

Spatial Distribution, Physical Condition, and Governance Challenges of Urban Parks and Gardens in Abuja, Nigeria

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ABSTRACT

Urban parks and gardens are essential components of urban green infrastructure, contributing to environmental sustainability, recreation, and improved quality of life. This study assessed the spatial distribution, physical condition, development factors, management challenges, and institutional governance of parks and gardens in Wuse and Maitama Districts of Abuja, Nigeria. A mixed-methods approach involving Geographic Information System (GIS) mapping, field observations, questionnaire surveys, Relative Importance Index (RII) analysis, and key informant interviews was employed. Data were collected from 384 respondents, while all identified parks and gardens were subjected to physical assessment. The study identified 13 public parks and gardens covering a total area of 177.78 ha. Wuse District contained 69.2% (9) of the facilities, whereas Maitama accounted for 73.8% (131.21 ha) of the total green space area. The IBB Golf Course (95.37 ha) and Millennium Park (24.80 ha) together represented 67.6% of total green space coverage. Physical condition scores ranged from 2.91 to 4.91, with 30.8% of facilities rated Very Good, 46.2% Good, and 23.0% Fair. Funding availability (RII = 0.872) and maintenance funding (RII = 0.865) were identified as the most significant factors influencing park development and management, respectively. The study concludes that despite an extensive green space network, governance, funding, and institutional coordination challenges constrain sustainable park management. Strengthening funding mechanisms, institutional capacity, and monitoring systems is essential for improving urban green infrastructure sustainability in Abuja.

Keywords: urban parks, green infrastructure, park management and governance, institutional framework.

INTRODUCTION

Urban parks and gardens have been widely studied in both developed and developing countries due to their importance in supporting environmental sustainability, public health, climate resilience, and urban liveability. Research from Europe, North America, and Asia has consistently demonstrated that well-planned green spaces contribute to air quality improvement, urban heat mitigation, biodiversity conservation, recreational opportunities, and social cohesion (Kabisch et al., 2022; Tang & Li, 2024). However, the management and sustainability of urban green infrastructure remain strongly influenced by local institutional, socioeconomic, and governance contexts.

In many developing countries, rapid urbanization has created significant pressures on urban green spaces. Studies in India, Pakistan, and Bangladesh have reported declining green space availability resulting from population growth, informal development, inadequate planning controls, and competing land-use demands (Sultana et al., 2021; Hassan et al., 2023). These studies indicate that although urban parks are recognized as essential components of sustainable cities, their effective management is frequently constrained by insufficient funding, weak enforcement of planning regulations, and limited stakeholder participation.

Across Africa, urban green spaces face similar challenges. In South Africa, Shackleton et al. (2021) observed substantial inequalities in green space provision between affluent and low-income neighbourhoods, with disadvantaged communities experiencing reduced access to quality recreational facilities. Likewise, studies conducted in Nairobi, Kenya, revealed that rapid urban expansion has contributed to the encroachment and fragmentation of public green spaces, thereby reducing their ecological and recreational functions (Mwangi & Kieti, 2022). Research in Accra, Ghana, further identified weak institutional coordination and inadequate maintenance practices as major barriers to sustainable urban park management (Mensah, 2020).

Several studies have also examined the governance dimensions of urban green infrastructure in African cities. Adelekan et al. (2021) reported that many municipal authorities face financial and institutional limitations that undermine effective park development and maintenance. Similarly, Cobbinah and Darkwah (2022) argued that policy implementation gaps and overlapping institutional responsibilities often hinder the delivery of sustainable green infrastructure across rapidly growing African cities. These findings suggest that governance and institutional effectiveness play a crucial role in determining the long-term sustainability of urban parks and gardens.

Within Nigeria, research has primarily focused on the environmental, recreational, and accessibility benefits of urban green spaces. For example, Okunola and Akinwale (2021) found that public parks in Lagos contribute significantly to recreation and environmental quality but are constrained by inadequate maintenance and increasing development pressure. In Ibadan, Adegun (2020) reported that poor management practices, insufficient funding, and weak enforcement of planning regulations contributed to the gradual deterioration of public green spaces. Studies conducted in Kano and Port Harcourt have similarly highlighted deficiencies in accessibility, maintenance, security, and institutional support for urban parks (Olorunfemi et al., 2022; Nwankwo & Chukwu, 2023).

Despite these contributions, empirical studies focusing specifically on Abuja remain relatively limited. Existing research has largely examined green infrastructure from environmental, landscape, and recreational perspectives, while less attention has been devoted to understanding how spatial distribution, physical condition, management practices, development constraints, and institutional frameworks interact to influence park sustainability. Furthermore, few studies have undertaken a comprehensive assessment of parks and gardens within key districts of the Federal Capital City using integrated spatial, physical, managerial, and governance indicators.

