

UPR314

PRINCIPLES OF LANDSCAPE DESIGN



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Course code: URP 314

Course title: Principles of Landscape Design

Course credit load: 2 Units

List of Series:

- **Series 1: Concepts, Definition and Scope of Landscape Planning**
- Series 2: Elements and Principles of Landscape Design
- Series 3: Landscape Design Process and Influencing Factors
- Series 4: Landscape Evaluation Techniques and Typologies
- Series 5: Applications and Management of Landscape Design

1 Concepts, Definition and Scope of Landscape Planning

Series outline

- **Part 1 (1.1): Concepts and Definition of Landscape**
 - Sub-Part 1.1.1: Definition and meaning of landscape
 - Sub-Part 1.1.2: Types and classification of landscapes
 - Sub-Part 1.1.3: Landscape as a human and natural system
- **Part 2 (1.2): Definition and Scope of Landscape Planning**
 - Sub-Part 1.2.1: Definition of landscape planning and design
 - Sub-Part 1.2.2: Scope and subject matter of landscape planning
 - Sub-Part 1.2.3: Distinguishing landscape planning from related fields
- **Part 3 (1.3): Historical Development of Landscape Planning**
 - Sub-Part 1.3.1: Ancient and pre-modern landscape traditions
 - Sub-Part 1.3.2: Landscape design in the modern era
 - Sub-Part 1.3.3: Landscape planning in the African and Nigerian context
- **Part 4 (1.4): Landscape Planning as a Profession and Discipline**
 - Sub-Part 1.4.1: Landscape planning as a professional field
 - Sub-Part 1.4.2: Relationship between landscape planning and urban planning
 - Sub-Part 1.4.3: Values and ethics in landscape planning practice

Introduction

Landscape is everywhere. Every outdoor space – a street, a park, a farm, a riverbank, a school compound – is a landscape of some kind, shaped by the interaction of natural processes and human activity. Yet landscape is more than scenery; it is the lived environment in which communities grow food, gather, play, and find rest. Understanding what landscape is, how it is planned and designed, and why it matters is therefore foundational knowledge for any built environment professional.



The aim of this Series is to equip you with the knowledge and skills to define landscape and landscape planning, describe the scope and historical development of the discipline, and explain its professional and ethical dimensions.

We shall commence this Series by exploring the concept and definition of landscape and its classification. Next, we will examine the definition and scope of landscape planning and how it relates to adjacent disciplines. Following that, we will trace the historical development of landscape design from ancient traditions to the modern era and the Nigerian context. Finally, we will wrap up by examining landscape planning as a profession and its relationship with urban planning and professional ethics.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **SLO 1.1** define landscape and describe its types and characteristics as a human and natural system,
- **SLO 1.2** define landscape planning and describe its scope and subject matter,
- **SLO 1.3** trace the historical development of landscape planning from ancient traditions to the Nigerian context,
- **SLO 1.4** explain landscape planning as a profession and describe its relationship with urban planning and professional ethics.

1.1 Concepts and Definition of Landscape

1.1.1 Definition and meaning of landscape

The word **landscape** derives from the Dutch *landschap*, originally meaning a patch of farmed ground. In contemporary usage, landscape refers to any portion of land that can be perceived as a coherent visual and ecological unit combining natural features such as landform, vegetation, water, and climate with human-made elements such as settlements, fields, roads, and cultural associations. The **European Landscape Convention** (2000) defines landscape as an area as perceived by people, whose character is the result of the action and interaction of natural and human factors. This definition is significant because it recognises that landscape is not merely a physical condition but a relationship between people, place, and perception.

Fill in the blank: The European Landscape Convention defines landscape as an area as perceived by people, shaped by the action and interaction of natural and _____ factors.





Short description: Image showing a typical Nigerian urban landscape with a mix of buildings, trees, open ground, and streets illustrating the interaction of natural and human elements.
Plate 1.1 A Nigerian urban landscape the interaction of natural and human elements

1.1.2 Types and classification of landscapes

Landscapes are classified in several ways. By **origin**: **natural landscapes** are those shaped primarily by physical and ecological processes with minimal human intervention, such as forests, wetlands, and coastal dunes; **cultural landscapes** are those shaped primarily by human activity over time, such as agricultural fields, urban parks, and historic gardens. By **character**: urban, peri-urban, rural, and wilderness landscapes each have distinct spatial, ecological, and experiential qualities. By **function**: recreational, agricultural, ecological, and infrastructural landscapes serve different human and environmental purposes. Understanding landscape classification helps planners identify appropriate design responses and management strategies for different landscape types.

Fill in the blank: Natural landscapes are shaped primarily by physical and ecological processes while cultural landscapes are shaped primarily by _____ activity over time.

1.1.3 Landscape as a human and natural system

Landscape is best understood as a **system** an interconnected whole in which natural processes and human activities continuously interact and influence one another. The **natural subsystem** includes geology, soils, hydrology, climate, and vegetation. The **human subsystem** includes land use, settlement patterns, infrastructure, and cultural practices. Changes in one subsystem affect the other: deforestation alters hydrology and climate; urbanisation modifies drainage and biodiversity; planting trees reduces urban heat. Thinking of landscape as a system rather than a static backdrop directs planners towards understanding dynamic processes and cumulative change, rather than responding only to visible surface conditions.



Fill in the blank: Thinking of landscape as a _____ directs planners towards understanding dynamic processes rather than responding only to visible surface conditions.

Pilot questions 1.1

1. Which of the following best defines landscape?
2. Which type of landscape is shaped primarily by human activity over time?
3. What are the two subsystems that interact within a landscape system?
4. Fill in the blank: The European Landscape Convention was adopted in the year _____.

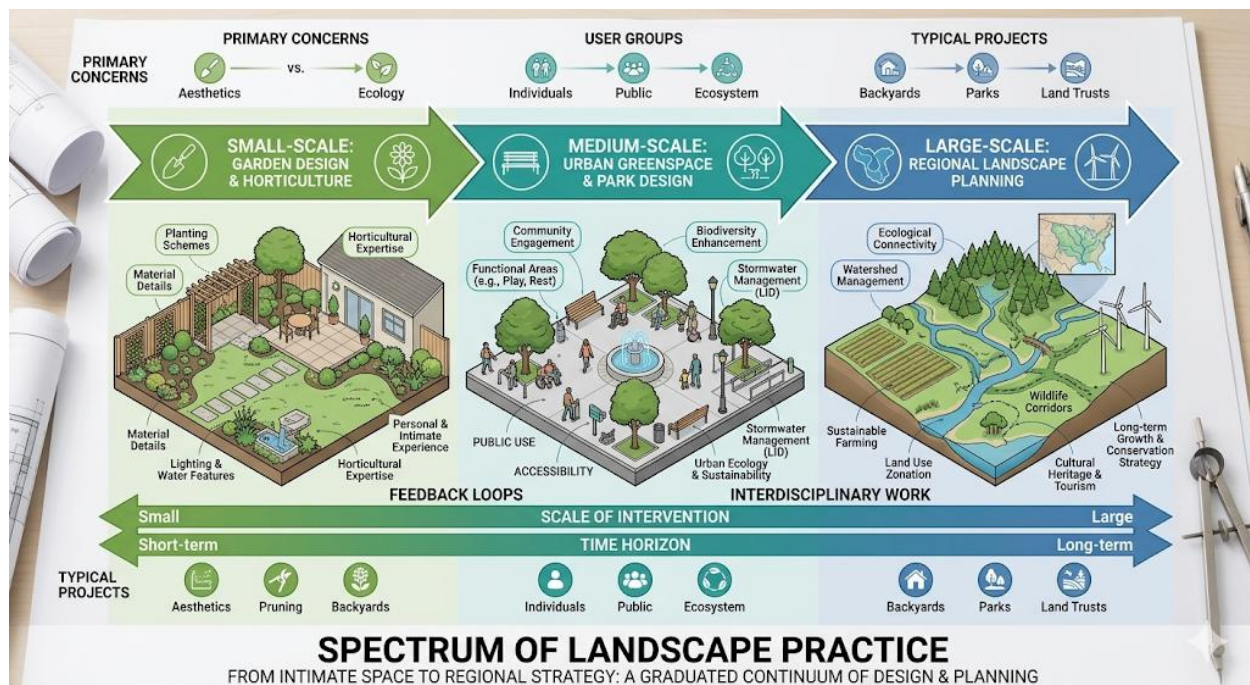
1.2 Definition and Scope of Landscape Planning

1.2.1 Definition of landscape planning and design

Landscape planning is the discipline concerned with the analysis, design, management, and stewardship of outdoor environments at scales ranging from a single garden to a regional catchment. **Landscape design** refers more specifically to the creation of outdoor spaces gardens, parks, plazas, streetscapes, and greenways through the deliberate arrangement of landform, vegetation, water, paving, and structures. The two terms are often used together because both involve understanding natural and human systems, applying aesthetic and ecological principles, and making decisions that shape people's experience of outdoor space. Landscape planning tends to operate at the larger, more strategic scale while landscape design focuses on the detailed composition of specific sites.

Fill in the blank: Landscape planning tends to operate at the larger _____ scale while landscape design focuses on the detailed composition of specific sites.





Short description: Diagram showing the spectrum of landscape practice from small-scale garden design through urban park design to large-scale regional landscape planning.

Figure 1.1 The spectrum of landscape practice from garden design to regional landscape planning

1.2.2 Scope and subject matter of landscape planning

The scope of landscape planning is broad. Its subject matter includes: **urban greenspaces** parks, squares, street trees, and green infrastructure; **rural landscapes** agricultural land, forests, and river corridors; **coastal and water landscapes** shorelines, wetlands, and flood plains; **post-industrial and degraded landscapes** brownfield sites, quarries, and eroded land; and **cultural and heritage landscapes** historic gardens, sacred groves, and traditional settlement patterns. Landscape planning also addresses **ecological connectivity** the linking of natural areas to support biodiversity and **climate adaptation** the use of green infrastructure to manage heat, flooding, and drought in urban and rural areas.

Fill in the blank: Ecological connectivity refers to the linking of natural areas to support _____ across the landscape.

1.2.3 Distinguishing landscape planning from related fields

Landscape planning overlaps with several related disciplines but is distinct from each. **Urban planning** addresses land use, development control, and infrastructure at the city or regional scale; landscape planning contributes the ecological and aesthetic dimensions of outdoor space within this broader framework. **Horticulture** focuses on plant cultivation; landscape planning uses plants as design elements within a larger spatial strategy. **Environmental management** addresses the conservation and management of natural resources; landscape planning contributes spatial design and planning skills to environmental management. **Architecture** designs buildings; landscape architecture designs the spaces between and around them. The integrative,



multi-scale, and cross-disciplinary character of landscape planning is its defining professional quality.

Fill in the blank: The integrative, multi-scale, and _____ character of landscape planning is its defining professional quality.

Pilot questions 1.2

1. Define landscape planning and distinguish it from landscape design.
2. Which of the following falls within the scope of landscape planning?
3. Fill in the blank: Landscape architecture designs the spaces _____ and around buildings.
4. How does landscape planning differ from horticulture?
5. What is ecological connectivity and why is it within the scope of landscape planning?

1.3 Historical Development of Landscape Planning

1.3.1 Ancient and pre-modern landscape traditions

The deliberate shaping of outdoor space for human benefit has ancient roots. In Mesopotamia, **sacred groves** and irrigated gardens were central to urban life. The **Persian paradise garden** an enclosed, geometrically ordered garden with water channels, shade trees, and fruit was one of the most influential landscape design traditions of antiquity, shaping later Islamic, Mughal, and European garden forms. In China, **scholar gardens** recreated idealised natural landscapes in miniature. In West Africa, the management of sacred forests, the organisation of compound planting, and the design of palace grounds represent indigenous landscape traditions of great sophistication, often overlooked in histories of landscape design that focus primarily on European precedents.

Fill in the blank: The Persian paradise garden was an enclosed, geometrically ordered garden with water channels, shade trees, and _____.

1.3.2 Landscape design in the modern era

Frederick Law Olmsted, the American landscape architect who designed Central Park in New York (1858), is widely regarded as the founder of modern landscape architecture. Olmsted argued that designed landscapes could improve public health, social cohesion, and democratic life in industrial cities. The **Arts and Crafts movement** in Britain, associated with Gertrude Jekyll and Edwin Lutyens, developed a naturalistic planting style integrated with architectural garden design. The twentieth century saw the emergence of **ecological landscape planning**, associated with Ian McHarg whose book *Design with Nature* (1969) argued that landscape planning should be grounded in ecological analysis rather than purely aesthetic preference a principle that remains central to contemporary practice.

Fill in the blank: Ian McHarg argued that landscape planning should be grounded in ecological _____ rather than purely aesthetic preference.

1.3.3 Landscape planning in the African and Nigerian context



Landscape planning in Nigeria and across Africa operates within a context shaped by indigenous landscape traditions, colonial interventions, rapid urbanisation, and environmental pressures. Colonial urban planning introduced formal parks and botanical gardens in Nigerian cities including the historic **Ibadan Botanical Garden** and the parks of Lagos but these were designed primarily for the colonial population and have been inconsistently maintained since independence. Contemporary landscape planning in Nigeria must address the rapid loss of urban trees and green space, flooding caused by impermeable urban surfaces, and the degradation of sacred forests and cultural landscapes. There is growing recognition that integrating indigenous landscape knowledge with contemporary ecological and design principles offers the most culturally appropriate and practically effective approach.

Fill in the blank: Contemporary landscape planning in Nigeria must address rapid loss of urban trees and green space, flooding, and the degradation of _____ forests and cultural landscapes.



Short description: Image of a maintained urban park or botanical garden in a Nigerian city showing trees, paths, and open lawns as an example of formal landscape design.

Plate 1.2 A formal urban park in Nigeria an example of modern landscape design

Pilot questions 1.3

1. Who is widely regarded as the founder of modern landscape architecture and what did he design?
2. What was Ian McHarg's central argument about landscape planning?
3. Fill in the blank: The Persian paradise garden influenced later Islamic, Mughal, and _____ garden forms.
4. Identify two landscape planning challenges facing Nigerian cities today.



5. Which landscape tradition from West Africa demonstrates indigenous sophistication in outdoor space management?

1.4 Landscape Planning as a Profession and Discipline

1.4.1 Landscape planning as a professional field

Landscape architecture is the recognised professional title for practitioners of landscape planning and design internationally, codified by bodies such as the **International Federation of Landscape Architects** (IFLA) and national professional institutes. In Nigeria, landscape practice is regulated primarily through the **Nigerian Institute of Town Planners** and the **Council of Registered Builders of Nigeria**, though a dedicated landscape architecture professional body has not yet been fully established. The professional training of landscape architects typically covers site analysis, ecological science, design theory, plant science, construction technology, and project management reflecting the integrative nature of the discipline.

Fill in the blank: The international body that codifies the landscape architecture profession is the International Federation of Landscape _____.

1.4.2 Relationship between landscape planning and urban planning

Landscape planning and **urban planning** are closely related and increasingly integrated in contemporary practice. Urban planners set the spatial framework land uses, densities, infrastructure networks within which landscape planners work. Landscape planners contribute expertise in greenspace strategy, ecological connectivity, climate adaptation, and the design of the public realm that urban planners typically lack. In the best contemporary planning practice, landscape planners are involved from the earliest stages of urban development planning, ensuring that ecological and landscape values inform the overall spatial strategy rather than being added as an afterthought. In Nigerian planning practice, this integration remains underdeveloped, with landscape considerations frequently subordinated to infrastructure and building priorities.

Fill in the blank: In Nigerian planning practice, landscape considerations are frequently _____ to infrastructure and building priorities.

1.4.3 Values and ethics in landscape planning practice

Landscape planners are guided by a set of professional values that reflect both the character of their discipline and the social responsibilities of their role. **Stewardship** the responsibility to manage landscapes for the long-term benefit of people and the natural environment is central. **Equity** ensuring that the benefits of designed landscapes are accessible to all members of the community, not only those in privileged areas is a social justice commitment with direct design implications. **Ecological responsibility** designing with rather than against natural processes reflects the discipline's grounding in environmental science. **Cultural respect** recognising and preserving the cultural and historical meanings embedded in landscapes acknowledges that landscapes are repositories of identity and memory as much as physical environments.

Fill in the blank: Stewardship in landscape planning refers to the responsibility to manage landscapes for the long-term benefit of people and the _____ environment.



