

Entrenching Urban Parks in Green Infrastructure: A Study of Surulere Township in Metropolitan Lagos

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ABSTRACT

The poor quality of Nigerian urban environment has been attributed partly to the inadequate, misuse and mismanagement of green infrastructure. It exerted major strain on the physical outlook of the cityscapes and a negative effect on the productivity of the residents. The paper examines practical strategies to increase park area on demographic basis in Surulere Local Government Area. The study is underpinned by green infrastructure principles. The paper recognised the importance of previous desktop studies in the metropolis and Surulere Local Government area especially demographic survey on community development area basis. Semi structured interviews of purposively chosen community leaders and questionnaires were used to comprehend urban parks needs of Surulere people.

The study revealed that 327 hectares of planned open spaces currently exist in Surulere. 50% of the existing planned open spaces are privately owned while 45% and 5% are institutional and public spaces respectively. Further revelation shows that 1043 hectares of public park area is required to meet recreational demand of 1,184,000 people. Acquiring land to meet this deficit explored bioremediation of polluted wetlands and illegal refuse dumps. Besides absorbing the 1043 hectares deficit the suggested reclamation will provide much needed opportunity to turn these brown fields to green area in this season of climate change negative impacts. In the absence of city government and failure of Local Government in discharging the constitutional right of urban park provision, the paper recommended the need for constitutional review that will empower State Government to develop parks as green infrastructure hubs.

Keywords: Urban Park, Green Infrastructure, Public Open Space, Values

INTRODUCTION

Biocentrism as a philosophical consideration disagrees with the supremacy of man in the ecosystem. Man and other members of the biotic community are seen on a greater web of life interacting with each other symbiotically and equally (Bidwell and Quinby, 1994). Human settlements are then perceived as urban ecosystem where *Homo sapiens* dominate the contextual landscape. Bio-centrists submissions encouraged humanity to checkmate the wanton consumption of fixed natural resources through conscious planning, designing and living with nature. It is a call for a systemic approach to design with climate and biophysical variables to create human habitats in harmony with the bioregion. Benyus (1997) and Bradley (2010) referred to this harmony as Biophilic environmental design consideration. Biophilia reveals the inner desire of man to associate with natural systems and processes that enhance liveability. In Biophilic urban physical planning, attention on city infrastructures shifts from grey infrastructure to green infrastructure to give sustainability paradigm a meaning.

The last few years witnessed a resurgent interest in streetscapes improvement especially introduction of shade trees along the major highways in Lagos metropolis. Visibly absent are urban parks and planned open spaces in the metropolis – the very core of “Green Cities Plan” adopted by the United Nations driven San Francisco Urban Environmental Accords (United Nations Urban Environmental Accords, 2005). Previous studies on urban green infrastructure development focused on the dearth of parks and open spaces in the metropolis. Falade (1988) historically traced this short coming to conversion of 1887 Lagos Botanical garden to the construction of 1895 Iddo railway terminal. Lagos Marina water front garden was removed to accommodate six lane outer Lagos Island ring roads in 1975 (Lagos State Government 2000). The premier Ikoyi Park was sub divided into residential estate. Yaba Love Garden and Biney Memorial zoological garden ceased to exist in 1985 (Adejumo, 2002). Ikeja Government Reservation Area playfield was platted as private residential estate. Ashinyanbi (2005) study was on the high ratio of planned hectare of open space per population in metropolis bearing in mind the 5.8% population growth rate. He arrived at open space area per population ratio of 140,000 people per hectare. This is very high when compared with New South Wales Department of Planning (2010) standard of 500 people per planned hectare at the city level or United Kingdom recommendation of one planned hectare per 1000 population. None of these studies holistically looked on the possibility of achieving

interconnected open spaces system in the metropolis. Mayors and administrators of various world cities including Nigeria signed and adopted 21 actions (United Nation Urban Environmental Accord, 2005). Six major issues including urban nature were recognized. Urban nature policy highlighted the importance of half-a-kilometre as the maximum distance that any city resident should trek before reaching a planned public park. The environmental accord is meant to strengthen the position of urban open space system as major green infrastructure. The pressing question is how would metropolitan Lagos achieve required international open space standard as a mega city? This paper examined the current state of planned open spaces and explored how appropriate hecterage of planned urban parks can be achieved as a green infrastructural developmental tool in metropolitan Lagos using Surulere Township as case study.