Consequently, an important research gap remains regarding the effectiveness of park development and management within Abuja's planned urban environment. Unlike many previous studies that examined single dimensions of urban green spaces, the present study provides an integrated assessment of the spatial distribution, physical condition, development factors, management challenges, and institutional arrangements affecting parks and gardens in Wuse and Maitama Districts. By focusing on Abuja, one of Africa's most prominent planned capital cities, the study contributes context-specific evidence to the growing discourse on sustainable urban green infrastructure management in developing cities.

METHODOLOGY

Study Area

The study was conducted in Wuse and Maitama Districts, located within Phase I of the Federal Capital City (FCC), Abuja, Nigeria. The two districts were selected because they contain some of the most prominent parks and gardens in the city and represent areas with diverse residential, commercial, administrative, and recreational land-use characteristics. Abuja lies between latitudes 8°25'N and 9°20'N and longitudes 6°45'E and 7°39'E within the Federal Capital Territory (FCT). Wuse and Maitama constitute major urban districts characterized by rapid urban development and a concentration of public recreational facilities.

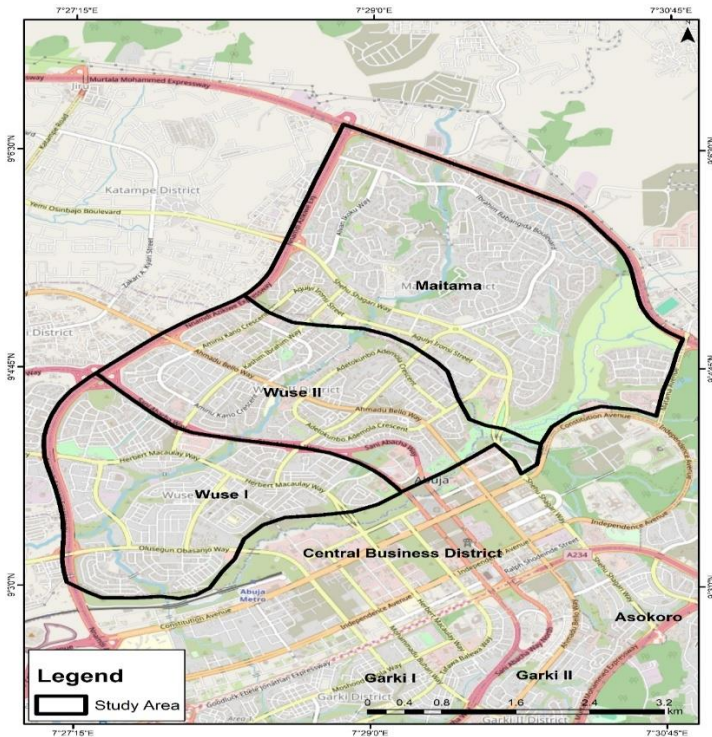


Figure 1: Map of the Study Area (Wuse & Maitama District)

Source: Grid3 Nigeria (2026)

Research Design

The study adopted a mixed-methods research design combining spatial analysis, field observation, questionnaire survey, and key informant interviews. The approach enabled the collection of quantitative and qualitative data required to assess the spatial distribution, physical condition, development factors, management challenges, and institutional framework governing parks and gardens within the study area.

Sources of Data

Both primary and secondary data were utilized.

Primary Data

Primary data were obtained through:

- Field observation and physical assessment of parks and gardens.
- Geographic coordinate acquisition using Global Positioning System (GPS) devices.
- Structured questionnaire administration to park users and relevant stakeholders.
- Key informant interviews with officials of relevant institutions involved in park planning, development, and management.

Secondary Data

Secondary data were obtained from:

- Abuja Master Plan documents.

- b. FCDA and Department of Parks and Recreation records.
- c. Existing maps and planning documents.
- d. Academic journals, books, government reports, and policy documents relating to urban green infrastructure and park management.

Population and Sample Size

The target population comprised users of parks and gardens within Wuse and Maitama Districts as well as officials from relevant government agencies. The sample size for the questionnaire survey was determined using Cochran's sample size formula for large populations:

$$n = \frac{Z^2 pq}{e^2}$$

where:

- n = required sample size
- Z = standard normal deviate (1.96 at 95% confidence level)
- p = estimated proportion of the population (0.5)
- $q = 1 - p$
- e = margin of error (0.05)

This yielded a sample size of 384 respondents, which formed the basis for the questionnaire survey and Relative Importance Index (RII) analysis.

Inventory and Spatial Mapping of Parks and Gardens

A comprehensive inventory of parks and gardens within the study area was undertaken through field surveys and geospatial mapping. Geographic coordinates of each facility were collected using handheld GPS equipment and subsequently processed in a Geographic Information System (GIS) environment. Spatial analysis was used to determine:

- a. Location of parks and gardens.
- b. Distribution patterns.
- c. Cadastral zones.
- d. Areal extent of individual facilities.
- e. Total green space coverage within the study area.