Value	Brief Explanation
Stewardship	The commitment to managing and protecting land resources for the long term. It involves acting as a "caretaker" rather than just a developer, ensuring that the landscape remains healthy and productive for future generations.
Equity	The practice of ensuring all communities—regardless of socioeconomic status—have fair access to quality green space, clean air, and environmental benefits. It involves inclusive design that addresses the needs of marginalized or underserved populations.
Ecological Responsibility	Prioritizing the health of natural systems by protecting biodiversity, managing water sustainably, and reducing carbon footprints. Planners aim to work <i>with</i> natural processes (like drainage and migration) rather than against them.
Cultural Respect	Recognizing and preserving the history, heritage, and unique identity of a place. This involves engaging with local communities to honor sacred sites, historic landmarks, and the "spirit of place" (<i>genius loci</i>) in new designs.

Box 1.1 Core values in landscape planning practice

Short description: A box summarising the core professional values in landscape planning including stewardship, equity, ecological responsibility, and cultural respect.

Pilot questions 1.4

1. What is the international professional body for landscape architects?
2. Explain one way in which landscape planning contributes to urban planning.
3. Define stewardship as a value in landscape planning.
4. Describe what equity means in the context of landscape planning practice.
5. Fill in the blank: Cultural respect in landscape planning acknowledges that landscapes are repositories of identity and _____ as much as physical environments.

Series Summary

This Series has introduced you to the foundational concepts of landscape planning. We began by defining landscape and tracing its classification as a natural, cultural, and systemic phenomenon. We then examined the definition and scope of landscape planning and design, distinguishing it from related disciplines including urban planning, horticulture, and architecture.



We went on to trace the historical development of landscape design from ancient paradise gardens through Olmsted and McHarg to the contemporary Nigerian context. Finally, we examined landscape planning as a profession, explored its relationship with urban planning, and described the core professional values of stewardship, equity, ecological responsibility, and cultural respect. By engaging with these topics, you should now be able to define landscape and landscape planning, describe its scope and history, and articulate its professional values, as outlined in the Series Learning Outcomes.

Glossary of Terms

- **Cultural landscape:** A landscape shaped primarily by human activity over time, including agricultural fields, urban parks, and historic gardens.
- **Ecological connectivity:** The linking of natural areas across a landscape to support the movement of species and the maintenance of biodiversity.
- **European Landscape Convention:** A Council of Europe treaty adopted in 2000 defining landscape as an area perceived by people whose character results from the action of natural and human factors.
- **IFLA:** The International Federation of Landscape Architects, the global professional body for landscape architecture.
- **Landscape:** Any portion of land perceived as a coherent visual and ecological unit, shaped by the interaction of natural processes and human activity.
- **Landscape architecture:** The professional practice of landscape planning and design, encompassing analysis, design, management, and stewardship of outdoor environments.
- **Landscape design:** The detailed creation of outdoor spaces through the deliberate arrangement of landform, vegetation, water, paving, and structures.
- **Landscape planning:** The discipline concerned with the analysis, design, management, and stewardship of outdoor environments at scales from site to region.
- **Natural landscape:** A landscape shaped primarily by physical and ecological processes with minimal human intervention.
- **Paradise garden:** An ancient Persian enclosed garden design with water channels, shade trees, and fruit, highly influential in later garden traditions.
- **Stewardship:** The responsibility to manage landscapes for the long-term benefit of people and the natural environment.

Concept Check Questions 1

Objective Questions

1. Define landscape. (Linked to SLO 1.1)
2. Identify two types of landscape classified by origin. (Linked to SLO 1.1)
3. Fill in the blank: Landscape planning operates at the larger _____ scale while landscape design addresses specific sites. (Linked to SLO 1.2)
4. State one core professional value of landscape planning. (Linked to SLO 1.4)



Short-Answer Questions

5. Explain the concept of landscape as a system, identifying its two main subsystems. (Linked to SLO 1.1)
6. Describe the scope of landscape planning, giving three examples of subject matter. (Linked to SLO 1.2)
7. Explain Ian McHarg's contribution to the development of landscape planning. (Linked to SLO 1.3)
8. Describe the relationship between landscape planning and urban planning in contemporary practice. (Linked to SLO 1.4)

Long-Answer Questions

9. Trace the historical development of landscape planning from ancient traditions to the modern era, explaining how each period contributed to the discipline today. (Linked to SLO 1.3)
10. Evaluate challenges facing landscape planning in Nigerian cities and propose how integrating indigenous knowledge with contemporary practice could improve cultural relevance and effectiveness. (Linked to SLO 1.3, 1.4)

Answers to Concept Check Questions 1

Objective Questions

1. Landscape is land perceived as a coherent visual and ecological unit, shaped by natural processes and human activity.
2. Natural landscape and cultural landscape.
3. Strategic.
4. Stewardship.

Short-Answer Questions

5. Landscape as a system comprises a natural subsystem (geology, soils, hydrology, climate, vegetation) and a human subsystem (land use, settlement, infrastructure, cultural practices). Changes in one affect the other.
6. Scope includes urban greenspaces (parks, street trees), rural landscapes (forests, rivers), coastal/water landscapes, degraded sites, and cultural/heritage landscapes.
7. Ian McHarg's *Design with Nature* (1969) argued for ecological analysis as the foundation of planning, shifting the discipline from aesthetics to science.
8. Urban planners set land use frameworks; landscape planners add greenspace strategy, ecological connectivity, climate adaptation, and public realm design. Integration ensures ecological values shape urban development.

Long-Answer Questions

9.
 - **Basic response:** Ancient traditions (Persian gardens, Chinese scholar gardens, African sacred groves) established designed outdoor environments. Olmsted used landscape for public health and democracy; McHarg grounded it in ecology. Contemporary practice integrates these traditions.
 - **Value-added response:** Learners may trace continuity from African sacred groves managing biodiversity and hydrology, through Olmsted's democratic parks, to McHarg's



ecological planning, arguing indigenous traditions anticipated modern ecological principles and should inform Nigerian practice.

10.

- **Basic response:** Nigerian cities face tree loss, flooding, and cultural landscape degradation. Indigenous practices (sacred groves, compound planting, waterway management) complement modern ecological design.
- **Value-added response:** Learners may propose mechanisms such as incorporating sacred trees into greenspace strategies, blending traditional water management with engineered drainage, and co-designing parks with community custodians. Institutional reforms could recognise landscape planning as a distinct specialisation in Nigerian education and regulation.

Answers to Pilot Questions 1

Part 1.1

1. A portion of land perceived as a coherent visual and ecological unit shaped by natural processes and human activity.
2. Cultural landscape.
3. The natural subsystem and the human subsystem.
- 4.

2000.

Part 1.2

1. Landscape planning covers analysis, design, management, and stewardship at multiple scales; landscape design focuses on individual sites.
2. Urban greenspace design.
3. Between.
4. Horticulture cultivates plants; landscape planning uses plants within broader ecological and spatial strategies.
5. Ecological connectivity links natural areas for biodiversity; landscape planners design/manage corridors and patches enabling species movement.

Part 1.3

1. Frederick Law Olmsted, designer of Central Park (1858).
2. That planning should be grounded in ecological analysis, not aesthetics.
3. European.
4. Rapid loss of urban trees/greenspace and flooding from impermeable surfaces.
5. Sacred forest management, compound planting, palace grounds design.

Part 1.4

1. IFLA – International Federation of Landscape Architects.



2. Landscape planners add greenspace strategy, ecological connectivity, climate adaptation.
3. Stewardship: managing landscapes for long-term benefit of people and nature.
4. Equity: ensuring designed landscapes benefit all community members.
5. Memory.

References and Attributions 1

Course Content References

- McHarg, I. L. (1969). *Design with Nature*. New York: Natural History Press.
- Motloch, J. L. (2001). *Introduction to Landscape Design*. New York: Wiley.
- Ndubisi, F. (2002). *Ecological Planning: A Historical and Comparative Synthesis*. Baltimore: Johns Hopkins University Press.

Illustrations

- *Plate 1.1* A Nigerian urban landscape: interaction of natural and human elements.
 - AI-generated prompt: “Generate an image of a typical Nigerian urban landscape showing buildings, trees, open ground, and streets as an example of the interaction of natural and human factors.”
 - Suggested OER search string: “Nigerian urban landscape natural human elements OER.”
- *Figure 1.1* The spectrum of landscape practice from garden design to regional landscape planning.
 - AI-generated prompt: “Generate a diagram showing the spectrum of landscape practice from small-scale garden design through urban greenspace design to regional landscape planning.”
 - Suggested OER search string: “landscape practice spectrum garden design regional planning diagram OER.”
- *Plate 1.2* A formal urban park in Nigeria: example of modern landscape design.
 - AI-generated prompt: “Generate an image of a maintained urban park in a Nigerian city with mature trees, paved paths, open lawns, and park benches.”
 - Suggested OER search string: “urban park Nigeria botanical garden landscape design OER.”
- *Box 1.1* Core values in landscape planning practice.
 - AI-generated prompt: “Generate a text box summarising the core professional values in landscape planning including stewardship, equity, ecological responsibility, and cultural respect with a brief explanation of each.”
 - Suggested OER search string: “landscape planning professional values stewardship equity ecology culture OER.”

Attributions

- All AI prompts are intended for use with generative tools to create original illustrations.
- Suggested search strings are provided to locate open educational resources (OER) for non-commercial academic use.



Course code: URP 314

Course title: Principles of Landscape Design

Course credit load: 2 Units

List of Series:

- Series 1: Concepts, Definition and Scope of Landscape Planning
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2 Elements and Principles of Landscape Design

Series outline

- **Part 1 (2.1): Natural Elements of Landscape Design**
 - Sub-Part 2.1.1: Landform and topography
 - Sub-Part 2.1.2: Vegetation trees, shrubs, and ground cover
 - Sub-Part 2.1.3: Water, climate, and natural light
- **Part 2 (2.2): Built Elements of Landscape Design**
 - Sub-Part 2.2.1: Paving, paths, and hard surfaces
 - Sub-Part 2.2.2: Structures walls, fences, pergolas, and furniture
 - Sub-Part 2.2.3: Lighting and signage in landscape design
- **Part 3 (2.3): Visual Principles of Landscape Design**
 - Sub-Part 2.3.1: Unity, harmony, and variety
 - Sub-Part 2.3.2: Balance, proportion, and scale
 - Sub-Part 2.3.3: Rhythm, emphasis, and sequence
- **Part 4 (2.4): Ecological and Functional Principles**
 - Sub-Part 2.4.1: Designing with natural processes
 - Sub-Part 2.4.2: Functional principles circulation, enclosure, and use
 - Sub-Part 2.4.3: Applying elements and principles in Nigerian landscapes

Introduction

Every landscape, however complex or simple, is composed of a finite set of elements the raw materials of design organised according to principles that determine whether the result is coherent, beautiful, and functional or not. Understanding these elements and principles is the designer's fundamental vocabulary. Just as a writer must know words before constructing sentences, a landscape designer must know the elements and principles of design before composing outdoor spaces.



The aim of this Series is to equip you with the knowledge and skills to identify and describe the natural and built elements of landscape design, explain the visual principles that govern their composition, and apply ecological and functional principles to landscape design problems.

We shall commence this Series by examining the natural elements landform, vegetation, water, climate, and light. Next, we will explore the built elements including paving, structures, lighting, and signage. Following that, we will describe the visual design principles of unity, balance, proportion, rhythm, and emphasis. Finally, we will wrap up by examining ecological and functional principles and how elements and principles are applied in Nigerian landscape contexts.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **SLO 2.1** identify and describe the natural elements of landscape design and their design implications,
- **SLO 2.2** identify and describe the built elements of landscape design and their appropriate applications,
- **SLO 2.3** explain the visual principles of landscape design including unity, balance, proportion, and rhythm,
- **SLO 2.4** apply ecological and functional design principles in Nigerian landscape design contexts.

2.1 Natural Elements of Landscape Design

2.1.1 Landform and topography

Landform is the shape of the ground surface its slopes, hollows, mounds, ridges, and flat areas. It is the most fundamental element of landscape design because it determines drainage patterns, views, microclimates, and the spatial character of a site. In design, landform can be accepted and worked with, modified through grading and earthwork, or created from scratch on flat sites.

Mounds create enclosure and privacy. **Hollows** collect water and shelter activity. **Slopes** direct movement and create visual drama. Understanding the existing topography and manipulating it economically is one of the most powerful and cost-effective tools available to the landscape designer.

Fill in the blank: Mounds in landscape design create _____ and privacy while hollows collect water and shelter activity.





Short description: Image showing a landscape design using landform mounds, slopes, and hollows to create spatial variety and enclosure in a park setting.

Plate 2.1 Landform as a design element mounds, slopes, and hollows in a park

2.1.2 Vegetation trees, shrubs, and ground cover

Vegetation is the most versatile and expressive natural element of landscape design. **Trees** provide canopy, shade, scale, and vertical structure; they define spaces, filter views, and moderate microclimate. **Shrubs** provide enclosure at human height, define boundaries, add texture and seasonal colour, and screen unwanted views. **Ground cover plants** protect soil, suppress weeds, reduce maintenance, and provide low-level texture and colour. **Grass** whether closely mown lawn or naturalistic meadow provides the flexible ground plane on which other elements are composed. Plant selection in Nigerian conditions must prioritise species that are drought-tolerant, adapted to local soils and rainfall patterns, and supportive of local biodiversity.

Fill in the blank: Trees provide canopy, shade, scale, and vertical structure, while shrubs provide _____ at human height and screen unwanted views.

2.1.3 Water, climate, and natural light

Water is among the most sensory and evocative elements of landscape design, contributing sound, movement, reflection, and cooling. It may be used as still reflective pools, moving streams or cascades, fountains, or retention features. **Climate** temperature, rainfall, humidity, and wind is not designed but must be designed for: orientation, shading, shelter, and drainage are all responses to climatic conditions. **Natural light** changes throughout the day and across seasons, creating constantly shifting patterns of shadow and illumination that bring designed landscapes to life. The position of trees, structures, and water features relative to the sun's path determines how light works in a landscape and is a key consideration in design.



Fill in the blank: Water in landscape design contributes sound, movement, reflection, and _____ to the outdoor environment.

Pilot questions 2.1

1. Which landscape element determines drainage patterns, views, and spatial character most fundamentally?
2. Which type of vegetation provides canopy, shade, and vertical structure?
3. What sensory qualities does water contribute to a landscape design?
4. Fill in the blank: Plant selection in Nigerian conditions must prioritise species that are drought-tolerant and adapted to local soils and _____ patterns.

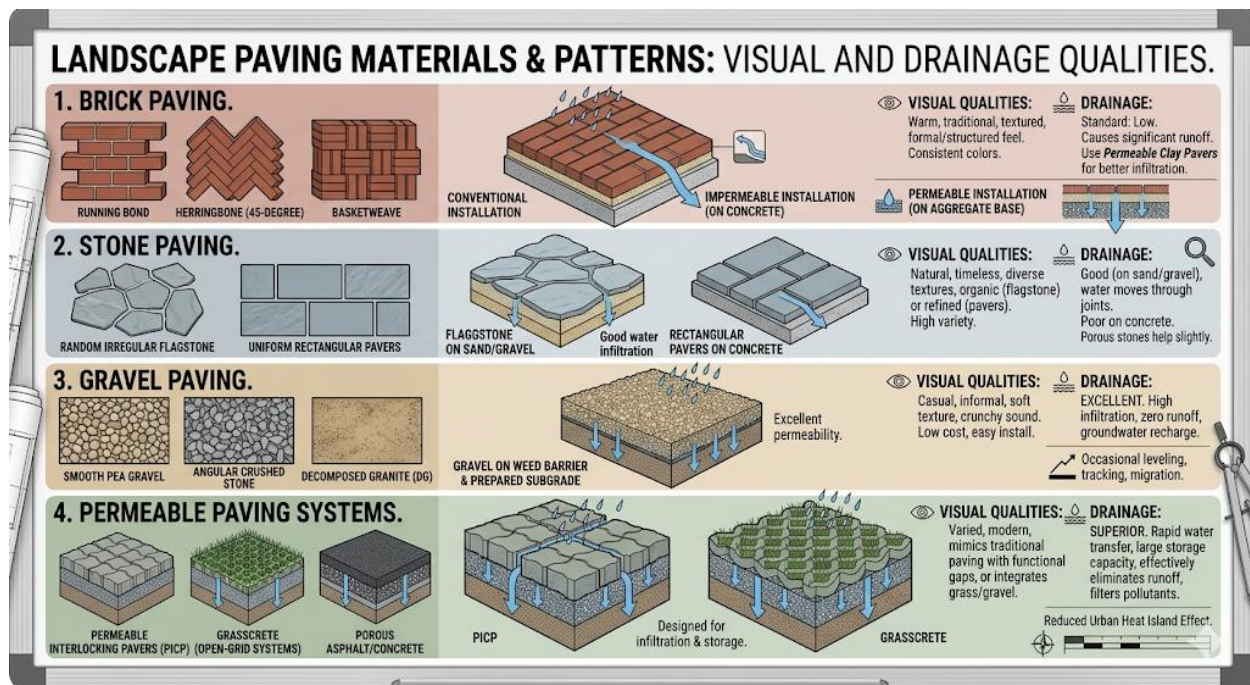
2.2 Built Elements of Landscape Design

2.2.1 Paving, paths, and hard surfaces

Hard surfaces paving, paths, terraces, roads, and plazas form the structural framework of designed landscapes, determining how people move through and use outdoor spaces. **Paving materials** include concrete, brick, stone, gravel, compacted laterite, and permeable surfaces, each with different qualities of colour, texture, durability, and drainage. The pattern and jointing of paving contributes significantly to the visual character of a space. **Path width** and alignment determine whether movement feels formal and directed or informal and exploratory. **Edging** defines the boundary between hard and soft surfaces and prevents paving from spreading into planting areas. In Nigerian conditions, permeable surfaces that allow stormwater infiltration are particularly important to reduce flooding.

