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## SOCIO-ECOLOGICAL SURVEY OF PARKS AND GARDENS IN THE FEDERAL CAPITAL TERRITORY, ABUJA NIGERIA

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### ABSTRACT

*Opinions of Abuja residents and potential recreational parks and gardens users were sought using structured questionnaires in order to document their socio-ecological knowledge. Three hundred (300) respondents were randomly selected from each of the Area Councils and questioned on the following socio-ecological issues: satisfaction with parks in the FCT, satisfaction with recreational facilities in the FCT, major activities in city parks and the recreational facilities, activities respondents want to see in parks, assessment on the amount of greening, security in parks, reasons for not using parks, willingness to pay for re-vegetation, participation in parks community services and awareness of publications by department of parks. The results showed that majority of the respondents (79%) and (70%) were not satisfied with the number of Parks in the FCT and Recreational Facilities in the FCT respectively. Also, on the major kinds of activity people would like to in City Parks and Recreational Facilities, selling of drinks (bar operation) was the highest (26%). On the facilities which respondents want to see in Parks highest number of respondents 31% would like Community centers. The amount of Greening was also assessed, majority of the respondents (83%) were not satisfied with the amount of greening in the FCT. On the Provision of Security in the Parks, majority of the respondents (84.3%) were not satisfied. Furthermore, reasons why some people may not like to use the parks were investigated, and three major reasons advanced were rowdy atmosphere, religious consideration and family background. Highest number of respondents 40.7% observed that rowdy atmosphere hindered them from patronizing the parks. On the willingness of people to pay for re-vegetation, 52% of the respondents were willing to pay for re-vegetation in the Council Areas. Again, participation in Parks Community Services was high, and concerning the Awareness of Publications by Department of Parks, 81% respondents were aware of the publications by department of parks in the Council Areas. These parks and green areas are the ecological units with indicators that need urgent policies for their maintenance and sustenance for both ecological and socio-ecological benefits.*

**Keywords:** Urban ecosystem, Natural ecosystem, Green Area, Recreational Parks, Gardens, Ecology.

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### INTRODUCTION

Cities constitute urban ecosystems which create an important nexus for humans and nature, with dynamic systems that are similar in interactions

and behaviours to natural ecosystems (Pickett *et al.*, 2001). In urban ecosystems, the adaptive landscape in which species interact and compete

has been transformed in its basic structure because of the dominance of the human species. Consequently, the self-organizing properties of natural ecological systems are replaced by the self-organizing properties of human system (Lance & Holding, 2002). As a result of this, new kinds of complexities are introduced to the urban ecosystem in temporal, spatial and symbolic scales. The urban ecosystem is therefore a hybrid of natural and man-made elements whose interactions are affected not only by the natural environment, but also culture, personal behaviour, politics, economics and social organization. The health of urban ecosystems depends on how favorable the natural and artificial systems mix and can apparently provide a model by which to assess the sustainability of the natural ecosystems that support human settlement (Meier, 1970). Unhealthiness in an associated urban ecosystem can lead to local and wider environmental degradation, social problems, economic decline, human health problems and further disconnection from nature.

One of the many urban centers in Nigeria is Abuja, which is the Nigerian's Federal Capital Territory (FCT). There is therefore the need to understand the socio-ecological properties or characteristics of the FCT for better management decision. The Master Plan for the City of Abuja was prepared for the Federal Government of Nigeria by the International Planning Associates

(IPA) and accepted in 1979 (Ibrahim, 2010). The basic concept of the Abuja Master Plan is the "Neighbourhood Concept". The Plan provides for residential enclave with a threshold population of 5000 people served with common facilities. This allows its inhabitants get the basic urban needs within the proximity of their varied homes. A group of neighbourhoods however form a district and the districts in turn are served by district centers with several facilities such as schools, hospitals, fire stations, etc. One important part of the provisions of the Master Plan of Abuja is the development of adequate Green Areas and other recreational facilities within the FCT (Ibrahim, 2010).