The mapped inventory provided the basis for assessing the spatial distribution and typology of parks and gardens.

Physical Condition Assessment

The physical condition of identified parks and gardens was evaluated using eleven indicators, including:

The assessment considered accessibility, landscaping quality, vegetation condition, security, waste management, sanitation facilities, maintenance status, functionality, infrastructure adequacy, development condition, and overall aesthetic quality.

Table 1: Responses were measured using a 5-point Likert scale:

Scale	Classification
4.01–5.00	Very Good
3.01–4.00	Good
2.51–3.00	Fair
1.51–2.50	Poor
1.00–1.50	Very Poor

The mean score ($\bar{x}$) for each park was computed using:

$$\bar{x} = \frac{\sum x}{n}$$

where:

- $\bar{x}$ = mean score
- $\sum x$ = sum of all scores
- n = number of observations

The resulting values were used to rank parks and classify their physical condition.

Relative Importance Index (RII) Analysis

The Relative Importance Index (RII) technique was employed to evaluate factors influencing the development and management of parks and gardens.

The RII was calculated using:

$$RII = \frac{\sum W}{A \times N}$$

where:

- $\sum W$ = total weighted score assigned by respondents
- A = highest weight (5)
- N = total number of respondents (384)

The RII ranges from 0 to 1, with higher values indicating greater importance or influence.

Table 2: The factors ranked according to their RII values

RII Range	Influence Level
0.80–1.00	High

0.60–0.79	High-Medium
0.40–0.59	Moderate
0.20–0.39	Low
Below 0.20	Very Low

Separate analyses were conducted for:

- Factors influencing park development.
- Factors influencing park management and maintenance.

Institutional Assessment and Policy Gap Analysis

The institutional framework governing parks and gardens was assessed through document review and key informant interviews involving relevant agencies, including:

Department of Parks and Recreation (DPR), Federal Capital Development Authority (FCDA), Department of Development Control, Abuja Geographic Information Systems (AGIS) and Abuja Environmental Protection Board (AEPB).

The assessment examined:

Existing policies and regulations, institutional roles and responsibilities, funding arrangements, monitoring and supervision mechanisms, enforcement practices, stakeholder participation and institutional capacity.

A policy-implementation gap analysis was undertaken by comparing statutory provisions with actual field practices to identify governance bottlenecks affecting park development and management.

Data Analysis

Data were analysed using descriptive and inferential techniques. Descriptive statistics such as frequencies, percentages, rankings, and mean scores were employed to summarize park characteristics and condition assessments. GIS techniques were used for spatial mapping and distribution analysis, while the Relative Importance Index (RII) was used to rank perceived development and management factors. Qualitative information from interviews and document reviews was subjected to thematic analysis and integrated with quantitative findings to provide a comprehensive understanding of park governance and management challenges.

Ethical Considerations

Participation in the study was voluntary. Respondents were informed of the purpose of the research, and confidentiality of all responses was maintained. Information obtained from government agencies and key informants was used strictly for academic purposes, and data were reported in aggregate form to ensure anonymity.

RESULTS

Spatial Distribution and Typology of Parks and Gardens

A total of 13 public parks and gardens were identified and mapped across Wuse and Maitama Districts in Phase I of the Federal Capital City (FCC), Abuja, covering a cumulative spatial extent of 177.78 hectares (ha).

District Breakdown: Wuse District accounts for 69.2% (n = 9) of all identified facilities, serving residential and mixed-use areas through neighbourhood-level green spaces²⁸. Maitama District contains 30.8% (n = 4) of the

facilities but encompasses 73.8% (131.21 ha) of the total green space area.

Spatial Dominance: The IBB Golf Course (95.37 ha) and Millennium Park (24.80 ha) in Maitama jointly account for 67.6% (120.17 ha) of the total green area in the study area. The smallest green space identified is Surich Park (1.33 ha) in Wuse Zone.