Fill in the blank: Permeable paving surfaces are particularly important in Nigerian conditions because they allow stormwater _____ and reduce flooding.





Short description: Diagram showing different paving patterns and materials brick, stone, gravel, and permeable paving with notes on their design and drainage qualities.
Figure 2.1 Paving materials and patterns in landscape design

2.2.2 Structures walls, fences, pergolas, and furniture

Walls are among the most powerful spatial elements in landscape design they create enclosure, provide privacy, define territory, support planting, and retain changes in level. **Fences** perform similar spatial functions with less visual mass. **Pergolas** and **arbours** provide overhead structure, supporting climbing plants and creating partially shaded rooms within the landscape. **Outdoor furniture** benches, tables, litter bins, bicycle racks, and drinking fountains supports the practical use of outdoor spaces and contributes to their character. The selection of structural materials should be guided by durability, thermal comfort, visual compatibility, and local availability, with particular attention in Nigerian conditions to resistance to heat, humidity, and termite attack.

Fill in the blank: Walls in landscape design create enclosure, provide privacy, define territory, support planting, and _____ changes in level.

2.2.3 Lighting and signage in landscape design

Landscape lighting extends the usability of outdoor spaces into the evening, enhances safety, and creates dramatic visual effects by illuminating trees, water features, and architectural elements. **Uplighting** directing light upwards into tree canopies creates a dramatic night-time character. **Path lighting** at low level guides movement safely without glare. **Feature lighting** picks out focal points. **Signage** in landscape design includes directional signs, interpretive boards, maps, and identity markers. Signage should be legible, proportionate to its setting, and designed to complement rather than dominate the landscape character. Both lighting and signage must be robust, weather-resistant, and appropriately maintained to remain effective.



Fill in the blank: Uplighting directs light _____ into tree canopies to create dramatic night-time character in landscape design.

Pilot questions 2.2

1. Why are permeable paving surfaces particularly important in Nigerian landscape design?
2. What spatial functions do walls perform in landscape design?
3. Fill in the blank: Pergolas provide overhead structure and support _____ plants to create partially shaded outdoor rooms.
4. What is uplighting and what effect does it create?
5. Identify two qualities that should guide the selection of structural materials in landscape design.

2.3 Visual Principles of Landscape Design

2.3.1 Unity, harmony, and variety

Unity is the quality of wholeness the sense that all parts of a design belong together and contribute to a coherent composition. It is achieved through **repetition** of plant species, materials, and forms; through **dominance** of a single strong element that holds the composition together; and through **interconnection** of spaces and elements by continuous paths, hedges, or planting. **Harmony** describes the pleasing agreement between elements that are related but not identical similar colours, textures, or forms placed together. **Variety** prevents monotony: a design with too much unity becomes dull, while one with too much variety becomes chaotic. The skilled designer balances unity and variety so that the composition is coherent yet interesting.

Fill in the blank: Unity is achieved through repetition, dominance, and _____ of spaces and elements across a landscape design.

2.3.2 Balance, proportion, and scale

Balance in landscape design describes the distribution of visual weight across a composition. **Symmetrical balance** mirroring elements on either side of a central axis conveys formality and order. **Asymmetrical balance** achieves equilibrium through different but visually equivalent elements on either side, conveying informality and naturalness. **Proportion** refers to the size relationship between elements within a design: a path that is too narrow for its setting, or a fountain that is too large for its forecourt, offends the viewer's sense of rightness. **Scale** refers to the relationship between the design and the human body: a space that feels comfortable to occupy has been scaled to human dimensions it neither overwhelms nor feels cramped.

Fill in the blank: Symmetrical balance conveys _____ and order while asymmetrical balance conveys informality and naturalness.

2.3.3 Rhythm, emphasis, and sequence

Rhythm in landscape design is created by the repetition of elements at regular or irregular intervals a row of trees, a series of planting beds, or repeated changes in paving pattern. Rhythm



creates movement, continuity, and a sense of designed intention. **Emphasis** draws the eye to a focal point—a specimen tree, a sculpture, a fountain, or a gateway—that anchors the composition and gives the viewer a centre of interest. Without emphasis, a design can feel flat and undirected. **Sequence** describes the experience of moving through a landscape: the designed succession of spaces—from enclosed to open, from shade to sun, from planted to paved—that creates a narrative of discovery and arrival.

Fill in the blank: Emphasis draws the eye to a _____ point that anchors the composition and gives the viewer a centre of interest.

Principle	Definition
Unity	The concept that all parts of the design work together to create a single, cohesive theme or "whole," often achieved through the consistent use of style or character.
Harmony	The pleasing arrangement of parts and the state of being in agreement. It ensures that different elements (like plants and hardscapes) feel like they belong together.
Variety	The use of diverse shapes, colors, and textures to prevent monotony and create visual interest without breaking the overall unity of the site.
Balance	The distribution of visual weight. Symmetrical balance uses mirrored elements for formality, while asymmetrical balance uses different elements with equal visual "pull."
Proportion	The relationship between the sizes of different elements within the design (e.g., the size of a garden bed compared to the size of the lawn).
Scale	The size of an object or space in relation to a standard point of reference, typically the human body or the surrounding architecture.
Rhythm	The repetition of elements (colors, plants, or shapes) to create a sense of movement and lead the viewer's eye through the landscape.
Emphasis	The creation of a focal point—such as a statue, a unique tree, or a fountain—that captures attention and provides a destination for the eye.



Principle	Definition
Sequence	The logical progression of change in size, shape, color, or texture. It manages how a person experiences the transition from one part of the landscape to another.

Box 2.1 Summary of visual principles of landscape design

Short description: A box summarising the visual design principles of unity, harmony, variety, balance, proportion, scale, rhythm, emphasis, and sequence with a brief definition of each.

Pilot questions 2.3

1. How is unity achieved in a landscape design?
2. Distinguish between symmetrical and asymmetrical balance in landscape design.
3. Fill in the blank: Proportion refers to the size relationship between elements within a design while scale refers to the relationship between the design and the human _____.
4. What is the purpose of emphasis in landscape design?
5. Describe what sequence means in the experience of moving through a landscape.

2.4 Ecological and Functional Principles

2.4.1 Designing with natural processes

Ian McHarg's principle of **designing with nature** remains one of the most important ecological principles in landscape design. It directs designers to work with existing natural processes hydrology, ecology, climate, and geology rather than imposing an artificial order upon them. **Ecological design** selects plant communities that are appropriate to the site's soils and climate, manages stormwater through natural processes such as infiltration and biofiltration, and creates habitats that support biodiversity. **Sustainable landscape design** minimises resource inputs water, energy, and materials and maximises ecological outputs biodiversity, carbon sequestration, and microclimate regulation. In the Nigerian context, designing with nature means prioritising native species, preserving existing trees, managing seasonal flooding, and protecting riparian vegetation.

Fill in the blank: Ecological design selects plant communities appropriate to the site's soils and climate, and manages stormwater through natural processes such as infiltration and _____.

2.4.2 Functional principles circulation, enclosure, and use

Beyond aesthetic composition, landscape design must be **functional** it must work for the people and activities it is designed to serve. **Circulation** the movement of people through a landscape must be direct, legible, and accessible to all users including those with disabilities. **Enclosure** the degree to which a space is bounded by walls, hedges, or other elements determines how safe, comfortable, and inviting it feels. **Activity zoning** the allocation of different areas for active recreation, quiet rest, social gathering, and service functions ensures that different user needs are met without conflict. **Maintenance** is also a functional



consideration: the most beautiful design will deteriorate if it cannot be maintained with the resources available.

Fill in the blank: Activity zoning allocates different areas for recreation, rest, social gathering, and service functions to ensure that different user needs are met without _____.

2.4.3 Applying elements and principles in Nigerian landscapes

Applying landscape design elements and principles in Nigerian conditions requires adaptation to the local context. **Climate** high temperatures, seasonal rainfall, and strong sun favours shade trees, permeable surfaces, and drought-resistant planting. **Cultural practices** the importance of communal gathering spaces, the use of outdoor areas for commerce and social activity, and the significance of certain tree species in cultural life should inform spatial organisation and planting design. **Material availability** the local availability of laterite, concrete block, local stone, and indigenous timber should guide hard landscape material selection. **Maintenance capacity** often limited in public sector Nigerian landscapes should favour low-maintenance, climate-adapted planting over high-input decorative schemes that will quickly deteriorate without sustained management.

Fill in the blank: Maintenance capacity in Nigerian public sector landscapes often favours low-_____ planting over high-input decorative schemes that will deteriorate without sustained management.



Short description: Image showing a well-designed Nigerian outdoor space using local materials, shade trees, and paved gathering areas that reflect local climate and cultural practice.

Plate 2.2 A designed Nigerian outdoor space using shade trees, local materials, and gathering areas

Pilot questions 2.4



1. What does McHarg's principle of designing with nature direct landscape designers to do?
2. Why is circulation an important functional principle in landscape design?
3. Fill in the blank: Activity zoning allocates different areas for active recreation, quiet rest, social gathering, and _____ functions.
4. Identify two climate-related adaptations important in Nigerian landscape design.
5. Why should maintenance capacity influence planting design in Nigerian public landscapes?

Series Summary

This Series has examined the elements and principles that form the vocabulary and grammar of landscape design. We began with the natural elements landform, vegetation, water, climate, and light before examining the built elements of paving, structures, lighting, and signage.

We then explored the visual principles unity, harmony, variety, balance, proportion, scale, rhythm, emphasis, and sequence that govern the composition of designed landscapes. Finally, we examined the ecological and functional principles that ground landscape design in natural processes and human needs, with specific attention to applying these principles in Nigerian landscape contexts. By engaging with these topics, you should now be able to identify design elements, explain design principles, and apply them in landscape design practice, as outlined in the Series Learning Outcomes.

Glossary of Terms

- **Asymmetrical balance:** A distribution of visual weight in which different but visually equivalent elements achieve equilibrium across a composition.
- **Circulation:** The movement of people through a landscape, which must be direct, legible, and accessible to all users.
- **Ecological design:** A design approach that works with natural processes hydrology, ecology, and climate and selects plant communities appropriate to the site's natural conditions.
- **Emphasis:** A design principle in which a focal point tree, fountain, or sculpture anchors the composition and provides a centre of interest.
- **Enclosure:** The degree to which a landscape space is bounded by walls, hedges, or other elements, determining how safe and comfortable it feels.
- **Ground cover:** Low-growing plants used to protect soil, suppress weeds, and provide low-level texture and colour in landscape design.
- **Landform:** The shape of the ground surface including slopes, hollows, mounds, and ridges, the most fundamental element of landscape design.
- **Proportion:** The size relationship between elements within a design, ensuring each element is appropriately sized relative to its setting.
- **Rhythm:** A design principle created by the repetition of elements at regular or irregular intervals, producing movement and continuity.



- **Scale:** The relationship between the size of a landscape space or element and the human body.
- **Sequence:** The designed succession of spaces experienced when moving through a landscape, creating a narrative of discovery and arrival.
- **Unity:** The design quality of wholeness, achieved through repetition, dominance, and interconnection of landscape elements.
- **Uplighting:** A landscape lighting technique that directs light upwards into tree canopies or structures to create dramatic night-time effects.

Concept Check Questions 2

Objective Questions

1. Identify two natural elements of landscape design. (Linked to SLO 2.1)
2. What does symmetrical balance convey in a landscape design? (Linked to SLO 2.3)
3. Fill in the blank: Unity in landscape design is achieved through repetition, dominance, and _____ of elements. (Linked to SLO 2.3)
4. State one ecological principle of landscape design. (Linked to SLO 2.4)

Short-Answer Questions

5. Explain the role of vegetation in landscape design, distinguishing between trees, shrubs, and ground cover. (Linked to SLO 2.1)
6. Describe the visual principle of sequence and explain how it enhances movement through a landscape. (Linked to SLO 2.3)
7. Explain what it means to design with natural processes and why it is important. (Linked to SLO 2.4)
8. Describe two adaptations landscape designers should make for Nigerian climatic and cultural conditions. (Linked to SLO 2.4)

Long-Answer Questions

9. Analyse unity, balance, proportion, rhythm, and emphasis, explaining how each contributes to landscape quality and how they interact. (Linked to SLO 2.3)
10. Evaluate how natural and built elements can be combined with ecological and functional principles to create outdoor spaces that are aesthetically and practically effective in Nigerian cities. (Linked to SLO 2.1, 2.2, 2.4)

Answers to Concept Check Questions 2

Objective Questions

1. Landform and vegetation.
2. Formality and order.
3. Interconnection.
4. Designing with natural processes—working with hydrology, ecology, and climate.

Short-Answer Questions

5. Trees provide canopy, shade, scale, and vertical structure. Shrubs provide enclosure, screening, texture, and seasonal colour. Ground cover protects soil, suppresses weeds, reduces



maintenance, and adds low-level texture. Together they form a layered, functional landscape.

6. Sequence is the designed succession of spaces—enclosed to open, shade to sun, planted to paved. It creates narrative, anticipation, and varied experiences.

7. Designing with natural processes means aligning with hydrology, ecology, and climate. It ensures resilience, lower maintenance, and reduced environmental costs.

8. Adaptations include prioritising shade trees and permeable paving for heat and flooding, and organising spaces around communal gathering areas reflecting Nigerian social life.

Long-Answer Questions

9.

- **Basic response:** Unity holds design together; balance distributes weight; proportion ensures size relationships; rhythm creates continuity; emphasis provides focal points.
- **Value-added response:** Learners may explain interactions, e.g., emphasis requires unity to be effective, rhythm links disparate parts to reinforce unity, with examples from Nigerian or international landscapes.

10.

- **Basic response:** Natural elements (trees, ground cover) address climate; built elements (paving, walls) provide structure; ecological principles ensure sustainability; functional principles ensure usability.
- **Value-added response:** Learners may show integration, e.g., shade trees create microclimates and visual unity, permeable paving uses local materials, communal seating reflects cultural patterns.

Answers to Pilot Questions 2

Part 2.1

1. Landform—determines drainage, views, microclimates, spatial character.
2. Trees.
3. Sound, movement, reflection, cooling.
4. Rainfall.

Part 2.2

1. Permeable surfaces allow infiltration, reducing flooding in Nigerian cities.
2. Walls create enclosure, privacy, define territory, support planting, retain levels.
3. Climbing.
4. Uplighting highlights tree canopies/structures, creating dramatic night character.
5. Durability and thermal comfort.

Part 2.3

1. Unity through repetition, dominance, and interconnection.
2. Symmetrical balance conveys formality; asymmetrical conveys informality.
3. Body.



4. Emphasis anchors composition, providing focal interest.
5. Sequence is succession of spaces—enclosed to open, shade to sun—creating narrative and arrival.

Part 2.4

1. Work with natural processes (hydrology, ecology, climate).
2. Safe, direct circulation ensures accessibility.
3. Service.
4. Shade trees for heat, permeable surfaces for flooding.
5. Climate-adapted planting is sustainable under limited maintenance resources.

References and Attributions 2

Course Content References

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- Reid, G. W. (2007). *From Concept to Form in Landscape Design*. Hoboken, NJ: Wiley.
- Booth, N. K. (1983). *Basic Elements of Landscape Architectural Design*. Long Grove, IL: Waveland Press.
- Simonds, J. O., & Starke, B. W. (2006). *Landscape Architecture: A Manual of Environmental Planning and Design*. New York: McGraw-Hill.

