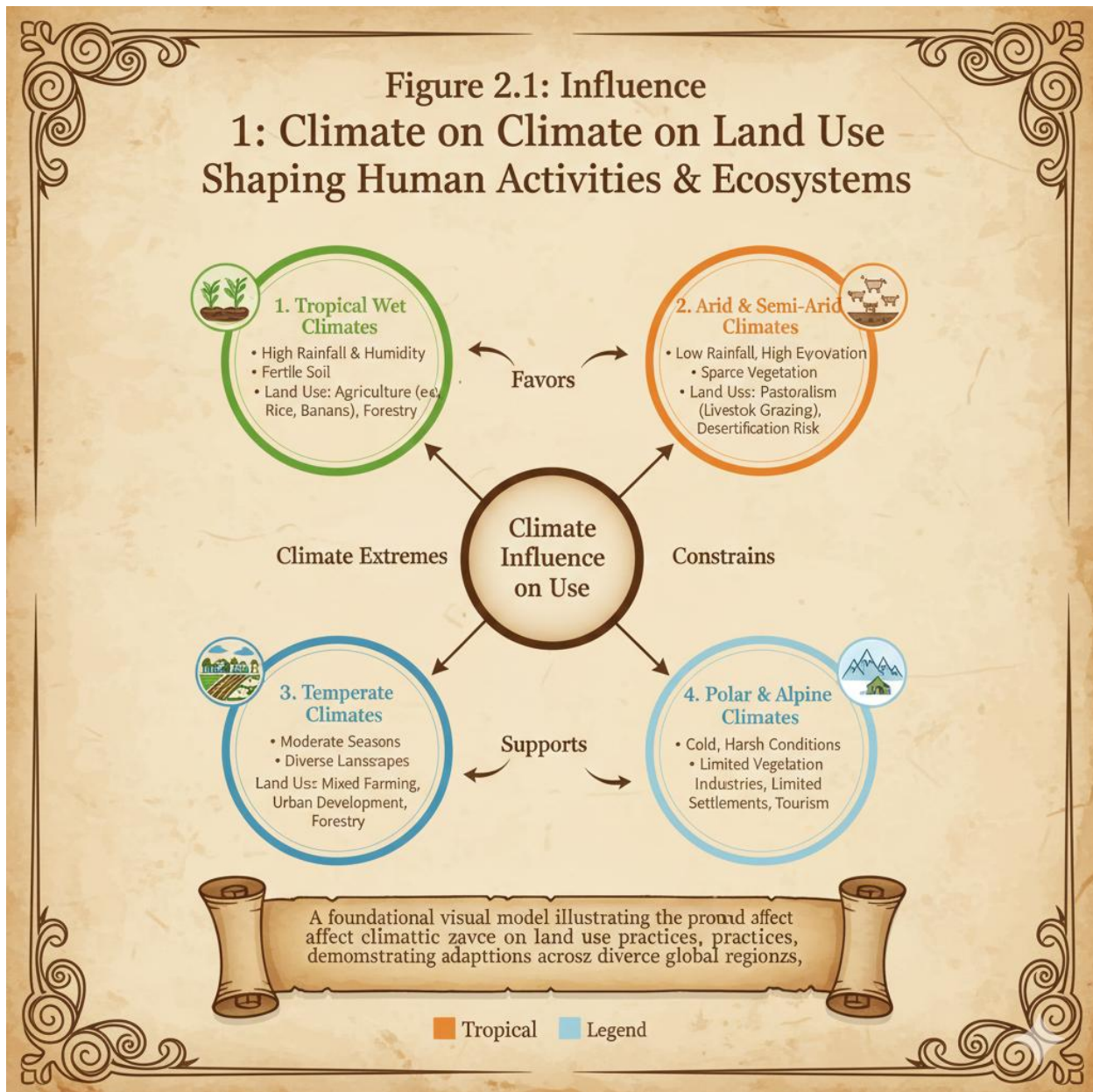


Diagram showing how climate zones influence land use (e.g., agriculture in tropical zones, pastoralism in arid zones).

Figure 2.1: Influence of climate on land use

2.1.2 Topography and soil characteristics

Topography refers to the physical features of the land surface, including elevation, slope, and relief. Steep slopes are often unsuitable for construction but may be used for forestry, while flat plains are ideal for agriculture and settlement. **Soil characteristics** such as fertility, texture, and



drainage also determine land use. Fertile soils encourage crop production, while poor soils may be reserved for grazing or left as natural vegetation.

Fill in the blank: Fertile soils encourage _____ production, while poor soils may be reserved for grazing.



Image showing contrasting land uses: farming on fertile plains and forestry on steep slopes.
Plate 2.1: Influence of topography and soil on land use

2.1.3 Availability of water resources

Water resources include rivers, lakes, groundwater, and rainfall, which are essential for agriculture, industry, and domestic use. Areas with abundant water supply often support



intensive farming, urban settlements, and industrial activities. Conversely, regions with scarce water resources may face limitations in land use, leading to reliance on irrigation or alternative livelihoods such as nomadic pastoralism.

Fill in the blank: Areas with abundant water supply often support intensive _____, urban settlements, and industrial activities.

Water Resource Availability	Common Land Uses	Infrastructure Requirements
Abundant (Rivers, Lakes, High Rainfall)	<i>Intensive agriculture, high-density urban centers, and water-heavy industries (e.g., paper, chemicals).</i>	<i>Massive drainage systems, ports, and hydroelectric dams.</i>
Moderate (Seasonal rain, Groundwater)	<i>Mixed farming (crops and livestock), medium-sized towns, and service-based industries.</i>	<i>Wells, boreholes, and small-scale water storage reservoirs.</i>
Scarce (Arid regions, Deserts)	<i>Large-scale irrigation projects, nomadic pastoralism, and sparse, specialized settlements.</i>	<i>Long-distance pipelines, desalination plants, and water-recycling systems.</i>

Table 2.1: Influence of water resources on land use

Pilot questions 2.1

1. Define climate and explain its influence on land use.
2. What is the difference between climate and weather?
3. How does topography affect land use?
4. State one way soil characteristics influence land use.
5. Mention one land use associated with abundant water resources.



2.2 Socio-Economic Determinants of Land Use

2.2.1 Population growth and distribution

Population growth refers to the increase in the number of people living in a given area, while **population distribution** describes how people are spread across space. These factors strongly influence land use because growing populations require more housing, schools, healthcare facilities, and infrastructure. High population density often leads to urban expansion, while sparse populations may result in extensive agricultural land use.

Fill in the blank: High population density often leads to _____ expansion, while sparse populations may result in extensive agricultural land use.

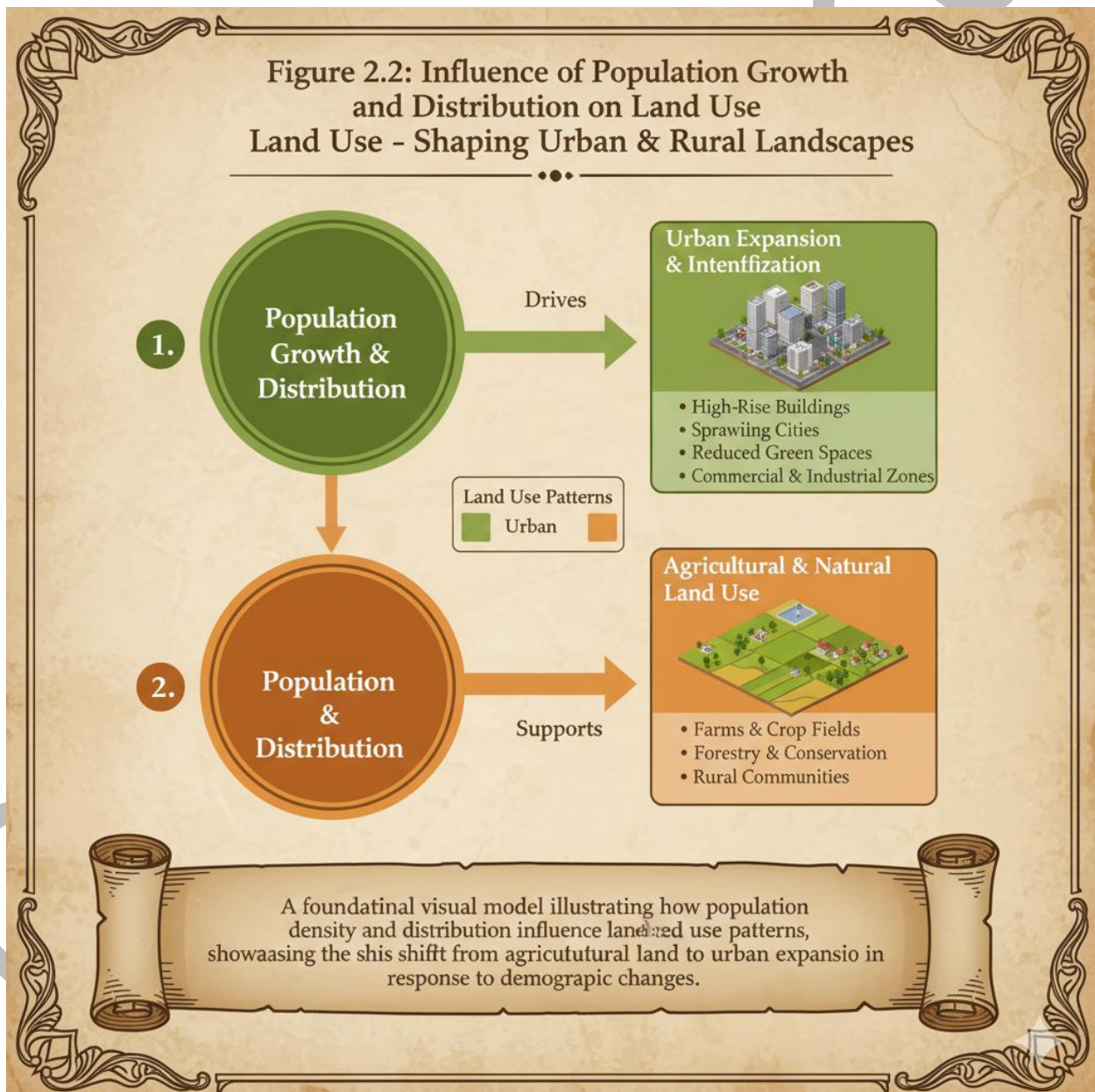


Diagram showing the relationship between population density and land use patterns (urban expansion versus agricultural land).

Figure 2.2: Influence of population growth and distribution on land use

2.2.2 Economic activities and employment patterns

Economic activities are the various ways people earn a living, such as farming, trading, manufacturing, and services. **Employment patterns** describe the distribution of jobs across these activities. Land use is shaped by economic activities because different sectors require specific spaces. For example, farming requires fertile land, manufacturing needs industrial zones, and services thrive in commercial centres. Employment opportunities also attract people to certain areas, influencing settlement patterns.

Fill in the blank: Manufacturing activities require _____ zones, while services thrive in commercial centres.

Economic Activity	Primary Land Use Requirement	Location Strategy
Farming	Fertile Agricultural Land: High-quality soil, adequate drainage, and access to water.	Rural or peri-urban areas where large, contiguous plots are available.
Manufacturing	Industrial Zones: Flat land with heavy-load infrastructure, high-voltage power, and waste disposal.	Outskirts of cities with direct access to highways, railways, or ports.
Trading	Market Spaces & Retail Hubs: High visibility, storage facilities, and easy access for suppliers.	Centrally located areas or major transport intersections.
Services	Commercial Centres: High-speed internet, prestigious office space, and proximity to other businesses.	The Central Business District (CBD) or modern "sub-centers."



Table 2.2: Economic activities and their land use requirements

2.2.3 Infrastructure and technological development

Infrastructure refers to the basic physical systems that support society, such as roads, electricity, water supply, and communication networks. **Technological development** involves innovations that improve productivity and efficiency. Both factors influence land use by determining accessibility and suitability of areas for settlement and industry. For instance, areas with good transport networks attract businesses, while technological advances such as irrigation systems expand agricultural possibilities in dry regions.

Fill in the blank: Areas with good transport networks attract _____, while irrigation systems expand agricultural possibilities in dry regions.

Factor	Influence on Land Use	Resulting Spatial Pattern
Transport Networks	Roads, rails, and ports increase land value and accessibility.	Ribbon Development: Settlements and shops clustering along highways.
Electricity Supply	Provides the heavy power required for machinery and high-rise life.	Industrial Clusters: Concentration of factories in areas with stable power grids.
Water Systems	Piped water and sewage systems allow for extreme density.	Vertical Urbanization: The growth of high-rise residential and office blocks.
Irrigation Tech	Overcomes natural rainfall limitations using pumps and pipes.	Agricultural Intensification: Turning arid "wasteland" into green farm belts.
Digital Networks	High-speed internet reduces the need for physical proximity.	De-centralization: Rise of "Home Offices" and tech hubs in suburban areas.



Box 2.2: Influence of infrastructure and technology on land use

- *Roads and transport networks encourage settlement and commerce*
 - *Electricity supply supports industrial growth*
 - *Water supply systems enable urban expansion*
- *Irrigation technology expands farming in arid regions*
- *Communication networks promote service industries*

Pilot questions 2.2

1. Define population growth and explain its influence on land use.
2. What is meant by population distribution?
3. Which economic activity requires fertile agricultural land?
4. State one way employment patterns influence settlement.
5. Mention one technological development that expands farming in dry regions.

2.3 Political and Institutional Determinants of Land Use

2.3.1 Government policies and regulations

Government policies are official decisions and strategies that guide how land is allocated and managed, while **regulations** are rules that enforce these policies. Policies such as zoning laws, environmental protection acts, and housing schemes directly shape land use patterns. For example, zoning laws may restrict industrial activities in residential areas, while environmental regulations protect wetlands from development.

Fill in the blank: Zoning laws may restrict _____ activities in residential areas to protect community welfare.

Policy Type	Primary Mechanism	Urban/Regional Impact



Zoning Laws	<i>Legal division of land into specific functional categories.</i>	<i>Prevents "land use conflict" by ensuring residential areas are shielded from industrial noise and pollution.</i>
Environmental Protection Acts	<i>Legislation that restricts or prohibits development in sensitive areas.</i>	<i>Safeguards "Ecosystem Services" like clean water from wetlands and carbon sequestration from forests.</i>
Housing Schemes	<i>Publicly funded or subsidized residential developments.</i>	<i>Promotes "Social Equity" by providing affordable shelter for low-income earners who are priced out of the private market.</i>

Box 2.3: Examples of government policies influencing land use

- Zoning laws separating residential, commercial, and industrial areas
- Environmental protection acts safeguarding forests and wetlands
 - Housing schemes promoting affordable settlements

2.3.2 Land tenure systems and ownership rights

Land tenure systems refer to the arrangements that define how land is owned, used, and transferred. **Ownership rights** specify who has legal control over land and how it can be utilised. Secure tenure encourages investment in land development, while insecure tenure may discourage long-term use. For instance, freehold ownership allows individuals to use land indefinitely, while leasehold grants use for a fixed period. Customary tenure systems, common in many societies, are based on traditional practices and community agreements.

Fill in the blank: Secure land tenure encourages _____ in land development, while insecure tenure discourages long-term use.



Tenure Type	Description	Typical Use Case
Freehold	<i>The owner has absolute and permanent rights to the land, which can be sold or passed to heirs indefinitely.</i>	<i>Private houses, individual farms, and commercial estates in urban areas.</i>
Leasehold	<i>Land is held for a specific period (e.g., 99 years) under a contract with the owner (often the State).</i>	<i>Industrial zones, government-allocated residential plots, and commercial skyscrapers.</i>
Customary	<i>Land is owned collectively by a community, family, or tribe based on long-standing traditions.</i>	<i>Communal grazing lands, traditional village settlements, and ancestral farmlands.</i>

Table 2.3: Types of land tenure systems

2.3.3 Institutional frameworks and planning authorities

Institutional frameworks are the structures and organisations that oversee land use planning, while **planning authorities** are the agencies responsible for implementing policies and regulations. These institutions ensure that land use decisions are coordinated, transparent, and enforceable. Examples include local planning councils, national ministries of urban development, and environmental agencies. Effective institutions promote orderly growth, while weak institutions may lead to unregulated development and conflicts.

Fill in the blank: Effective planning authorities promote orderly growth, while weak institutions may lead to _____ development.



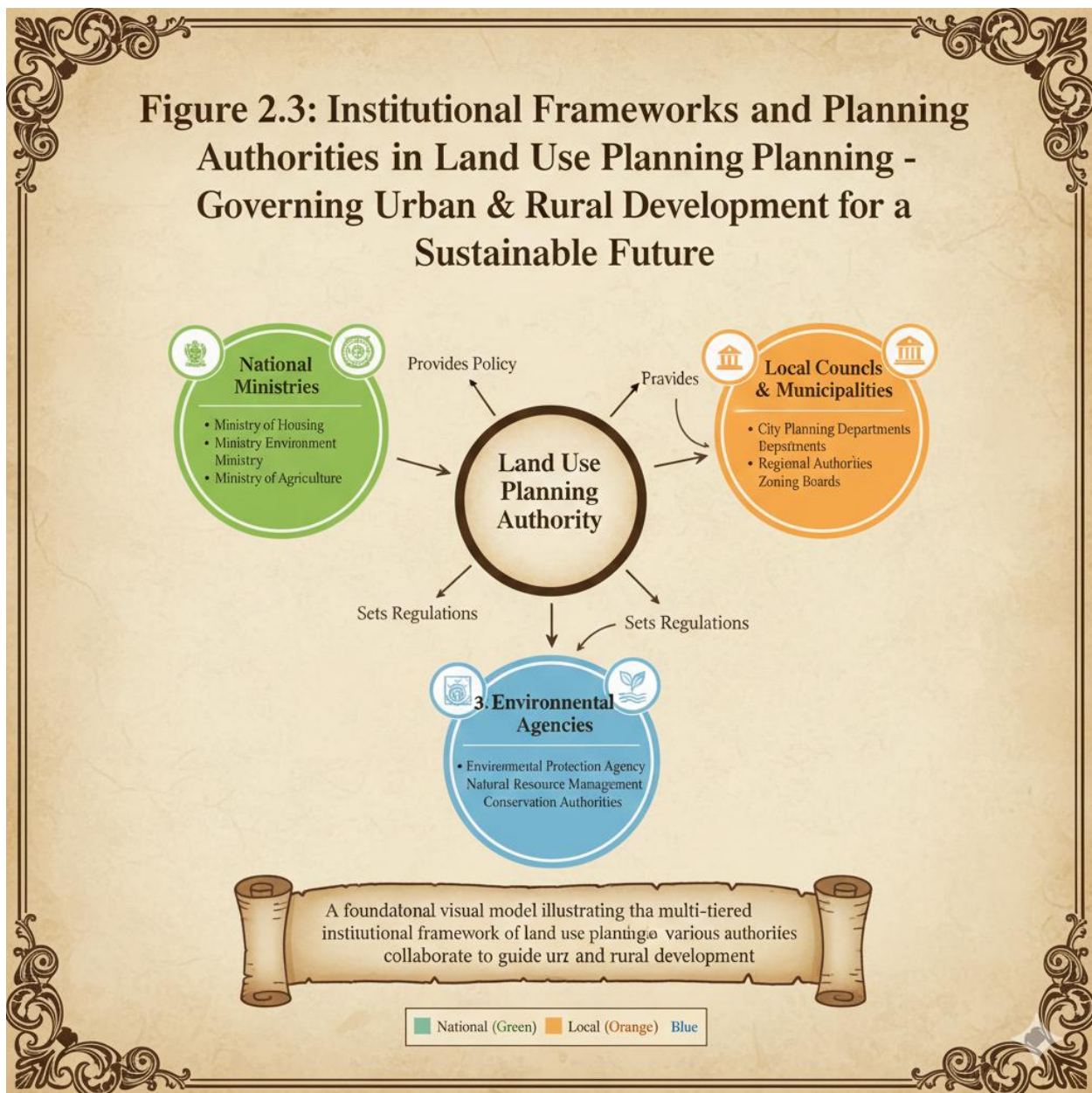


Diagram showing institutional frameworks in land use planning, linking national ministries, local councils, and environmental agencies.