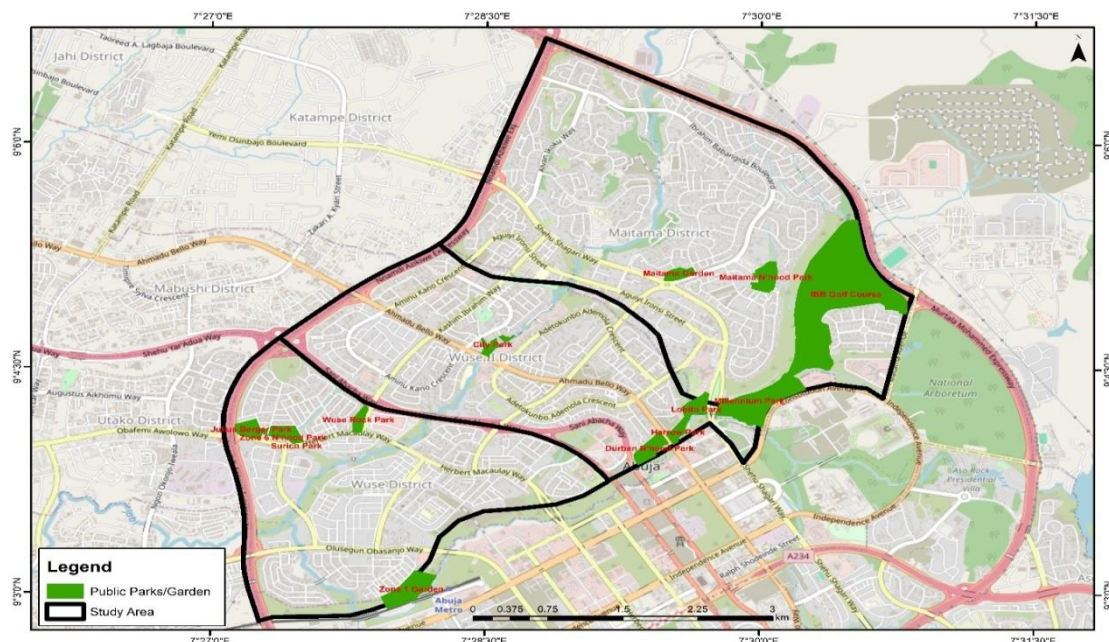


Figure 2: Spatial distribution of public parks and garden within the study area

Source: Field Survey (2026)

Table 3: Spatial Inventory and Characteristics of Identified Parks and Gardens in Wuse and Maitama Districts

Name	Cadastral Zone	District	Typology / Function	Geographic Coordinates (Lat, Long)	Area (Ha)
IBB Golf Course	A05	Maitama	Golf Course / Recreational Open Space	9.08331, 7.50690	95.37
Millennium Park	A05	Maitama	Public Park / Recreational Open Space	9.07143, 7.50002	24.80
Zone 1 Garden	A02	Wuse Zone 1	Park / Green Area	9.05038, 7.46819	12.59
Durban Neighbourhood Park	A08	Wuse II	Neighbourhood Park	9.06590, 7.49003	7.62
Maitama Neighbourhood Park	A05	Maitama	Neighbourhood Park	9.08519, 7.50053	7.30
Julius Berger Park	A02	Wuse Zone 6	Neighbourhood Park	9.06811, 7.45364	5.38
Lobito Park	A08	Wuse II	Neighbourhood Park	9.07086, 7.49428	5.35
Zone 6 Neighbourhood	A02	Wuse Zone 6	Neighbourhood Park	9.06785, 7.45659	4.02

Park					
Maitama Garden	A05	Maitama	Park / Green Area	9.08553, 7.49259	3.74
Harrow Park	A08	Wuse II	Park / Green Area	9.06810, 7.49261	3.64
Wuse Rock Park	A02	Wuse Zone 5	Park / Green Area	9.06920, 7.46360	3.36
City Park	A07	Wuse II	Park / Green Area	9.07759, 7.47576	3.30
Surich Park	A02	Wuse Zone 6	Park / Green Area	9.06710, 7.45788	1.33
Total Area	—	—	—	—	177.78

Source: Field Survey (2026)

Physical Status and Condition Assessment of Parks and Gardens

Evaluated against 11 physical and operational indicators on a 5-point Likert scale (1.00–1.50 = Very Poor, 1.51–2.50 = Poor, 2.51–3.00 = Fair, 3.01–4.00 = Good, 4.01–5.00 = Very Good), the overall physical condition scores ranged from 2.91 to 4.91. No facility fell into the Poor or Very Poor categories.

Very Good Condition (4.01–5.00): 4 facilities (Millennium Park [4.91], IBB Golf Course [4.82], Durban Neighbourhood Park [4.27], and Zone 1 Garden [4.09]) exhibit high functional infrastructure, vegetation management, accessibility, and security.

Good Condition (3.01–4.00): 6 facilities (Harrow Park [4.00], Maitama Garden [3.91], City Park [3.82], Wuse Rock Park [3.36], Julius Berger Park [3.27], and Maitama Neighbourhood Park [3.18]) remain functional but show minor deficiencies in waste management, security, or sanitation.

Fair Condition (2.51–3.00): 3 facilities (Zone 6 Neighbourhood Park [3.00], Lobito Park [3.00], and Surich Park [2.91]) scored lowest due to degraded vegetation cover, deficient sanitary infrastructure, and poor security ratings.