2.0 Study Area

Surulere Local Government is located at $6^{\circ}30'0''\text{N}$ $3^{\circ}21'0''\text{E}$ / 6.5°N 3.35°E in Lagos State Nigeria. It is mostly residential with a population density of 21,864 inhabitants per square kilometre. Total population is 1,183,886 persons (National Population Commission, 2009). It is bounded on the North by Mushin Local Government Area on the East by Lagos Mainland Local Government, on the South East by Apapa Local Government and on the West by Ojo Local Government Area. Surulere developed on reclaimed sand barrier- lagoon geomorphic formation typical of Lagos State. The natural drainage system is made of streams and canals that still support fragments of fresh water swamps. The most prominent is the tertiary canal that serves as eastern boundary. Monsoonal climatic effect prevails and is responsible to the rainy and dry seasons.



Figure:1 Metropolitan Lagos Showing Surulere Local Government

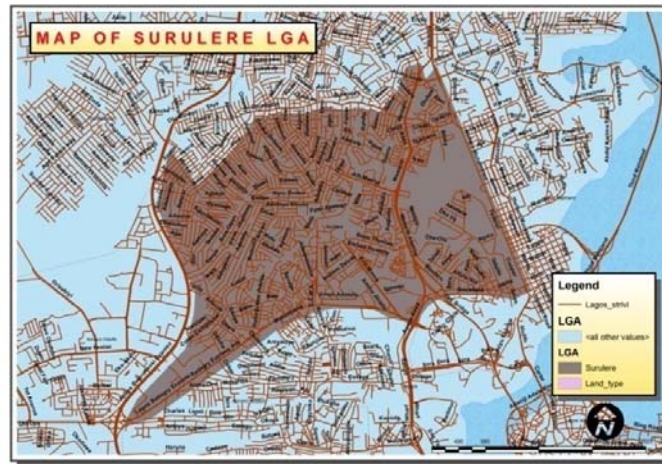


Figure: 2 Map of Surulere LGA

3 LITERATURE REVIEW

The quest for practical ecological framework that meets the environmental, social and economic sub sectors of urban sustainability paradigm drove the emergent of green infrastructure (Benedict and McMahon, 2002; and McDonald et al., 2005). Green infrastructure is an interconnected network of green spaces that conserves natural ecosystem values and provides associated benefits to human populations. While conventional approaches to urban open space planning address city spaces on individual basis, green infrastructure approach looks at conservation values and actions relative to land development, growth management and built infrastructure planning (The Conservation Fund, 2004). It is composed of a wide variety of natural and restored native ecosystems and planned landscape features that make up a system of “hubs” and “links” (Benedict and McMahon (2002). On city scale, it is about the strategic connection of green areas providing multiple benefits including recreation, carbon sequestration, urban heat island mitigation, landscape conservation, checkmating urban sprawl and serving as eco-engineering in this season of destructive fluvial and tidal flooding. Structurally green infrastructure is twofold namely links and hubs. Links are corridors tying the hub system together and enabling green infrastructure networks to work for the benefit of man and other living members of urban ecosystem. It includes canals, rivers, creeks, other natural city drainage corridors and well defined streetscapes. Hubs are nodal green spaces including urban parks, planned green spaces, wetlands and forested hilly terrains. The later, wetlands and forested hilly terrains

constitute the informal and natural open space groups. They represent the remaining fragments of contextual city ecosystem vulnerable to intense anthropogenic activities. Formal group is made up of planned urban open spaces defined by building facades and city base planes. They are designed and constructed nodes that provide physical character to city landscape (Lynch 1960).