Illustrations

- *Plate 2.1* Landform as a design element: mounds, slopes, and hollows in a park.
 - AI-generated prompt: “Generate an image of a park landscape design using mounds, gentle slopes, and hollows to create spatial variety, enclosure, and visual interest.”
 - Suggested OER search string: “landform landscape design mounds slopes hollows park OER.”
- *Figure 2.1* Paving materials and patterns in landscape design.
 - AI-generated prompt: “Generate a diagram showing different paving materials and patterns used in landscape design including brick, stone, gravel, and permeable paving with notes on their visual and drainage qualities.”
 - Suggested OER search string: “paving materials patterns landscape design brick stone gravel OER.”
- *Box 2.1* Summary of visual principles of landscape design.
 - AI-generated prompt: “Generate a text box summarising the visual principles of landscape design including unity, harmony, variety, balance, proportion, scale, rhythm, emphasis, and sequence with a brief definition of each.”
 - Suggested OER search string: “visual principles landscape design unity balance rhythm emphasis OER.”
- *Plate 2.2* A designed Nigerian outdoor space using shade trees, local materials, and gathering areas.
 - AI-generated prompt: “Generate an image of a well-designed Nigerian outdoor public space using local paving materials, large shade trees, and communal gathering areas reflecting local climate and cultural use.”



- Suggested OER search string: “Nigerian outdoor space shade trees local materials gathering area landscape OER.”

Attributions

- All AI prompts are intended for use with generative tools to create original illustrations.
- Suggested search strings are provided to locate open educational resources (OER) for non-commercial academic use.

Course code: URP 314

Course title: Principles of Landscape Design

Course credit load: 2 Units

List of Series:

- Series 1: Concepts, Definition and Scope of Landscape Planning
- Series 2: Elements and Principles of Landscape Design
- **Series 3: Landscape Design Process and Influencing Factors**
- Series 4: Landscape Evaluation Techniques and Typologies
- Series 5: Applications and Management of Landscape Design

3 Landscape Design Process and Influencing Factors

Series outline

- **Part 1 (3.1): The Landscape Design Process**
 - Sub-Part 3.1.1: Stages of the landscape design process
 - Sub-Part 3.1.2: Site analysis and inventory
 - Sub-Part 3.1.3: Design development and documentation
- **Part 2 (3.2): Physical and Environmental Influencing Factors**
 - Sub-Part 3.2.1: Climate and microclimate
 - Sub-Part 3.2.2: Soils, geology, and hydrology
 - Sub-Part 3.2.3: Existing vegetation and ecological character
- **Part 3 (3.3): Human and Cultural Influencing Factors**
 - Sub-Part 3.3.1: User needs and community context
 - Sub-Part 3.3.2: Cultural values and indigenous knowledge
 - Sub-Part 3.3.3: Legal, regulatory, and economic constraints
- **Part 4 (3.4): Integrating Factors in Landscape Design**
 - Sub-Part 3.4.1: Conducting a landscape design brief
 - Sub-Part 3.4.2: Synthesis and concept development
 - Sub-Part 3.4.3: Design decisions in the Nigerian landscape context



Introduction

Landscape design does not happen in a vacuum. Every outdoor space that a designer is asked to improve or create exists within a web of physical conditions, human needs, cultural values, legal requirements, and economic constraints that together define what is possible and what is appropriate. The designer who ignores these factors produces beautiful drawings that cannot be built, maintained, or used; the designer who understands them produces landscapes that work with their context and serve their communities well.

The aim of this Series is to equip you with the knowledge and skills to describe the stages of the landscape design process, identify and analyse the physical and human factors that influence landscape design decisions, and integrate these factors into a coherent design concept.

We shall commence this Series by examining the stages of the landscape design process from brief through site analysis to design documentation. Next, we will explore the physical and environmental factors – climate, soils, and existing vegetation – that shape design responses. Following that, we will examine the human and cultural factors including user needs, cultural values, and regulatory constraints. Finally, we will wrap up by considering how all these factors are integrated through the design brief, concept development, and design decision-making in the Nigerian context.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **SLO 3.1** describe the stages of the landscape design process from brief to documentation,
- **SLO 3.2** identify and analyse the physical and environmental factors that influence landscape design,
- **SLO 3.3** explain the human and cultural factors that shape landscape design decisions,
- **SLO 3.4** integrate influencing factors through the design brief, concept development, and design decisions.

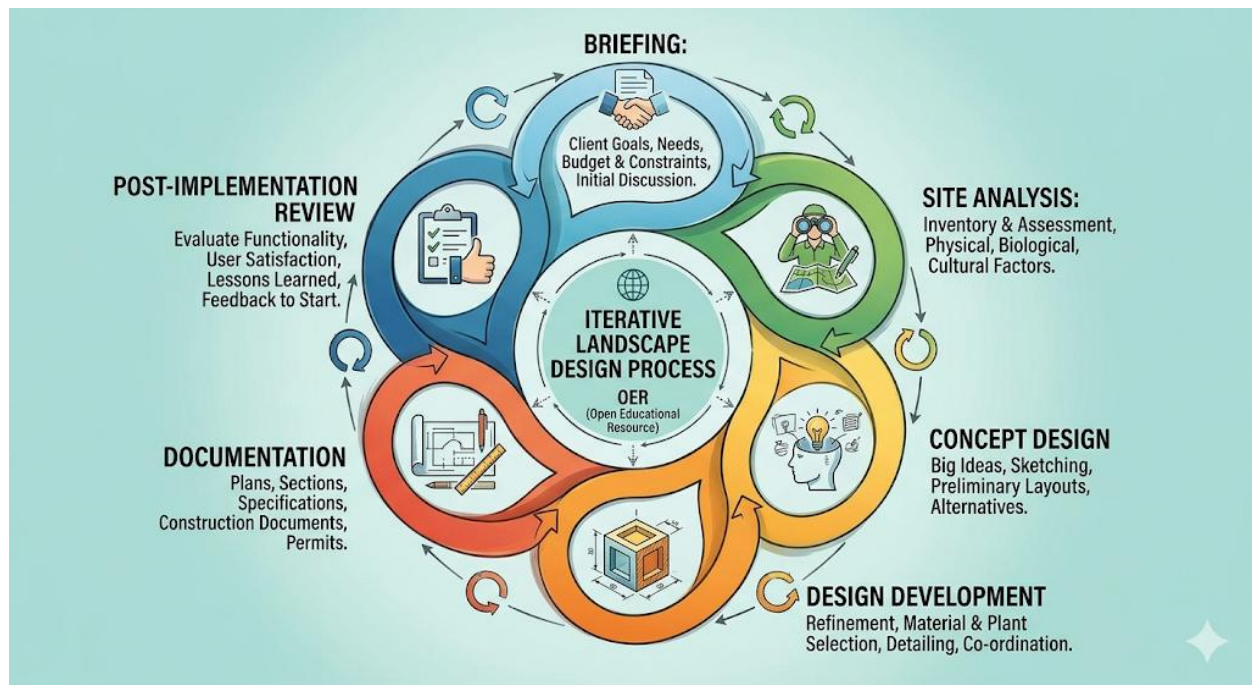
3.1 The Landscape Design Process

3.1.1 Stages of the landscape design process

The landscape design process is iterative rather than linear – designers move back and forth between stages as understanding deepens and ideas are tested. Nevertheless, a general sequence can be identified. **Briefing** establishes the client's requirements, the project scope, and the budget. **Site analysis** gathers information about the physical, ecological, and cultural character of the site. **Concept design** generates initial ideas for the spatial organisation and character of the landscape. **Design development** refines the preferred concept into a detailed design. **Design documentation** produces the drawings, specifications, and schedules needed to implement the design. **Post-implementation review** assesses whether the design has achieved its objectives. Each stage informs the next, and findings at any stage may require revisiting earlier decisions.



Fill in the blank: The landscape design process is _____ rather than linear designers move back and forth between stages as understanding deepens.



Short description: Diagram showing the landscape design process as an iterative cycle of stages from briefing through site analysis, concept design, development, and documentation to post-implementation review.

Figure 3.1 The landscape design process an iterative cycle of stages

3.1.2 Site analysis and inventory

Site analysis is the systematic investigation of a site's physical, ecological, visual, and cultural character. A **site inventory** records the facts: existing vegetation, levels and drainage, soil types, views in and out, microclimate, access points, utilities, and adjacent land uses. **Site analysis** goes further, interpreting what the inventory data means for the design identifying opportunities such as existing trees worth retaining, and constraints such as areas of poor drainage or noise exposure. Analysis is typically presented on **annotated base maps** that overlay different data layers to reveal spatial patterns and relationships. In Nigerian conditions, the inventory must also document informal uses of the site market trading, parking, community gathering that may not appear on official records but are essential to understanding how the space actually functions.

Fill in the blank: Site analysis goes beyond inventory by _____ what the data means for design identifying opportunities and constraints.

3.1.3 Design development and documentation

Design development refines the concept design into a fully resolved spatial layout, specifying materials, planting species, levels, drainage, and structures in sufficient detail for construction. Key outputs include a **layout plan** showing the precise arrangement of all landscape elements; **planting plans** specifying the location, species, size, and spacing of all plants; **sections and**



elevations showing the vertical character of key areas; **detail drawings** for specific elements such as paving patterns, wall construction, and water features; and **specifications** describing the standards of materials and workmanship required. In practice, the completeness of documentation varies with project size and budget, but even small projects benefit from clear planting plans and basic layout drawings that reduce the risk of construction errors.

Fill in the blank: A planting plan specifies the location, _____, size, and spacing of all plants in a landscape design.

Pilot questions 3.1

1. What are the six stages of the landscape design process?
2. What is the difference between a site inventory and a site analysis?
3. Which design document specifies the location and species of all plants?
4. Fill in the blank: In Nigerian conditions, site inventory must document _____ uses of the site that may not appear on official records.

3.2 Physical and Environmental Influencing Factors

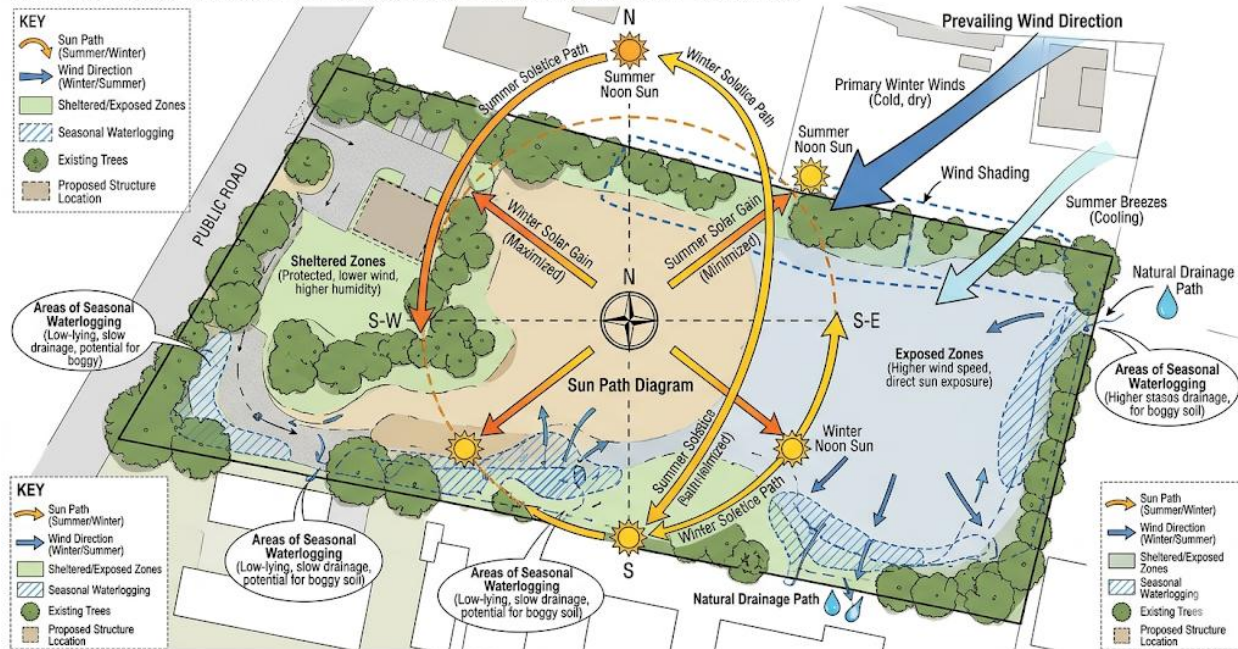
3.2.1 Climate and microclimate

Climate is one of the most powerful influences on landscape design because it determines what plants can grow, what outdoor activities are comfortable, and what construction materials are appropriate. Key climatic variables include **temperature**, **rainfall** and its seasonal distribution, **humidity**, **solar radiation**, and **wind direction and speed**. **Microclimate** refers to the local variations in climate produced by topography, water bodies, vegetation, and built surfaces a sheltered south-facing slope may be significantly warmer than an exposed ridge on the same site. Understanding microclimate enables designers to position seating in sheltered, sunny spots, shade trees over west-facing terraces, and channel breezes through hot urban spaces. In Nigerian conditions, managing solar heat gain and heavy seasonal rainfall are the dominant climatic design challenges.

Fill in the blank: Microclimate refers to local variations in climate produced by topography, water bodies, vegetation, and built _____.



SITE ANALYSIS DIAGRAM: MICROCLIMATE FACTORS & ECO-PLANNING



Short description: Image showing a site analysis diagram with microclimate annotations indicating sun paths, prevailing wind direction, sheltered and exposed areas, and areas of seasonal waterlogging.

Plate 3.1 Site analysis diagram showing microclimate factors sun, wind, shelter, and drainage

3.2.2 Soils, geology, and hydrology

Soil is the growing medium for all planted landscapes and its characteristics **texture** (sandy, loamy, or clay), **depth**, **drainage**, **pH**, and **fertility** determine which plant species will thrive and which construction approaches are appropriate. **Geology** influences soil characteristics, topography, and the availability of local stone for hard landscape construction. **Hydrology** the movement of water across and through the site determines drainage patterns, flood risk, and the feasibility of water features. In Nigerian cities, many sites suffer from poor drainage due to high clay content, compaction, or restricted outfall conditions that must be understood before planting or paving decisions are made. Soil investigation, at minimum a series of test pits and pH measurements, should be standard practice in all landscape design projects.

Fill in the blank: Soil texture, depth, drainage, pH, and _____ are the key characteristics that determine which plant species will thrive on a site.

3.2.3 Existing vegetation and ecological character

Existing vegetation is both a resource and a constraint. Mature trees are among the most valuable assets on any site: they provide immediate canopy, shade, and ecological habitat that would take decades to replace. Protecting them during design and construction is a fundamental responsibility. **Ecological character** the community of plants, animals, and ecological processes present on a site should be surveyed and understood before design begins. **Ecological surveys** identify habitats of value, invasive species requiring management, and opportunities for habitat enhancement. In Nigerian urban landscapes, informal planted areas, street trees, and remnant



natural vegetation often have higher ecological value than formal gardens, and should be assessed and retained wherever the design programme allows.

Fill in the blank: Protecting _____ trees during design and construction is a fundamental responsibility because they take decades to replace.

Pilot questions 3.2

1. Why is climate one of the most powerful influences on landscape design?
2. What soil characteristics must a designer understand before making planting decisions?
3. Fill in the blank: In Nigerian cities, poor drainage is often caused by high clay content, compaction, or restricted _____.
4. Why are mature trees considered among the most valuable assets on a design site?
5. What does an ecological survey identify on a landscape design site?

3.3 Human and Cultural Influencing Factors

3.3.1 User needs and community context

User needs are the starting point for functional landscape design. A children's playground has fundamentally different design requirements from a corporate headquarters courtyard, an urban park, or a hospital garden yet all are landscape design commissions. Understanding who will use the space, in what numbers, at what times, for what activities, and with what physical abilities is essential to producing a design that will be used and valued. **Community context** the social, demographic, and economic character of the surrounding community shapes what is appropriate: a formal ornamental garden may be entirely wrong for a neighbourhood where residents need productive growing space, informal gathering areas, and robust surfaces that can withstand heavy use. Community consultation should inform the brief for any landscape project serving a public or community function.

Fill in the blank: Community consultation should inform the _____ for any landscape project serving a public or community function.

3.3.2 Cultural values and indigenous knowledge

Cultural values are embedded in landscapes in ways that designers must understand and respect. The significance of particular tree species in Nigerian cultural life the **iroko**, the **silk cotton tree**, and the **baobab** all carry cultural and spiritual meanings in different communities means that their presence or absence in a design is never culturally neutral. **Indigenous knowledge** of plant uses, land management practices, and sacred spaces is a design resource that is frequently ignored in favour of imported design conventions. Incorporating indigenous knowledge into landscape design produces outcomes that are more culturally appropriate, more ecologically sound, and more likely to be maintained and valued by the communities they serve. Designers working in Nigerian communities should actively seek this knowledge through consultation with elders, community organisations, and traditional authorities.



Fill in the blank: Incorporating indigenous knowledge into landscape design produces outcomes that are more culturally appropriate, more ecologically sound, and more likely to be _____ by communities.