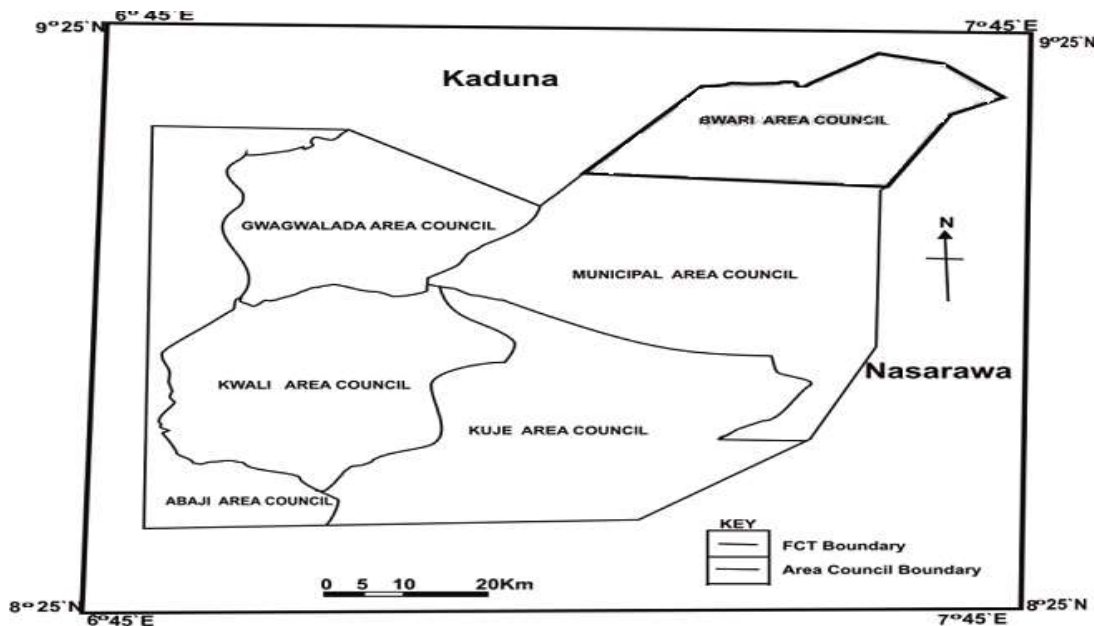
In the FCT, there are several Parks, Green Area and Open Spaces and these parks are categorized into three broad groups, the Neighbourhood Park, the District Park and the City Park. The Neighbourhood parks are situated within residential areas and are typically within walking distance of most houses. The district parks are larger than the neighbourhood parks but are less feature rich than the City Parks. They are usually created along major roads and are not always within walking distance of residential areas. The City Parks are the largest parks both in terms of size and variety of parks features. City Parks are usually accessed through vehicular means and are therefore equipped with adequate parking facilities. Parks and recreation areas provide wide varieties of leisure and amusement

activities for the relaxation, pleasure and enjoyment of people. Parks provide the opportunity for residents to relax and recreate thereby ensuring healthy lifestyles. However, the information on the socio-ecological importance and management strategies of these Green Areas that could translate to sustainable management is insufficient.

## METHODOLOGY

A survey-based socio-ecological research was conducted in the FCT. This city lies between the latitude of  $8^{\circ}25'N$  to  $9^{\circ}25'N$  and longitude  $6^{\circ}45'E$  to  $7^{\circ}45'E$  and is bounded by Kaduna State to the North, Kogi State to the south, and Niger State to the West and Nasarawa State to the East. As shown in Figure 1 below, FCT has are six (6) Council Areas that includes

Gwagwalada, Kuje, Kwali, Bwari, Abaji and the Abuja Municipal Area Council (AMAC) (AGIS, 2004). In this study, three hundred (300) respondents were randomly selected from each of the Area Councils, and their opinions were obtained through the use of structured questionnaires on each of the following socio-ecological issues: These include satisfaction with parks in the FCT, satisfaction with recreational facilities in the FCT, major activities in city parks and the recreational facilities, activities respondents want to see in parks, assessment on the amount of greening, security in parks, reasons for not using parks, willingness to pay for re-vegetation, participation in parks community services and awareness of publications by department of parks.