Planned urban open space system is structured to accommodate central parks, district parks, community parks, neighbourhood parks, plazas and playgrounds. This hierarchical definition is a product of modernism. Scientific urbanism assigns specific values for parks and allied city spaces in its conscious desire to improve liveability in human settlements. Walker (2004) identified ten public values of urban parks. The values include provision of recreational facilities and programmes; enhancement of city aesthetics quality; improvement of quality of urban life; boosting of real estate; sequestration of excess carbon and other pollutants in urban air space; contribution to the vitality of the community and the well being of the people; contribution to youth's physical, intellectual, emotional and social development; provision of employment opportunities; improvement of community's life expectancy through healthy leisure services; and strengthening of neighbourhood social capital. These values place planned parks as city's major physical tool required to positively impact the economy, education, health and people's social life.

Incorporation of value system in western public open space in history responds to prevailing needs. Cranz (2000) noted that the function of parks is a reflection of immediate socio political goals on a time scale. He reiterated that the 1861 park movement in America were solutions to the dual problems of industrialization and urbanization. While parks served as city lungs to sequester polluted cityscape, they also served as forum to strengthen community social values among the blue collar workers and disillusioned immigrants (Eisner and Gallion, 1980). Dynamism in social goals between 1900 and 1965 America accounted for the 'recreational facilities' and 'open spaces' park model (Cranz, 2000). 'Recreational facilities' park model came in response to the need for active sporting facilities for all age groups in 1930 America – a period of economic depression. The goal is to keep the active population engaged. 'Open spaces' model of the mid nineteen sixties identified socio ecological relationship between parks and urban transportation corridors as one grand open space system (Cranz, 2000). The underlying ideology of 'open space model' is the perception

of the city as an architectural piece within the landscape that must be aesthetically treated during the planning process. That is, aesthetic values of urban parks must not be seen on an individual park level, rather it should be seen on city scale composed of interconnected green spaces. Values inherent in city spaces may be biophysical, social, cultural, religious, economic and political (Ardoin, 2004). The values trigger green city consciousness in urban policies and political ideologies. This study examines the incorporation of parks as green infrastructure hubs in the Surulere Township. .

4 METHODOLOGY

The paper recognised the importance of previous desktop studies in Surulere Local Government area especially demographic survey on community development area basis (CDA); Surulere planned open spaces inventory; Geographic Information System generated streets map; and 2009 Surulere satellite images. Personal observation and enumerated secondary data were used to authenticate existing parks and proposed recreational parks relative to Surulere population. Interviews with purposively chosen community leaders and questionnaires were used to comprehend desired activities in urban parks, distance to existing spaces and expected functional facilities in a typical Surulere park.

Surulere Local Government Area (LGA) is composed of twenty community development areas (Figure 3) and has a population of 1,183,886 people with an annual growth rate of 5.8%. Due to the vast area of Surulere and the high population density, the sample frame for this research was the population of purposively chosen Community Development Areas (CDA) closest to existing unplanned natural areas namely Adeniran Ogunsanya, Sam Shonibare, Empire, Gbaja and Ogunmola. Total population of the five community development areas is 201,000. Therefore the sample frame for this research is 201,000 people. Based on a sample size of 0.001% from the total population of the five community development areas, a sample size of 201 was obtained and 200 questionnaires were randomly administered at the rate of 10 questionnaires per community development area.