Table 4: Evaluated Mean Scores and Overall Condition Ranking of Parks and Gardens

Rank	Park / Garden	Mean Score	Condition Classification	Key Performance Characteristics
1st	Millennium Park	4.91	Very Good	Scored 5.00 across all 10 physical indicators; waste management scored 4.
2nd	IBB Golf Course	4.82	Very Good	Scored 5.00 in development, landscaping, security, and maintenance.
3rd	Durban Neighbourhood Park	4.27	Very Good	High accessibility (5.00) and functionality (5.00).
4th	Zone 1 Garden	4.09	Very Good	High overall functionality (5.00) with balanced landscaping.
5th	Harrow Park	4.00	Good	Uniform score of 4.00 across all 11 physical indicators.
6th	Maitama Garden	3.91	Good	Strong landscaping (4.00); minor waste management deficit (3.00).
7th	City Park	3.82	Good	Well-protected; lower functionality and waste management (3.00).
8th	Wuse Rock Park	3.36	Good	Good landscaping/vegetation (4.00); weak sanitation

				(2.00).
9th	Julius Berger Park	3.27	Good	Excellent pedestrian/road accessibility (5.00); moderate maintenance3more_horiz.
10th	Maitama Neighbourhood Park	3.18	Good	Moderate overall development (3.00); good accessibility (4.00).
11th	Zone 6 Neighbourhood Park	3.00	Fair	Accessible (4.00); degraded vegetation condition (2.00).
12th	Lobito Park	3.00	Fair	Development/landscaping fair (3.00); weak sanitation (2.00) and security (2.00).
13th	Surich Park	2.91	Fair	Accessible (4.00); lowest landscaping (2.00) and vegetation condition (2.00).

Source: Field Survey (2026)

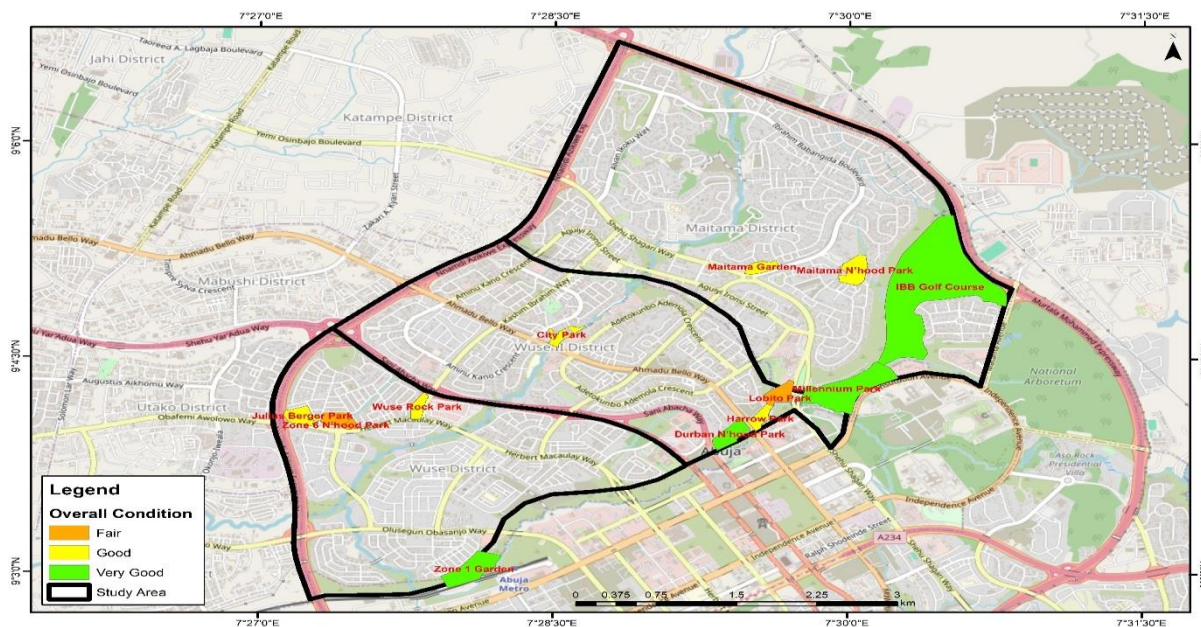


Figure 3: Overall status and condition of public parks and garden

Source: Field Survey (2026)

Relative Importance Index (RII) Analysis of Factors Influencing Development

The Relative Importance Index was applied to rank key drivers and constraints. Five factors fell into the High Influence band, highlighting financial constraints, governance, and land pressures as primary determinants of park development.

Table 5: Perceived Factors Influencing the Development of Parks and Gardens

Factor Variable /	Very Influential (5)	Influential (4)	Moderately Influential (3)	Slightly Influential (2)	Not Influential (1)	Sum of Weights Sigma	RII Score	RII Rank	Influence Level
Availability of Funding / Budgetary Allocation	219	110	37	11	7	1675	0.872	1	High

Government Policy and Political Will	201	119	40	15	9	1640	0.854	2	High
Availability of / Pressure on Land	192	110	51	18	13	1602	0.834	3	High
Population Growth and Urbanisation	174	126	57	16	11	1588	0.827	4	High
Master Plan Provisions and Enforcement	158	135	59	22	10	1561	0.813	5	High
Institutional / Administrative Capacity	146	128	69	26	15	1516	0.790	6	High–Medium
Land-Use Conflict and Encroachment	135	127	73	31	18	1482	0.772	7	High–Medium
Public Awareness and Demand	113	130	80	37	24	1423	0.741	8	High–Medium
Private-Sector / PPP Involvement	100	111	91	51	31	1350	0.703	9	High–Medium
Technical / Horticultural Expertise	84	105	101	55	39	1292	0.673	10	High–Medium