Figure 2.3: Institutional frameworks and planning authorities in land use planning

Pilot questions 2.3

1. State one example of a government policy that influences land use.
2. What is meant by land tenure system?
3. Give one difference between freehold and leasehold tenure.
4. Mention one role of planning authorities in land use management.
5. Why does secure tenure encourage investment in land development?



2.4 Dynamics of Land Use Change

2.4.1 Urbanisation and settlement expansion

Urbanisation refers to the process by which rural areas transform into urban centres due to population growth, economic opportunities, and infrastructure development. **Settlement expansion** occurs when cities grow outward, often consuming agricultural land and natural habitats. This dynamic reshapes land use by increasing demand for housing, transport networks, and public services.

Fill in the blank: Urbanisation often consumes _____ land and natural habitats as cities expand outward.



*Diagram showing urban expansion into surrounding agricultural and natural areas.
Figure 2.4: Urbanisation and settlement expansion*

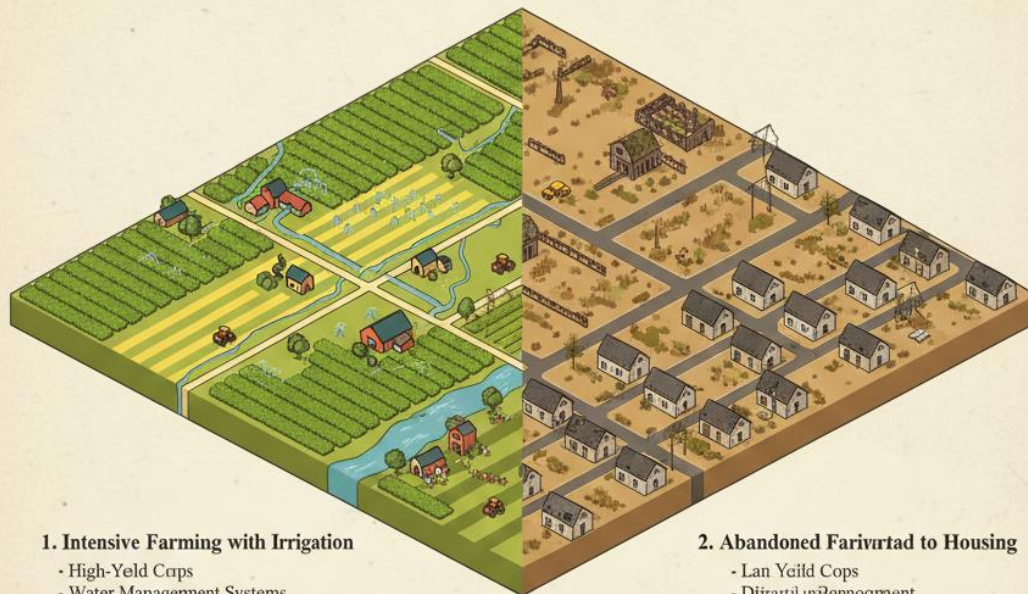
2.4.2 Agricultural intensification and decline

Agricultural intensification refers to increasing productivity on existing farmland through improved techniques, fertilisers, irrigation, and mechanisation. Conversely, **agricultural decline** occurs when farmland is abandoned or converted to other uses, often due to urbanisation, soil degradation, or economic shifts. These dynamics affect food security and rural livelihoods, while also influencing the balance between rural and urban land use.

Fill in the blank: Agricultural decline often occurs when farmland is abandoned or converted to _____ uses.



Plate 2.4: Agriculture of Tomsifaphy and Doil Un and Use - Contrasing Human Activity and Ecoystems



1. Intensive Farming with Irrigation

- High-Yield Cops
- Water Management Systems
- Modern Machimery
- Food Production Hub

2. Abandoned Farivrtad to Housing

- Lan Yeild Cops
- Ditrartil reBonnogment
- Housing Developsen Land

A foundaional visual case study illustrating the prond affliat toporaphy and soil quality on land use practices on paatigins, highlighe flat, rich agricultural lands and sloped regions.

■ Intensive Farming (Dark Green)

Image showing contrasting land uses: intensive farming with irrigation versus abandoned farmland converted to housing.

Plate 2.4: Agricultural intensification and decline

2.4.3 Environmental pressures and climate change impacts

Environmental pressures include deforestation, pollution, and resource depletion, while **climate change impacts** refer to long-term shifts in temperature, rainfall, and extreme weather events. These dynamics alter land use by reducing agricultural productivity, increasing vulnerability of settlements, and necessitating adaptation strategies such as conservation zones or climate-resilient infrastructure.



Fill in the blank: Climate change impacts include long-term shifts in _____, rainfall, and extreme weather events.

<i>Pressure / Impact</i>	<i>Effect on Land Use</i>	<i>Consequence for Planning</i>
<i>Deforestation</i>	<i>Loss of tree cover and biodiversity.</i>	<i>Increased soil erosion and loss of natural carbon "sinks."</i>
<i>Pollution</i>	<i>Contamination of soil, air, and aquifers.</i>	<i>Land becomes "brownfields" that are unsafe for residential or agricultural use.</i>
<i>Resource Depletion</i>	<i>Over-extraction of groundwater and minerals.</i>	<i>Limits the "carrying capacity" of the land, forcing the abandonment of settlements.</i>
<i>Climate Change</i>	<i>Shifting rainfall and extreme weather (floods/droughts).</i>	<i>Existing infrastructure (drains/roads) becomes obsolete or easily destroyed.</i>
<i>Adaptation Needs</i>	<i>Requirement for "Resilient Infrastructure."</i>	<i>Higher construction costs and the need for "no-build" conservation zones.</i>

Box 2.4: Environmental pressures and climate change impacts on land use

- *Deforestation reduces biodiversity and alters land cover*
 - *Pollution degrades soil and water quality*
- *Resource depletion limits agricultural and industrial activities*
- *Climate change shifts rainfall patterns and increases extreme events*
- *Adaptation strategies include conservation zones and resilient infrastructure*

Pilot questions 2.4



1. Define urbanisation and explain its impact on land use.
2. What is meant by settlement expansion?
3. State one factor that leads to agricultural decline.
4. Mention one environmental pressure that affects land use.
5. Give one example of a climate change impact on land use.

Series Summary

This Series has focused on the determinants and dynamics that shape how land is used and how it changes over time. Its purpose has been to help you recognise the multiple influences on land use, ranging from natural conditions to human decisions, and to highlight their relevance in planning practice. By examining these factors, you have gained insight into why land use varies across regions and how it evolves in response to pressures and opportunities.

We began by exploring physical determinants such as climate, topography, soil, and water resources, then moved on to socio-economic determinants including population growth, economic activities, and infrastructure development. Following that, we considered political and institutional determinants, looking at government policies, land tenure systems, and planning authorities. Finally, we analysed the dynamics of land use change, including urbanisation, agricultural shifts, and environmental pressures. In line with the Series Learning Outcomes, you should now be able to describe physical factors, explain socio-economic influences, analyse political and institutional determinants, and evaluate the processes that drive land use change. These skills provide a strong foundation for applying land use planning knowledge in both academic and professional contexts.

Glossary of Terms

- **Agricultural decline:** The reduction or abandonment of farmland, often due to urbanisation, soil degradation, or economic changes.
- **Agricultural intensification:** Increasing productivity on existing farmland through improved techniques, fertilisers, irrigation, or mechanisation.
- **Climate:** The long-term patterns of temperature, rainfall, humidity, and wind in a region.
- **Economic activities:** The different ways people earn a living, such as farming, trading, manufacturing, and services.
- **Employment patterns:** The distribution of jobs across different economic activities, which influences settlement and land use.
- **Environmental pressures:** Human activities such as deforestation, pollution, and resource depletion that affect land use and natural systems.
- **Infrastructure:** Basic physical systems that support society, including roads, electricity, water supply, and communication networks.
- **Institutional frameworks:** The structures and organisations that oversee land use planning, such as ministries, councils, and agencies.
- **Land tenure systems:** The arrangements that define how land is owned, used, and transferred, including freehold, leasehold, and customary tenure.
- **Ownership rights:** Legal entitlements that specify who controls land and how it can be used.



- **Planning authorities:** Agencies or organisations responsible for implementing land use policies and regulations.
- **Population distribution:** The way people are spread across space in a given area.
- **Population growth:** The increase in the number of people living in a particular area.
- **Settlement expansion:** The outward growth of cities and towns, often consuming agricultural land and natural habitats.
- **Topography:** The physical features of the land surface, including elevation, slope, and relief.
- **Water resources:** Natural sources such as rivers, lakes, groundwater, and rainfall that support agriculture, industry, and settlements.
- **Weather:** Short-term atmospheric conditions such as daily temperature, rainfall, and wind.

Concept Check Questions [Series 2]

Objective Questions

Which of the following is a physical determinant of land use?

- Population growth
- Climate
- Employment patterns
- Government policies

1. (Linked to SLO 2.1)

Fertile soils are most suitable for:

- Forestry
- Grazing
- Crop production
- Industrial development

2. (Linked to SLO 2.1)

Which socio-economic factor directly influences settlement expansion?

- Climate change
- Population growth
- Land tenure systems
- Institutional frameworks

3. (Linked to SLO 2.2)

Freehold tenure refers to:

- Temporary ownership for a fixed period
- Permanent ownership of land
- Ownership based on tradition
- Government-controlled land allocation

4. (Linked to SLO 2.3)



Urbanisation often results in:

- a) Expansion of forests
- b) Conversion of farmland to housing
- c) Decline in population density
- d) Reduction in infrastructure development

5. (Linked to SLO 2.4)

Short-Answer Questions

- 6. Define climate and explain its influence on land use. (Linked to SLO 2.1)
- 7. State one example of an economic activity and its land use requirement. (Linked to SLO 2.2)
- 8. What is meant by land tenure system? (Linked to SLO 2.3)
- 9. Mention one role of planning authorities in land use management. (Linked to SLO 2.3)
- 10. Give one example of a climate change impact on land use. (Linked to SLO 2.4)

Long-Answer Questions

- 11. Describe the physical determinants of land use and analyse how they shape land use patterns. (Linked to SLO 2.1)
- 12. Explain socio-economic determinants of land use and evaluate their impact on settlement and development. (Linked to SLO 2.2)
- 13. Analyse political and institutional determinants of land use, focusing on policies, tenure systems, and planning authorities. (Linked to SLO 2.3)
- 14. Evaluate the dynamics of land use change, including urbanisation, agricultural shifts, and environmental pressures. (Linked to SLO 2.4)

Answers to Concept Check Questions [Series 2]

Objective Questions

- 1. b) Climate
- 2. c) Crop production
- 3. b) Population growth
- 4. b) Permanent ownership of land
- 5. b) Conversion of farmland to housing

Short-Answer Questions

- 6. Climate refers to long-term patterns of temperature, rainfall, humidity, and wind. It influences land use by determining suitable crops, settlement areas, and industries.
- 7. Farming requires fertile agricultural land.
- 8. A land tenure system is the arrangement that defines how land is owned, used, and transferred.
- 9. Planning authorities implement land use policies and ensure orderly development.
- 10. One climate change impact is shifts in rainfall patterns that affect agricultural productivity.

Long-Answer Questions



Basic response: Physical determinants include climate, topography, soil, and water resources. These shape land use by influencing agriculture, settlement, and industry.

11. **Value-added response:** Outstanding learners may add examples such as tropical climates supporting cocoa farming, or steep slopes being reserved for forestry, and discuss how these determinants interact with socio-economic factors.

Basic response: Socio-economic determinants include population growth, economic activities, and infrastructure. They impact settlement expansion and development by increasing demand for housing, jobs, and services.

12. **Value-added response:** Advanced learners may evaluate how rapid urbanisation creates challenges such as overcrowding, while infrastructure development attracts industries and reshapes regional economies.

Basic response: Political and institutional determinants include government policies, land tenure systems, and planning authorities. These influence land allocation, ownership, and regulation.

13. **Value-added response:** Outstanding learners may analyse how weak institutions lead to unregulated development, or how secure tenure encourages investment, using case studies from different regions.

Basic response: Dynamics of land use change include urbanisation, agricultural intensification and decline, and environmental pressures. These processes alter land use patterns over time.

14. **Value-added response:** Advanced learners may evaluate how climate change accelerates land use change, or how urbanisation interacts with agricultural decline, creating complex challenges for planners.

Answers to Pilot Questions [Series 2]

Part 2.1 Physical determinants of land use

- Climate is the long-term patterns of temperature, rainfall, humidity, and wind, and it influences land use by determining suitable crops, settlement areas, and industries.
- Weather refers to short-term atmospheric conditions, while climate describes long-term patterns.
- Topography affects land use by determining where farming, forestry, or settlement can occur, depending on slope and elevation.
- Soil fertility influences land use by encouraging crop production, while poor soils may be used for grazing or left as natural vegetation.
- Abundant water resources support intensive farming, urban settlements, and industrial activities.

Part 2.2 Socio-economic determinants of land use

- Population growth is the increase in the number of people in an area, and it influences land use by increasing demand for housing, services, and infrastructure.



- Population distribution refers to how people are spread across space in a given area.
- Farming requires fertile agricultural land.
- Employment patterns influence settlement by attracting people to areas with job opportunities.
- Irrigation technology expands farming in dry regions.

Part 2.3 Political and institutional determinants of land use

- One example of a government policy that influences land use is zoning laws.
- A land tenure system is the arrangement that defines how land is owned, used, and transferred.
- Freehold tenure provides permanent ownership, while leasehold grants ownership for a fixed period.
- Planning authorities implement land use policies and ensure orderly development.
- Secure tenure encourages investment in land development because it provides confidence in long-term use.

Part 2.4 Dynamics of land use change

- Urbanisation is the process by which rural areas transform into urban centres, and it impacts land use by increasing demand for housing, infrastructure, and services.
- Settlement expansion is the outward growth of cities and towns, often consuming agricultural land and natural habitats.
- Agricultural decline can result from farmland being abandoned or converted to other uses such as housing.
- One environmental pressure that affects land use is deforestation.
- One example of a climate change impact on land use is shifts in rainfall patterns that reduce agricultural productivity.

References and Attributions [Series 2]

The following references and attributions cover all sources, illustration placeholders, and suggested OER materials used in **Series 2: Determinants and Dynamics of Land Use**. The referencing style applied here follows APA guidelines for clarity and consistency.

General References

- Food and Agriculture Organization (FAO). (2017). *Land use planning for sustainable development*. Rome: FAO.
- United Nations Human Settlements Programme (UN-Habitat). (2020). *Land use planning and management*. Nairobi: UN-Habitat.
- World Bank. (2019). *Urban land use and planning strategies*. Washington, DC: World Bank.

Illustration Placeholders and Attributions

- *Figure 2.1: Influence of climate on land use*
 - AI-generated prompt: "Create a labelled diagram showing climate zones and examples of land use such as farming in tropical regions and pastoralism in arid regions."
 - Suggested OER search string: "climate influence on land use diagram OER."



- **Plate 2.1: Influence of topography and soil on land use**
 - AI-generated prompt: "Generate an image showing farmland on fertile plains and forestry on steep slopes to illustrate topography and soil influence."
 - Suggested OER search string: "topography and soil influence on land use OER image."
- **Table 2.1: Influence of water resources on land use**
 - AI-generated prompt: "Create a table showing how different levels of water resource availability influence land use."
 - Suggested OER search string: "water resources and land use OER table."
- **Figure 2.2: Influence of population growth and distribution on land use**
 - AI-generated prompt: "Create a labelled diagram showing how high population density leads to urban expansion and sparse populations lead to agricultural land use."
 - Suggested OER search string: "population density and land use diagram OER."
- **Table 2.2: Economic activities and their land use requirements**
 - AI-generated prompt: "Create a table showing economic activities and their land use requirements, including farming, manufacturing, trading, and services."
 - Suggested OER search string: "economic activities and land use OER table."
- **Box 2.2: Influence of infrastructure and technology on land use**
 - AI-generated prompt: "Create a text box summarising the influence of infrastructure and technology on land use, including transport, electricity, water, irrigation, and communication."
 - Suggested OER search string: "infrastructure and technology influence on land use OER summary."
- **Box 2.3: Examples of government policies influencing land use**
 - AI-generated prompt: "Create a text box summarising examples of government policies influencing land use such as zoning laws, environmental acts, and housing schemes."
 - Suggested OER search string: "government policies influencing land use OER summary."
- **Table 2.3: Types of land tenure systems**
 - AI-generated prompt: "Create a table showing types of land tenure systems including freehold, leasehold, and customary tenure."
 - Suggested OER search string: "types of land tenure systems OER table."
- **Figure 2.3: Institutional frameworks and planning authorities in land use planning**
 - AI-generated prompt: "Create a labelled diagram showing institutional frameworks in land use planning, linking national ministries, local councils, and environmental agencies."
 - Suggested OER search string: "institutional frameworks in land use planning diagram OER."
- **Figure 2.4: Urbanisation and settlement expansion**
 - AI-generated prompt: "Create a labelled diagram showing how urbanisation leads to settlement expansion into agricultural and natural areas."
 - Suggested OER search string: "urbanisation and settlement expansion diagram OER."
- **Plate 2.4: Agricultural intensification and decline**
 - AI-generated prompt: "Generate an image showing intensive farming with irrigation alongside abandoned farmland converted to housing."
 - Suggested OER search string: "agricultural intensification and decline OER image."
- **Box 2.4: Environmental pressures and climate change impacts on land use**



- AI-generated prompt: “Create a text box summarising environmental pressures and climate change impacts on land use.”
- Suggested OER search string: “environmental pressures and climate change impacts OER summary.”

COURSE CODE : URP 204

COURSE TITLE : Introduction to Land Use Planning

COURSE UNIT : 2 Units

Series 1: Concepts, Principles, and Importance of Land Use Planning

Series 2: Determinants and Dynamics of Land Use

Series 3: Land Use Types and Selection Criteria

Series 4: Methods, Models, and Tools for Land Use Planning

Series 5: Problems of Land Use Planning and Integrated Spatial Solutions in Nigeria

Here is the proposed outline for Series 3:

Part 3.1 Residential and commercial land use

- 3.1.1 Characteristics of residential land use
- 3.1.2 Characteristics of commercial land use
- 3.1.3 Interactions between residential and commercial areas

Part 3.2 Agricultural and industrial land use

- 3.2.1 Types of agricultural land use (subsistence, commercial, mixed farming)
- 3.2.2 Industrial land use and zoning requirements
- 3.2.3 Conflicts and complementarities between agriculture and industry

Part 3.3 Recreational and institutional land use

- 3.3.1 Recreational spaces (parks, sports facilities, green areas)
- 3.3.2 Institutional land use (schools, hospitals, government facilities)
- 3.3.3 Importance of balancing recreational and institutional needs

Part 3.4 Criteria for land use selection

- 3.4.1 Physical criteria (location, accessibility, environmental suitability)
- 3.4.2 Socio-economic criteria (population needs, economic viability, cultural values)
- 3.4.3 Political and legal criteria (policies, regulations, tenure systems)



Introduction

In the last Series, we explored the determinants and dynamics of land use, examining how physical, socio-economic, political, and environmental factors shape the way land is utilised and transformed. Building on that foundation, this Series turns to the specific types of land use and the criteria that guide their selection. Understanding these categories and the reasons behind their allocation is essential for planners, as it ensures that land resources are used efficiently, fairly, and sustainably.