3.3.3 Legal, regulatory, and economic constraints

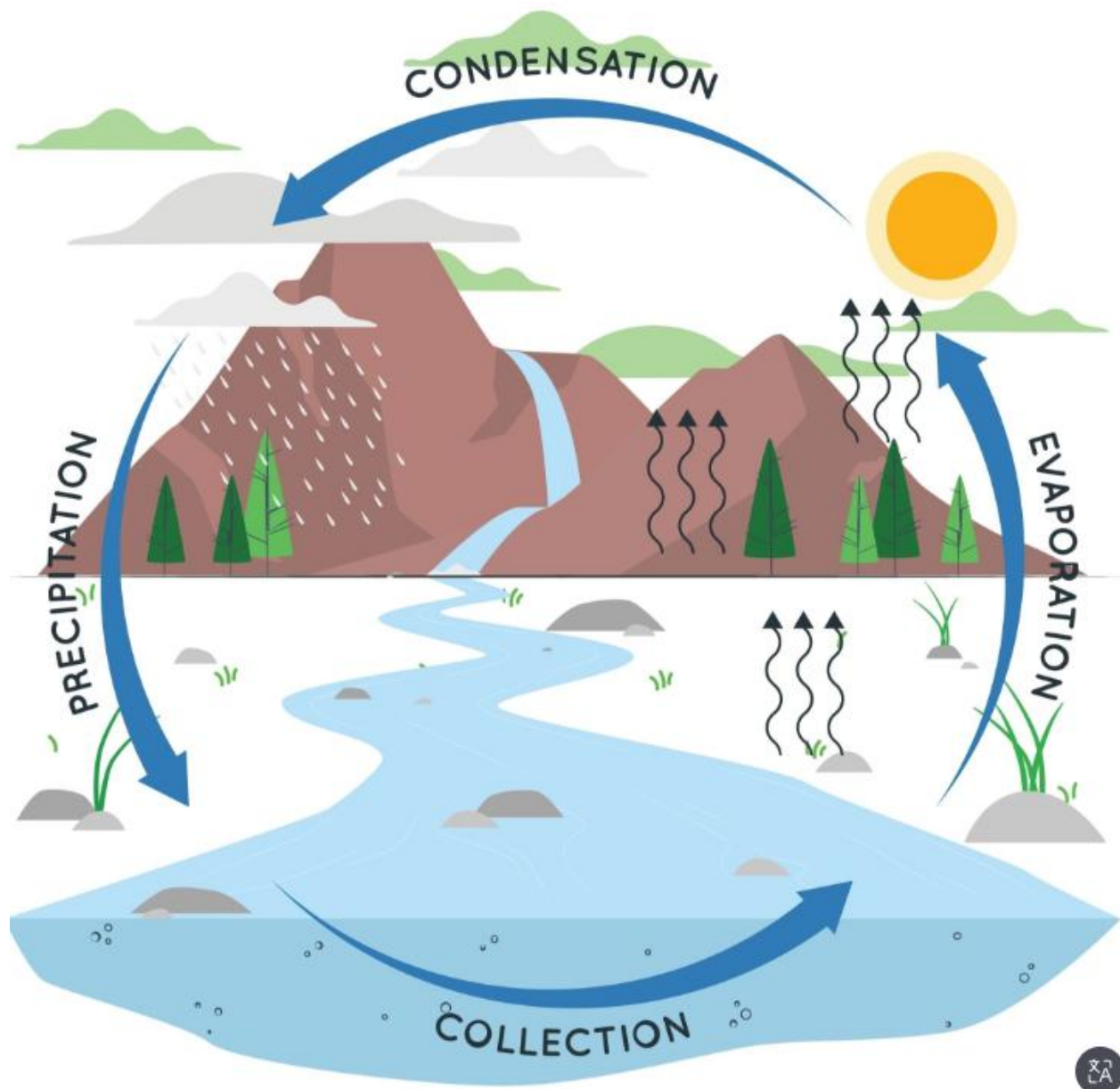
Legal constraints include planning regulations, building codes, tree protection orders, and environmental legislation that restrict what can be built or removed on a site. In Nigeria, the **Land Use Act of 1978** governs land tenure and affects what site modifications are legally permissible. **Regulatory constraints** include standards for accessibility, drainage, and safety that designs must meet. **Economic constraints** the budget available for construction and for ongoing maintenance are among the most important practical limits on design ambition. A design that is beyond the client's budget to build, or beyond the institution's capacity to maintain, is not a successful design however aesthetically admirable it may be. Understanding the full life-cycle cost of a design including maintenance from the outset is a mark of professional responsibility.

Fill in the blank: Understanding the full _____ cost of a design including maintenance from the outset is a mark of professional responsibility.

Category	Key Influencing Factors	Impact on Design
Physical & Environmental	Climate & Microclimate	Determines plant hardiness, irrigation needs, and the placement of shade or windbreaks.
	Topography & Landform	Influences drainage, accessibility (slopes vs. flats), and the "view" or orientation of the site.

Box 3.1 Key influencing factors in landscape design a summary





Short description: A box summarising the principal physical, environmental, human, and cultural factors that influence landscape design decisions, organised into categories.

Pilot questions 3.3

1. Why must a designer understand who will use a landscape space before beginning design?
2. Give two examples of tree species with cultural significance in Nigerian communities.
3. Fill in the blank: Indigenous knowledge is a design resource that is frequently ignored in favour of _____ design conventions.
4. Why is the budget for ongoing maintenance as important as the construction budget in landscape design?



5. What does the Land Use Act of 1978 govern and why is it relevant to landscape design?

3.4 Integrating Factors in Landscape Design

3.4.1 Conducting a landscape design brief

The **design brief** is the foundational document of any landscape design project. It records the client's objectives, the site boundary, the project budget, the programme of uses required, any specific constraints or requirements, and the timeline for design and construction. A good brief is **clear** unambiguous about what is required; **complete** covering all aspects that will influence the design; and **agreed** confirmed by both designer and client before design work begins. In practice, the brief often evolves as the designer learns more about the site and the client's needs, and a well-structured brief-writing process involves asking probing questions that reveal requirements the client has not explicitly stated. Community landscape projects may require a **participatory brief-writing process** in which community members contribute to defining what is needed.

Fill in the blank: A good design brief is clear, complete, and _____ confirmed by both designer and client before work begins.



Short description: Image of a landscape designer discussing a project brief with a client at a table, with site photographs and drawings spread between them.

Plate 3.2 Conducting the landscape design brief designer and client in discussion

3.4.2 Synthesis and concept development

Synthesis is the creative act at the heart of the design process the translation of site analysis data, brief requirements, and influencing factors into a **design concept**. A design concept is not a



detailed plan but a **guiding idea** a clear statement of the spatial organisation, character, and experience that the design will create. Strong concepts are simple enough to be stated in one or two sentences but rich enough to generate all the detailed decisions that follow. Concept development typically involves **sketching** rapid, exploratory drawing that tests spatial ideas quickly before committing to detail and **diagram**, which abstracts the key spatial moves of the design. The concept should respond directly to the site analysis findings and the brief: a design concept that could have been developed for any site is not a strong concept.

Fill in the blank: A design concept should respond directly to the site analysis findings and the brief; a concept that could apply to _____ site is not a strong concept.

3.4.3 Design decisions in the Nigerian landscape context

Bringing influencing factors together in design decision-making requires professional judgement the ability to weigh competing considerations and make choices that are both contextually appropriate and technically sound. In the Nigerian landscape context, this judgement must navigate several tensions: between **imported design conventions** and **locally appropriate approaches**; between **aesthetic ambition** and **maintenance realism**; between **client preferences** and **community needs**; and between **ecological best practice** and **economic constraints**. Developing the capacity to navigate these tensions drawing on knowledge of elements and principles, site analysis skills, cultural sensitivity, and professional ethics is the central goal of landscape design education. The most successful Nigerian landscape designs are those that draw on local knowledge, use local materials, respond to local climate, and serve local communities.

Fill in the blank: The most successful Nigerian landscape designs draw on local knowledge, use local materials, respond to local _____, and serve local communities.

Pilot questions 3.4

1. What are the three qualities of a good design brief?
2. What is a design concept and how does it differ from a detailed design?
3. Why should concept development involve sketching rather than detailed drawing?
4. Identify two tensions that landscape designers must navigate in the Nigerian context.
5. Fill in the blank: Synthesis is the translation of site analysis data, brief requirements, and influencing factors into a design _____.

Series Summary

This Series has examined the landscape design process and the factors that shape design decisions. We began by tracing the stages of the design process from briefing and site analysis through concept design and development to documentation, recognising its iterative character. We then explored the physical and environmental factors climate and microclimate, soils and hydrology, and existing vegetation that must be understood and responded to in any landscape design.



We went on to examine the human and cultural factors user needs, cultural values and indigenous knowledge, and legal and economic constraints that determine what is appropriate and achievable. Finally, we considered how all these factors are integrated through the design brief, concept development, and professional judgement in the Nigerian landscape context. By engaging with these topics, you should now be able to describe the design process, identify influencing factors, and explain how they are integrated in design decision-making, as outlined in the Series Learning Outcomes.

Glossary of Terms

- **Briefing:** The stage of the landscape design process that establishes the client's requirements, project scope, and budget.
- **Concept design:** The stage of the design process in which initial ideas for the spatial organisation and character of the landscape are generated.
- **Design brief:** A document recording the client's objectives, site boundary, budget, programme of uses, constraints, and timeline.
- **Design concept:** A guiding idea that states the spatial organisation, character, and experience a design will create, simple enough to direct all subsequent design decisions.
- **Design documentation:** Drawings, specifications, and schedules produced to communicate the design in sufficient detail for construction.
- **Ecological survey:** An assessment of the habitats, species, and ecological processes present on a site, identifying features of value and opportunities for enhancement.
- **Indigenous knowledge:** Community knowledge of plant uses, land management practices, and sacred spaces accumulated over generations and relevant to landscape design.
- **Microclimate:** Local variations in climate produced by topography, water bodies, vegetation, and built surfaces at the scale of a site or part of a site.
- **Post-implementation review:** An assessment of whether a completed landscape design has achieved its objectives, generating lessons for future projects.
- **Site analysis:** The interpretation of site inventory data to identify design opportunities and constraints.
- **Site inventory:** A systematic record of a site's physical, ecological, visual, and cultural characteristics.
- **Synthesis:** The creative act of translating site analysis data, brief requirements, and influencing factors into a design concept.

Concept Check Questions 3

Objective Questions

1. List the six stages of the landscape design process. (Linked to SLO 3.1)
2. Define microclimate. (Linked to SLO 3.2)



3. Fill in the blank: A design concept is a _____ idea that directs all subsequent design decisions. (Linked to SLO 3.4)
4. State one human factor that influences landscape design. (Linked to SLO 3.3)

Short-Answer Questions

5. Distinguish between site inventory and site analysis and explain why both are needed. (Linked to SLO 3.1)
6. Explain why understanding soil characteristics is essential before planting decisions. (Linked to SLO 3.2)
7. Describe the role of cultural values and indigenous knowledge in landscape design. (Linked to SLO 3.3)
8. Explain what a design brief is and why it should be agreed before design work begins. (Linked to SLO 3.4)

Long-Answer Questions

9. Analyse physical and environmental factors a designer must investigate before designing a public park in a Nigerian city, explaining how each influences design decisions. (Linked to SLO 3.2)
10. Evaluate tensions landscape designers face when integrating influencing factors in Nigeria, and explain how professional judgement, cultural sensitivity, and local knowledge help navigate them. (Linked to SLO 3.3, 3.4)

Answers to Concept Check Questions 3

Objective Questions

1. Briefing, site analysis, concept design, design development, design documentation, post-implementation review.
2. Microclimate: local climate variations created by topography, vegetation, water, and built surfaces at site scale.
3. Guiding.
4. User needs.

Short-Answer Questions

5. Site inventory records facts (vegetation, soils, drainage, views, access). Site analysis interprets meaning (trees to retain, areas too wet, views to frame). Both are needed—facts alone don't guide design.
6. Soil texture, depth, drainage, pH, fertility determine plant success. Wrong species for soil conditions leads to failure and wasted cost.
7. Cultural values shape appropriateness: significant species, gathering spaces, sacred places. Indigenous knowledge offers ecologically and culturally grounded solutions.
8. A design brief records objectives, boundaries, budget, uses, constraints, timeline. Agreement ensures design meets client needs and avoids wasted effort.

Long-Answer Questions

9.
 - **Basic response:** Climate (heat, rainfall) influences tree choice and paving. Soils (often clay) affect drainage and planting. Existing trees guide retention. Microclimate informs seating and shading.



- **Value-added response:** Learners may explain interactions, e.g., clay soils stressed by downpours require permeable paving, bioswales, and tolerant plants. Informal uses (markets, recreation) documented in inventory should be incorporated rather than displaced.

10.

- **Basic response:** Tensions include imported conventions vs. local approaches, aesthetics vs. maintenance, client vs. community needs. Professional judgement and cultural sensitivity balance these.
- **Value-added response:** Learners may cite examples, e.g., client preference for formal European planting vs. community need for shade trees. They may propose using concept development to integrate all factors into a clear guiding idea, showing contextual design as professional achievement.

Answers to Pilot Questions 3

Part 3.1

1. Briefing, site analysis, concept design, design development, design documentation, post-implementation review.
2. Inventory records facts; analysis interprets opportunities/constraints.
3. Planting plan.
4. Informal.

Part 3.2

1. Determines plant growth, comfort of activities, suitability of materials.
2. Texture, depth, drainage, pH, fertility.
3. Outfall.
4. Retained trees provide canopy, shade, habitat.
5. Habitats of value, invasive species, opportunities for enhancement.

Part 3.3

1. Different users have different needs; ignoring them produces unused spaces.
2. Iroko and silk cotton tree.
3. Imported.
4. Limited budgets mean ambitious planting deteriorates; design must be maintainable.
5. Land tenure governs permissible site modifications.

Part 3.4

1. Clear, complete, agreed.
2. A design concept is a guiding idea for organisation and character; directs decisions without specifying details.
3. Sketching tests ideas quickly; easier to discard than detailed plans.



4. Imported conventions vs. local approaches; aesthetics vs. maintenance realism.
5. Concept.

References and Attributions 3

Course Content References

- McHarg, I. L. (1969). *Design with Nature*. New York: Natural History Press.
- Motloch, J. L. (2001). *Introduction to Landscape Design*. New York: Wiley.
- Reid, G. W. (2007). *From Concept to Form in Landscape Design*. Hoboken, NJ: Wiley.

Illustrations

- *Figure 3.1* The landscape design process: an iterative cycle of stages.
 - AI-generated prompt: “Generate a circular diagram showing the landscape design process as an iterative cycle including briefing, site analysis, concept design, design development, documentation, and post-implementation review.”
 - Suggested OER search string: “landscape design process iterative cycle stages diagram OER.”
- *Plate 3.1* Site analysis diagram showing microclimate factors: sun, wind, shelter, and drainage.
 - AI-generated prompt: “Generate a site analysis diagram annotated with microclimate factors including sun path arrows, prevailing wind direction, sheltered and exposed zones, and areas of seasonal waterlogging.”
 - Suggested OER search string: “site analysis microclimate sun wind shelter drainage diagram OER.”
- *Box 3.1* Key influencing factors in landscape design: a summary.
 - AI-generated prompt: “Generate a text box summarising the key influencing factors in landscape design organised into physical and environmental factors and human and cultural factors.”
 - Suggested OER search string: “landscape design influencing factors physical environmental human cultural summary OER.”
- *Plate 3.2* Conducting the landscape design brief: designer and client in discussion.
 - AI-generated prompt: “Generate an image of a landscape designer discussing a project brief with a client at a table with site photographs and reference drawings spread between them.”
 - Suggested OER search string: “landscape design brief client discussion designer meeting OER.”

Attributions

- All AI prompts are intended for use with generative tools to create original illustrations.
- Suggested search strings are provided to locate open educational resources (OER) for non-commercial academic use.