Source: Field Survey (2026)

Relative Importance Index (RII) Analysis of Factors Influencing Management

Regarding ongoing maintenance and operational upkeep, Adequacy of Maintenance Funding (RII = 0.865), Staffing and Skilled Manpower (RII = 0.834), and Maintenance Equipment and Facilities (RII = 0.819) emerged as the top three high-impact factors.

Table 6: Perceived Factors Influencing the Management and Maintenance of Parks and Gardens

Factor Variable /	Very Influential (5)	Influential (4)	Moderately Influential (3)	Slightly Influential (2)	Not Influential (1)	Sum of Weights Sigma	RII Score	RII Rank	Influence Level
Adequacy of Maintenance Funding	216	106	40	15	7	1661	0.865	1	High
Staffing and Skilled Manpower	183	124	48	18	11	1602	0.834	2	High
Maintenance Equipment and Facilities	168	128	55	22	11	1572	0.819	3	High
Inter-Agency / Institutional	155	126	64	24	15	1534	0.799	4	High–

Coordination									Medium
Monitoring and Supervision	140	132	69	27	16	1505	0.784	5	High–Medium
Clear Management Responsibility / Ownership	129	124	77	33	21	1459	0.760	6	High–Medium
Security and Control of Vandalism	124	119	78	37	26	1430	0.745	7	High–Medium
Policy / Regulatory Enforcement	110	113	88	44	29	1383	0.720	8	High–Medium
Community Participation	95	108	93	51	37	1325	0.690	9	High–Medium
Revenue Generation from Parks	80	95	103	60	46	1255	0.654	10	High–Medium

Source: Field Survey (2026)

Institutional Framework and Policy–Implementation Gap Analysis

Institutional responsibilities are split between the Department of Parks and Recreation (DPR) (custodian), FCDA Urban & Regional Planning, Department of Development Control, AGIS, and AEPB. The qualitative evaluation revealed significant friction points between legislative mandates and actual delivery.

Table 7: Institutional Assessment Matrix and Policy–Implementation Gap Analysis

Institutional Dimension	Evaluated Status	Regulatory Provision vs. Observed Field Practice	Key Governance Bottleneck
Policies & Regulations	Strong	Provision: Comprehensive framework (Abuja Master Plan, FCT Park Regulations 2005, FCT Park Policy 2019) Practice: Clear policy base exists on paper.	Implementation gaps across agency workflows.
Roles & Responsibilities	Moderate	Provision: Mandates defined across 5 primary agencies. Practice: Statutory overlap during land allocation and layout licensing.	DPR site allocations occasionally conflict with AGIS title records.
Development Control	Moderate	Provision: Powers exist to remove illegal structures and enforce approved land use. Practice: Reactive demolitions post-development (e.g., Boulevard Park, Maitama).	Uncoordinated approval tracks between DPR and Development Control.
Institutional Coordination	Weak	Provision: Joint environmental management mandated. Practice: No shared spatial database or inter-agency GIS platform.	Agencies operate in silos with conflicting boundary records.
Funding	Weak	Provision: Budget allocations for development and upkeep. Practice: Irregular, non-ring-fenced, and insufficient operational funds.	Maintenance capital competes with broader urban infrastructure.

Monitoring & Supervision	Weak	Provision: Systematic oversight of green cover standards. Practice: Manual inspections; absence of real-time GIS/remote-sensing monitoring.	Encroachment and over-building detected late.
Enforcement	Weak	Provision: Penalties for land-use conversion and violations. Practice: Delayed and episodic enforcement actions.	Commercial land pressures override technical mandates.
Stakeholder Participation	Weak	Provision: Community engagement and private partnership. Practice: Ad-hoc project involvement without structured stewardship channels.	Erosion of local community ownership and reporting.
Institutional Capacity	Weak	Provision: Technical oversight of urban green infrastructure. Practice: Shortage of specialized staff (landscape architects, GIS experts) and equipment.	Inability to maintain routine monitoring schedules.

Source: Compiled from Document Review and Key Informant Interviews (2026)

DISCUSSION

Spatial Distribution of Green Infrastructure

The findings reveal differences in the spatial distribution of parks and gardens between Wuse and Maitama Districts. Although Wuse contained the majority of identified green spaces, Maitama accounted for most of the total green space area. This pattern suggests that green infrastructure in the study area is distributed unevenly, with larger and more resource-intensive recreational facilities concentrated in specific urban locations. Similar spatial variation in green space provision have been observed in cities worldwide, where access to large parks and green amenities often varies across districts and socio-economic groups (Tang & Li, 2024; UN-Habitat, 2022).