The aim of this Series is to introduce you to the major types of land use and to equip you with the ability to evaluate the criteria that influence their selection. By the end of the Series, you will be able to identify different land use categories and explain the considerations that guide their allocation in planning practice.

We shall commence this Series by examining residential and commercial land use, focusing on their characteristics and interactions. Next, we will explore agricultural and industrial land use, considering both their requirements and potential conflicts. Following that, we will move on to recreational and institutional land use, highlighting their importance in supporting social and community needs. Finally, we will wrap up by analysing the criteria for land use selection, including physical, socio-economic, and political factors. This progression will provide you with a comprehensive understanding of land use types and the principles that guide their allocation.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **SLO 3.1** describe the characteristics of residential and commercial land use,
- **SLO 3.2** explain the requirements and interactions of agricultural and industrial land use,
- **SLO 3.3** analyse the importance of recreational and institutional land use in supporting community needs, and
- **SLO 3.4** evaluate physical, socio-economic, and political criteria for land use selection.

3.1 Residential and Commercial Land Use

3.1.1 Characteristics of residential land use

Residential land use refers to areas designated for housing and related facilities. It includes single-family homes, apartments, and housing estates. The main characteristics are provision of shelter, accessibility to services, and varying densities depending on population needs.



Residential areas often require supporting infrastructure such as roads, water supply, and electricity.

Fill in the blank: Residential land use provides _____ and related facilities such as housing estates and apartments.

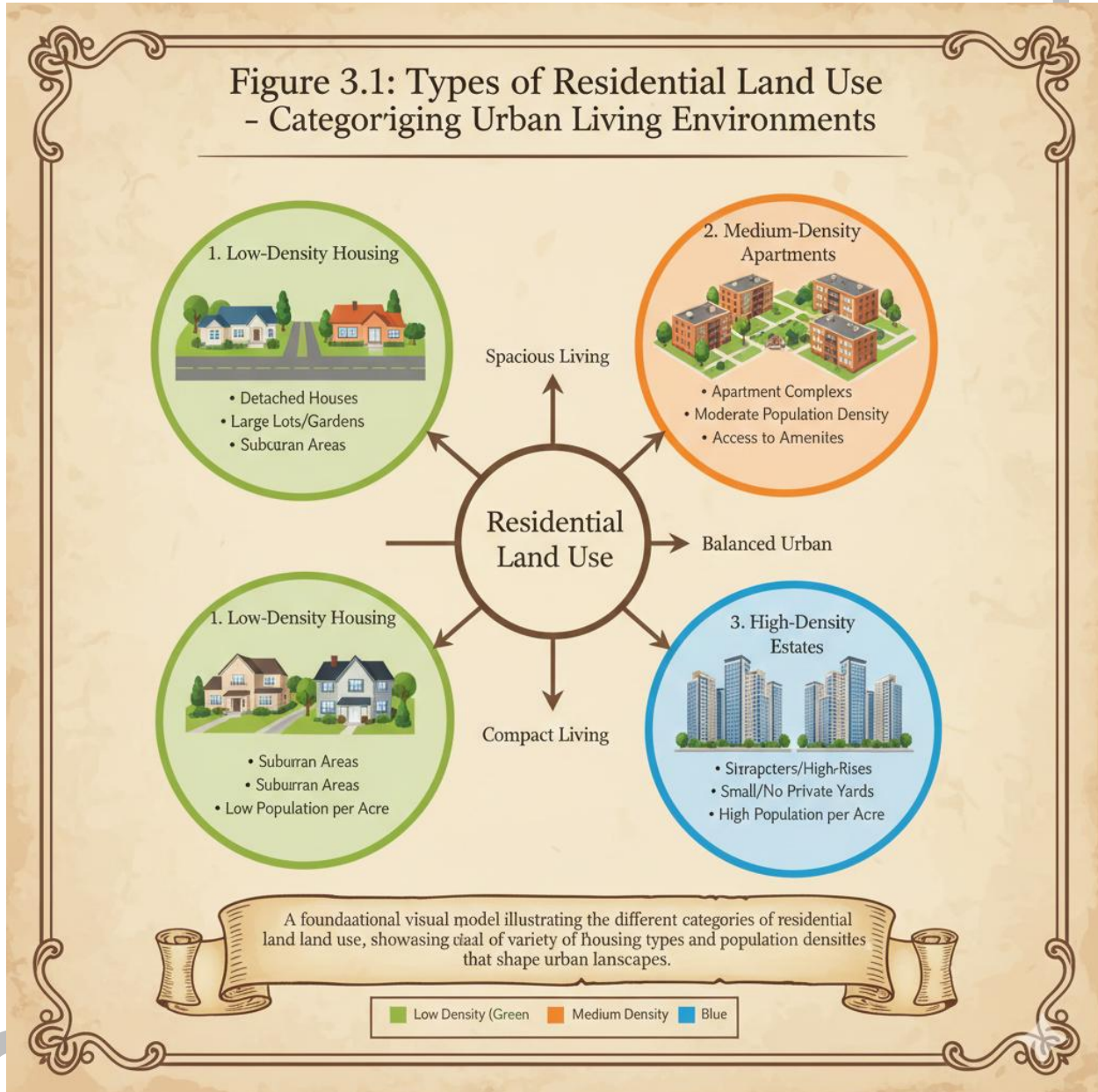


Diagram showing different types of residential land use (low-density housing, medium-density apartments, high-density estates).

Figure 3.1: Types of residential land use

3.1.2 Characteristics of commercial land use



Commercial land use refers to areas designated for trade, business, and services. Examples include markets, shopping centres, office complexes, and financial institutions. The main characteristics are concentration of economic activities, accessibility, and provision of facilities that support commerce. Commercial areas are often located near transport hubs or residential zones to maximise convenience.

Fill in the blank: Commercial land use refers to areas designated for _____, business, and services.



Image showing examples of commercial land use such as shopping centres, office complexes, and markets.

Plate 3.1: Examples of commercial land use



3.1.3 Interactions between residential and commercial areas

Residential and commercial land uses are closely linked. People living in residential areas depend on nearby commercial centres for goods, services, and employment. At the same time, commercial areas thrive when located close to residential zones, as they benefit from customer access. However, poor planning may lead to conflicts such as congestion, noise, or pollution. Effective land use planning ensures harmony between these two categories.

Fill in the blank: Poor planning of residential and commercial areas may lead to conflicts such as _____, noise, or pollution.

Type of Interaction	Description	Planning Benefit
Market Support	<i>Residential zones provide the "threshold population" (customers) needed for shops and markets to thrive.</i>	<i>Ensures local businesses remain profitable and sustainable.</i>
Labor Supply	<i>Residents provide the human capital (workforce) required to run offices, banks, and retail centers.</i>	<i>Reduces recruitment costs and supports a stable local economy.</i>
Service Provision	<i>Commercial centers provide essential goods, healthcare services, and professional offices to residents.</i>	<i>Enhances the quality of life and convenience for the community.</i>
Spatial Harmony	<i>Proper zoning ensures these uses are close enough for access but separated enough to prevent noise and traffic conflicts.</i>	<i>Minimizes environmental stress and maintains high property values.</i>

Box 3.1: Key interactions between residential and commercial land use



- Residential areas provide customers and workforce for commercial centres
- Commercial centres supply goods, services, and employment to residential areas
 - Proper planning reduces congestion and environmental conflicts

Pilot questions 3.1

1. Define residential land use and state its main characteristics.
2. What facilities are commonly found in commercial land use?
3. Mention one way residential and commercial areas interact.
4. State one possible conflict that may arise between residential and commercial land use.
5. Why is proper planning important in linking residential and commercial land use?

3.2 Agricultural and Industrial Land Use

3.2.1 Types of agricultural land use

Agricultural land use refers to areas designated for farming activities, including crop production and livestock rearing. It can be classified into **subsistence farming**, where farmers grow food mainly for household consumption; **commercial farming**, which involves large-scale production for sale; and **mixed farming**, which combines crop cultivation with livestock rearing. Each type requires fertile soils, water availability, and suitable climatic conditions.

Fill in the blank: Subsistence farming involves growing food mainly for _____ consumption.

Type of Agriculture	Description	Spatial & Infrastructure Needs
Subsistence Farming	<i>Small-scale production primarily intended to feed the farmer's family with little surplus for sale.</i>	<i>Requires proximity to rural settlements and access to basic extension services.</i>
Commercial Farming	<i>Large-scale, capital-intensive production of crops or livestock specifically for national or global markets.</i>	<i>Needs large, contiguous land tracts, heavy machinery access, and proximity to major transport corridors.</i>



Mixed Farming	<i>An integrated system where crops and livestock are raised on the same land, often recycling waste (manure as fertilizer).</i>	<i>Requires diverse zoning to accommodate both planting cycles and animal husbandry requirements.</i>
----------------------	--	---

Table 3.1: Types of agricultural land use

3.2.2 Industrial land use and zoning requirements

Industrial land use refers to areas designated for manufacturing, processing, and related activities. Industries require access to transport networks, energy supply, and water resources. To prevent conflicts, **zoning requirements** are applied, which separate industrial areas from residential or commercial zones. Heavy industries are usually located away from residential areas due to noise, pollution, and safety concerns, while light industries may be closer to towns.

Fill in the blank: Heavy industries are usually located away from _____ areas due to noise and pollution.



Figure 3.2: Industrial Land Use and Zoning Requirements - Organizing Urban Spaces for Function & Safety

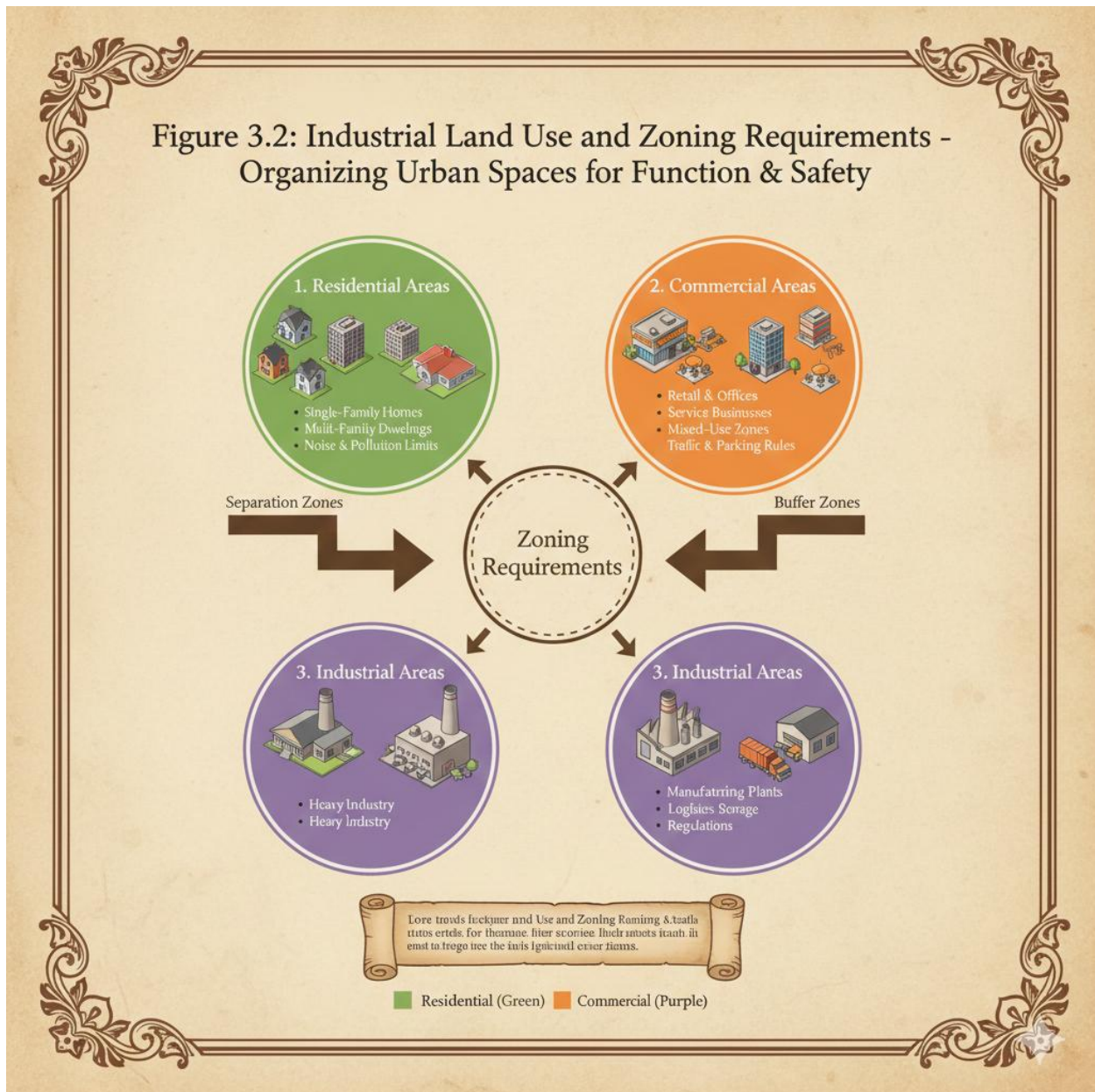


Diagram showing zoning requirements separating industrial, residential, and commercial areas.
Figure 3.2: Industrial land use and zoning requirements

3.2.3 Conflicts and complementarities between agriculture and industry

Agriculture and industry often interact in complex ways. **Conflicts** may arise when industrial expansion consumes farmland, pollutes water sources, or displaces rural communities. On the other hand, **complementarities** exist when industries provide fertilisers, machinery, and



markets for agricultural products. Effective planning seeks to balance these relationships, ensuring that both sectors contribute to sustainable development.

Fill in the blank: Industries complement agriculture by providing fertilisers, _____, and markets for farm products.

Category	Key Issues	Impact on Land Use
Conflicts	Farmland Loss: Urban-industrial expansion "swallowing" fertile soil. Pollution: Industrial runoff contaminating irrigation water and soil. Displacement: Rural communities losing ancestral land to factories.	Leads to food insecurity and social unrest in peri-urban areas.
Complementarities	Input Supply: Industry provides fertilizers, pesticides, and tractors. Value Addition: Agro-processing factories turn raw crops into high-value goods. Market Linkage: Industrial workers provide a large, stable market for food.	Boosts rural incomes and reduces post-harvest waste.
Planning Goal	Sustainable Balance: Ensuring both sectors thrive without destroying the other.	Use of "Agro-Industrial Parks" and strict environmental buffering.



Box 3.2: Conflicts and complementarities between agriculture and industry

- *Conflicts: farmland loss, pollution, displacement of rural communities*
- *Complementarities: provision of fertilisers, machinery, and markets*
- *Planning goal: balance agriculture and industry for sustainable development*

Pilot questions 3.2

1. Define agricultural land use and state its main types.
2. What is meant by subsistence farming?
3. State one zoning requirement for industrial land use.
4. Mention one conflict between agriculture and industry.
5. Give one example of how industry complements agriculture.

3.3 Recreational and Institutional Land Use

3.3.1 Recreational spaces

Recreational land use refers to areas designated for leisure, relaxation, and physical activities. Examples include parks, playgrounds, sports facilities, and green spaces. These areas are vital for improving quality of life, promoting health, and fostering social interaction. Recreational spaces also contribute to environmental sustainability by preserving greenery within urban areas.

Fill in the blank: Recreational land use refers to areas designated for leisure, relaxation, and _____ activities.





Image showing examples of recreational land use such as parks, playgrounds, and sports facilities.

Plate 3.2: Examples of recreational land use

3.3.2 Institutional land use

Institutional land use refers to areas designated for public services and facilities such as schools, hospitals, government offices, and religious centres. These spaces are essential for



meeting community needs and ensuring access to education, healthcare, governance, and spiritual life. Institutional land use often requires central locations to maximise accessibility for the population.

Fill in the blank: Institutional land use refers to areas designated for public services such as schools, _____, and government offices.

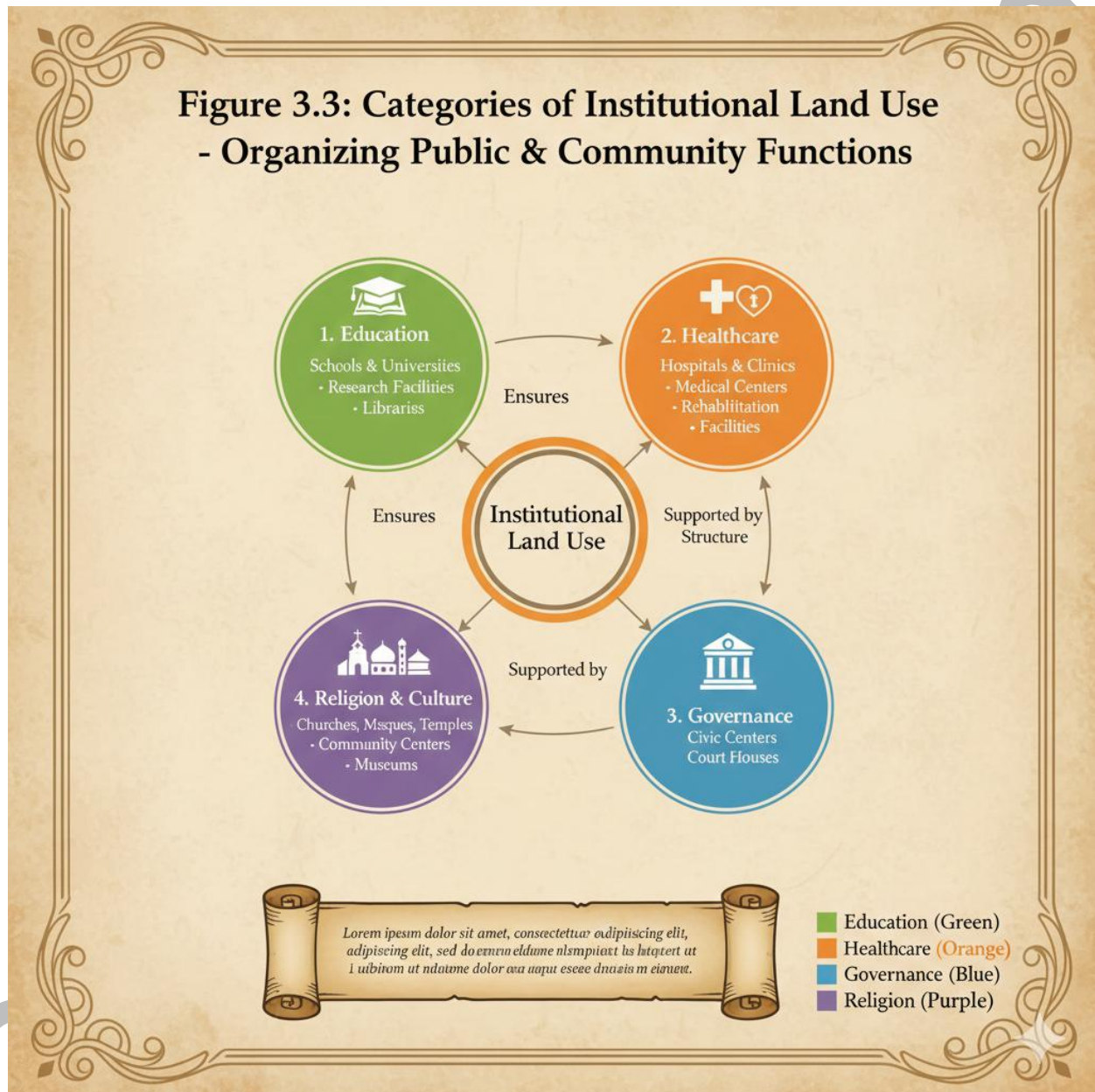


Diagram showing institutional land use categories (education, healthcare, governance, religion).