**Figure 1:** Map of Federal Capital Territory showing the six area councils (AGIS, 2004)

## RESULTS

### 1.1 Satisfaction with Parks in Federal Capital Territory

In Table 1, majority of the respondents (236: 79%) were not satisfied with the number of Parks in the FCT, however, (47: 16%) were satisfied while only (17:5%) were very satisfied. The break down of the result based

on Council wards showed that, Kwali area Council has the highest number of respondents that were not satisfied with the number of parks (48: 96%), followed by Kuje (47:94%). Abuja Municipal Area Council (AMAC) has the highest number of respondents that were satisfied with the existing parks and garden (31:62%) and least number of respondents (10:20%) who were not satisfied.

**Table 1:** Satisfaction with Parks in Federal Capital Territory

Council Area	Satisfied	Very Satisfied	Not Satisfied	Total
Abaji	3	2	45	50
Abuja Municipal	31	9	10	50
Bwari	5	3	42	50
Gwagwalada	4	2	44	50
Kuje	2	1	47	50
Kwali	2	0	48	50
<b>Total (FCT)</b>	<b>47</b>	<b>17</b>	<b>236</b>	<b>300</b>

### 1.2 Satisfaction with Recreational Facilities in the FCT

In Table 2, a total of 300 hundred questionnaires were administered, majority of the respondents (210: 70%) were not satisfied with Recreational Facilities in the FCT, however, (66:22%) were satisfied while only (24:8%) were very satisfied. The break down

of the result based on Council wards showed that, Kwali area Council has the highest number of respondents that were not satisfied with Recreational Facilities in the FCT (44: 88%), followed by Bwari (43: 84%). AMAC has the highest number of respondents that were satisfied with Recreational Facilities in the FCT (32:64%) and least number of respondents (7:14%) who were not satisfied.

**Table 2:** Satisfaction with Recreational Facilities in the FCT

<b>Council Area</b>	<b>Satisfied</b>	<b>Very Satisfied</b>	<b>Not satisfied</b>	<b>Total</b>
<b>Abaji</b>	6	4	40	<b>50</b>
<b>Abuja Municipal</b>	32	11	7	<b>50</b>
<b>Bwari</b>	5	2	43	<b>50</b>
<b>Gwagwalada</b>	9	3	38	<b>50</b>
<b>Kuje</b>	11	1	38	<b>50</b>
<b>Kwali</b>	3	3	44	<b>50</b>
<b>Total (FCT)</b>	<b>66</b>	<b>24</b>	<b>210</b>	<b>300</b>

### 1.3 Major activities in City Parks and Recreational Facilities

In Table 3, major activities in the parks and recreational facilities were investigated, selling of drinks (bar operation) was the highest (79:26%) among the activities in the parks followed by restaurants (60:20%). Games, Shops and other activities were 46:15%, 44:14% and 71:25% respectively. The

breakdown of the result based on Council wards showed that, AMAC has the highest number of bars 17:34% preceded by Gwagwalada (16:32%). Other activity which is second in the overall ranking includes petty trading, photography, Suya Spot, car wash stand, etc. Also in AMAC, bar was the highest (17:34%) followed by restaurants (12:24%) as the operational business.

**Table 3:** Major activities in City Parks and Recreational Facilities

<b>Council Area</b>	<b>Restaurant</b>	<b>Bar</b>	<b>Games</b>	<b>Shops</b>	<b>Others</b>	<b>Total</b>
<b>Abaji</b>	8	13	7	5	17	<b>50</b>
<b>Abuja Municipal</b>	12	17	5	7	18	<b>50</b>
<b>Bwari</b>	11	13	7	5	14	<b>50</b>
<b>Gwagwalada</b>	10	16	14	7	3	<b>50</b>
<b>Kuje</b>	9	8	5	9	10	<b>50</b>
<b>Kwali</b>	10	12	8	11	9	<b>50</b>
<b>Total</b>	<b>60</b>	<b>79</b>	<b>46</b>	<b>44</b>	<b>71</b>	<b>300</b>

## 1.4 Facilities Respondents want to see in

### Parks

In Table 4, facilities Respondents want to see in Parks include club houses, Community centers, community facilities and other activities. In all of these parks and recreational facilities investigated, highest number of respondents 93: 31% would like have

Community centers, followed by Community facilities (90:30%) while 36:12% opted for club houses in the FCT. The break down of the result based on Council wards showed that, highest number of Community centers followed by Bwari. 17: 34% of respondents from each of Bwari and Gwagwalada Council Areas would like to have Community facilities established in the parks.