The dominance of the IBB Golf Course and Millennium Park further illustrates the concentration of green resources within a few large facilities. While large urban parks offer substantial ecological, recreational, and climate-regulation benefits, equitable urban green space systems require both metropolitan parks and accessible neighbourhood green spaces. Recent studies emphasize that proximity and accessibility are critical determinants of park use and the realization of health and social benefits associated with urban green infrastructure (Lau et al., 2021; Konijnendijk, 2023).

The presence of several neighbourhood parks in Wuse demonstrates an attempt to provide localized recreational facilities. However, the relatively small size of some parks may limit their ecological functionality and capacity to support diverse recreational activities. Contemporary green infrastructure research highlights that park effectiveness depends not only on quantity but also on connectivity, accessibility, and multifunctionality within the wider urban landscape (Dong et al., 2024; Konijnendijk, 2023).

Therefore, the observed spatial structure suggests that future urban green infrastructure planning in Abuja should prioritize a increased distribution of green spaces to improve accessibility and environmental quality. Such an approach aligns with current global recommendations for creating greener, healthier, and more resilient urban neighbourhoods (UN-Habitat, 2022; Tang & Li, 2024).

Physical Quality and Recreational Functionality of Parks

The condition assessment indicates that the overall quality of parks and gardens in the study area is generally satisfactory, as none of the facilities were classified as poor or very poor. This finding suggests that

management authorities have been able to maintain a basic level of functionality and service delivery despite various institutional and financial challenges.

The exceptionally high ratings recorded for Millennium Park and IBB Golf Course demonstrate the importance of investment, maintenance, and management effectiveness in ensuring park quality. Well-maintained parks are more likely to attract users, support recreational activities, and promote physical and mental well-being among urban residents (Lau et al., 2021).

Interestingly, some smaller parks such as Durban Neighbourhood Park and Zone 1 Garden achieved performance levels comparable to larger facilities. This finding suggests that park quality is influenced more by effective maintenance, accessibility, landscaping, and facility provision than by park size alone. Recent studies on urban green infrastructure similarly emphasize that multifunctional and well-managed neighbourhood parks can make substantial contributions to urban sustainability and residents' quality of life (Dong et al., 2024; Konijnendijk, 2023).

The lower condition scores obtained by Surich Park, Lobito Park, and Zone 6 Neighbourhood Park highlight persistent deficiencies in sanitation, vegetation management, waste disposal, and security. These deficiencies may reflect disparities in maintenance priorities and resource allocation. Such variations are common in urban green space systems where flagship parks receive greater attention than smaller neighbourhood facilities, potentially resulting in unequal recreational opportunities across urban communities (Lau et al., 2021; UN-Habitat, 2022).

Consequently, efforts to improve urban park quality in Abuja should focus not only on preserving high-performing parks but also on upgrading lower-performing neighbourhood parks to ensure equitable service provision throughout the city.

Financial and Institutional Drivers of Park Development and Management

The Relative Importance Index (RII) analysis identified funding as the most influential factor affecting both park development and park management. The prominence of funding-related variables demonstrates that financial resources remain the foundation upon which successful urban green infrastructure development and maintenance depend. Urban green infrastructure projects require significant investment for land acquisition, facility development, landscaping, staffing, and routine operational activities (UN-Habitat, 2022; Dong et al., 2024).

Government policy and political will also emerged as highly influential factors in the development of parks and gardens. This finding highlights the importance of political commitment in translating planning objectives into practical outcomes. Recent research indicates that successful urban greening programmes require strong governance support, adequate funding arrangements, and integration across multiple levels of government (Pauleit et al., 2021).

Similarly, land availability and increasing urbanization were identified as major determinants of park development. Rapid urban expansion intensifies competition for land, often placing pressure on designated green spaces. Contemporary studies have warned that unless urban planning systems actively protect green infrastructure, urban growth may result in reduced environmental quality and increased inequity in access to green spaces (Tang & Li, 2024; UN-Habitat, 2022).

The results relating to park management further emphasize the importance of institutional capacity. Staffing and skilled manpower ranked second among management factors, while maintenance equipment and facilities ranked third. These findings suggest that effective management depends not only on financing but also on the availability of qualified professionals and appropriate operational resources. Adaptive management approaches within green infrastructure systems similarly stress the importance of technical expertise and organizational capacity in ensuring long-term sustainability (Dong et al., 2024).

Governance Effectiveness and Policy Implementation Challenges

One of the most important findings of this study is the substantial gap between policy provisions and implementation practices. Although Abuja possesses a relatively comprehensive regulatory framework for green space planning and management, implementation remains constrained by weak coordination, limited institutional capacity, and inadequate financial support. Similar governance challenges have been identified globally, where strong policy frameworks often fail to achieve intended outcomes because of institutional fragmentation and implementation bottlenecks (Pauleit et al., 2021; UN-Habitat, 2022).