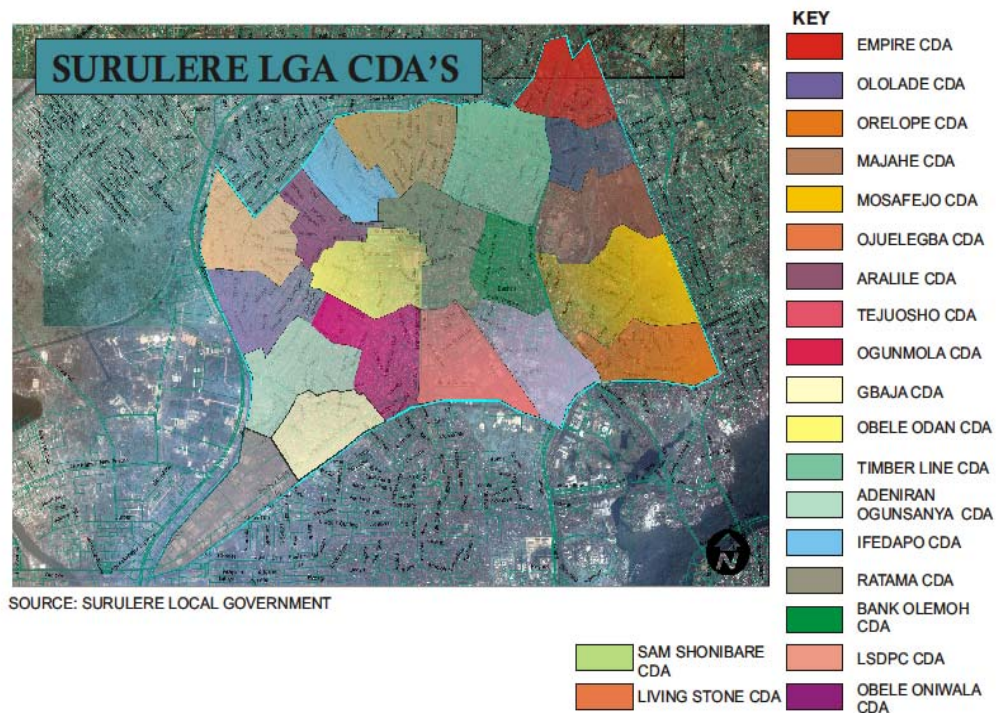


Figure: 3 Surulere LGA Community Development Areas

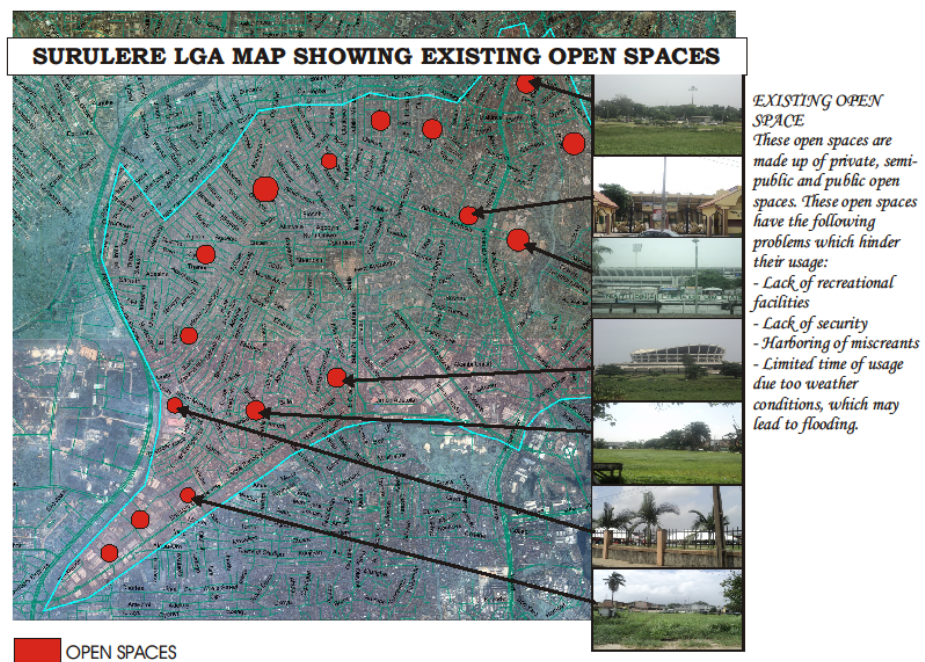


Figure 4: Existing Open Spaces in Surulere Local Government Area

5 RESULTS, ANALYSIS AND DISCUSSION OF FINDINGS

5.1 Existing Planned Open Space

Table 1 summarised the existing open spaces. A total of 327 hectares of partially furnished open space was in use (Figure: 4). This is about 14.22% of the LGA land area.