Course code: URP 314

Course title: Principles of Landscape Design

Course credit load: 2 Units



List of Series:

- Series 1: Concepts, Definition and Scope of Landscape Planning
- Series 2: Elements and Principles of Landscape Design
- Series 3: Landscape Design Process and Influencing Factors
- **Series 4: Landscape Evaluation Techniques and Typologies**
- Series 5: Applications and Management of Landscape Design

4 Landscape Evaluation Techniques and Typologies

Series outline

- **Part 1 (4.1): Introduction to Landscape Evaluation**
 - Sub-Part 4.1.1: Purpose and types of landscape evaluation
 - Sub-Part 4.1.2: Landscape character assessment
 - Sub-Part 4.1.3: Landscape visual impact assessment
- **Part 2 (4.2): Techniques for Landscape Evaluation**
 - Sub-Part 4.2.1: Descriptive and inventory-based techniques
 - Sub-Part 4.2.2: Preference and perception studies
 - Sub-Part 4.2.3: GIS and digital tools in landscape evaluation
- **Part 3 (4.3): Landscape Typologies**
 - Sub-Part 4.3.1: Urban landscape typologies
 - Sub-Part 4.3.2: Rural and natural landscape typologies
 - Sub-Part 4.3.3: Cultural and heritage landscape typologies
- **Part 4 (4.4): Applying Evaluation and Typologies in Nigeria**
 - Sub-Part 4.4.1: Landscape evaluation in Nigerian planning practice
 - Sub-Part 4.4.2: Nigerian landscape typologies and their characteristics
 - Sub-Part 4.4.3: Evaluation as a basis for design and management decisions

Introduction

Before a landscape can be designed, managed, or protected, it must be understood and assessed. Landscape evaluation is the systematic process of examining and judging landscape character, quality, and value providing the evidence base for planning decisions, design briefs, and management strategies. At the same time, understanding landscape typologies the recognised categories of landscape type with their characteristic features and values equips planners and designers with a framework for interpreting what they observe and for selecting appropriate design and management responses.

The aim of this Series is to equip you with the knowledge and skills to explain the purpose and types of landscape evaluation, apply key evaluation techniques, describe the principal landscape



typologies, and use evaluation and typology frameworks in Nigerian planning and design contexts.

We shall commence this Series by introducing landscape evaluation its purpose, and the key methods of landscape character assessment and visual impact assessment. Next, we will examine specific evaluation techniques including descriptive, preference-based, and digital approaches. Following that, we will describe the principal urban, rural, and cultural landscape typologies. Finally, we will wrap up by examining how evaluation and typologies are applied in Nigerian landscape planning practice.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **SLO 4.1** explain the purpose and types of landscape evaluation including character assessment and visual impact assessment,
- **SLO 4.2** apply descriptive, preference-based, and digital landscape evaluation techniques,
- **SLO 4.3** describe the principal urban, rural, and cultural landscape typologies and their characteristics,
- **SLO 4.4** apply landscape evaluation and typology frameworks in Nigerian planning and design contexts.

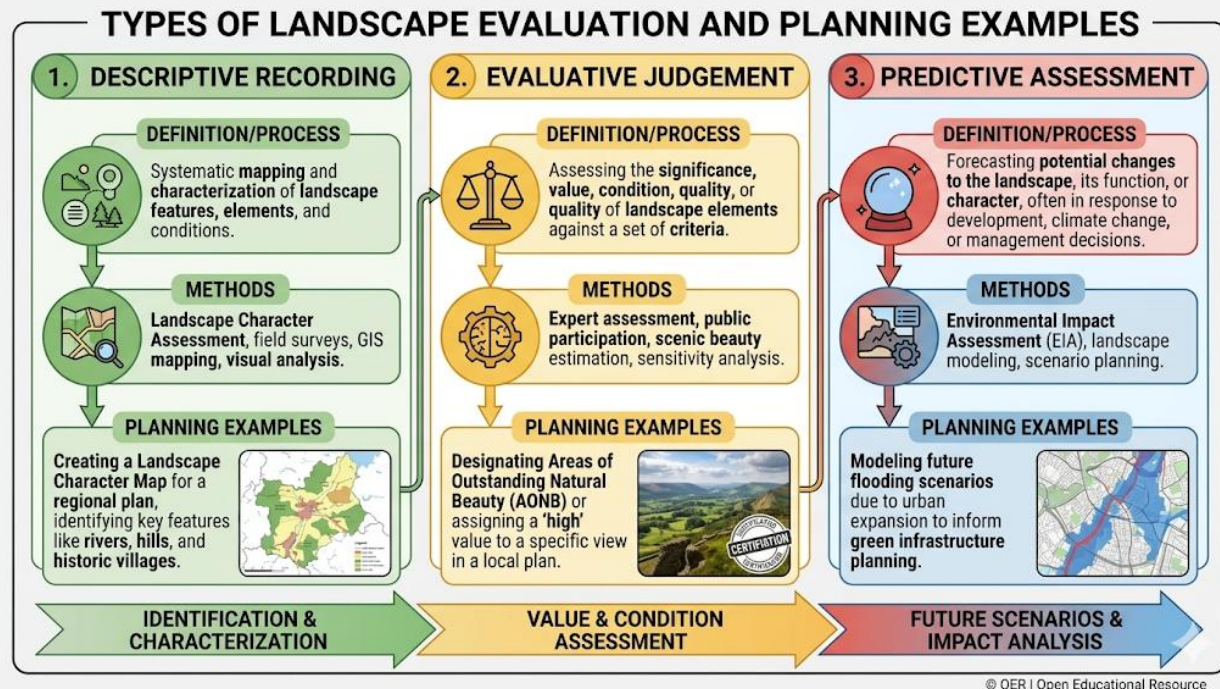
4.1 Introduction to Landscape Evaluation

4.1.1 Purpose and types of landscape evaluation

Landscape evaluation is the process of systematically assessing the characteristics, qualities, and values of a landscape for planning, design, or management purposes. Its principal purposes are to: describe and map landscape character as a baseline for planning; identify landscapes of particular scenic, ecological, or cultural value; assess the likely impact of proposed developments on landscape character and visual amenity; and provide evidence to support protection, enhancement, or restoration decisions. Landscape evaluation may be **descriptive** recording what is present; **evaluative** judging the quality or significance of what is observed; or **predictive** assessing the likely future condition of the landscape in the absence of, or following, a proposed intervention.

Fill in the blank: Landscape evaluation may be descriptive, evaluative, or _____ assessing the likely future condition of a landscape following a proposed intervention.





Short description: Diagram showing the three purposes of landscape evaluation descriptive, evaluative, and predictive with examples of each applied to a landscape planning scenario.

Figure 4.1 Three types of landscape evaluation descriptive, evaluative, and predictive

4.1.2 Landscape character assessment

Landscape character assessment (LCA) is the most widely used framework for systematic landscape evaluation. It identifies and describes the distinct character of different areas of landscape the combination of landform, vegetation, land use, settlement pattern, and cultural associations that makes each area recognisably different from its neighbours. LCA is typically presented as a **character map** dividing the study area into landscape character types or areas, each described in a written profile. Character assessment is a value-neutral exercise: it describes what is present without judging whether it is good or bad. Evaluation of significance and sensitivity is a separate subsequent step. In planning practice, LCA provides the evidence base for landscape protection policies, design guidance, and impact assessment.

Fill in the blank: Landscape character assessment is a value-neutral exercise: it _____ what is present without judging whether it is good or bad.

4.1.3 Landscape visual impact assessment

Landscape and visual impact assessment (LVIA) evaluates the effects of a proposed development on the character and appearance of the landscape and on the visual amenity of people who experience it. Key steps include: establishing the **zone of theoretical visibility (ZTV)** the area from which a proposed development could potentially be seen; conducting **viewshed analysis** to identify the actual extent of visibility; assessing the **sensitivity** of affected landscape receptors to change; assessing the **magnitude** of predicted change; and combining sensitivity and magnitude to reach a judgement of **significance**. LVIA is commonly required as



part of environmental impact assessments for major development proposals including wind farms, roads, housing estates, and industrial facilities.

Fill in the blank: The zone of theoretical visibility identifies the area from which a proposed development could potentially be _____.

Pilot questions 4.1

1. What are the three types of landscape evaluation?
2. What is landscape character assessment and what does it produce?
3. What does ZTV stand for in landscape and visual impact assessment?
4. Fill in the blank: In LVIA, significance is reached by combining the _____ of affected landscape receptors with the magnitude of predicted change.

4.2 Techniques for Landscape Evaluation

4.2.1 Descriptive and inventory-based techniques

Descriptive techniques record the observable physical, ecological, and visual characteristics of a landscape systematically. **Field survey** is the foundation: trained observers record landform, vegetation cover and condition, land use, field boundaries, water features, settlement pattern, building character, and cultural features on survey sheets or annotated maps. **Photographic survey** provides a visual record of landscape character and condition from defined viewpoints. **Transect surveys** record landscape change along defined lines across a study area.

Mapping overlaying survey data on base maps reveals spatial patterns and supports the delineation of landscape character areas. Descriptive techniques are most reliable when conducted by trained observers using standardised methods, reducing the subjectivity that inevitably affects landscape judgements.

Fill in the blank: Field survey is the foundation of descriptive landscape evaluation, recording landform, vegetation, land use, and _____ features on survey sheets.





Short description: Image of a landscape assessor conducting a field survey, recording landscape characteristics on a survey form with annotated maps in an open rural landscape.

Plate 4.1 Field survey in landscape evaluation a trained assessor recording landscape characteristics

4.2.2 Preference and perception studies

Preference studies investigate which landscape types and visual qualities people find most attractive or satisfying, using methods such as **photograph preference surveys** asking respondents to rate landscape photographs and **place attachment studies** that investigate the emotional and cultural bonds people have with particular landscapes. **Perception studies** examine how people understand and interpret landscapes, including how familiarity, cultural background, and personal experience influence landscape judgements. These methods recognise that landscape value is partly subjective and culturally determined different communities may value the same landscape very differently. In Nigerian landscape evaluation, preference and perception studies are particularly important for capturing the cultural and spiritual values attached to landscapes that objective descriptive techniques may miss.

Fill in the blank: Preference and perception studies recognise that landscape value is partly _____ and culturally determined.

4.2.3 GIS and digital tools in landscape evaluation

Geographic Information Systems (GIS) have transformed landscape evaluation by enabling the rapid integration and analysis of multiple data layers topography, land use, vegetation cover, viewsheds, cultural heritage, and ecological habitat to produce composite landscape assessments. **Viewshed analysis** using digital elevation models identifies the zone of theoretical visibility from any point or line, essential for LVIA. **Remote sensing** including satellite imagery and aerial photography provides up-to-date landscape cover data over large areas. **3D**



visualisation software produces photomontages and animated fly-throughs that show how a proposed development will appear in its landscape context, an increasingly standard component of planning applications for major developments.

Fill in the blank: Viewshed analysis using digital elevation models identifies the zone of theoretical _____ from any defined point or line.

Pilot questions 4.2

1. What does a photographic survey provide in landscape evaluation?
2. What do photograph preference surveys ask respondents to do?
3. Fill in the blank: GIS enables the rapid integration of multiple data _____ to produce composite landscape assessments.
4. What is remote sensing and how is it used in landscape evaluation?
5. Why are preference and perception studies particularly important in Nigerian landscape evaluation?

4.3 Landscape Typologies

4.3.1 Urban landscape typologies

Urban landscapes are classified into typologies based on their spatial character, land use, and ecological function. Common urban landscape typologies include: **parks and public open spaces** formally designed areas for recreation and amenity; **streetscapes** the character of streets, including carriageways, footpaths, street trees, and frontages; **waterfronts** riverside, lakeside, or coastal areas where urban development meets water; **urban green infrastructure** the network of greenspaces including parks, gardens, green roofs, and street trees that provides ecological and amenity services; **brownfield landscapes** formerly developed or industrially degraded land; and **informal urban landscapes** the unplanned green spaces, street verges, and spontaneous vegetation that characterise many areas of African cities.

Fill in the blank: Urban green infrastructure is the network of greenspaces including parks, gardens, green roofs, and street trees that provides ecological and _____ services.





Short description: Image showing a Nigerian urban streetscape with trees, paved paths, commercial frontages, and informal uses illustrating typical urban landscape character.
Plate 4.2 Nigerian urban streetscape a typical urban landscape typology

4.3.2 Rural and natural landscape typologies

Rural and natural landscape typologies describe the range of non-urban landscape types from intensively farmed agricultural land to near-natural wilderness. Common typologies include: **agricultural landscapes** cropland, farmsteads, and their associated field patterns; **forest and woodland landscapes** including plantation forests, secondary regrowth, and remnant natural forests; **savanna landscapes** the dominant natural landscape type across much of Nigeria, characterised by grass cover with scattered trees; **wetland landscapes** floodplains, swamps, and mangroves; **coastal landscapes** beaches, dunes, and estuaries; and **upland and rocky landscapes** the granite inselbergs, escarpments, and plateaux that punctuate the Nigerian landscape. Each typology has characteristic ecological communities, land uses, and visual qualities that inform both design responses and management strategies.

Fill in the blank: Savanna landscapes, the dominant natural landscape type across much of Nigeria, are characterised by grass cover with scattered _____.

4.3.3 Cultural and heritage landscape typologies

Cultural and heritage landscapes are those in which the interaction of human activity and nature over time has produced landscapes of particular historical, aesthetic, or cultural significance. Recognised typologies include: **historic gardens and parks** designed landscapes of aesthetic and historical value; **sacred landscapes** areas with spiritual significance including sacred groves, shrines, and religious sites; **traditional agricultural landscapes** farming landscapes that retain pre-industrial patterns and management practices; and **indigenous settlement landscapes** the spatial organisation of traditional villages and compounds with their associated farming and forest land. In Nigeria, sacred groves, royal palace grounds, and



traditional compound layouts are among the most significant cultural landscape heritage assets, frequently threatened by urban expansion and development pressure.

Fill in the blank: Sacred groves, royal palace grounds, and traditional compound layouts are among the most significant cultural landscape _____ assets in Nigeria.

Typology	Key Characteristics	Nigerian Examples
Urban	High-density built environments, paved infrastructure, engineered drainage, and managed public parks.	Lagos (Marina/Lekki): High-rise commercial hubs. Abuja: Planned administrative layouts and Millennium Park.
Rural	Low-density settlements defined by subsistence or commercial agriculture, grazing lands, and traditional earth-based architecture.	Jos Plateau: Terraced farming communities. Niger Delta: Riverine fishing villages and stilt housing.
Natural	Ecosystems with minimal human interference, characterized by indigenous flora, fauna, and geological formations.	Yankari National Park: Savanna woodland and warm springs. Cross River National Park: Dense tropical rainforest and biodiversity.
Cultural & Heritage	Landscapes shaped by long-term human interaction, spiritual beliefs, or historical events; often protected for their "sense of place."	Osun-Osogbo Sacred Grove: Rainforest dotted with shrines and sculptures. Sukur Cultural Landscape: Ancient stone-terraced hills and palaces (UNESCO site).



Box 4.1 Summary of principal landscape typologies urban, rural, and cultural
Short description: A box summarising the principal landscape typologies including urban, rural and natural, and cultural and heritage types with examples from the Nigerian context.

Pilot questions 4.3

1. Identify three urban landscape typologies.
2. What characterises savanna landscapes in Nigeria?
3. Fill in the blank: Sacred landscapes include areas of spiritual significance such as sacred groves, shrines, and _____ sites.
4. Why are informal urban landscapes particularly significant in African cities?
5. Give two examples of cultural and heritage landscape assets in Nigeria.

4.4 Applying Evaluation and Typologies in Nigeria

4.4.1 Landscape evaluation in Nigerian planning practice

Landscape evaluation is an underdeveloped component of Nigerian planning practice. Environmental Impact Assessment (EIA) legislation requires assessment of landscape and visual effects for major projects, but the quality and depth of landscape evaluation in Nigerian EIAs is often limited by a shortage of trained practitioners, inadequate methodological frameworks, and insufficient political will to enforce standards. Outside the EIA context, systematic landscape character assessment has rarely been applied in Nigerian urban or regional planning. There is significant potential to develop locally adapted evaluation frameworks that integrate objective descriptive methods with the preference and perception approaches needed to capture cultural landscape values, and to build the professional capacity to apply them routinely in planning decisions.

Fill in the blank: Landscape evaluation is underdeveloped in Nigerian planning practice, partly due to a shortage of _____ practitioners and inadequate methodological frameworks.

4.4.2 Nigerian landscape typologies and their characteristics

Nigeria's landscape diversity from the mangrove swamps of the Niger Delta to the Jos Plateau, from the Sahel savanna of the north to the rainforest remnants of the southwest encompasses most of the landscape typologies described in this Series. **Coastal and delta landscapes** face severe pressures from oil industry activity, mangrove clearance, and sea level rise. **Savanna landscapes** are subject to desertification in the north and agricultural expansion everywhere. **Urban landscapes** are transforming rapidly under the pressure of population growth and informal settlement expansion. **Sacred and cultural landscapes** are threatened by urban encroachment and the weakening of traditional governance systems that protected them. Understanding which typologies are present in a given planning area, and what pressures they face, is the starting point for any landscape planning exercise in Nigeria.

Fill in the blank: Nigeria's landscape diversity ranges from the mangrove swamps of the Niger Delta to the _____ of the Jos Plateau and the Sahel savanna of the north.