Figure 3.3: Categories of institutional land use



3.3.3 Importance of balancing recreational and institutional needs

Recreational and institutional land uses must be balanced to ensure sustainable and inclusive communities. Too much emphasis on institutional facilities without recreational spaces may lead to stress and reduced quality of life. Conversely, prioritising recreation without adequate institutions may limit access to essential services. Effective planning integrates both, ensuring that communities enjoy health, education, governance, and leisure in harmony.

Fill in the blank: Effective planning integrates recreational and institutional land uses to ensure communities enjoy _____, education, governance, and leisure in harmony.

Land Use Category	Core Contributions	Community Impact
Recreational	<i>Parks, playgrounds, sports complexes, and green corridors.</i>	<i>Promotes physical health, reduces stress, and provides space for social gathering.</i>
Institutional	<i>Schools, hospitals, places of worship, and government offices.</i>	<i>Provides the infrastructure for education, healthcare, spiritual growth, and civic order.</i>
The Balance	<i>Ensuring both are accessible and properly distributed.</i>	<i>Creates a livable city where residents aren't just serviced, but are also able to thrive and relax.</i>

Box 3.3: Importance of balancing recreational and institutional land use

- *Recreational spaces promote health, relaxation, and social interaction*
- *Institutional facilities provide education, healthcare, governance, and religion*
 - *Balanced planning ensures sustainable and inclusive communities*

Pilot questions 3.3

1. Define recreational land use and state its main examples.
2. What is meant by institutional land use?
3. Mention one category of institutional land use.
4. Why is it important to balance recreational and institutional land use?



5. State one benefit of recreational spaces in urban areas.

3.4 Criteria for Land Use Selection

3.4.1 Physical criteria

Physical criteria refer to natural and environmental factors that determine whether land is suitable for a particular use. These include location, accessibility, soil fertility, slope, drainage, and climate. For example, flat and fertile land is ideal for agriculture, while elevated areas may be better suited for forestry or conservation. Accessibility through roads and transport networks is also a key physical consideration.

Fill in the blank: Flat and fertile land is ideal for _____, while elevated areas may be better suited for forestry.



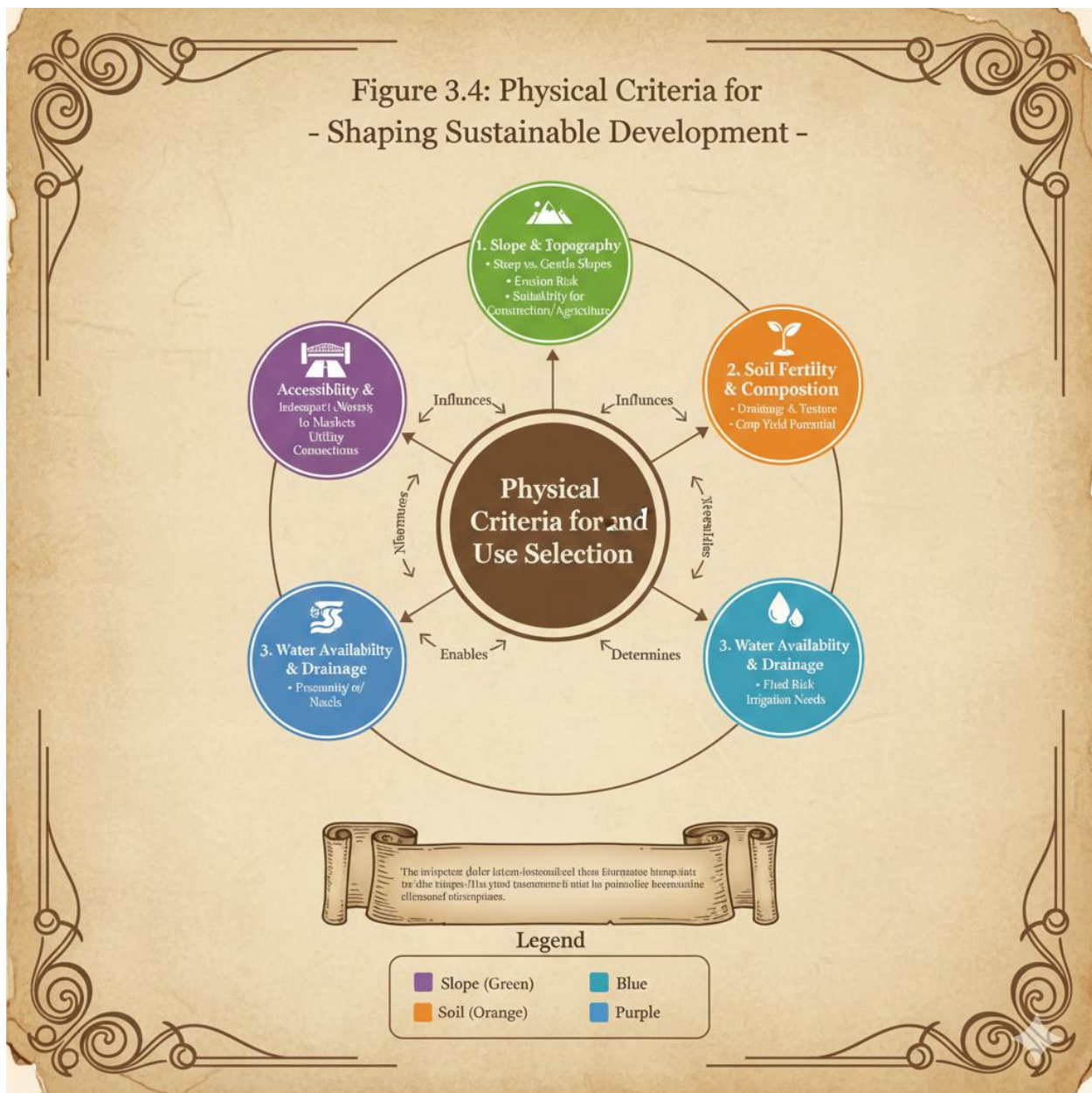


Diagram showing physical criteria such as slope, soil fertility, and accessibility influencing land use.

Figure 3.4: Physical criteria for land use selection

3.4.2 Socio-economic criteria

Socio-economic criteria refer to human and community-related factors that influence land use decisions. These include population needs, economic viability, cultural values, and demand for



services. For instance, densely populated areas require more residential and commercial land, while economically vibrant regions may prioritise industrial zones. Cultural and social values also shape land use, such as preserving sacred sites or allocating land for community gatherings.

Fill in the blank: Densely populated areas require more _____ and commercial land to meet community needs.

Criterion	Influence on Land Use	Strategic Planning Example
Population Needs	<i>Dictates the scale and type of land required for human survival and comfort.</i>	Residential Expansion: Converting peripheral land to housing based on high birth rates or migration.
Economic Viability	<i>Evaluates whether a project can generate enough revenue to sustain itself and the local economy.</i>	Industrial Zones: Allocating land for factories near ports to maximize export profits.
Cultural Values	<i>Protects the identity, history, and spiritual connections of the community to the land.</i>	Sacred Sites: Zoning heritage sites or traditional burial grounds as "No-Build" zones.
Demand for Services	<i>Identifies gaps in the social fabric that require physical space to be filled.</i>	Social Infrastructure: Reserving land for schools and hospitals in a rapidly aging or growing neighborhood.

Table 3.2: Socio-economic criteria for land use selection

3.4.3 Political and legal criteria

Political and legal criteria refer to government policies, regulations, and laws that guide land allocation and use. These include zoning laws, environmental protection regulations, and land tenure systems. Political priorities, such as promoting affordable housing or protecting natural



resources, also influence land use decisions. Legal frameworks ensure that land use is orderly, fair, and sustainable.

Fill in the blank: Zoning laws, environmental protection regulations, and _____ systems are examples of political and legal criteria.

Criterion	Function in Planning	Real-World Impact
Zoning Laws	<i>The legal partitioning of land into specific functional areas.</i>	<i>Ensures a quiet residential neighborhood isn't disrupted by a noisy factory.</i>
Environmental Regulations	<i>Statutes that mandate the protection of natural assets.</i>	<i>Prevents the draining of wetlands or the clearing of protected forests for short-term gain.</i>
Land Tenure Systems	<i>The legal regime defining who owns and can use the land.</i>	<i>Provides the security needed for banks to issue mortgages and developers to build.</i>
Government Priorities	<i>Strategic goals set by the administration (e.g., "Green Energy" or "Low-Cost Housing").</i>	<i>Dictates where public funds are spent, such as building a new rail line or a solar farm.</i>

Box 3.4: Political and legal criteria for land use selection

- Zoning laws separate residential, commercial, and industrial areas
- Environmental regulations protect forests, wetlands, and biodiversity
 - Land tenure systems define ownership and usage rights
- Government priorities influence allocation of land for housing or conservation

Pilot questions 3.4

1. Define physical criteria and give one example.



2. State one socio-economic criterion for land use selection.
3. Mention one cultural value that may influence land use.
4. What is meant by political and legal criteria?
5. Give one example of a government regulation that affects land use.

Series Summary

This Series has examined the different types of land use and the criteria that guide their selection, highlighting their importance in creating sustainable and functional communities. Its purpose has been to help you recognise the categories of land use and understand how decisions are made to allocate land fairly and effectively. By studying these aspects, you have gained insight into the practical considerations that underpin land use planning.

We began with residential and commercial land use, focusing on their characteristics and interactions. Then we explored agricultural and industrial land use, considering both their requirements and potential conflicts. Following that, we looked at recreational and institutional land use, emphasising the need for balance in community development. Finally, we analysed the criteria for land use selection, including physical, socio-economic, and political factors. In line with the Series Learning Outcomes, you should now be able to describe residential and commercial land use, explain agricultural and industrial requirements, analyse recreational and institutional importance, and evaluate the criteria that guide land use decisions.

Glossary of Terms

- **Agricultural land use:** Areas designated for farming activities such as crop production and livestock rearing.
- **Commercial farming:** Large-scale farming aimed at producing crops or livestock for sale in markets.
- **Commercial land use:** Areas designated for trade, business, and services, including markets, shopping centres, and offices.
- **Conflicts (agriculture and industry):** Situations where industrial activities negatively affect farming, such as farmland loss or pollution.
- **Cultural values:** Traditions and beliefs that influence how land is allocated, for example preserving sacred sites.
- **Industrial land use:** Areas designated for manufacturing, processing, and related activities, often separated by zoning laws.
- **Institutional land use:** Areas set aside for public services such as schools, hospitals, government offices, and religious centres.
- **Mixed farming:** A type of agriculture that combines crop cultivation with livestock rearing on the same land.
- **Physical criteria:** Natural and environmental factors such as soil fertility, slope, drainage, and climate that influence land use decisions.
- **Political and legal criteria:** Government policies, regulations, and laws that guide land allocation and use, including zoning and tenure systems.
- **Recreational land use:** Areas designated for leisure and physical activities, such as parks, playgrounds, and sports facilities.
- **Socio-economic criteria:** Human and community-related factors such as population needs, economic viability, and demand for services that shape land use choices.



- **Subsistence farming:** Small-scale farming where crops are grown mainly for household consumption rather than sale.
- **Zoning requirements:** Rules that separate different types of land use, such as residential, commercial, and industrial, to prevent conflicts.

Concept Check Questions [Series 3]

Objective Questions

Which of the following is an example of residential land use?

- a) Parks
- b) Housing estates
- c) Factories
- d) Shopping centres

1. (Linked to SLO 3.1)

Subsistence farming is best described as:

- a) Large-scale farming for sale
- b) Farming for household consumption
- c) Farming combining crops and livestock
- d) Farming for industrial processing

2. (Linked to SLO 3.2)

Which of the following is an institutional land use?

- a) Market
- b) Hospital
- c) Playground
- d) Factory

3. (Linked to SLO 3.3)

Zoning laws are an example of:

- a) Physical criteria
- b) Socio-economic criteria
- c) Political and legal criteria
- d) Cultural values

4. (Linked to SLO 3.4)

Short-Answer Questions

- 5. Define residential land use and state one of its characteristics. (Linked to SLO 3.1)
- 6. State one difference between commercial farming and subsistence farming. (Linked to SLO 3.2)
- 7. Mention one example of recreational land use. (Linked to SLO 3.3)



8. What is meant by socio-economic criteria in land use selection? (Linked to SLO 3.4)
9. Give one example of a cultural value that influences land use. (Linked to SLO 3.4)

Long-Answer Questions

10. Describe the characteristics of residential and commercial land use, and analyse how they interact. (Linked to SLO 3.1)
11. Explain the types of agricultural land use and evaluate the zoning requirements for industrial land use. (Linked to SLO 3.2)
12. Analyse the importance of recreational and institutional land use in supporting community development. (Linked to SLO 3.3)
13. Evaluate the physical, socio-economic, and political criteria for land use selection, giving examples of each. (Linked to SLO 3.4)

Answers to Concept Check Questions [Series 3]

Objective Questions

1. b) Housing estates
2. b) Farming for household consumption
3. b) Hospital
4. c) Political and legal criteria

Short-Answer Questions

5. Residential land use refers to areas designated for housing and related facilities. One characteristic is provision of shelter.
6. Commercial farming produces crops for sale, while subsistence farming produces mainly for household use.
7. An example of recreational land use is a park.
8. Socio-economic criteria are human and community-related factors such as population needs and economic viability that influence land use decisions.
9. Preserving sacred sites is an example of a cultural value influencing land use.

Long-Answer Questions

Basic response: Residential land use provides housing, while commercial land use supports trade and services. They interact because residents depend on commercial centres for goods and services, and commercial centres thrive near residential areas.

10. **Value-added response:** Outstanding learners may add that poor planning can cause congestion and pollution, while integrated planning ensures accessibility and harmony between living and working spaces.

Basic response: Agricultural land use includes subsistence, commercial, and mixed farming. Industrial land use requires zoning to separate heavy industries from residential areas.

11. **Value-added response:** Advanced learners may evaluate how industrial expansion can displace farmland, but also how industries complement agriculture by providing fertilisers, machinery, and markets.



Basic response: Recreational land use provides leisure and health benefits, while institutional land use ensures access to education, healthcare, and governance. Both are essential for community development.

12. **Value-added response:** Outstanding learners may analyse how balanced provision of recreational and institutional spaces prevents stress, supports inclusivity, and enhances sustainability in urban planning.

Basic response: Physical criteria include slope and soil fertility; socio-economic criteria include population needs and economic viability; political and legal criteria include zoning laws and tenure systems.

13. **Value-added response:** Advanced learners may evaluate how these criteria interact, for example, how political priorities influence socio-economic needs, or how physical limitations require innovative planning solutions.

Answers to Pilot Questions [Series 3]

Part 3.1 Residential and commercial land use

- Residential land use refers to areas designated for housing and related facilities. Its main characteristic is provision of shelter.
- Facilities commonly found in commercial land use include markets, shopping centres, and office complexes.
- Residential and commercial areas interact because residents depend on commercial centres for goods, services, and employment.
- One possible conflict is congestion caused by poor planning of residential and commercial areas.
- Proper planning is important because it reduces conflicts such as noise and pollution and ensures accessibility.

Part 3.2 Agricultural and industrial land use

- Agricultural land use refers to areas designated for farming activities. Its main types are subsistence, commercial, and mixed farming.
- Subsistence farming is small-scale farming where crops are grown mainly for household consumption.
- One zoning requirement for industrial land use is separating heavy industries from residential areas to reduce pollution and safety risks.
- One conflict between agriculture and industry is farmland loss due to industrial expansion.
- Industry complements agriculture by providing fertilisers, machinery, and markets for farm products.

Part 3.3 Recreational and institutional land use

- Recreational land use refers to areas designated for leisure and physical activities such as parks and playgrounds.
- Institutional land use refers to areas designated for public services such as schools, hospitals, and government offices.
- One category of institutional land use is healthcare facilities such as hospitals.



- It is important to balance recreational and institutional land use to ensure sustainable and inclusive communities.
- One benefit of recreational spaces in urban areas is promoting health and social interaction.

Part 3.4 Criteria for land use selection

- Physical criteria are natural and environmental factors such as soil fertility and slope. One example is fertile land being suitable for agriculture.
- One socio-economic criterion for land use selection is population needs.
- A cultural value that may influence land use is preserving sacred sites.
- Political and legal criteria are government policies, regulations, and laws that guide land allocation and use.
- An example of a government regulation that affects land use is zoning laws.

References and Attributions [Series 3]

The following references and attributions cover all sources, illustration placeholders, and suggested OER materials used in **Series 3: Types of Land Use and Criteria for Selection**. The referencing style applied here follows APA guidelines for clarity and consistency.

General References

- Food and Agriculture Organization (FAO). (2017). *Land use planning for sustainable development*. Rome: FAO.
- United Nations Human Settlements Programme (UN-Habitat). (2020). *Land use planning and management*. Nairobi: UN-Habitat.
- World Bank. (2019). *Urban land use and planning strategies*. Washington, DC: World Bank.

Illustration Placeholders and Attributions

- *Figure 3.1: Types of residential land use*
 - AI-generated prompt: "Create a labelled diagram showing low-density housing, medium-density apartments, and high-density estates."
 - Suggested OER search string: "types of residential land use diagram OER."
- *Plate 3.1: Examples of commercial land use*
 - AI-generated prompt: "Generate an image showing a shopping centre, office complex, and market as examples of commercial land use."
 - Suggested OER search string: "examples of commercial land use OER image."
- *Box 3.1: Key interactions between residential and commercial land use*
 - AI-generated prompt: "Create a text box summarising key interactions between residential and commercial land use."
 - Suggested OER search string: "residential and commercial land use interactions OER summary."
- *Table 3.1: Types of agricultural land use*
 - AI-generated prompt: "Create a table showing types of agricultural land use including subsistence, commercial, and mixed farming."
 - Suggested OER search string: "types of agricultural land use OER table."



- *Figure 3.2: Industrial land use and zoning requirements*
 - AI-generated prompt: "Create a labelled diagram showing zoning requirements separating industrial, residential, and commercial areas."
 - Suggested OER search string: "industrial land use zoning diagram OER."
- *Box 3.2: Conflicts and complementarities between agriculture and industry*
 - AI-generated prompt: "Create a text box summarising conflicts and complementarities between agriculture and industry."
 - Suggested OER search string: "agriculture and industry conflicts complementarities OER summary."
- *Plate 3.2: Examples of recreational land use*
 - AI-generated prompt: "Generate an image showing a park, playground, and sports facility as examples of recreational land use."
 - Suggested OER search string: "examples of recreational land use OER image."
- *Figure 3.3: Categories of institutional land use*
 - AI-generated prompt: "Create a labelled diagram showing institutional land use categories including education, healthcare, governance, and religion."
 - Suggested OER search string: "institutional land use categories diagram OER."
- *Box 3.3: Importance of balancing recreational and institutional land use*
 - AI-generated prompt: "Create a text box summarising the importance of balancing recreational and institutional land use."
 - Suggested OER search string: "balancing recreational and institutional land use OER summary."
- *Figure 3.4: Physical criteria for land use selection*
 - AI-generated prompt: "Create a labelled diagram showing slope, soil fertility, and accessibility as physical criteria for land use selection."
 - Suggested OER search string: "physical criteria for land use selection diagram OER."
- *Table 3.2: Socio-economic criteria for land use selection*
 - AI-generated prompt: "Create a table showing socio-economic criteria for land use selection including population needs, economic viability, cultural values, and demand for services."
 - Suggested OER search string: "socio-economic criteria for land use selection OER table."
- *Box 3.4: Political and legal criteria for land use selection*
 - AI-generated prompt: "Create a text box summarising political and legal criteria for land use selection."
 - Suggested OER search string: "political and legal criteria for land use selection OER summary."