Table: 1 Existing Open Spaces in Surulere Local Government Area

S/N	Existing Open Spaces	Ownership	Hectares	Percentage of LGA
1.	Coca-cola village	Private	5	0.22
2.	Jalupon Close	Semi-Public	3	0.13
3.	Eagles Club Playground	Private	8	0.35
4.	NPA Sports' Field	Private	23	1.00
5.	Teslim Balogun Stadium	Public	30	1.30
6.	Iponri Estate Playground	Semi-Public	5	0.22
7.	Iponri Estate High Sch	Semi-Public	5	0.22
8.	Abebe Playground	Semi-Public	3	0.13
9.	Shitta Roundabout	Open space	1	0.04
10.	Aguda Mosque	Private	9	0.39
11.	Union Bank Sport Field	Semi-Public	42	1.83
12.	White Sand Field	Semi-Public	34	1.48
13.	Jubilee School Space	Semi-Public	8	0.34
14.	Idi-Araba School	Private	7	0.30
15.	LUTH Medilag Courts	Private	10	0.43
16.	LUTH Football Pitch	Private	15	0.65
17.	Albati Barracks	Private	18	0.78
18.	Paddington Playground	Semi-Public	6	0.26
19.	Love Garden Playground	Semi-Public	4	0.17
20.	National Stadium	Private	78	3.39
21.	People Club	Private	13	0.56
	Total		327	14.22

Source: Surulere Local Government Council

Fifty percent of the existing planned open spaces are privately owned while 45% and 5% are institutional and public spaces respectively (Figure 5). Privately owned spaces including Coca Cola and Union Bank recreational centres are restricted to registered members who do not reside in the area. The few publicly owned open spaces have deteriorated below functional standard. This encouraged the conversion of collector streets to make shift football fields on Sunday morning and environmental sanitation days (Plate 1)

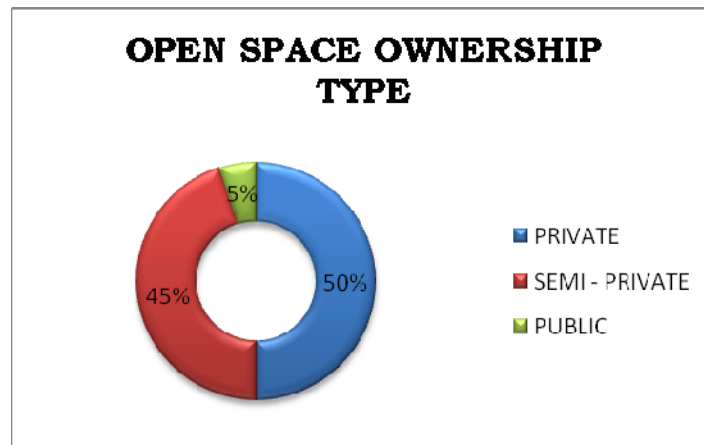


Figure 5.:Open Space Ownership Type



Plate 1: A football Scene on Timson Street- Surulere

5.2 Natural and Unplanned Open Spaces (Wetland)

1903 hectares of unplanned natural open spaces were identified (Figure 6). These spaces are degraded wet lands being threatened by land speculators. The use of household solid wastes to reclaim sections of this wetland is a major environmental concern.