4.4.3 Evaluation as a basis for design and management decisions

Landscape evaluation is not an end in itself but a means to better design and management decisions. The findings of a landscape character assessment should directly inform design briefs specifying which character features must be retained or reinforced, which deficiencies should be addressed, and which opportunities for enhancement exist. The findings of an LVIA should determine the siting, scale, and screening of proposed developments. **Evaluation-led design** in which design decisions are grounded in and justified by evaluation evidence produces landscapes that are more contextually appropriate and more defensible in planning decision-making. In the Nigerian context, building evaluation into planning and design processes routinely, even in simplified form, would significantly improve the quality and accountability of landscape-related decisions.

Fill in the blank: Evaluation-led design produces landscapes that are more contextually _____ and more defensible in planning decision-making.

Pilot questions 4.4

1. Why is landscape evaluation underdeveloped in Nigerian planning practice?
2. Identify two Nigerian landscape typologies that face severe environmental pressure.
3. Fill in the blank: Evaluation-led design grounds design decisions in evaluation evidence, making outcomes more contextually appropriate and more _____ in planning.
4. How should the findings of a landscape character assessment inform a design brief?
5. What role does LVIA play in the siting and design of major development proposals?

Series Summary

This Series has examined the techniques and typological frameworks used to evaluate landscapes and to classify them into recognisable types. We began by introducing the purpose and types of landscape evaluation descriptive, evaluative, and predictive and examining landscape character assessment and landscape and visual impact assessment as the two most widely applied evaluation frameworks.

We then explored the principal evaluation techniques descriptive field survey, preference and perception studies, and GIS and digital tools before describing the principal landscape typologies across urban, rural and natural, and cultural and heritage categories. Finally, we examined the current state of landscape evaluation in Nigerian planning practice, described the diversity of Nigerian landscape typologies, and explained how evaluation evidence should drive design and management decisions. By engaging with these topics, you should now be able to explain evaluation types and techniques, describe landscape typologies, and apply evaluation frameworks in Nigerian contexts, as outlined in the Series Learning Outcomes.

Glossary of Terms



- **Cultural landscape:** A landscape in which the interaction of human activity and nature over time has produced areas of particular historical, aesthetic, or cultural significance.
- **Descriptive evaluation:** Landscape evaluation that systematically records observable physical, ecological, and visual characteristics without making quality judgements.
- **Evaluative assessment:** Landscape evaluation that judges the quality, significance, or sensitivity of observed landscape characteristics.
- **GIS:** Geographic Information Systems digital platforms enabling the integration, analysis, and mapping of multiple spatial data layers.
- **Landscape character assessment:** A value-neutral evaluation framework that identifies and describes the distinct character of different landscape areas through their combination of landform, vegetation, land use, and cultural features.
- **Landscape typology:** A recognised category of landscape type with characteristic spatial, ecological, and visual features, used to classify and compare landscapes.
- **LVIA:** Landscape and Visual Impact Assessment an evaluation of the effects of a proposed development on landscape character and visual amenity.
- **Magnitude:** In LVIA, the scale and extent of predicted change to the landscape or to views as a result of a proposed development.
- **Predictive evaluation:** Landscape evaluation that assesses the likely future condition of a landscape following a proposed change or intervention.
- **Preference study:** A landscape evaluation technique that investigates which landscape types and visual qualities people find most attractive, typically using photograph rating surveys.
- **Sensitivity:** In LVIA, the degree to which a landscape receptor or viewer is susceptible to the effects of a proposed change.
- **Viewshed analysis:** A GIS-based technique that identifies the area of land from which a specified point or object is potentially visible.
- **Zone of theoretical visibility:** The area from which a proposed development could potentially be seen, established through viewshed analysis using digital elevation data.

Concept Check Questions 4

Objective Questions

1. Define landscape evaluation and state two of its purposes. (Linked to SLO 4.1)
2. What does landscape character assessment describe? (Linked to SLO 4.1)
3. Fill in the blank: Savanna landscapes are characterised by grass cover with scattered _____. (Linked to SLO 4.3)
4. State one reason why landscape evaluation is underdeveloped in Nigerian planning practice. (Linked to SLO 4.4)

Short-Answer Questions

5. Explain the key steps in a landscape and visual impact assessment. (Linked to SLO 4.1)
6. Describe two techniques used in descriptive landscape evaluation. (Linked to SLO 4.2)
7. Distinguish between urban green infrastructure and informal urban landscapes as typologies.



(Linked to SLO 4.3)

8. Explain what evaluation-led design means and why it produces better outcomes. (Linked to SLO 4.4)

Long-Answer Questions

9. Compare descriptive, preference-based, and GIS-based landscape evaluation techniques, explaining strengths, limitations, and how they can be combined. (Linked to SLO 4.2)

10. Evaluate landscape typologies in a Nigerian city of your choice, identifying pressures each faces and the evaluation approaches most appropriate for assessing and protecting them. (Linked to SLO 4.3, 4.4)

Answers to Concept Check Questions 4

Objective Questions

1. Landscape evaluation is the systematic assessment of landscape characteristics, qualities, and values. Purposes include describing landscape character and assessing impacts of proposed developments.
2. Landscape character assessment describes the distinct combination of landform, vegetation, land use, and cultural features that makes each landscape recognisably different.
3. Trees.
4. A shortage of trained practitioners.

Short-Answer Questions

5. LVIA steps: establish zone of theoretical visibility; conduct viewshed analysis; assess sensitivity of receptors; assess magnitude of change; combine sensitivity and magnitude to judge significance.

6. Field survey records landform, vegetation, land use, cultural features. Photographic survey provides a visual record from defined viewpoints. Both are systematic and observer-based.

7. Urban green infrastructure is the planned network of parks, gardens, green roofs, and street trees. Informal urban landscapes are unplanned spaces, verges, and spontaneous vegetation with ecological and social value but no formal management.

8. Evaluation-led design grounds decisions in character assessment, specifying features to retain, deficiencies to address, and opportunities to enhance. It produces contextually appropriate, evidence-based outcomes.

Long-Answer Questions

9.

- **Basic response:** Descriptive techniques are systematic but miss cultural values. Preference studies capture public values but are subjective. GIS enables spatial analysis but depends on data quality. Combining all three is most comprehensive.
- **Value-added response:** Learners may note Nigerian limitations, e.g., lack of accurate elevation data for GIS, Western preference studies missing cultural values. They may propose adapted methods using simplified field survey, community mapping, and satellite imagery.

10.



- **Basic response:** Lagos typologies include urban, waterfront, informal, and remnant natural landscapes. Pressures include development, flooding, encroachment. Character assessment, LVIA, and community preference studies together provide evaluation.
- **Value-added response:** Learners may highlight threats to Lagos's cultural and sacred landscapes from rapid development, and propose community-centred evaluation incorporating indigenous knowledge to protect them within planning systems.

Answers to Pilot Questions 4

Part 4.1

1. Descriptive, evaluative, predictive.
2. A value-neutral framework describing distinct character of landscape areas, producing maps and profiles.
3. Zone of theoretical visibility.
4. Sensitivity.

Part 4.2

1. Visual record of character and condition from viewpoints.
2. Rate photographs to indicate attractiveness or satisfaction.
3. Layers.
4. Satellite imagery and aerial photography provide up-to-date cover data.
5. Needed to capture cultural and spiritual values missed by descriptive techniques.

Part 4.3

1. Parks, public open spaces, streetscapes, urban green infrastructure.
2. Grass cover with scattered trees.
3. Religious.
4. Informal green spaces in African cities often have ecological and social value despite lacking management.
5. Sacred groves and palace grounds.

Part 4.4

1. Shortage of practitioners, weak frameworks, insufficient political will.
2. Coastal/delta landscapes under oil pressure; savanna landscapes facing desertification and agricultural expansion.
3. Defensible.
4. By specifying features to retain, deficiencies to address, and opportunities to enhance.
5. Determines siting, scale, and screening of developments by assessing visibility and significance.

References and Attributions 4

Course content references



Landscape Institute and Institute of Environmental Management and Assessment (2013). *Guidelines for Landscape and Visual Impact Assessment*, 3rd edn. London: Routledge.
McHarg, I. L. (1969). *Design with Nature*. New York: Natural History Press.
Motloch, J. L. (2001). *Introduction to Landscape Design*. New York: Wiley.

Illustrations

Figure 4.1 Three types of landscape evaluation descriptive, evaluative, and predictive
AI-generated suggestion: "Generate a diagram showing the three types of landscape evaluation including descriptive recording, evaluative judgement, and predictive assessment with planning examples of each."

Suggested OER search string: "landscape evaluation types descriptive evaluative predictive diagram OER."

Plate 4.1 Field survey in landscape evaluation a trained assessor recording landscape characteristics

AI-generated suggestion: "Generate an image of a landscape assessor conducting a field survey in an open landscape, recording characteristics on a survey form with annotated maps."

Suggested OER search string: "landscape evaluation field survey assessor recording characteristics OER."

Plate 4.2 Nigerian urban streetscape a typical urban landscape typology

AI-generated suggestion: "Generate an image of a Nigerian urban streetscape showing trees, paved paths, commercial frontages, street vendors, and parked vehicles illustrating urban landscape character."

Suggested OER search string: "Nigerian urban streetscape landscape typology commercial trees OER."

Box 4.1 Summary of principal landscape typologies urban, rural, and cultural

AI-generated suggestion: "Generate a text box summarising the principal landscape typologies including urban, rural and natural, and cultural and heritage types with Nigerian examples of each."

Suggested OER search string: "landscape typologies urban rural cultural heritage summary Nigeria OER."

Attributions

All AI prompts are intended for use with generative tools to create original illustrations. Suggested search strings are provided to locate open educational resources (OER) for non-commercial academic use.

Course code: URP 314

Course title: Principles of Landscape Design

Course credit load: 2 Units



List of Series:

- Series 1: Concepts, Definition and Scope of Landscape Planning
- Series 2: Elements and Principles of Landscape Design
- Series 3: Landscape Design Process and Influencing Factors
- Series 4: Landscape Evaluation Techniques and Typologies
- **Series 5: Applications and Management of Landscape Design**

5 Applications and Management of Landscape Design

Series outline

- **Part 1 (5.1): Applications of Landscape Design**
 - Sub-Part 5.1.1: Parks, gardens, and recreational landscapes
 - Sub-Part 5.1.2: Streetscapes, plazas, and urban public spaces
 - Sub-Part 5.1.3: Institutional, residential, and commercial landscapes
- **Part 2 (5.2): Green Infrastructure and Ecological Applications**
 - Sub-Part 5.2.1: Urban green infrastructure and its benefits
 - Sub-Part 5.2.2: Landscape design for stormwater and flood management
 - Sub-Part 5.2.3: Habitat creation and ecological restoration
- **Part 3 (5.3): Landscape Management**
 - Sub-Part 5.3.1: Principles and objectives of landscape management
 - Sub-Part 5.3.2: Maintenance planning and operations
 - Sub-Part 5.3.3: Community involvement in landscape management
- **Part 4 (5.4): Landscape Design and Management in Nigeria**
 - Sub-Part 5.4.1: Applications in Nigerian urban and peri-urban landscapes
 - Sub-Part 5.4.2: Challenges of landscape management in Nigeria
 - Sub-Part 5.4.3: Towards sustainable landscape practice in Nigeria

Introduction

The principles, elements, processes, and evaluation frameworks covered in the preceding series of this course are not academic abstractions they exist to be applied. Landscape design shapes the parks where children play, the streets where communities gather, the campuses where students learn, and the green corridors that sustain biodiversity in rapidly urbanising environments. But design alone is not enough: a landscape that is not managed will deteriorate within a few seasons, however well it was conceived. Applications and management are therefore the twin pillars of effective landscape practice.

The aim of this Series is to equip you with the knowledge and skills to describe the principal applications of landscape design across different contexts, explain the role of green infrastructure and ecological applications, describe the principles and practice of landscape management, and



evaluate the specific challenges and opportunities of landscape design and management in Nigeria.

We shall commence this Series by examining the principal application types parks, streetscapes, institutional, and residential landscapes. Next, we will explore green infrastructure and ecological applications including stormwater management and habitat creation. Following that, we will describe the principles, planning, and community dimensions of landscape management. Finally, we will wrap up by evaluating applications and management in the Nigerian context and considering what sustainable landscape practice requires.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **SLO 5.1** describe the principal applications of landscape design across parks, streetscapes, and institutional and residential contexts,
- **SLO 5.2** explain the role of green infrastructure and ecological landscape applications in urban environments,
- **SLO 5.3** describe the principles of landscape management and explain maintenance planning and community involvement,
- **SLO 5.4** evaluate the challenges and opportunities of landscape design and management in the Nigerian context.

5.1 Applications of Landscape Design

5.1.1 Parks, gardens, and recreational landscapes

Parks and gardens are among the most familiar applications of landscape design. **Urban parks** range from large metropolitan parks providing active recreation, passive amenity, and ecological habitat, to small neighbourhood parks and pocket gardens serving local communities. Their design must balance the needs of diverse user groups children, elderly residents, sport players, dog walkers, and passive visitors within a single spatial composition. **Botanic gardens** have an additional scientific and educational function, organising plants by family, origin, or ecological community. **Recreational landscapes** sports fields, golf courses, waterfront promenades, and cycle routes are purpose-designed for specific activities and require careful integration of the surface, drainage, planting, and facility elements appropriate to each use.

Fill in the blank: Urban parks must balance the needs of diverse _____ groups within a single spatial composition.





Short description: Image of a well-used urban park in a Nigerian city showing a mix of recreational activities, shade trees, paved paths, and open lawns.

Plate 5.1 An urban park in Nigeria a designed recreational landscape serving diverse users

5.1.2 Streetscapes, plazas, and urban public spaces

Streetscapes are the designed character of streets including carriageways, footpaths, planting strips, street trees, and frontages. Well-designed streetscapes make walking safe and pleasant, contribute to urban identity, and provide ecological corridor functions through their tree canopy.

Plazas and public squares are hard-surfaced gathering spaces that serve civic, commercial, and cultural functions. Their design must accommodate large numbers of people comfortably, provide shade and seating, and create a character appropriate to their urban context. **Urban public spaces** more broadly market places, transport interchanges, riverfront promenades, and informal gathering spaces are among the most socially significant landscapes in Nigerian cities, and their design quality directly affects the quality of urban public life.

Fill in the blank: Well-designed streetscapes make walking safe and pleasant, contribute to urban identity, and provide ecological _____ functions through their tree canopy.

5.1.3 Institutional, residential, and commercial landscapes

Institutional landscapes school grounds, hospital gardens, university campuses, government complexes serve specific user populations whose needs shape the design. School grounds must provide safe play space, learning environments, and ecological interest. Hospital gardens are increasingly recognised as therapeutic environments that support patient recovery and staff wellbeing. **Residential landscapes** from individual gardens to communal areas of housing estates determine the daily experience of home and neighbourhood. **Commercial landscapes** retail forecourts, office campus grounds, and industrial planting contribute to brand identity, staff amenity, and the visual quality of business environments. In each application, the



landscape designer must understand the specific functional, social, and aesthetic requirements of the brief.

Fill in the blank: Hospital gardens are recognised as _____ environments that support patient recovery and staff wellbeing.

Pilot questions 5.1

1. What user groups must an urban park design accommodate?
2. What ecological function do street trees provide in a streetscape?
3. Why are hospital gardens described as therapeutic environments?
4. Fill in the blank: Urban public spaces such as market places and transport interchanges are among the most socially _____ landscapes in Nigerian cities.

5.2 Green Infrastructure and Ecological Applications

5.2.1 Urban green infrastructure and its benefits

Green infrastructure is the strategically planned network of natural and semi-natural areas parks, street trees, green roofs, rain gardens, bioswales, and green corridors that delivers a range of **ecosystem services** in urban environments. These services include: **urban cooling** trees and vegetation reduce air and surface temperatures through shading and evapotranspiration; **air quality improvement** vegetation filters particulates and absorbs pollutants; **stormwater management** green surfaces absorb and slow rainfall, reducing runoff and flood risk; **biodiversity support** green corridors and habitat patches enable species movement and persistence in urban environments; and **mental health and wellbeing** exposure to green space is consistently associated with reduced stress and improved psychological wellbeing.

Fill in the blank: Urban cooling through green infrastructure occurs because trees and vegetation reduce temperatures through shading and _____.

[Insert Figure here]

Short description: Diagram showing urban green infrastructure elements including parks, street trees, green roofs, rain gardens, and bioswales connected as a network providing ecosystem services.