COURSE CODE : URP 204

COURSE TITLE : Introduction to Land Use Planning

COURSE UNIT : 2 Units



Series 1: Concepts, Principles, and Importance of Land Use Planning
Series 2: Determinants and Dynamics of Land Use
Series 3: Land Use Types and Selection Criteria
Series 4: Methods, Models, and Tools for Land Use Planning
Series 5: Problems of Land Use Planning and Integrated Spatial Solutions in Nigeria

Here is the proposed outline for Series 4:

Part 4.1 Methods of land use planning

- Survey methods (field surveys, questionnaires, interviews)
- Analytical methods (statistical analysis, spatial analysis)
- Participatory methods (community involvement, stakeholder consultation)

Part 4.2 Models of land use planning

- Descriptive models (land use maps, trend analysis)
- Predictive models (simulation, forecasting)
- Normative models (ideal land use patterns, policy-driven models)

Part 4.3 Tools for land use planning

- Geographic Information Systems (GIS)
- Remote sensing
- Planning support systems (decision support tools, software applications)

Part 4.4 Application of methods, models, and tools

- Case studies in urban planning
- Case studies in rural/agricultural planning
- Integration of approaches for sustainable development

Introduction

In the last Series, we examined the different types of land use and the criteria that guide their selection. Having understood what land uses exist and how they are chosen, we now turn to the practical approaches that planners employ to organise, analyse, and implement land use decisions. This Series is particularly important because it introduces you to the methods, models, and tools that make land use planning systematic, evidence-based, and responsive to community needs.

The aim of this Series is to familiarise you with the key approaches used in land use planning and to equip you with the ability to apply appropriate methods, models, and tools in different planning contexts. By the end of the Series, you will be able to identify, explain, and evaluate these approaches and understand how they contribute to effective planning practice.



We shall commence this Series by exploring the methods of land use planning, including survey, analytical, and participatory approaches. Next, we will examine models of land use planning, distinguishing between descriptive, predictive, and normative models. Following that, we will move on to tools for land use planning, focusing on Geographic Information Systems, remote sensing, and planning support systems. Finally, we will wrap up by considering the application of these methods, models, and tools through case studies in urban and rural contexts, and by discussing how they can be integrated to promote sustainable development.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **SLO 4.1** describe the main methods of land use planning, including survey, analytical, and participatory approaches,
- **SLO 4.2** explain the different models of land use planning, distinguishing between descriptive, predictive, and normative models,
- **SLO 4.3** demonstrate the use of key tools for land use planning such as Geographic Information Systems, remote sensing, and planning support systems, and
- **SLO 4.4** evaluate the application of methods, models, and tools in case studies of urban and rural planning, highlighting their role in sustainable development.

4.1 Methods of Land Use Planning

4.1.1 Survey methods

Survey methods involve collecting data directly from the field to understand land use patterns and community needs. These include **field surveys**, where planners observe and record land use activities; **questionnaires**, which gather structured responses from residents; and **interviews**, which provide detailed insights from stakeholders. Survey methods are essential for obtaining first-hand information that reflects the realities on the ground.

Fill in the blank: Survey methods such as questionnaires and interviews are used to collect _____ information from communities.



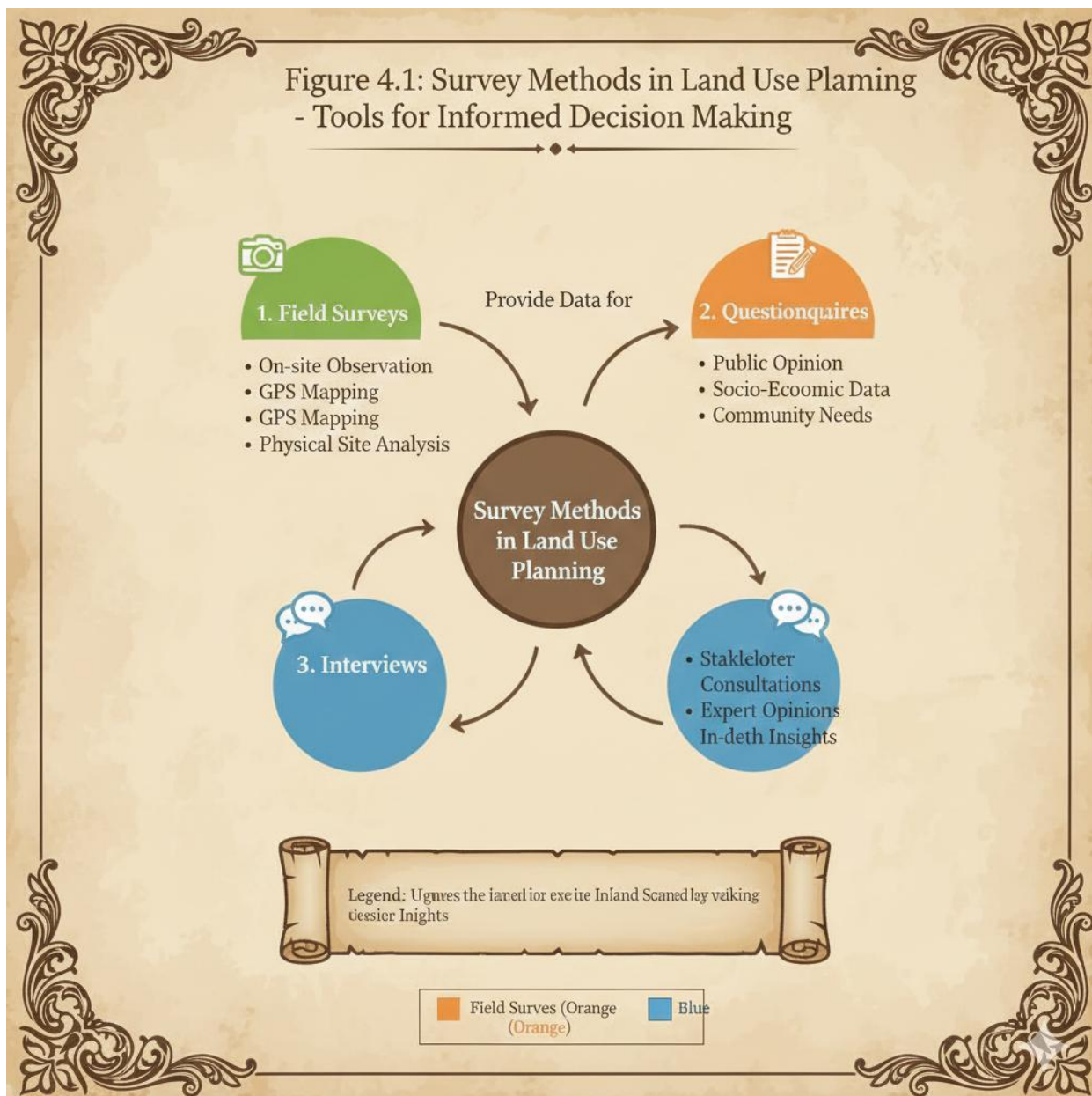


Diagram showing different survey methods (field survey, questionnaire, interview) and their applications in land use planning.

Figure 4.1: Survey methods in land use planning

4.1.2 Analytical methods

Analytical methods refer to techniques used to process and interpret data collected during surveys. These include **statistical analysis**, which identifies trends and relationships in land use data, and **spatial analysis**, which examines how land uses are distributed across



geographic areas. Analytical methods help planners make evidence-based decisions by transforming raw data into meaningful insights.

Fill in the blank: Analytical methods such as statistical and spatial analysis help planners make _____ decisions.

Method	Description	Example Application
Statistical Analysis	<i>The use of mathematical models and numerical data to identify patterns and forecast future needs.</i>	Demographic Forecasting: <i>Predicting how many new apartments will be needed by 2030 based on birth rates and migration.</i>
Spatial Analysis	<i>The examination of land features and human activities based on their geographic location and proximity.</i>	Suitability Mapping: <i>Identifying the best location for a new hospital by analyzing distance from existing clinics and road accessibility.</i>

Table 4.1: Analytical methods in land use planning

4.1.3 Participatory methods

Participatory methods involve engaging communities and stakeholders in the planning process. These include community meetings, workshops, and stakeholder consultations. The aim is to ensure that land use plans reflect the needs and aspirations of the people who will be most affected. Participatory methods promote inclusivity, transparency, and acceptance of planning outcomes.

Fill in the blank: Participatory methods promote inclusivity by involving _____ in the planning process.



Benefit	Description	Long-term Impact
Community Ownership	<i>Residents feel a sense of responsibility for the plan because they helped shape it.</i>	<i>Reduced vandalism and better maintenance of public spaces and infrastructure.</i>
Transparency & Trust	<i>The decision-making process is open to public scrutiny, reducing fears of corruption.</i>	<i>Smoother legal approvals and fewer "NIMBY" (Not In My Backyard) protests.</i>
Local Knowledge	<i>Planners gain "ground-truth" data that maps might miss (e.g., historical flooding or social hubs).</i>	<i>More accurate and functional plans that solve real-world daily problems.</i>
Aspirations & Vision	<i>Plans reflect the unique identity and future hopes of the specific community.</i>	<i>Greater social cohesion and a stronger "sense of place" in new developments.</i>

Box 4.1: Benefits of participatory methods in land use planning

- Encourages community ownership of plans
- Promotes transparency and trust
- Ensures plans reflect local needs and aspirations

Pilot questions 4.1

1. Define survey methods and give one example.
2. State one analytical method used in land use planning.
3. What is meant by participatory methods?
4. Mention one benefit of participatory methods.
5. Why are analytical methods important in land use planning?



4.2 Models of Land Use Planning

4.2.1 Descriptive models

Descriptive models are planning approaches that explain existing land use patterns without attempting to predict or prescribe future changes. They rely on tools such as land use maps, surveys, and trend analysis to show how land is currently being used. These models are useful for identifying baseline conditions and providing planners with a clear picture of the present situation.

Fill in the blank: Descriptive models explain existing land use patterns using tools such as _____ and surveys.

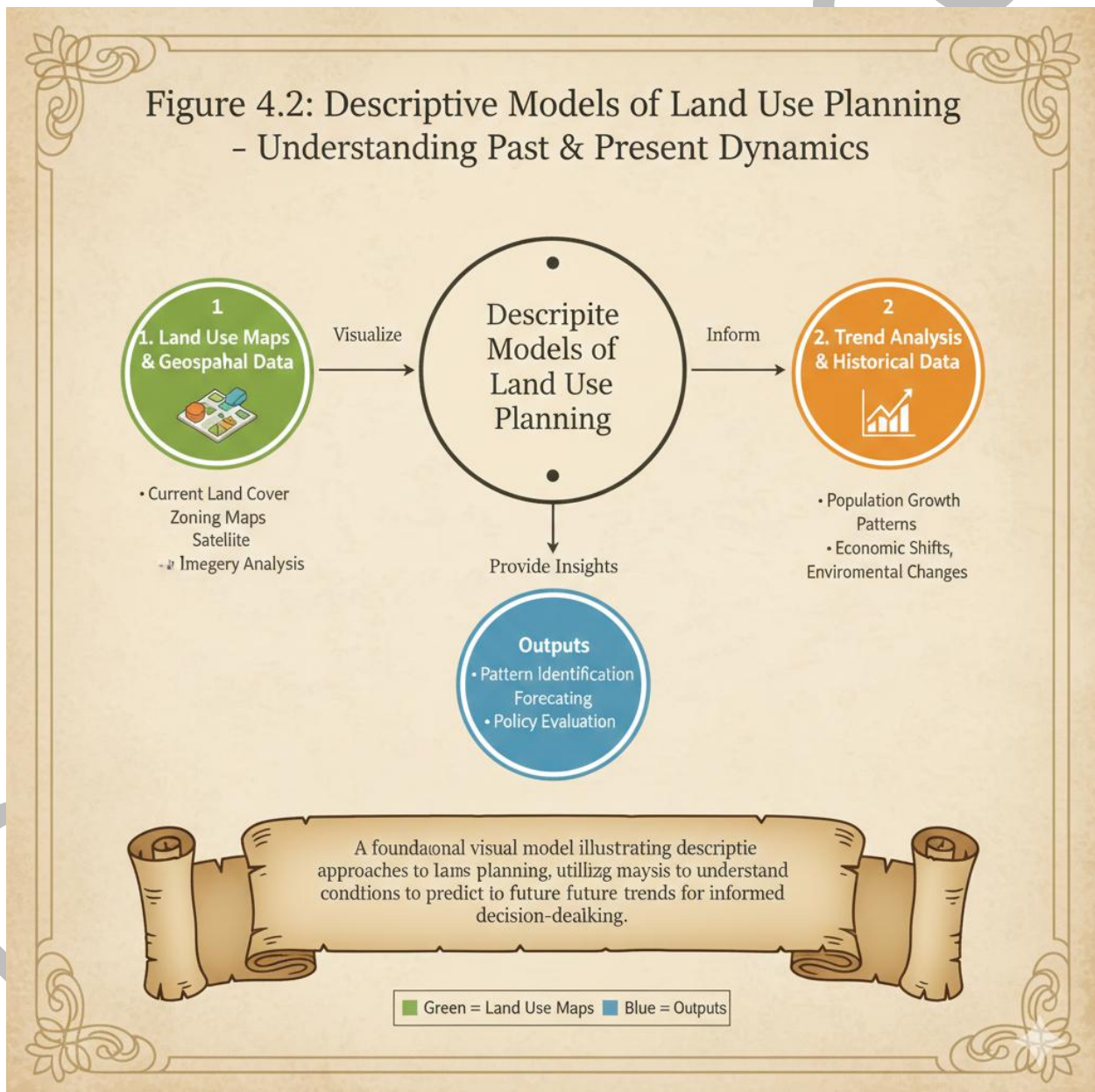


Diagram showing a descriptive model with land use maps and trend analysis.
Figure 4.2: Descriptive models of land use planning

4.2.2 Predictive models

Predictive models are designed to forecast future land use changes based on current data and trends. They use simulation techniques, statistical projections, and scenario analysis to anticipate how land use might evolve under different conditions. Predictive models help planners prepare for challenges such as urban expansion, population growth, or environmental change.

Fill in the blank: Predictive models use simulation techniques and _____ projections to forecast future land use changes.

Model Type	Description	Example Application
Simulation	Uses computer algorithms to replicate real-world systems and test how they respond to changes.	Urban Growth Modeling: Simulating how a new highway will cause "sprawl" in the next 20 years.
Statistical Projection	Extends historical numerical trends into the future using mathematical formulas.	Housing Demand: Calculating exactly how many schools and clinics are needed based on birth rates.
Scenario Analysis	Creates multiple "what-if" stories to help decision-makers prepare for uncertainty.	Climate Adaptation: Mapping which areas will flood if sea levels rise by 0.5m vs. 1.0m.

Table 4.2: Predictive models in land use planning



4.2.3 Normative models

Normative models are planning approaches that prescribe ideal or desired land use patterns based on policy goals or community values. They are not concerned with describing or predicting but rather with setting standards for how land should be used. Examples include zoning plans, master plans, and policy-driven frameworks that aim to achieve sustainability, equity, or economic growth.

Fill in the blank: Normative models prescribe ideal land use patterns based on _____ goals or community values.

Model Type	Purpose	Guiding Principle
Zoning Plans	<i>Legal separation of land into specific use categories.</i>	Order & Health: <i>Protecting residential life from industrial nuisances.</i>
Master Plans	<i>Comprehensive, long-term blueprints for a city's physical growth.</i>	Coordination: <i>Ensuring infrastructure (roads, water) grows in sync with buildings.</i>
Policy Frameworks	<i>High-level strategies (e.g., "The Green City Initiative").</i>	Sustainability & Equity: <i>Balancing economic profit with social and environmental health.</i>

Box 4.2: Examples of normative models in land use planning

- Zoning plans that separate residential, commercial, and industrial areas
 - Master plans that guide long-term development of cities
 - Policy frameworks promoting sustainability and equity

Pilot questions 4.2

1. Define descriptive models and state one tool they use.
2. What is meant by predictive models in land use planning?
3. Mention one technique used in predictive models.
4. Define normative models and give one example.



5. Why are normative models important in guiding land use planning?

4.3 Tools for Land Use Planning

4.3.1 Geographic Information Systems (GIS)

Geographic Information Systems (GIS) are computer-based tools used to capture, store, analyse, and display spatial data. They allow planners to visualise land use patterns, assess environmental impacts, and model future scenarios. GIS integrates maps with data, making it easier to identify relationships between land use and factors such as population density, infrastructure, or natural resources.

Fill in the blank: GIS integrates maps with _____ to help planners identify relationships between land use and other factors.





Diagram showing GIS layers (population, infrastructure, land use, environment) integrated into a single map.

Figure 4.3: GIS as a tool for land use planning

4.3.2 Remote sensing

Remote sensing refers to the collection of information about the Earth's surface using satellites or aerial photography. It provides planners with up-to-date data on land cover, vegetation, water bodies, and urban growth. Remote sensing is particularly useful for monitoring changes over time and for areas that are difficult to access physically.



Fill in the blank: Remote sensing collects information about the Earth's surface using _____ or aerial photography.



Image showing satellite imagery of urban growth and vegetation cover.
Plate 4.1: Remote sensing in land use planning

4.3.3 Planning support systems (PSS)

Planning support systems (PSS) are specialised software applications designed to assist planners in decision-making. They combine data analysis, modelling, and visualisation tools to evaluate different planning scenarios. PSS can be used to test the impacts of proposed



developments, assess sustainability, and support stakeholder engagement by presenting clear visual outputs.

Fill in the blank: Planning support systems combine data analysis, modelling, and _____ tools to evaluate planning scenarios.

Function	What it Does	Planning Outcome
Impact Evaluation	<i>Quantifies the effects of a new project on traffic, drainage, and local services.</i>	<i>Prevents "unforeseen" consequences, like a new mall causing gridlock on local streets.</i>
Sustainability Assessment	<i>Measures land use options against environmental and social indicators.</i>	<i>Ensures developments don't exceed the land's "carrying capacity" or destroy vital ecosystems.</i>
Stakeholder Engagement	<i>Uses 3D models and interactive maps to show the public proposed changes.</i>	<i>Moves the conversation from complex legal jargon to clear, visual "before and after" scenarios.</i>

Box 4.3: Functions of planning support systems

- *Evaluate impacts of proposed developments*
 - *Assess sustainability of land use options*
- *Support stakeholder engagement with visual outputs*

Pilot questions 4.3

1. Define GIS and state one of its uses in land use planning.
2. What is meant by remote sensing?
3. Mention one advantage of remote sensing for planners.
4. Define planning support systems and give one of their functions.
5. Why are tools such as GIS and PSS important for effective land use planning?



4.4 Application of Methods, Models, and Tools

4.4.1 Case studies in urban planning

Urban planning often requires the integration of methods, models, and tools to manage growth and development. For example, planners may use **survey methods** to collect data on housing demand, apply **predictive models** to forecast population growth, and employ **GIS tools** to visualise land use changes. These combined approaches help cities address challenges such as congestion, housing shortages, and environmental sustainability.