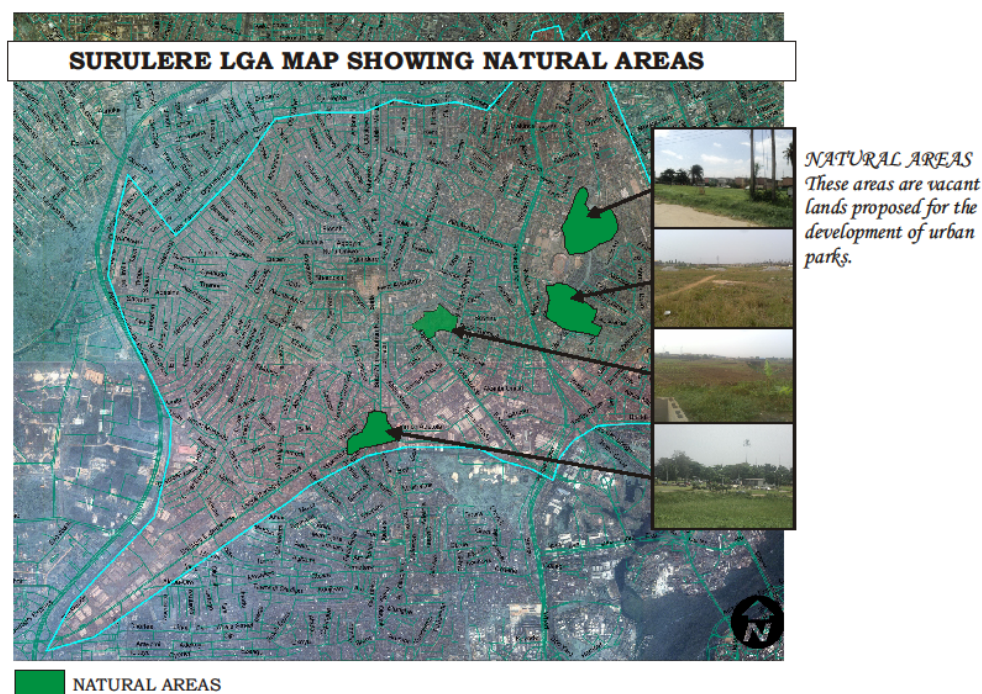


Figure 6: Natural Areas in Surulere Local Government Area

5.3 Community Participation

Community participation is key to sustainable green infrastructure provision. Provision of urban parks in Surulere depended on whether the people want parks and allied open spaces in their vicinities. Analysed questionnaire showed that 98.5% desire the provision of functional open space while the remaining 1.55% is indifferent (Table 2). Facilities in urban open space reflect inherent value system of the inhabitants. Figure 7 expressed Surulere community desired values in recreational public realm. The demand for football field is highest while the lowest is gynasium. This may be understood from the perspectives of two stadia in the LGA and the acceptance of football on national level as number one sport.

Table 2: Need for Urban Parks in Surulere

	Frequency	Percentage	Valid Percent	Cumulative Percent
Yes	197	98.5	98.5	98.5
No	3	1.5	1.5	100.0
Total	200	100.0	100.0	