**Table 4:** Facilities Respondents want to see in Parks at the FCT

<b>Council Area</b>	<b>Club houses</b>	<b>Community centers</b>	<b>Community facilities</b>	<b>Others</b>	<b>Total</b>
<b>Abaji</b>	6	21	8	15	<b>50</b>
<b>Abuja Municipal</b>	7	15	14	14	<b>50</b>
<b>Bwari</b>	5	17	17	11	<b>50</b>
<b>Gwagwalada</b>	6	15	17	12	<b>50</b>
<b>Kuje</b>	7	13	10	20	<b>50</b>
<b>Kwali</b>	5	12	15	18	<b>50</b>
<b>Total (FCT)</b>	<b>36</b>	<b>93</b>	<b>81</b>	<b>90</b>	<b>300</b>

### 1.5 Assessment on the amount of Greening

In Table 5, a total of 300 hundred questionnaires were administered, majority of the respondents (249:83%) were not satisfied with the amount of greening in the FCT, however, (33:11%) were satisfied while only (18:6%) were very satisfied. The break down of the result based on Council wards showed

that, Abaji area Council has the highest number of respondents that were not satisfied with the amount of greening in the FCT (50: 100%), followed by Kwuje (48:96%). Also AMAC has the highest number of respondents that were satisfied with the amount of greening in the FCT (19:38%) and least number of respondents (13:26%) who were not satisfied.

**Table 5:** Assessment on the amount of Greening

<b>Council Area</b>	<b>Satisfied</b>	<b>Very satisfied</b>	<b>Not satisfied</b>	<b>Total</b>
Abaji	0	0	50	<b>50</b>
Abuja Municipal	19	18	13	<b>50</b>
Bwari	3	0	47	<b>50</b>
Gwagwalada	6	0	44	<b>50</b>
Kuje	2	0	48	<b>50</b>
Kwali	3	0	47	<b>50</b>
<b>Total (FCT)</b>	<b>33</b>	<b>18</b>	<b>249</b>	<b>300</b>

### 1.6 Provision of Security in the Parks

As shown in Table 6, a total of 300 hundred questionnaires were administered, majority of the respondents (253:84.3%) were not satisfied with the Security in the Parks provided in the FCT, and however, (25:8.3%) were satisfied while only (22:7.3%) were very satisfied. The break down of the result based on Council

wards showed that, each of the Abaji, Kuje and Kwali area Councils has the highest number of respondents that were not satisfied with the amount of greening in the FCT (50:100%), followed by Bwari (49:98%). Also AMAC has the highest number of respondents that were satisfied with the amount of greening in the FCT (22:44%) and least number of respondents (9:18%) who were not satisfied.

**Table 6:** Provision of Security in the Parks

<b>Council Area</b>	<b>Satisfied</b>	<b>Very Satisfied</b>	<b>Not Satisfied</b>	<b>Total</b>
Abaji	0	0	50	<b>50</b>
Abuja Municipal	22	19	9	<b>50</b>
Bwari	1	0	49	<b>50</b>
Gwagwalada	2	3	45	<b>50</b>
Kuje	0	0	50	<b>50</b>
Kwali	0	0	50	<b>50</b>
<b>Total (FCT)</b>	<b>25</b>	<b>22</b>	<b>253</b>	<b>300</b>

**1.7 Reasons for not Using Parks:**

Three major reasons were advanced why people were not using the recreation centers. The reasons were rowdy atmosphere, religious consideration and family background. As shown in Table 7, in all of these parks and recreational facilities investigated, highest number of respondents 122: 40.7% observed that rowdy atmosphere hindered them from patronizing the parks, this was followed by

religious considerations (116:38.7%), while family back ground was last (62:20.6%). The break down of the result based on Council wards showed that, highest number of respondent from Abaji and Gwagwalada, (24:48%) each advanced religious considerations and rowdy atmosphere respectively for not visiting the parks. Family background was also a reason for people not visiting the parks in Gwagwalada and Kuje (7:14%)