Fill in the blank: Urban planners use predictive models to forecast _____ growth and housing demand.





Diagram showing integration of survey methods, predictive models, and GIS tools in urban planning.

Figure 4.4: Application of methods, models, and tools in urban planning

4.4.2 Case studies in rural and agricultural planning

Rural and agricultural planning also benefits from applying different approaches. **Remote sensing** can be used to monitor farmland and vegetation cover, while **analytical methods** help assess soil fertility and crop yields. **Normative models** may prescribe land allocation for



sustainable farming practices. Together, these applications support food security, rural development, and environmental conservation.

Fill in the blank: Remote sensing is particularly useful in monitoring farmland and _____ cover.



*Image showing satellite monitoring of farmland and vegetation cover.
Plate 4.2: Application of tools in rural and agricultural planning*

4.4.3 Integration of approaches for sustainable development

Effective land use planning requires the integration of methods, models, and tools to achieve **sustainable development**, which refers to meeting present needs without compromising future



generations. For instance, participatory methods ensure community involvement, predictive models anticipate future challenges, and planning support systems provide decision-making frameworks. When combined, these approaches create balanced plans that promote economic growth, social equity, and environmental protection.

Fill in the blank: Sustainable development in land use planning aims to meet present needs without compromising _____ generations.

Approach	Integrated Role	Sustainability Outcome
Participatory Methods	<i>Bridges the gap between technical design and local lived experience.</i>	Social Equity: <i>Ensures marginalized voices are heard and the plan belongs to the people.</i>
Predictive Models	<i>Simulates future pressures like population surges or climate risks.</i>	Environmental Protection: <i>Prevents building in future flood zones or destroying vital ecosystems.</i>
Support Systems (PSS)	<i>Synthesizes complex data into clear, visual decision-making tools.</i>	Economic Growth: <i>Provides investors with certainty and data-backed infrastructure plans.</i>
The Result	Holistic Planning: <i>A unified strategy that balances people, planet, and profit.</i>	Resilience: <i>A city that can adapt to 21st-century shocks while thriving daily.</i>

Box 4.4: Integration of approaches for sustainable development

- Participatory methods ensure inclusivity and community ownership
- Predictive models anticipate future challenges such as urban expansion
- Planning support systems provide frameworks for decision-making
- Integration promotes economic growth, social equity, and environmental protection

Pilot questions 4.4



1. Give one example of how methods, models, and tools are applied in urban planning.
2. State one use of remote sensing in rural planning.
3. What is meant by sustainable development in land use planning?
4. Mention one benefit of integrating participatory methods into planning.
5. Why is it important to combine different approaches in land use planning?

Series Summary

This Series has focused on the practical approaches that make land use planning systematic, evidence-based, and responsive to community needs. Its purpose has been to introduce you to the methods, models, and tools that planners use to collect data, interpret information, and design effective strategies for both urban and rural contexts. By engaging with these topics, you have gained insight into how planning decisions are supported by structured techniques and technological applications.

We began by examining methods of land use planning, including survey, analytical, and participatory approaches. Then we explored models of land use planning, distinguishing between descriptive, predictive, and normative types. Following that, we studied tools such as Geographic Information Systems, remote sensing, and planning support systems. Finally, we considered how these methods, models, and tools are applied in practice through case studies and integration for sustainable development. In line with the Series Learning Outcomes, you should now be able to describe planning methods, explain different models, demonstrate the use of key tools, and evaluate their application in real-world planning scenarios.

Glossary of Terms

- **Analytical methods:** Techniques used to process and interpret data, such as statistical and spatial analysis, to support planning decisions.
- **Descriptive models:** Planning approaches that explain existing land use patterns using tools like maps and surveys, without predicting or prescribing future changes.
- **Geographic Information Systems (GIS):** Computer-based tools that capture, store, analyse, and display spatial data, helping planners visualise and assess land use patterns.
- **Normative models:** Planning approaches that prescribe ideal or desired land use patterns based on policy goals or community values.
- **Participatory methods:** Approaches that involve communities and stakeholders in the planning process through meetings, workshops, or consultations, ensuring inclusivity and ownership.
- **Planning support systems (PSS):** Software applications that combine data analysis, modelling, and visualisation to assist planners in evaluating scenarios and making decisions.
- **Predictive models:** Planning approaches that forecast future land use changes using simulations, statistical projections, or scenario analysis.
- **Remote sensing:** The collection of information about the Earth's surface using satellites or aerial photography, often used to monitor land cover and environmental changes.
- **Survey methods:** Data collection techniques such as field surveys, questionnaires, and interviews that provide first-hand information about land use and community needs.



- **Sustainable development:** A planning principle that aims to meet present needs without compromising the ability of future generations to meet theirs.

Concept Check Questions [Series 4]

Objective Questions

Which of the following is a survey method used in land use planning?

- a) Remote sensing
- b) Questionnaire
- c) GIS
- d) Predictive modelling

1. (Linked to SLO 4.1)

Descriptive models in land use planning are mainly concerned with:

- a) Prescribing ideal land use patterns
- b) Forecasting future land use changes
- c) Explaining existing land use patterns
- d) Designing zoning laws

2. (Linked to SLO 4.2)

Which tool integrates maps with data to help planners visualise land use patterns?

- a) Remote sensing
- b) GIS
- c) Scenario analysis
- d) Master plan

3. (Linked to SLO 4.3)

Sustainable development in land use planning aims to:

- a) Focus only on present needs
- b) Meet present needs without compromising future generations
- c) Prioritise industrial growth over environmental protection
- d) Limit community participation in planning

4. (Linked to SLO 4.4)

Short-Answer Questions

- 5. Define survey methods and give one example. (Linked to SLO 4.1)
- 6. State one difference between predictive models and normative models. (Linked to SLO 4.2)
- 7. What is meant by remote sensing in land use planning? (Linked to SLO 4.3)
- 8. Mention one function of planning support systems. (Linked to SLO 4.3)



9. Give one example of how participatory methods contribute to sustainable development. (Linked to SLO 4.4)

Long-Answer Questions

10. Describe survey, analytical, and participatory methods of land use planning, highlighting their importance. (Linked to SLO 4.1)
11. Explain descriptive, predictive, and normative models of land use planning, and evaluate their usefulness. (Linked to SLO 4.2)
12. Demonstrate how GIS, remote sensing, and planning support systems are applied in land use planning. (Linked to SLO 4.3)
13. Evaluate the application of methods, models, and tools in case studies of urban and rural planning, and discuss their role in sustainable development. (Linked to SLO 4.4)

Answers to Concept Check Questions [Series 4]

Objective Questions

1. b) Questionnaire
2. c) Explaining existing land use patterns
3. b) GIS
4. b) Meet present needs without compromising future generations

Short-Answer Questions

5. Survey methods are techniques for collecting first-hand data, such as questionnaires or interviews.
6. Predictive models forecast future land use changes, while normative models prescribe ideal land use patterns.
7. Remote sensing is the collection of information about the Earth's surface using satellites or aerial photography.
8. Planning support systems evaluate scenarios and assist decision-making by combining data analysis, modelling, and visualisation.
9. Participatory methods contribute to sustainable development by ensuring community ownership and inclusivity in planning decisions.

Long-Answer Questions

Basic response: Survey methods collect first-hand data, analytical methods process and interpret data, and participatory methods involve communities in planning. Together, they provide accurate information and inclusivity.

10. **Value-added response:** Outstanding learners may add that combining these methods ensures transparency, strengthens trust, and improves the acceptance of land use plans.

Basic response: Descriptive models explain current land use, predictive models forecast future changes, and normative models prescribe ideal patterns. Each serves a distinct purpose in planning.



11. **Value-added response:** Advanced learners may evaluate that descriptive models provide baselines, predictive models prepare for challenges, and normative models align planning with policy goals, making them complementary.

Basic response: GIS visualises spatial data, remote sensing monitors land cover, and planning support systems evaluate scenarios. These tools enhance decision-making.

12. **Value-added response:** Outstanding learners may demonstrate how integrating these tools allows planners to anticipate environmental impacts, engage stakeholders, and design sustainable strategies.

Basic response: In urban planning, predictive models and GIS help manage growth, while in rural planning, remote sensing and analytical methods support agriculture. Integration promotes sustainability.

13. **Value-added response:** Advanced learners may discuss how combining participatory methods, predictive models, and planning support systems ensures balanced development, addressing economic, social, and environmental needs simultaneously.

Answers to Pilot Questions [Series 4]

Part 4.1 Methods of land use planning

- Survey methods are techniques for collecting first-hand data, such as questionnaires, interviews, or field surveys.
- One analytical method used in land use planning is statistical analysis.
- Participatory methods involve engaging communities and stakeholders in the planning process.
- One benefit of participatory methods is that they promote transparency and community ownership of plans.
- Analytical methods are important because they help planners make evidence-based decisions.

Part 4.2 Models of land use planning

- Descriptive models explain existing land use patterns and one tool they use is land use maps.
- Predictive models are approaches that forecast future land use changes.
- One technique used in predictive models is scenario analysis.
- Normative models prescribe ideal land use patterns, and one example is zoning plans.
- Normative models are important because they guide planning towards policy goals and community values.

Part 4.3 Tools for land use planning

- GIS is a computer-based tool that captures, stores, analyses, and displays spatial data. One of its uses is visualising land use patterns.



- Remote sensing is the collection of information about the Earth's surface using satellites or aerial photography.
- One advantage of remote sensing is that it provides up-to-date data for areas that are difficult to access.
- Planning support systems are software applications that assist planners in decision-making. One of their functions is evaluating the impacts of proposed developments.
- Tools such as GIS and PSS are important because they enhance decision-making and support sustainable planning.

Part 4.4 Application of methods, models, and tools

- An example of application in urban planning is using predictive models and GIS to forecast and manage city growth.
- One use of remote sensing in rural planning is monitoring farmland and vegetation cover.
- Sustainable development in land use planning means meeting present needs without compromising the ability of future generations to meet theirs.
- One benefit of integrating participatory methods is ensuring inclusivity and community ownership of plans.
- It is important to combine different approaches in land use planning because integration promotes balanced development that addresses economic, social, and environmental needs.

References and Attributions [Series 4]

The following references and attributions cover all sources, illustration placeholders, and suggested OER materials used in **Series 4: Methods, Models, and Tools for Land Use Planning**. The referencing style applied here follows APA guidelines for clarity and consistency.

General References

- Food and Agriculture Organization (FAO). (2017). *Land use planning for sustainable development*. Rome: FAO.
- United Nations Human Settlements Programme (UN-Habitat). (2020). *Land use planning and management*. Nairobi: UN-Habitat.
- World Bank. (2019). *Urban land use and planning strategies*. Washington, DC: World Bank.
- Campbell, S., & Fainstein, S. (2012). *Readings in planning theory*. Oxford: Wiley-Blackwell.

Illustration Placeholders and Attributions

- *Figure 4.1: Survey methods in land use planning*
 - AI-generated prompt: "Create a labelled diagram showing field surveys, questionnaires, and interviews as survey methods in land use planning."
 - Suggested OER search string: "survey methods in land use planning diagram OER."



- **Table 4.1: Analytical methods in land use planning**
 - AI-generated prompt: "Create a table showing analytical methods in land use planning including statistical and spatial analysis."
 - Suggested OER search string: "analytical methods in land use planning OER table."
- **Box 4.1: Benefits of participatory methods in land use planning**
 - AI-generated prompt: "Create a text box summarising the benefits of participatory methods in land use planning."
 - Suggested OER search string: "participatory methods in land use planning OER summary."
- **Figure 4.2: Descriptive models of land use planning**
 - AI-generated prompt: "Create a labelled diagram showing descriptive models of land use planning using maps and trend analysis."
 - Suggested OER search string: "descriptive models land use planning diagram OER."
- **Table 4.2: Predictive models in land use planning**
 - AI-generated prompt: "Create a table showing predictive models in land use planning including simulation, statistical projection, and scenario analysis."
 - Suggested OER search string: "predictive models land use planning OER table."
- **Box 4.2: Examples of normative models in land use planning**
 - AI-generated prompt: "Create a text box summarising examples of normative models in land use planning."
 - Suggested OER search string: "normative models land use planning OER summary."
- **Figure 4.3: GIS as a tool for land use planning**
 - AI-generated prompt: "Create a labelled diagram showing GIS layers such as population, infrastructure, land use, and environment."
 - Suggested OER search string: "GIS layers land use planning diagram OER."
- **Plate 4.1: Remote sensing in land use planning**
 - AI-generated prompt: "Generate an image showing satellite imagery of urban growth and vegetation cover for land use planning."
 - Suggested OER search string: "remote sensing land use planning OER satellite image."
- **Box 4.3: Functions of planning support systems in land use planning**
 - AI-generated prompt: "Create a text box summarising the functions of planning support systems in land use planning."
 - Suggested OER search string: "planning support systems land use OER summary."
- **Figure 4.4: Application of methods, models, and tools in urban planning**
 - AI-generated prompt: "Create a labelled diagram showing survey methods, predictive models, and GIS tools applied in urban planning."
 - Suggested OER search string: "urban planning application of land use methods OER diagram."
- **Plate 4.2: Application of tools in rural and agricultural planning**
 - AI-generated prompt: "Generate an image showing satellite monitoring of farmland and vegetation cover for agricultural planning."
 - Suggested OER search string: "remote sensing farmland vegetation cover OER image."
- **Box 4.4: Integration of approaches for sustainable development in land use planning**
 - AI-generated prompt: "Create a text box summarising integration of methods, models, and tools for sustainable development in land use planning."



- Suggested OER search string: “integration of land use planning approaches sustainable development OER summary.”

COURSE CODE : URP 204

COURSE TITLE : Introduction to Land Use Planning

COURSE UNIT : 2 Units

Series 1: Concepts, Principles, and Importance of Land Use Planning

Series 2: Determinants and Dynamics of Land Use

Series 3: Land Use Types and Selection Criteria

Series 4: Methods, Models, and Tools for Land Use Planning

Series 5: Problems of Land Use Planning and Integrated Spatial Solutions in Nigeria

Here is the proposed outline for Series 5:

Part 5.1 Problems of land use planning in Nigeria

- Institutional and administrative challenges
- Legal and policy-related issues
- Socio-economic and cultural constraints

Part 5.2 Physical and environmental challenges

- Rapid urbanisation and informal settlements
- Environmental degradation and resource conflicts
- Inadequate infrastructure and poor spatial organisation

Part 5.3 Integrated spatial solutions

- Role of Geographic Information Systems (GIS) and remote sensing
- Participatory and community-based approaches
- Policy reforms and institutional strengthening

Part 5.4 Case studies and best practices in Nigeria

- Urban renewal projects
- Agricultural land management initiatives
- Sustainable development programmes



Introduction

In the last Series, we explored the methods, models, and tools that make land use planning systematic and evidence-based. Building on that foundation, we now turn our attention to the real-world challenges that affect planning practice in Nigeria. Land use planning in the country faces numerous obstacles, ranging from institutional weaknesses to environmental pressures, yet integrated spatial solutions offer pathways to overcome these problems. This Series is particularly relevant because it connects theory with practice, helping you understand both the difficulties and the strategies for achieving sustainable outcomes.

The aim of this Series is to examine the major problems of land use planning in Nigeria and to equip you with knowledge of integrated spatial solutions that can address these challenges effectively. By the end of the Series, you will be able to identify key problems, analyse their impacts, and evaluate solutions that promote sustainable development.

We shall commence this Series by studying the problems of land use planning in Nigeria, focusing on institutional, legal, and socio-economic constraints. Next, we will move on to physical and environmental challenges such as rapid urbanisation, environmental degradation, and inadequate infrastructure. Following that, we will explore integrated spatial solutions, including the use of Geographic Information Systems, participatory approaches, and policy reforms. Finally, we will wrap up by examining case studies and best practices in Nigeria, highlighting urban renewal projects, agricultural land management initiatives, and sustainable development programmes.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **SLO 5.1** identify institutional, legal, and socio-economic problems of land use planning in Nigeria,
- **SLO 5.2** analyse physical and environmental challenges such as rapid urbanisation and resource conflicts,
- **SLO 5.3** explain integrated spatial solutions including GIS, participatory approaches, and policy reforms, and
- **SLO 5.4** evaluate case studies and best practices in Nigeria that demonstrate sustainable land use planning.

5.1 Problems of Land Use Planning in Nigeria

5.1.1 Institutional and administrative challenges



Institutional challenges refer to weaknesses in the organisations responsible for land use planning. In Nigeria, many planning institutions face issues such as inadequate funding, poor coordination among agencies, and limited technical capacity. **Administrative challenges** include bureaucratic delays, corruption, and weak enforcement of planning regulations. These problems reduce the effectiveness of land use planning and often result in unregulated development.

Fill in the blank: Institutional challenges such as poor coordination among agencies often lead to _____ development.

Challenge	Primary Impact	Resulting Urban Condition
Inadequate Funding	<i>Agencies lack the tools (GIS, vehicles, drones) and trained staff needed for modern oversight.</i>	<i>Outdated maps and "guesswork" in development control.</i>
Bureaucratic Delays	<i>Long waiting periods for building permits and land titles.</i>	<i>Encourages "informal" building without approval to save time.</i>
Weak Enforcement	<i>Lack of political will or manpower to stop illegal structures or zoning violations.</i>	<i>Encroachment on green belts and public rights-of-way.</i>
Corruption	<i>"Under-the-table" payments for land allocation or bypassing building codes.</i>	<i>Distorted land markets and increased risk of building collapses.</i>

Box 5.1: Examples of institutional and administrative challenges

- *Inadequate funding for planning agencies*
- *Bureaucratic delays in approving plans*
- *Weak enforcement of regulations*
- *Corruption in land allocation processes*



5.1.2 Legal and policy-related issues

Legal issues arise from outdated laws, conflicting statutes, and weak enforcement mechanisms. For example, land tenure systems in Nigeria are complex, with overlapping customary and statutory rights. **Policy-related issues** include inconsistent government policies and lack of political will to implement reforms. These problems create uncertainty and discourage investment in planned development.

Fill in the blank: Legal issues in Nigeria often stem from overlapping _____ and statutory rights.

Issue Type	Description	Real-World Example
Legal	Outdated & Conflicting Statutes: Reliance on laws that don't account for modern urban density, plus friction between federal and state powers.	Land Use Act (1978): Conflicts between the Governor's statutory power and the "Inherent Rights" of customary landowners/communities.
Policy	Inconsistency & Discontinuity: New administrations often abandon the urban plans of their predecessors, leading to "abandoned" visions.	Abandoned Master Plans: A state government starting a new "Smart City" project while leaving the previous administration's "Housing for All" scheme unfinished.

Table 5.1: Legal and policy-related issues in land use planning

5.1.3 Socio-economic and cultural constraints

Socio-economic constraints include poverty, rapid population growth, and limited access to resources. These factors make it difficult for communities to comply with planning regulations or invest in sustainable development. **Cultural constraints** arise from traditional practices and beliefs that may conflict with modern planning approaches. For instance, resistance to relocation from ancestral lands can hinder urban renewal projects.

Fill in the blank: Cultural constraints such as resistance to relocation from _____ lands can hinder urban renewal projects.