SOURCE: Field Survey, 2010

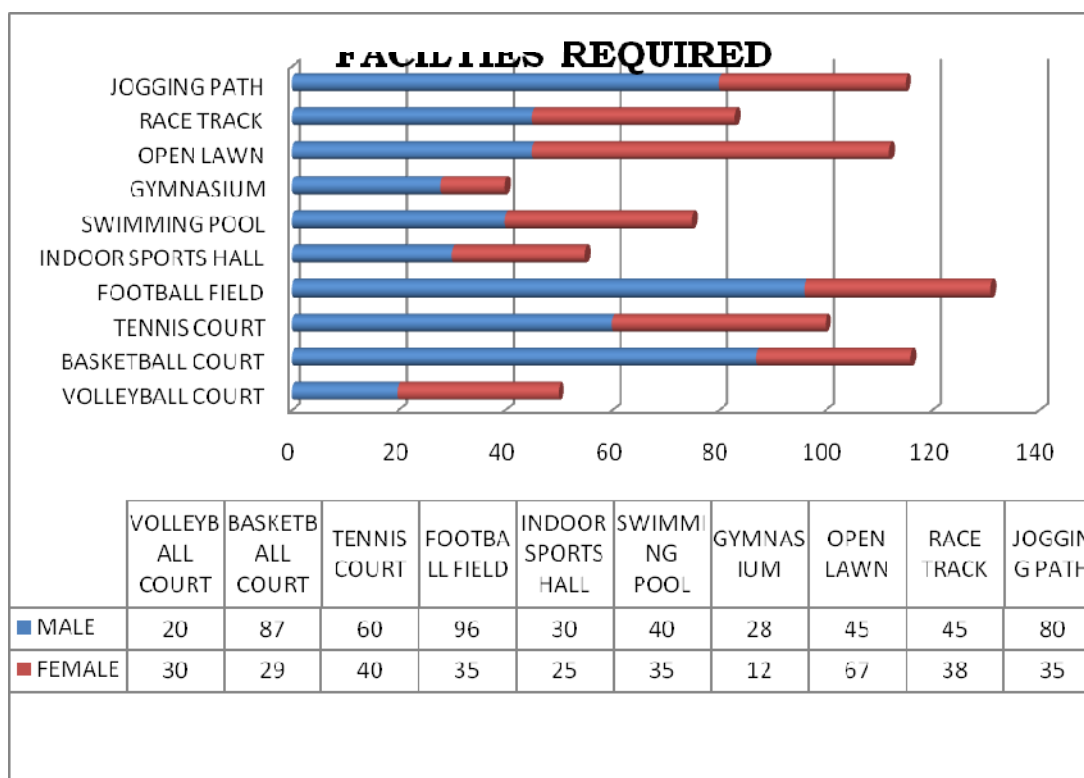


Figure 7: Desired Facilities in Surulere LGA Public Open Space

6. SURULERE PARK DEVELOPMENTAL STRATEGY

Urban parks development as the hub of green infrastructure has demographic implications. Population of human settlements is a determinant of the expected area of planned open space in all their categories. New South Wales Department of Planning (2010) standard of 500 people per planned, equipped and functional hectare of recreational park may not be feasible in highly built up Lagos metropolis. In the absence of national, state, local government and city standard this paper assumed 1000 people per planned hectare of park bearing in mind similar standards in other Mega cities of the world like Mexico City. At the assumed standard of 1000 people per hectare and a population of 1,184,000 (National Population Commission, 2005), 1,184 hectares of park area is required to meet Surulere open space demand. While Table 1 shows that the total area of existing planned open spaces in Surulere is 327 hectares, Figure 4 displays spatial distribution. A closer look at Table 1 shows that 141 hectares of the 327 hectares are public recreational spaces while the remaining is privately owned. The

difference between total public park areas required (1,184 hectares) and actual public planned open space (141 hectares) shows a deficit of 1043 hectares. Buildable land area is a very expensive commodity in the metropolis. Two options should be considered in meeting park area shortfall namely land acquisition and sharing in improved public institution play fields. Acquiring land areas to meet this deficit explore bioremediation and reclamation of polluted wetlands and illegal refuse dumps in the town. Figure 6 classified such areas as natural open space areas estimated to be 1,903 hectares. Figure 8 shows possible urban open space distribution through acquisition, revitalisation of existing ones, private play areas and shared public play areas. Besides absorbing the 1043 hectares park area deficit, it would provide much needed opportunity to turn such brown field to green area.