**Table 7:** Reasons for not Using Parks

<b>Council Area</b>	<b>Rowdy atmosphere</b>	<b>Religious consideration</b>	<b>Family background</b>	<b>Total</b>
Abaji	23	24	3	<b>50</b>
Abuja Municipal	21	20	9	<b>50</b>
Bwari	19	16	15	<b>50</b>
Gwagwalada	24	19	7	<b>50</b>
Kuje	23	20	7	<b>50</b>
Kwali	12	17	21	<b>50</b>
<b>Total (FCT)</b>	<b>122</b>	<b>116</b>	<b>62</b>	<b>300</b>

**1.8 Willingness to Pay for Re-Vegetation**

As shown in Table 8, residents were asked on their willingness to pay for re-vegetation on a scale of yes or no. A total of 156 (52%) respondents out of the 300 were willing to pay for re-vegetation in the Council Areas. On the

bases of each Council, highest number of respondents (46:92%) in AMAC was willing to pay for re-vegetation. This was preceded by Kuje area council (27:54%) while in Abaji; only 12 (24%) respondents were willing to pay for re-vegetation.



**Table 8:** Willingness to Pay for Re-Vegetation

<b>Council Area</b>	<b>Yes</b>	<b>No</b>	<b>Total</b>
<b>Abaji</b>	12	38	50
<b>Abuja Municipal</b>	46	4	50
<b>Bwari</b>	13	37	50
<b>Gwagwalada</b>	17	33	50
<b>Kuje</b>	29	21	50
<b>Kwali</b>	27	23	50
<b>Total (FCT)</b>	<b>144</b>	<b>156</b>	<b>300</b>

### 1.9 Participation in Parks Community

#### Services

As shown in Table 9, residents were asked on their Participation in Parks Community Services on a scale of yes or no. A total of 216 (72%) respondents out of the 300 were willing to participate in Parks Community Services in

the Council Areas. On the bases of each Council, highest number of respondents (48:96%) in AMAC was willing to Participation in Parks Community Services. This was preceded by Kuje area council (13:26%) while in Kwali only 11 (22%) respondents were willing to Participation in Parks Community Services.

**Table 9:** Participation in Parks Community Services

<b>Council Area</b>	<b>Yes</b>	<b>No</b>	<b>Total</b>
Abaji	0	50	<b>50</b>
Abuja Municipal	48	2	<b>50</b>
Bwari	3	47	<b>50</b>
Gwagwalada	9	41	<b>50</b>
Kuje	13	37	<b>50</b>
Kwali	11	39	<b>50</b>
<b>Total (FCT)</b>	<b>84</b>	<b>216</b>	<b>300</b>

**1.10 Awareness of Publications by**

**Department of Parks**

As shown in Table 10, residents were asked on their awareness of publications by department of parks. A total of 243 (81%) respondents out of the 300 were aware of the publications by department of parks in the Council Areas. On the bases of each Council, highest number of

respondents (48:96%) in each of Abaji, Kwali and Gwagwalada Council Areas were not aware of publications by department of parks. This was preceded by Kuje area council (46:92%) while in AMAC, 18 (36%) respondents were not aware of publications by department of parks

**Table 10:** Awareness of Publications by Department of Parks

<b>Council Area</b>	<b>Yes</b>	<b>No</b>	<b>Total</b>
Abaji	2	48	<b>50</b>
Abuja Municipal	32	18	<b>50</b>
Bwari	5	45	<b>50</b>
Gwagwalada	2	48	<b>50</b>
Kuje	4	46	<b>50</b>
Kwali	2	48	<b>50</b>
<b>Total (FCT)</b>	<b>57</b>	<b>243</b>	<b>300</b>

**DISCUSSION**

The interface created as a result of the interactions between man and nature in the urban settings that culminates into socio-ecological systems could be highly unpredictable and cannot be pre-empted by a single theory or model (Lance & Holding, 2002). Individual’s opinion varies from one another in different socio-ecological aspect to a large extent in concepts and contexts. As shown in the result section, majority of the

respondents (79%) were not satisfied with the number of Parks in the FCT.