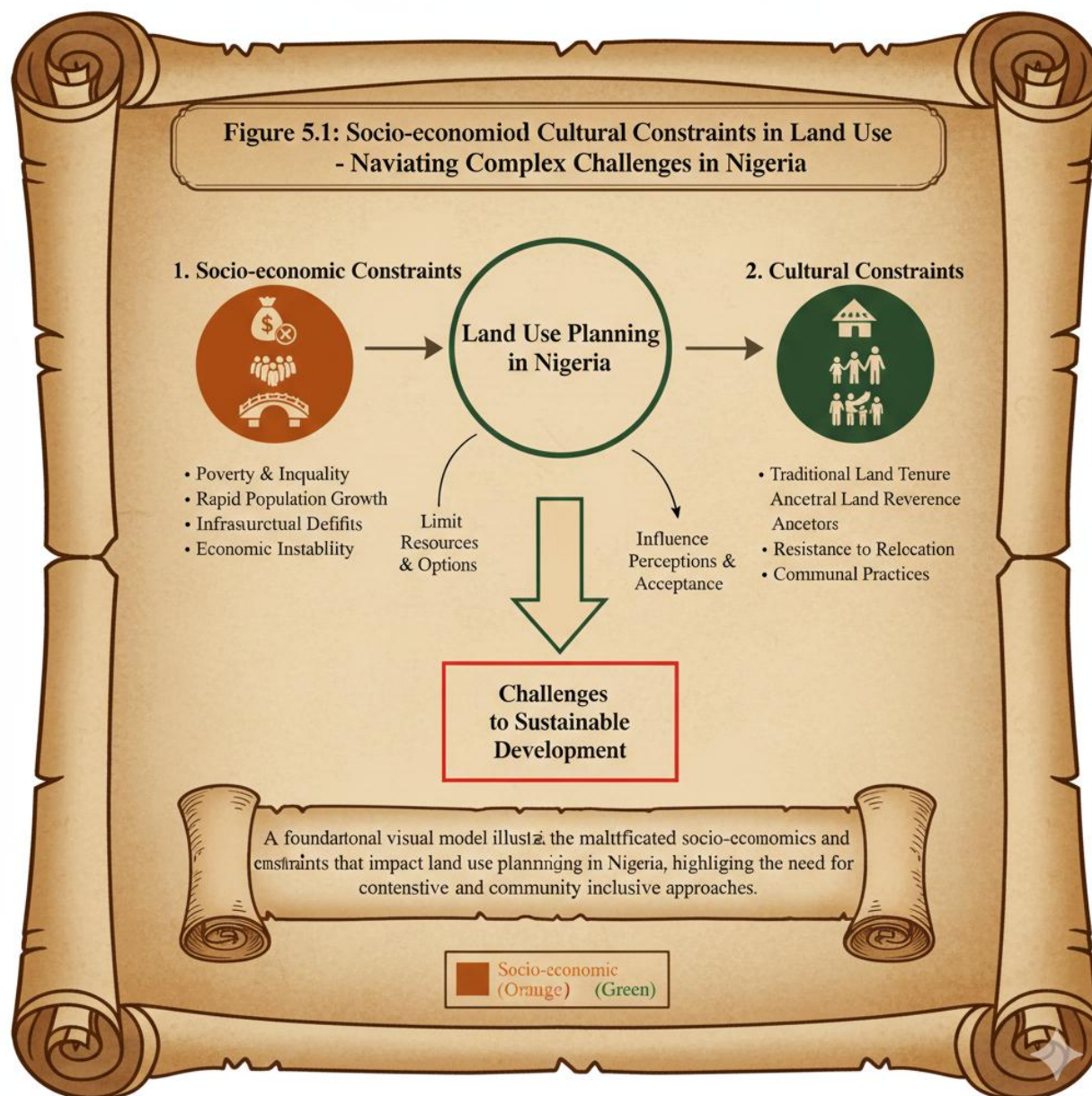


Diagram showing socio-economic and cultural constraints affecting land use planning.
Figure 5.1: Socio-economic and cultural constraints in land use planning

Pilot questions 5.1

1. Define institutional challenges in land use planning.
2. State one example of an administrative challenge in Nigeria.
3. What is meant by legal issues in land use planning?
4. Mention one policy-related issue affecting land use planning.
5. Give one example of a cultural constraint that hinders land use planning.

5.2 Physical and Environmental Challenges



5.2.1 Rapid urbanisation and informal settlements

Rapid urbanisation refers to the fast growth of cities due to population increase and rural-to-urban migration. In Nigeria, this has led to the expansion of cities beyond planned limits. One major consequence is the rise of **informal settlements**, which are unplanned residential areas lacking basic infrastructure and services. These settlements often emerge because formal housing cannot keep pace with demand.

Fill in the blank: Rapid urbanisation in Nigeria often results in the growth of _____ settlements that lack basic services.

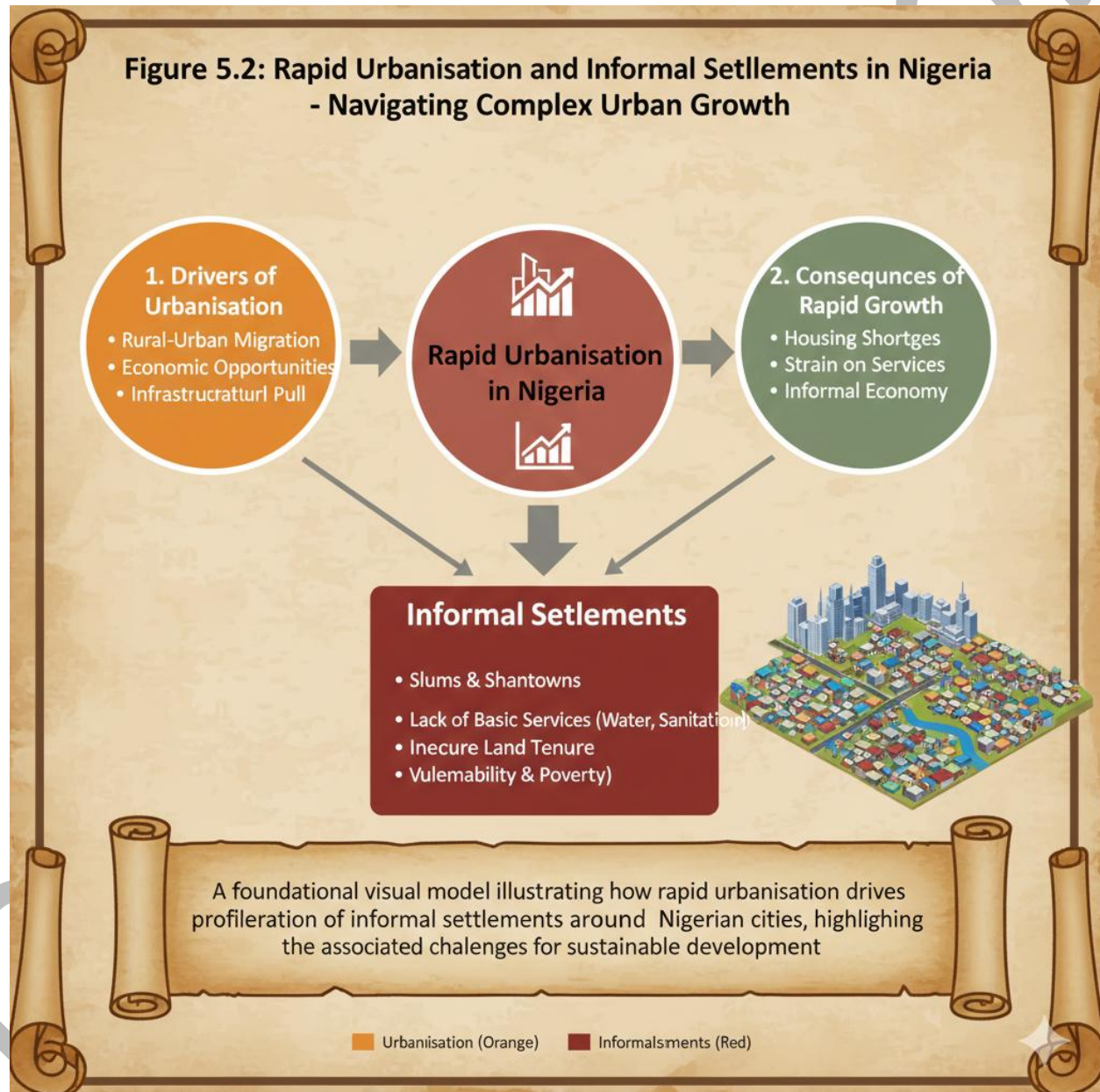


Diagram showing rapid urbanisation leading to informal settlements around city centres.
Figure 5.2: Rapid urbanisation and informal settlements in Nigeria



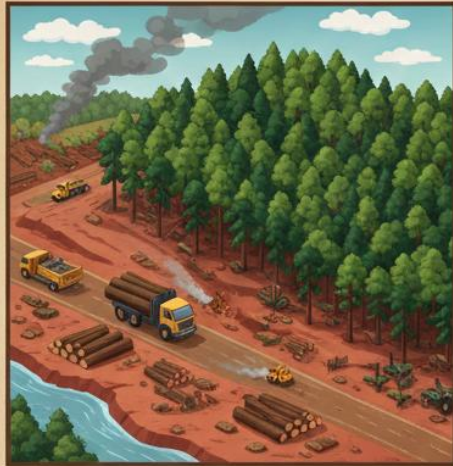
5.2.2 Environmental degradation and resource conflicts

Environmental degradation is the deterioration of the natural environment through activities such as deforestation, pollution, and poor waste management. In Nigeria, this is often linked to uncontrolled urban expansion and industrial activities. **Resource conflicts** occur when communities compete for scarce resources such as land, water, or grazing areas. These conflicts are intensified by poor planning and environmental stress.

Fill in the blank: Resource conflicts in Nigeria are often intensified by poor planning and environmental _____.



Plate 5.1: Environmental Degradation in Nigeria - Urgent Challenges to Land & Ecosystems



1. Deforestation & Habitat Loss



2. Land Degradation & Erosion

A foundational visual case study illustrating critical environmental challenges in Nigeria, showing the impacts of deforestation and degradation on ecosystems, on agriculture, and communities, highlighting the need for sustainable land management practices.

■ Deforestation ■ (Erosion)



Image showing deforestation and land degradation in Nigeria.
Plate 5.1: Environmental degradation in Nigeria

5.2.3 Inadequate infrastructure and poor spatial organisation

Inadequate infrastructure refers to insufficient facilities such as roads, drainage systems, water supply, and electricity. In many Nigerian cities, infrastructure development has not kept pace with population growth. **Poor spatial organisation** means that land uses are not properly arranged, leading to congestion, traffic problems, and inefficient service delivery. Together, these challenges reduce the quality of life and hinder sustainable development.



Fill in the blank: Poor spatial organisation in Nigerian cities often leads to congestion and _____ problems.

Challenge	Description	Local Consequence
Inadequate Infrastructure	<i>The deficit or total absence of basic skeletal services needed for urban functionality.</i>	Poor Drainage: Recurrent flash flooding in areas like Lagos (Lekki/Ajah) or Lokoja during the rainy season.
Poor Spatial Organisation	<i>The haphazard mixing of incompatible land uses and lack of a coherent street hierarchy.</i>	Traffic Congestion: Gridlock in city centers (e.g., Onitsha or Ibadan) due to shops, schools, and homes sharing a single narrow road.

Table 5.2: Examples of inadequate infrastructure and poor spatial organisation

Pilot questions 5.2

1. Define rapid urbanisation and state one of its consequences.
2. What is meant by informal settlements?
3. Give one example of environmental degradation in Nigeria.
4. What are resource conflicts and why do they occur?
5. Mention one effect of poor spatial organisation in Nigerian cities.

5.3 Integrated Spatial Solutions

5.3.1 Role of Geographic Information Systems (GIS) and remote sensing

Geographic Information Systems (GIS) are computer-based tools that capture, store, analyse, and display spatial data. They help planners visualise land use patterns, identify



environmental risks, and design effective solutions. **Remote sensing** refers to the use of satellite imagery and aerial photography to monitor land cover, vegetation, and urban growth. Together, GIS and remote sensing provide accurate and up-to-date information that supports evidence-based planning in Nigeria.

Fill in the blank: Remote sensing provides planners with _____ imagery that helps monitor land cover and urban growth.

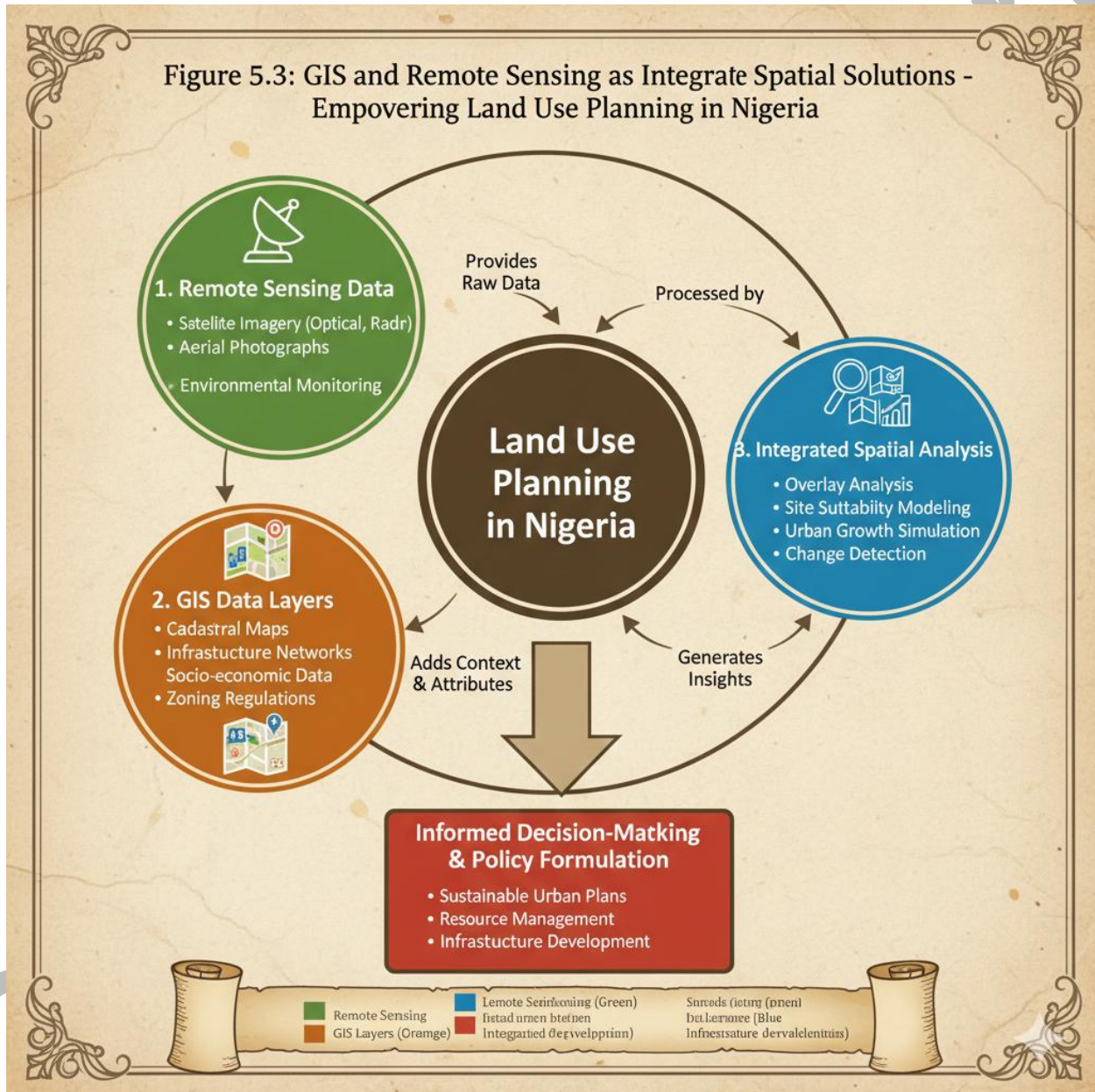


Diagram showing integration of GIS and remote sensing in land use planning.

Figure 5.3: GIS and remote sensing as integrated spatial solutions



5.3.2 Participatory and community-based approaches

Participatory approaches involve engaging communities and stakeholders in the planning process. This ensures that land use plans reflect local needs and values. **Community-based approaches** go further by empowering local groups to take ownership of planning initiatives, such as neighbourhood upgrading or rural land management. These approaches promote inclusivity, transparency, and acceptance of planning outcomes, making them vital for integrated solutions in Nigeria.

Fill in the blank: Participatory approaches ensure that land use plans reflect _____ needs and values.

<i>Benefit</i>	<i>Practical Application in Nigeria</i>	<i>Impact on Planning</i>
<i>Inclusivity & Transparency</i>	<i>Open town hall meetings where diverse groups (youth, women, elders) share their views.</i>	<i>Reduces the "secrecy" that often leads to suspicions of land grabbing or corruption.</i>
<i>Community Ownership</i>	<i>Locals help identify boundaries and site selections for community assets.</i>	<i>Residents become "informal guards" of public property, reducing vandalism of streetlights or drains.</i>
<i>Improved Acceptance</i>	<i>Planning outcomes reflect the cultural and economic habits of the specific locality.</i>	<i>Fewer legal battles and protests against new zoning laws or urban renewal projects.</i>
<i>Strengthened Trust</i>	<i>Regular dialogue between the Ministry of Physical Planning and the neighborhood.</i>	<i>Creates a collaborative environment where residents are more willing to pay for services.</i>



Box 5.3: Benefits of participatory and community-based approaches

- *Encourage inclusivity and transparency*
- *Promote community ownership of plans*
- *Improve acceptance of planning outcomes*
- *Strengthen trust between planners and communities*

5.3.3 Policy reforms and institutional strengthening

Policy reforms are changes in laws, regulations, and policies aimed at improving land use planning. In Nigeria, reforms may include updating outdated land tenure laws, introducing zoning regulations, or promoting sustainable development policies. **Institutional strengthening** refers to building the capacity of planning agencies through training, funding, and better coordination. These measures ensure that integrated spatial solutions are supported by strong governance and effective institutions.

Fill in the blank: Institutional strengthening involves building the capacity of _____ agencies through training and funding.

Strategy	Description	Practical Nigerian Example
Policy Reform	<i>Modernizing the legal framework to align with current urban realities and global best practices.</i>	Review of the Land Use Act (1978): <i>Moving toward digital land titles and simplifying the Governor's consent process to boost the mortgage market.</i>
Institutional Strengthening	<i>Enhancing the technical, financial, and human resource capacity of planning departments.</i>	State GIS Integration: <i>Equipping agencies like KOGIS (Kogi) or EDOGIS (Edo) with high-res satellite data and training staff in spatial analytics.</i>

Table 5.3: Examples of policy reforms and institutional strengthening



Pilot questions 5.3

1. Define GIS and state one of its uses in land use planning.
2. What is meant by remote sensing?
3. Mention one benefit of participatory approaches in land use planning.
4. Define policy reforms and give one example in Nigeria.
5. What is institutional strengthening and why is it important?

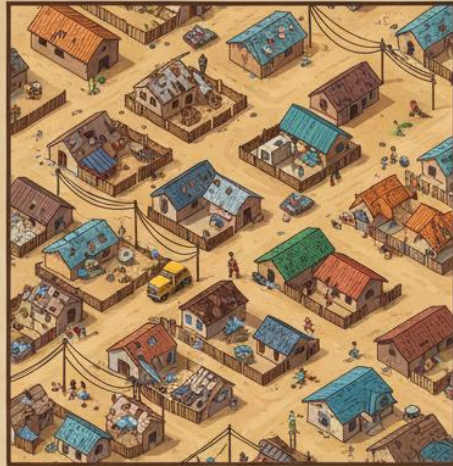
5.4.1 Urban renewal projects

Urban renewal projects are initiatives aimed at revitalising deteriorated urban areas by improving infrastructure, housing, and public spaces. In Nigeria, examples include redevelopment efforts in Lagos and Abuja, where planners have sought to upgrade informal settlements and provide better access to services. These projects demonstrate how integrated spatial solutions can transform neglected areas into functional and sustainable communities.