The assessment identified institutional coordination as a particularly weak area. The absence of integrated geospatial databases and coordinated information systems among responsible agencies contributes to overlaps in responsibilities and inconsistencies in land administration. Recent governance literature emphasizes that effective green space governance increasingly depends on integrated planning approaches, inter-agency collaboration, and shared decision-making mechanisms (Pauleit et al., 2021).

Funding constraints emerged repeatedly throughout the study, reinforcing their significance as a major governance bottleneck. Inadequate and irregular funding restricts development activities, maintenance programmes, monitoring operations, and enforcement efforts. Contemporary urban greening research identifies sustainable financing mechanisms as a prerequisite for the successful implementation and long-term maintenance of green infrastructure systems (Dong et al., 2024; UN-Habitat, 2022).

The findings also reveal weaknesses in monitoring, enforcement, and stakeholder participation. The continued reliance on manual inspections and delayed enforcement responses reduces the effectiveness of green space protection measures. Furthermore, the limited involvement of communities and private-sector actors suggests that current management approaches remain largely government-centered. Recent studies advocate participatory and community-centered governance models, arguing that stakeholder engagement strengthens stewardship, accountability, and long-term sustainability of urban green spaces (Campbell et al., 2022; Pauleit et al., 2021).

LIMITATIONS OF THE STUDY

This study provides important insights into the distribution, condition, development, and management of parks and gardens within Wuse and Maitama Districts of Abuja; however, several limitations should be acknowledged. First, the study was geographically restricted to two districts within Phase I of the Federal Capital City and therefore may not fully represent conditions in other districts of Abuja, particularly emerging development areas where green infrastructure provision may differ significantly.

Second, the assessment of park condition relied on field observations and Likert-scale evaluations, which, despite the use of standardized indicators, may contain elements of subjectivity. Variations in respondents' perceptions and field assessment judgments could influence the assigned condition scores.

Third, the Relative Importance Index (RII) analysis was based on stakeholders' and users' perceptions of factors influencing park development and management. While these perceptions provide valuable insights into prevailing challenges and priorities, they may not fully capture the complexity of institutional, financial, and political processes affecting urban green space governance.

Fourth, the study adopted a cross-sectional approach and assessed parks at a single point in time. Consequently, seasonal variations, long-term maintenance trends, and temporal changes in park quality and usage patterns were not examined. Longitudinal studies incorporating multi-year monitoring would provide a more comprehensive understanding of trends in urban green infrastructure development and management.

Finally, the study focused primarily on spatial, physical, and institutional dimensions of park management and did not investigate ecological indicators such as biodiversity, carbon sequestration potential, ecosystem service valuation, or users' health and well-being outcomes. Future research should integrate these dimensions to

provide a more holistic assessment of the contribution of urban parks and gardens to sustainable urban development.

CONCLUSION

This study examined the spatial distribution, physical condition, development factors, management challenges, and institutional framework governing parks and gardens within Wuse and Maitama Districts of Abuja, Nigeria. The findings revealed the existence of thirteen public parks and gardens covering a total area of 177.78 hectares, with a notable disparity between the numerical distribution of facilities and the actual allocation of green space area. While Wuse contained the majority of identified parks, Maitama possessed most of the total green space area due to the presence of large facilities such as the IBB Golf Course and Millennium Park.

The condition assessment demonstrated that urban green spaces within the study area are generally functional, with most facilities classified as good or very good. Nevertheless, significant variations exist between flagship parks and smaller neighbourhood parks, indicating unequal maintenance standards and resource allocation. Parks with higher levels of investment, infrastructure provision, and institutional attention consistently achieved better condition ratings than smaller facilities.

The RII analyses established that financial considerations constitute the most critical drivers of both park development and management. Funding availability, political commitment, land availability, staffing capacity, and maintenance resources were identified as the principal determinants of effective green space provision and sustainability. These findings emphasize that the long-term success of urban green infrastructure depends largely on adequate financial support and institutional capacity.

Furthermore, the institutional assessment revealed a substantial gap between policy intentions and implementation outcomes. Although Abuja possesses a relatively comprehensive planning and regulatory framework for green space management, challenges relating to inter-agency coordination, funding inadequacies, weak monitoring systems, limited stakeholder participation, and insufficient technical capacity continue to hinder effective implementation.

Overall, the study concludes that the primary challenge confronting parks and gardens in Abuja is not the absence of policies or planning frameworks but deficiencies in governance implementation. Achieving sustainable urban green infrastructure development will require stronger institutional coordination, dedicated funding mechanisms, enhanced enforcement of planning regulations, adoption of geospatial monitoring technologies, and increased community and private-sector participation. Addressing these issues will strengthen the contribution of urban parks and gardens to environmental sustainability, public health, recreation, climate resilience, and overall urban quality of life in Abuja.

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