Unlike the natural ecosystems, urban ecosystems are dominated with humans and their opinions are likely to be influenced by their status in the society and consequently leading to a varied opinion. More also, because of enlightenment and awareness of the ecosystem functions and benefits of the green areas to the cities, humans are now able to

question the qualities and quantities of the resource needed for sustainable coexistence (Meier, 1970). Inference from the two levels of satisfactions (very satisfied and satisfied) showed a range of between 5%- 16% and the break down of the result based on Council wards showed that, Kwali area Council has the highest number of respondents that were not satisfied with the number of parks 96% followed by Kuje 94%. Abuja Municipal Area Council has the highest number of respondents that were satisfied with the existing parks and garden (62%).

These results showed a trend in that the further away the Council Area from the AMAC, the more people feel dissatisfied with the number of the parks. There are more parks, where there are concentration of government presence and residential areas than areas built for only residency. The result also showed that satisfaction with recreational facilities in the FCT varied depending on the location. Majority of the respondents (70%) were not satisfied with recreational facilities in the FCT, however, (22%) were satisfied while only (8%) were very satisfied. These results showed a trend in that the further away from the AMAC the more people feel dissatisfied with the number of the parks.

Also, the major kinds of activity people would like to in City Parks and recreational facilities

were investigated. As shown in the result section, selling of drinks (bar operation) was the highest (26%) among the activities in the parks followed by restaurants, games, shops and other activities. Other activities include petty trading, photography, Suya Spot, car wash stand, building of churches and mosques etc. This result shows that people like to sit out in these facilities and refresh themselves during and after the day's job. Another important issue was on the types of facilities respondents want to see in parks, showed that facilities which respondents want to see in Parks includes club houses, Community centers, community facilities and other activities. Highest number of respondents 31% would like Community centers, followed by Community facilities (30%) while 12% opted for club houses in the FCT.

Facilities that are of higher ranks are beneficial to parents and children. The amount of Greening was also assessed, the result, showed that majority of the respondents (83%) were not satisfied with the amount of greening in the FCT. This is because, people are aware of the importance of green areas in the master plan (Ibrahim, 2010). On the Provision of Security in the Parks as shown in the result section, majority of the respondents (84.3%) were not satisfied with the Security in the Parks provided in the FCT, however, (8.3%) were

satisfied while only (7.3%) were very satisfied. This indicates that there is need for security beef up in the parks considering the insecurity situation in the country.

Furthermore, reasons why some people may not like to use the parks were investigated, and three major reasons advanced were rowdy atmosphere, religious consideration and family background. Highest number of respondents 40.7% observed that rowdy atmosphere hindered them from patronizing the parks, most people would not like to have their leisure in rowdy and noisy environment.

On the willingness of people to pay for re-vegetation, as shown in the result section, 52% of the respondents were willing to pay for re-vegetation in the Council Areas. These showed that most people are informed of the importance of green areas in their environment. Green areas contain representative of both exotic and native plant species that are either planted or found as endemic species. Some of these exotic tree species includes *Araucaria excels*, *Casuarina equisetifolia*, *Terminalia*

*catapa*, *Delonix regia*, *Gmelina arborea*, *Galphimia glauca*, *Ixora coainea*, *Eucalyptus tereticornis* and *Eucalyptus camaldulensis*. Tree species common to most of the sites are native tree species. For instant, 24 native tree species that were common to AMAC and Abaji, AMAC and Kuje include *Kigelia africana*, *Prosopis africana*, *Parkia biglobosa*, *Bridelia ferruginea*, *Hymenocardia acida*, *Sterculia setigera*, *Daniella olivera*, *Vitex doniana*, *Piliostigma thonningii*, *Afzelia africana*, *Annona senegalensis*, *Newbouldia laevis* etc (Ihuma, 2015).

The awareness to pay for re-vegetation in AMAC was highest and this shows that more people are informed in the AMAC. As shown in the result section, participation in Parks Community Services was high, and concerning the awareness of publications by department of parks, 81% respondents were aware of the publications by department of parks in the Council Areas. These are indicators that there is need to maintain these green areas for both ecological and socio-ecological benefits.

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