Figure 5.1 Urban green infrastructure a network of elements providing ecosystem services

5.2.2 Landscape design for stormwater and flood management

Sustainable urban drainage systems (SUDS) use landscape design to manage stormwater as close to its source as possible, reducing the volume and speed of runoff entering drainage systems. Key SUDS elements include: **permeable paving** surfaces that allow water to infiltrate into the ground; **rain gardens** planted depressions that collect and absorb runoff from roofs and paving; **bioswales** planted channels that slow, filter, and convey stormwater; and **retention ponds** designed water bodies that store and gradually release stormwater. In Nigerian cities



where heavy seasonal rainfall overwhelms conventional drainage systems and causes widespread flooding, SUDS approaches integrated into landscape design offer a cost-effective and ecologically beneficial alternative to purely engineered solutions.

Fill in the blank: Rain gardens are planted _____ that collect and absorb runoff from roofs and paving surfaces.

5.2.3 Habitat creation and ecological restoration

Habitat creation in landscape design involves designing planting and landform to establish new ecological communities meadows, wetlands, woodland edges, and wildlife corridors within urban or degraded landscapes. **Native species planting** is fundamental: native plant communities support a far richer assemblage of invertebrates, birds, and mammals than ornamental or exotic planting. **Ecological restoration** addresses damaged or degraded landscapes eroded hillsides, contaminated brownfield sites, degraded riverbanks by re-establishing natural processes and vegetation communities. In Nigeria, the restoration of degraded urban waterways, the re-establishment of sacred grove buffer planting, and the creation of wildlife corridors along urban drainage channels represent high-priority ecological restoration opportunities.

Fill in the blank: Native species planting supports a far richer assemblage of wildlife than ornamental or _____ planting.

Pilot questions 5.2

1. List four ecosystem services provided by urban green infrastructure.
2. What are SUDS and what is their purpose in landscape design?
3. Fill in the blank: Bioswales are planted channels that slow, _____, and convey stormwater.
4. Why is native species planting fundamental to habitat creation?
5. Give two examples of ecological restoration opportunities in Nigerian urban landscapes.

5.3 Landscape Management

5.3.1 Principles and objectives of landscape management

Landscape management is the ongoing stewardship of designed and natural landscapes to maintain their condition, character, and function over time. Its objectives include: maintaining the **design intent** preserving the spatial relationships, planting composition, and character that the original design established; supporting **ecological function** managing vegetation to maintain and enhance biodiversity; ensuring **safety and usability** keeping paths, structures, and play equipment safe; and achieving **sustainability** managing with the minimum necessary inputs of water, fertiliser, pesticides, and energy. Good landscape management begins with a **management plan** that records the design intent, describes the condition of all elements, sets objectives, and prescribes the management operations required to achieve them.

Fill in the blank: Good landscape management begins with a management _____ that records design intent, describes conditions, sets objectives, and prescribes required operations.





*Short description: Image of a landscape maintenance team pruning trees and maintaining planting beds in a public park, illustrating routine landscape management operations.
Plate 5.2 Landscape management in practice maintenance operations in a public park*

5.3.2 Maintenance planning and operations

Maintenance planning translates management objectives into a **schedule of operations** specifying what tasks need to be done, when, how often, and by whom. Typical maintenance operations include: **grass cutting** frequency determined by grass type and use; **tree pruning** crown lifting, deadwood removal, and formative pruning to maintain structure and safety; **shrub management** cutting back, thinning, and replacement of failing plants; **hard surface maintenance** weed control, cleaning, and repair of paving and edging; **irrigation** particularly critical for newly established planting; and **litter collection** and general upkeep. Maintenance costs should be estimated at the design stage and confirmed as affordable before the design is finalised, since an unmaintainable design is ultimately a failed design.

Fill in the blank: Maintenance costs should be estimated at the _____ stage and confirmed as affordable before the design is finalised.

5.3.3 Community involvement in landscape management

Community involvement in landscape management has both practical and social benefits. Practically, community volunteers, friends groups, and local organisations can supplement professional maintenance capacity, extending what is achievable within limited public budgets. Socially, people who are involved in caring for a landscape develop stronger ownership and attachment to it, reducing vandalism and encouraging responsible use. **Community gardening** schemes allotments, communal food growing areas, and neighbourhood gardens combine landscape management with social cohesion, food security, and health benefits. In Nigerian communities where public sector maintenance capacity is severely limited, community-led



landscape management is not merely desirable but often the only realistic means of sustaining designed landscapes over the long term.

Fill in the blank: People who are involved in caring for a landscape develop stronger _____ and attachment to it, reducing vandalism and encouraging responsible use.

Objective	Brief Explanation
Maintaining Design Intent	Ensures the landscape continues to reflect the architect's original vision, including aesthetic principles like unity, balance, and scale. It involves managing plant growth and hardscapes so the "spirit of the place" isn't lost over time.
Supporting Ecological Function	Focuses on the health of the ecosystem by preserving biodiversity, managing soil quality, and protecting natural water cycles. This includes using native plants to support local wildlife and maintaining "corridors" for animal movement.
Ensuring Safety	Prioritizes the well-being of users and staff by identifying physical hazards (like cracked paths or falling limbs), ensuring proper lighting for security, and following strict protocols for equipment use and chemical handling.
Achieving Sustainability	Aims for long-term viability by reducing resource consumption (water, energy, and synthetic fertilizers). It seeks a "triple bottom line" balance where the landscape is environmentally healthy, socially beneficial, and economically efficient to maintain.

Box 5.1 Key principles of landscape management design intent, ecology, safety, and sustainability

Short description: A box summarising the four principal objectives of landscape management including maintaining design intent, supporting ecological function, ensuring safety and usability, and achieving sustainability.

Pilot questions 5.3

1. What are the four objectives of landscape management?
2. What does a maintenance schedule specify?
3. Fill in the blank: An unmaintainable design is ultimately a _____ design, however aesthetically admirable it may appear.
4. State two practical benefits of community involvement in landscape management.
5. Why is community-led management particularly important in Nigerian public landscapes?



5.4 Landscape Design and Management in Nigeria

5.4.1 Applications in Nigerian urban and peri-urban landscapes

Nigerian cities offer a wide range of landscape design application contexts from large urban parks and university campuses to neighbourhood open spaces, institutional grounds, and the informal green spaces of rapidly growing peri-urban areas. The most pressing applications include: **urban park and open space provision** in areas currently underserved by public greenspace; **streetscape improvement** through tree planting and pedestrian path design; **institutional landscape design** for schools, hospitals, and government buildings where outdoor environments currently receive little design attention; and **SUDS-integrated landscape design** to address the chronic flooding that affects most Nigerian cities during the rainy season. Each application requires the designer to adapt the principles and processes covered in this course to local climate, materials, culture, and maintenance capacity.

Fill in the blank: SUDS-integrated landscape design is among the most pressing applications in Nigerian cities because of the chronic _____ that affects most cities during the rainy season.

5.4.2 Challenges of landscape management in Nigeria

Landscape management in Nigeria faces significant challenges. **Funding constraints** mean that public parks and open spaces are chronically underfunded, with maintenance budgets insufficient for even basic upkeep. **Staffing limitations** a shortage of trained horticulturalists and landscape managers reduce the quality and consistency of maintenance operations. **Vandalism and encroachment** on public open space are widespread, particularly where communities have not been engaged in the design and management process. **Institutional fragmentation** with responsibility for landscape management divided between multiple agencies without clear coordination leads to duplication, gaps, and neglect. Addressing these challenges requires not only increased funding but institutional reform, professional capacity building, and the development of community ownership of public landscape assets.

Fill in the blank: Institutional _____ with landscape management responsibility divided between agencies without coordination leads to duplication, gaps, and neglect.

5.4.3 Towards sustainable landscape practice in Nigeria

Sustainable landscape practice in Nigeria requires a convergence of design, management, community, and institutional commitments. **Design for sustainability** using climate-adapted, low-maintenance native species, permeable surfaces, and passive water management reduces the resource demands of landscape management. **Community co-design and co-management** involving communities from the briefing stage through construction to ongoing maintenance builds the ownership and capacity needed for long-term landscape stewardship. **Professional capacity building** expanding landscape architecture education, establishing a dedicated professional body, and developing locally adapted design and management standards equips the profession to meet Nigeria's landscape challenges. **Policy integration** incorporating landscape planning and green infrastructure requirements into urban development policy ensures that landscape is treated as essential urban infrastructure rather than an optional amenity.



Fill in the blank: Policy integration ensures that landscape planning is treated as essential urban _____ rather than an optional amenity.

Pilot questions 5.4

1. Identify three priority landscape design applications in Nigerian cities.
2. What are two institutional challenges facing landscape management in Nigeria?
3. Fill in the blank: Community co-design and co-management builds the _____ and capacity needed for long-term landscape stewardship.
4. What does designing for sustainability mean in the Nigerian landscape context?
5. Why is professional capacity building necessary for sustainable landscape practice in Nigeria?

Series Summary

This final Series has brought together the principles, processes, and evaluation frameworks of the course in their practical application and management dimensions. We began by examining the principal landscape design applications parks, streetscapes, institutional, residential, and commercial landscapes before exploring the ecological applications of green infrastructure, SUDS, and habitat creation.

We then described the principles and practice of landscape management, including maintenance planning and the vital role of community involvement, before evaluating the specific challenges and opportunities of landscape design and management in Nigeria. The course has introduced you to the vocabulary, principles, processes, evaluation methods, and applications of landscape design with consistent attention to the Nigerian context. By applying these foundations in studio and field exercises, you should be equipped to contribute to more thoughtful, ecologically sound, culturally appropriate, and sustainably managed landscapes in Nigeria and beyond, as outlined in the Series Learning Outcomes.

Glossary of Terms

- **Bioswale:** A planted channel designed to slow, filter, and convey stormwater as part of a sustainable urban drainage system.
- **Community gardening:** A landscape management approach involving community members in shared food growing and garden maintenance for social, health, and food security benefits.
- **Ecological restoration:** The re-establishment of natural processes and vegetation communities in damaged or degraded landscapes.
- **Ecosystem services:** The benefits that natural and semi-natural landscapes provide to people, including urban cooling, air quality improvement, stormwater management, and biodiversity support.
- **Green infrastructure:** The strategically planned network of natural and semi-natural areas in urban environments that delivers ecosystem services.



- **Habitat creation:** The design of planting and landform to establish new ecological communities within designed or degraded landscapes.
- **Landscape management:** The ongoing stewardship of designed and natural landscapes to maintain their condition, character, and function over time.
- **Maintenance plan:** A document that records design intent, describes element conditions, sets management objectives, and prescribes required maintenance operations.
- **Native species planting:** The use of plant species indigenous to the local region, which support richer ecological communities than exotic or ornamental species.
- **Rain garden:** A planted depression designed to collect and absorb stormwater runoff from roofs and paving surfaces.
- **SUDS:** Sustainable urban drainage systems landscape design approaches that manage stormwater close to its source through infiltration, filtering, and slow release.
- **Therapeutic landscape:** An outdoor environment designed to support health and wellbeing, typically applied to hospital gardens and healing gardens.

Concept Check Questions 5

Objective Questions

1. State two principal applications of landscape design. (Linked to SLO 5.1)
2. What does SUDS stand for and what is its purpose? (Linked to SLO 5.2)
3. Fill in the blank: A management plan records design intent, describes conditions, sets _____, and prescribes required operations. (Linked to SLO 5.3)
4. State one challenge of landscape management in Nigeria. (Linked to SLO 5.4)

Short-Answer Questions

5. Explain four ecosystem services provided by urban green infrastructure. (Linked to SLO 5.2)
6. Describe the key operations included in a landscape maintenance schedule. (Linked to SLO 5.3)
7. Explain the practical and social benefits of community involvement in landscape management. (Linked to SLO 5.3)
8. Describe what designing for sustainability means in the Nigerian landscape context. (Linked to SLO 5.4)

Long-Answer Questions

9. Evaluate the role of green infrastructure and SUDS in addressing flooding and ecological degradation in Nigerian cities, explaining effective design approaches. (Linked to SLO 5.2)
10. Evaluate challenges of landscape management in Nigeria and propose an integrated strategy combining design, community, professional, and policy dimensions. (Linked to SLO 5.3, 5.4)

Answers to Concept Check Questions 5

Objective Questions

1. Parks and recreational landscapes; institutional landscapes.
2. Sustainable Urban Drainage Systems; purpose is to manage stormwater close to source through infiltration, filtering, and slow release.
3. Objectives.
4. Chronic underfunding of maintenance budgets.



Short-Answer Questions

5. Ecosystem services:

- Urban cooling via shade and evapotranspiration.
- Air quality improvement by filtering particulates.
- Stormwater management through absorption and slowed runoff.
- Biodiversity support via corridors and habitat patches.
- Mental health and wellbeing benefits from exposure to green space.

6. Maintenance schedule includes: grass cutting, tree pruning, shrub management, hard surface repair, irrigation for new planting, litter collection, and general upkeep.

7. Practically, community involvement supplements limited professional capacity. Socially, it builds ownership, reduces vandalism, and encourages responsible use.

8. Designing for sustainability in Nigeria means using native, low-maintenance species; permeable surfaces; passive water management (rain gardens, bioswales); and locally available materials to reduce costs and support supply chains.

Long-Answer Questions

9.

- **Basic response:** Permeable paving, rain gardens, bioswales, retention ponds reduce flooding. Native planting restores habitat. Green corridors connect fragmented areas.
- **Value-added response:** Learners may explain system integration, e.g., bioswales linking to rain gardens and retention ponds as a network. They may assess Nigerian constraints such as clay soils limiting infiltration, limited maintenance capacity, and retrofitting challenges in dense urban areas.

10.

- **Basic response:** Challenges include funding shortfalls, staffing limits, vandalism, and fragmented institutions. Integrated strategy requires sustainable design, community co-management, professional capacity building, and policy integration.
- **Value-added response:** Learners may evaluate how these reinforce each other, e.g., sustainable design reduces maintenance demand; community co-management reduces vandalism; professional bodies set standards; policy integration provides frameworks. They may propose sequenced reforms starting with achievable steps toward full institutional integration.

Answers to Pilot Questions 5

Part 5.1

1. Children, elderly residents, sport players, dog walkers, passive visitors.
2. Ecological corridor enabling species movement.
3. Designed to support patient recovery and staff wellbeing.
4. Significant.

Part 5.2

1. Urban cooling, air quality improvement, stormwater management, biodiversity support.
2. Sustainable Urban Drainage Systems; manage stormwater close to source via infiltration, filtering, slow release.
3. Filter.
4. Native plant communities support richer biodiversity than exotic planting.



5. Restoration of degraded waterways and sacred grove buffers.

Part 5.3

1. Maintain design intent, support ecology, ensure safety/usability, achieve sustainability.
2. Specifies tasks, timing, frequency, and responsibility.
3. Failed.
4. Volunteers supplement professionals; ownership reduces vandalism.
5. Public sector capacity is limited; community-led management sustains landscapes.

Part 5.4

1. Urban park provision, streetscape tree planting, SUDS-integrated design.
2. Underfunding and institutional fragmentation.
3. Ownership.
4. Climate-adapted species, permeable surfaces, passive water management.
5. Shortage of trained practitioners and no professional body limits quality and consistency.

References and Attributions 5

Course content references

- McHarg, I. L. (1969). *Design with Nature*. New York: Natural History Press.
- Motloch, J. L. (2001). *Introduction to Landscape Design*. New York: Wiley.
- Ndubisi, F. (2002). *Ecological Planning: A Historical and Comparative Synthesis*. Baltimore: Johns Hopkins University Press.

Illustrations

Plate 5.1 An urban park in Nigeria a designed recreational landscape serving diverse users

AI-generated suggestion: "Generate an image of a well-used urban park in a Nigerian city with shade trees, paved paths, open lawns, children playing, and people sitting under trees."

Suggested OER search string: "urban park Nigeria recreational landscape diverse users shade trees OER."

Figure 5.1 Urban green infrastructure a network of elements providing ecosystem services

AI-generated suggestion: "Generate a diagram showing urban green infrastructure elements including parks, street trees, green roofs, rain gardens, and bioswales connected as a network with labels showing the ecosystem services each provides."

Suggested OER search string: "urban green infrastructure network ecosystem services parks street trees bioswales OER."

Plate 5.2 Landscape management in practice maintenance operations in a public park

AI-generated suggestion: "Generate an image of a landscape maintenance team pruning trees and maintaining planting beds in a public park, illustrating routine management operations."

Suggested OER search string: "landscape management maintenance team public park pruning planting OER."

Box 5.1 Key principles of landscape management design intent, ecology, safety, and sustainability



AI-generated suggestion: "Generate a text box summarising the four key objectives of landscape management including maintaining design intent, supporting ecological function, ensuring safety, and achieving sustainability with brief explanations."

Suggested OER search string: "landscape management objectives design intent ecology safety sustainability OER."

Attributions

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