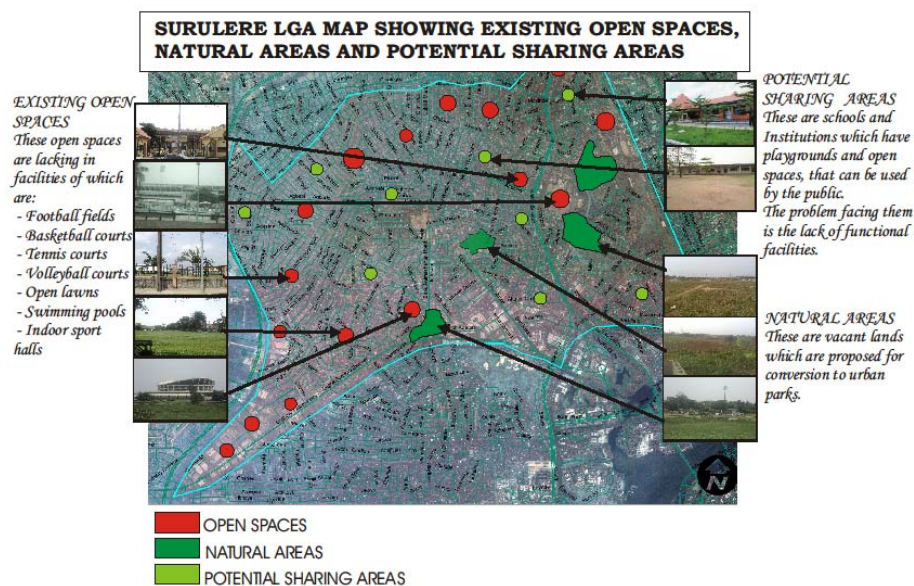


Figure 8: Public Park Development Strategy in Surulere

7 CONCLUSION

Liveability in cities is enhanced by the availability of planned open spaces. Planned open spaces are outdoor libraries to read the people, feel the community and identify the socio cultural values of the city. The ability of these spaces to express community feelings distinguishes them as important factor for measuring quality of urban life. That accounts for urban designer's interest in evolving a well-coordinated open space system that responds to the recreational, social, political, economic and ecological needs of the city. These needs underlay the ten identified public values of urban parks (Walker, 2004). The values are then

entrenched in urban parks as green infrastructure nodal spaces to define sustainable goals on city greening conceptual framework. Urban greening as a philosophy is a very recent development in the Nigerian built environment. The dearth of parks and planned open spaces is traceable to absence of public realm planning policies. That accounts for the nomenclature anomalies of referring to left over spaces including clover leafs, intersections, and roundabouts as parks. Public Park is not an urban after thought; rather it should be conceived as a land use exhibiting aesthetics, health, spiritual and environmental values necessary for city branding. The paper observed the inadequacy of planned open space in Surulere. Even the existing playgrounds are privately owned and exclusively reserved for members only.

The paper has shown that the problem of urban park development can be tackled by understanding the demographical implication of urban spatial configuration; symbiotic use of existing natural areas and comprehension of heartfelt desire of the people as the primary public park stakeholders. Consideration should be given to the following recommendations:

- An Independent Park Agency or Park Department should be established on Local Government level to lay solid foundation for necessary green infrastructure.
- Currently Local Government has the constitutional right to develop urban parks. No progress had been made since independence. There a need for urgent constitution review that gives the State Government the legal right to develop parks for the benefit of the people.
- Urgent attention should be given to the development of urban park policies rooted in desired sustainability principles.

The poor quality of Nigerian urban environment has been attributed partly to the inadequate, misuse and mismanagement of green infrastructure. It exerted major strain on the physical outlook of the cityscapes and a negative effect on the productivity of the residents. Urban parks may be seen as a simple concept, it is a powerful instrument that defines city growth, contributes to carbon sequestration, enhances aesthetics and serves as much desired natural mitigation measure for climate change driven flooding. Conscious investment in green infrastructure is an investment in the well being of the people.

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Citation:

Adejumo, O.T (2015). Entrenching Urban Parks in Metropolitan Lagos Green Infrastructure (A Case Study of Surulere Township in Metropolitan Lagos. *The Lagos Journal of Environmental Studies*. Faculty of Environmental Sciences. University of Lagos. Akoka. Lagos. Vol 9 No 2 Pp 64-79