Fill in the blank: Urban renewal projects in Nigeria often focus on upgrading _____ settlements and improving access to services.



Plate 5.2: Urban Renewal Project in Nigeria - - Catalyng Community & Infrastrccture Transformation



1. Before Renewal



2. Atnd Degradation & Erosion

A foundational visual case study illustrating critical environmental challenges in Nigeria, showing the stark contrast between the current state of urban infrastructure and the potential for improved living standards.

Before (Erosion)



Image showing an upgraded urban settlement with improved housing and infrastructure.
Plate 5.2: Urban renewal project in Nigeria

5.4.2 Agricultural land management initiatives

Agricultural land management initiatives are programmes designed to improve the use of rural land for farming and food production. In Nigeria, these include efforts to promote sustainable farming practices, reduce land degradation, and enhance productivity. Examples are community-based land allocation schemes and government-supported irrigation projects.



Such initiatives highlight the importance of integrating environmental sustainability with socio-economic development.

Fill in the blank: Agricultural land management initiatives in Nigeria aim to reduce land _____ and promote sustainable farming.

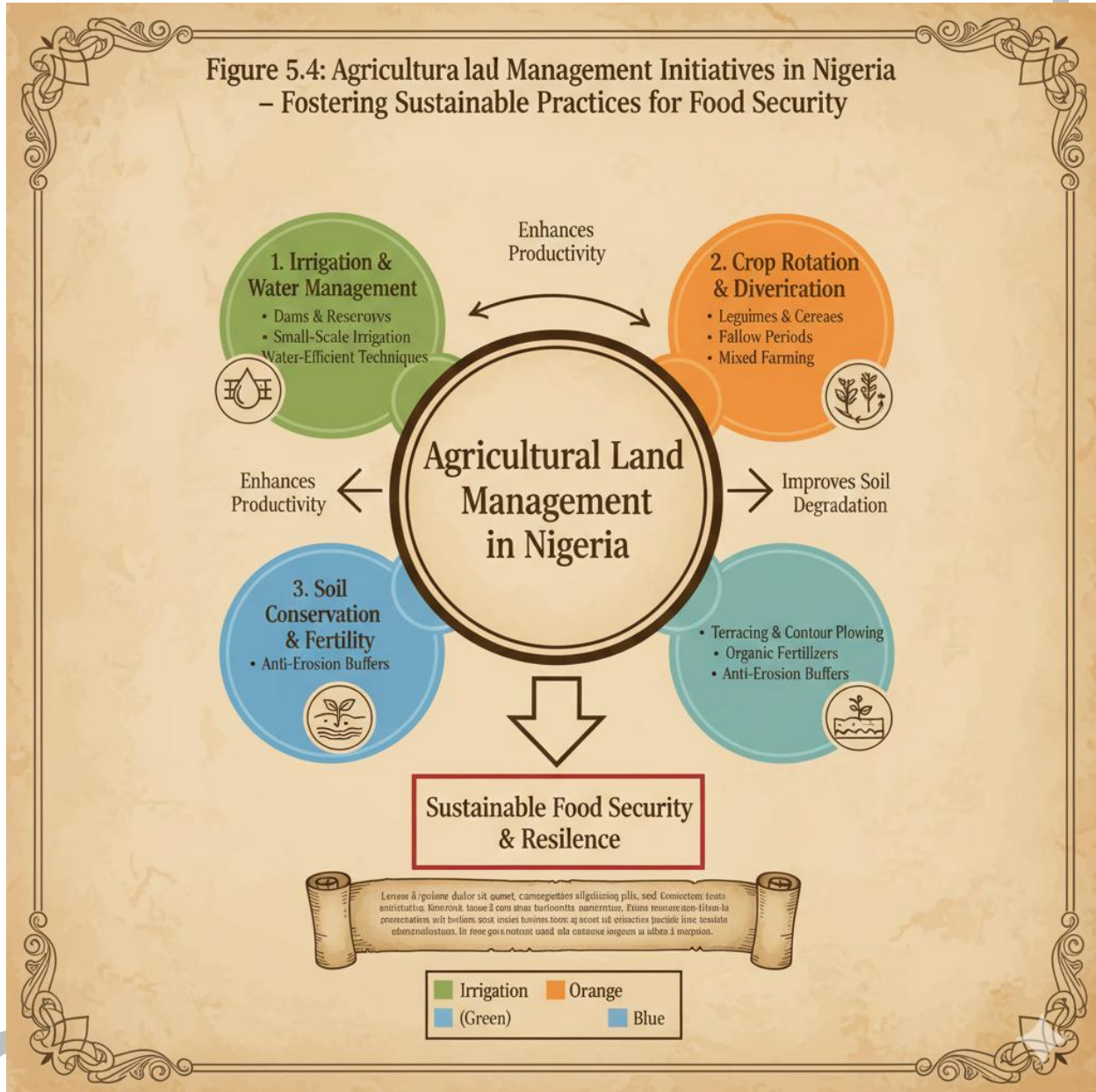


Diagram showing agricultural land management practices such as irrigation, crop rotation, and soil conservation.

Figure 5.4: Agricultural land management initiatives in Nigeria

5.4.3 Sustainable development programmes



Sustainable development programmes are projects that balance economic growth, social equity, and environmental protection. In Nigeria, examples include eco-city initiatives, renewable energy projects, and integrated waste management schemes. These programmes demonstrate best practices by aligning land use planning with long-term sustainability goals. They also show how participatory approaches and policy reforms can support inclusive development.

Fill in the blank: Sustainable development programmes aim to balance economic growth, social equity, and _____ protection.

Programme Type	Core Objective	Key Local Example
Eco-City Initiatives	<i>Integrating nature into urban design to manage heat and flooding.</i>	Eko Atlantic City (Lagos): Features the "Great Wall of Lagos" for sea defense and dedicated green corridors.
Renewable Energy	<i>Decentralizing power to reduce reliance on fossil fuels and the noisy "generator culture."</i>	Solar Power Naija: A federal initiative to install 5 million solar home systems in underserved communities.
Integrated Waste Management	<i>Moving from open dumping to "Waste-to-Wealth" circular economies.</i>	Lagos Waste Management Authority (LAWMA): Programs for plastic recycling and converting organic waste to compost/energy.

Box 5.4: Examples of sustainable development programmes in Nigeria

- *Eco-city initiatives promoting green infrastructure*
- *Renewable energy projects supporting clean power*
- *Integrated waste management schemes reducing pollution*

Pilot questions 5.4

1. Define urban renewal projects and state one of their objectives.
2. What is meant by agricultural land management initiatives?



3. Mention one example of a sustainable development programme in Nigeria.
4. Why are agricultural land management initiatives important for rural communities?
5. How do sustainable development programmes promote inclusive growth?

Series Summary

This Series has examined the challenges that affect land use planning in Nigeria and the integrated spatial solutions that can help address them. Its purpose has been to highlight the institutional, legal, socio-economic, physical, and environmental problems that hinder effective planning, while also presenting practical strategies and examples of how these issues can be resolved. By engaging with this Series, you have been guided to connect theoretical knowledge with real-world applications that are critical for sustainable development.

We began by exploring the problems of land use planning in Nigeria, focusing on institutional weaknesses, legal complexities, and socio-cultural constraints. Then we moved on to physical and environmental challenges such as rapid urbanisation, environmental degradation, and inadequate infrastructure. Following that, we studied integrated spatial solutions, including the role of GIS and remote sensing, participatory approaches, and policy reforms. Finally, we examined case studies and best practices in Nigeria, such as urban renewal projects, agricultural land management initiatives, and sustainable development programmes. In line with the Series Learning Outcomes, you should now be able to identify key problems, analyse physical and environmental challenges, explain integrated solutions, and evaluate case studies that demonstrate sustainable land use planning in Nigeria.

Glossary of Terms

- **Agricultural land management initiatives:** Programmes designed to improve the use of rural land for farming and food production, often promoting sustainable practices and reducing land degradation.
- **Environmental degradation:** The deterioration of the natural environment caused by human activities such as deforestation, pollution, and poor waste management.
- **Geographic Information Systems (GIS):** Computer-based tools that capture, store, analyse, and display spatial data, helping planners visualise land use patterns and design solutions.
- **Informal settlements:** Unplanned residential areas that develop without official approval, often lacking basic infrastructure and services.
- **Institutional challenges:** Weaknesses in organisations responsible for land use planning, such as poor coordination, inadequate funding, and limited technical capacity.
- **Legal issues:** Problems arising from outdated laws, conflicting statutes, or weak enforcement mechanisms that complicate land use planning.
- **Participatory approaches:** Planning methods that involve communities and stakeholders directly, ensuring that land use plans reflect local needs and values.
- **Policy reforms:** Changes in laws, regulations, or policies aimed at improving land use planning and promoting sustainable development.



- **Remote sensing:** The collection of information about the Earth's surface using satellites or aerial photography, often used to monitor land cover and urban growth.
- **Resource conflicts:** Disputes that arise when communities compete for scarce resources such as land, water, or grazing areas.
- **Socio-economic constraints:** Limitations caused by factors such as poverty, rapid population growth, and limited access to resources, which hinder effective land use planning.
- **Sustainable development programmes:** Projects that balance economic growth, social equity, and environmental protection, often involving eco-city initiatives or renewable energy schemes.
- **Urban renewal projects:** Initiatives aimed at revitalising deteriorated urban areas by improving housing, infrastructure, and public spaces.

Concept Check Questions [Series 5]

Objective Questions

Which of the following is an example of an institutional challenge in land use planning in Nigeria?

- Outdated land tenure laws
- Poor coordination among agencies
- Rapid urbanisation
- Informal settlements

1. (Linked to SLO 5.1)

Environmental degradation in Nigeria is often caused by:

- Strong enforcement of planning laws
- Deforestation and poor waste management
- Effective community participation
- Adequate infrastructure provision

2. (Linked to SLO 5.2)

Which tool provides planners with satellite imagery to monitor land cover and urban growth?

- GIS
- Remote sensing
- Policy reform
- Participatory approach

3. (Linked to SLO 5.3)

Sustainable development programmes aim to balance:

- Economic growth, social equity, and environmental protection
- Industrialisation, population growth, and urbanisation
- Infrastructure, housing, and transport
- Political reforms, cultural practices, and legal systems



4. (Linked to SLO 5.4)

Short-Answer Questions

5. Define institutional challenges in land use planning and give one example. (Linked to SLO 5.1)
6. State one difference between rapid urbanisation and informal settlements. (Linked to SLO 5.2)
7. What is meant by GIS in land use planning? (Linked to SLO 5.3)
8. Mention one benefit of participatory approaches in integrated spatial solutions. (Linked to SLO 5.3)
9. Give one example of a sustainable development programme in Nigeria. (Linked to SLO 5.4)

Long-Answer Questions

10. Identify and describe institutional, legal, and socio-economic problems of land use planning in Nigeria. (Linked to SLO 5.1)
11. Analyse physical and environmental challenges such as rapid urbanisation, environmental degradation, and inadequate infrastructure. (Linked to SLO 5.2)
12. Explain how GIS, remote sensing, participatory approaches, and policy reforms contribute to integrated spatial solutions. (Linked to SLO 5.3)
13. Evaluate case studies and best practices in Nigeria, including urban renewal projects, agricultural land management initiatives, and sustainable development programmes. (Linked to SLO 5.4)

Answers to Concept Check Questions [Series 5]

Objective Questions

1. b) Poor coordination among agencies
2. b) Deforestation and poor waste management
3. b) Remote sensing
4. a) Economic growth, social equity, and environmental protection

Short-Answer Questions

5. Institutional challenges are weaknesses in organisations responsible for planning, such as poor coordination among agencies.
6. Rapid urbanisation refers to fast city growth, while informal settlements are unplanned residential areas that emerge as a consequence.
7. GIS is a computer-based tool that captures, stores, analyses, and displays spatial data for planning.
8. Participatory approaches ensure inclusivity and transparency, improving acceptance of planning outcomes.
9. One example is eco-city initiatives promoting green infrastructure.

Long-Answer Questions



Basic response: Institutional problems include poor coordination and inadequate funding; legal problems involve outdated laws and overlapping rights; socio-economic problems include poverty and rapid population growth.

10. **Value-added response:** Outstanding learners may add that these problems collectively weaken planning effectiveness, discourage investment, and perpetuate unregulated development.

Basic response: Physical challenges include rapid urbanisation leading to informal settlements, while environmental challenges include degradation and resource conflicts. Inadequate infrastructure worsens these issues.

11. **Value-added response:** Advanced learners may analyse how these challenges interact, for example, poor infrastructure intensifying the effects of rapid urbanisation and environmental stress.

Basic response: GIS and remote sensing provide accurate spatial data, participatory approaches involve communities, and policy reforms update outdated laws. Together, they strengthen planning.

12. **Value-added response:** Outstanding learners may explain how integrating these solutions creates evidence-based, inclusive, and sustainable planning frameworks that address Nigeria's unique challenges.

Basic response: Case studies include urban renewal projects upgrading informal settlements, agricultural initiatives promoting sustainable farming, and programmes balancing growth with environmental protection.

13. **Value-added response:** Advanced learners may evaluate how these best practices demonstrate the effectiveness of integrated solutions, highlighting lessons for future planning and policy reforms.

Answers to Pilot Questions [Series 5]

Part 5.1 Problems of land use planning in Nigeria

- Institutional challenges are weaknesses in organisations responsible for land use planning, such as poor coordination among agencies.
- One example of an administrative challenge in Nigeria is bureaucratic delays in approving plans.
- Legal issues in land use planning refer to problems arising from outdated laws, conflicting statutes, or weak enforcement mechanisms.
- One policy-related issue affecting land use planning is inconsistent government policies.
- A cultural constraint that hinders land use planning is resistance to relocation from ancestral lands.

Part 5.2 Physical and environmental challenges



- Rapid urbanisation is the fast growth of cities due to population increase and migration, and one of its consequences is the rise of informal settlements.
- Informal settlements are unplanned residential areas that lack basic infrastructure and services.
- An example of environmental degradation in Nigeria is deforestation.
- Resource conflicts are disputes over scarce resources such as land or water, and they occur due to poor planning and environmental stress.
- One effect of poor spatial organisation in Nigerian cities is traffic congestion.

Part 5.3 Integrated spatial solutions

- GIS is a computer-based tool that captures, stores, analyses, and displays spatial data, and one of its uses is visualising land use patterns.
- Remote sensing is the collection of information about the Earth's surface using satellites or aerial photography.
- One benefit of participatory approaches in land use planning is that they promote inclusivity and transparency.
- Policy reforms are changes in laws or regulations to improve planning, and one example in Nigeria is the introduction of modern zoning laws.
- Institutional strengthening is building the capacity of planning agencies through training and funding, and it is important because it improves governance and effectiveness.

Part 5.4 Case studies and best practices in Nigeria

- Urban renewal projects are initiatives aimed at revitalising deteriorated urban areas, and one of their objectives is upgrading informal settlements.
- Agricultural land management initiatives are programmes designed to improve rural land use for farming and food production.
- One example of a sustainable development programme in Nigeria is eco-city initiatives promoting green infrastructure.
- Agricultural land management initiatives are important for rural communities because they promote sustainable farming and reduce land degradation.
- Sustainable development programmes promote inclusive growth by balancing economic, social, and environmental goals.

References and Attributions [Series 5]

The following references and attributions cover all sources, illustration placeholders, and suggested OER materials used in **Series 5: Problems of Land Use Planning and Integrated Spatial Solutions in Nigeria**. The referencing style applied here follows APA guidelines for clarity and consistency.

General References

- Food and Agriculture Organization (FAO). (2017). *Land use planning for sustainable development*. Rome: FAO.
- United Nations Human Settlements Programme (UN-Habitat). (2020). *Land use planning and management*. Nairobi: UN-Habitat.
- World Bank. (2019). *Urban land use and planning strategies*. Washington, DC: World Bank.



- Mabogunje, A. L. (2011). *Land reform in Nigeria: Progress, problems and prospects*. Ibadan: University Press.
- Campbell, S., & Fainstein, S. (2012). *Readings in planning theory*. Oxford: Wiley-Blackwell.

Illustration Placeholders and Attributions

- **Box 5.1: Examples of institutional and administrative challenges**
 - AI-generated prompt: "Create a text box summarising examples of institutional and administrative challenges in land use planning in Nigeria."
 - Suggested OER search string: "institutional challenges land use planning Nigeria OER summary."
- **Table 5.1: Legal and policy-related issues in land use planning**
 - AI-generated prompt: "Create a table showing legal and policy-related issues in land use planning in Nigeria."
 - Suggested OER search string: "legal policy issues land use planning Nigeria OER table."
- **Figure 5.1: Socio-economic and cultural constraints in land use planning**
 - AI-generated prompt: "Create a labelled diagram showing socio-economic constraints (poverty, population growth) and cultural constraints (traditional practices, resistance to relocation)."
 - Suggested OER search string: "socio-economic cultural constraints land use planning Nigeria OER diagram."
- **Figure 5.2: Rapid urbanisation and informal settlements in Nigeria**
 - AI-generated prompt: "Create a labelled diagram showing rapid urbanisation leading to informal settlements around Nigerian cities."
 - Suggested OER search string: "rapid urbanisation informal settlements Nigeria OER diagram."
- **Plate 5.1: Environmental degradation in Nigeria**
 - AI-generated prompt: "Generate an image showing deforestation and land degradation in Nigeria."
 - Suggested OER search string: "environmental degradation Nigeria OER image."
- **Table 5.2: Examples of inadequate infrastructure and poor spatial organisation**
 - AI-generated prompt: "Create a table showing examples of inadequate infrastructure and poor spatial organisation in Nigerian cities."
 - Suggested OER search string: "infrastructure challenges spatial organisation Nigeria OER table."
- **Figure 5.3: GIS and remote sensing as integrated spatial solutions**
 - AI-generated prompt: "Create a labelled diagram showing GIS and remote sensing working together in land use planning in Nigeria."
 - Suggested OER search string: "GIS remote sensing integrated spatial solutions Nigeria OER diagram."
- **Box 5.3: Benefits of participatory and community-based approaches**
 - AI-generated prompt: "Create a text box summarising the benefits of participatory and community-based approaches in land use planning."
 - Suggested OER search string: "participatory community-based approaches land use planning Nigeria OER summary."
- **Table 5.3: Examples of policy reforms and institutional strengthening**
 - AI-generated prompt: "Create a table showing examples of policy reforms and institutional strengthening in land use planning in Nigeria."



- Suggested OER search string: “policy reforms institutional strengthening land use planning Nigeria OER table.”
- *Plate 5.2: Urban renewal project in Nigeria*
 - AI-generated prompt: “Generate an image showing upgraded housing and infrastructure in an urban renewal project in Nigeria.”
 - Suggested OER search string: “urban renewal projects Nigeria OER image.”
- *Figure 5.4: Agricultural land management initiatives in Nigeria*
 - AI-generated prompt: “Create a labelled diagram showing agricultural land management practices such as irrigation, crop rotation, and soil conservation.”
 - Suggested OER search string: “agricultural land management initiatives Nigeria OER diagram.”
- *Box 5.4: Examples of sustainable development programmes in Nigeria*
 - AI-generated prompt: “Create a text box summarising examples of sustainable development programmes in Nigeria.”
 - Suggested OER search string: “sustainable development programmes Nigeria OER summary.”

