LANDSCAPE AS A VERITABLE TOOL TO ENVIRONMENTAL SUSTAINABILITY: introducing green practices.

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ABSTRACT

Landscaped open spaces are few and far between as found in many emerging cities of most developing countries and this has served as a deterrent to city development and the achievement of a healthy and sustainable environment. This paper focuses on the landscape quality of open spaces highlighting the peculiarities of Akure, a city in South-western Nigeria as it evaluates the significance of landscaped areas to the built environment in an urban setting. The poor quality of the city's urban environment has been attributed partly to inadequate use and management of these urban open spaces and this has exerted a major strain on the physical outlook of the environment and an attendant negative effect on the welfare and productivity of the residents. The need to effectively address the issue of a sustainable built environment calls for the identification and analyses of the open spaces in a bid to assess their implications to landscape planning and the status of the city's development. This study also discusses the concept of sustainability, looking into its principles and the indicators that impact sustainability of the built environment as well as the resultant problems. Case studies carried out assessed the land use and landscape status of the open spaces while the statistically analysed results revealed the inadequacies in the provision and management of the open spaces within the study areas. Recommendations of attainable policies and measures towards the introduction of green practices were proffered in a bid to enhance a sustainable living environment that will reduce the effects of the green house gases.

Keywords: Environmental Sustainability, Green house gases, Nigeria, Open Spaces

1. INTRODUCTION

The environment is an interactive, indispensable medium within and through which man's life routine is carried out. Man's life in his present nature is unimaginable without the environment to supply him with his needs such as air (to breathe), water (to drink and wash with), food (to eat), and solid minerals for fashioning weapons, building shelters and clothing (Atolagbe 2002). This brings to bear that some aspects of man's exploitation of the environment are limitless; these include those he does unconsciously as well as others that are still a mystery to him.

This exploitation of environmental resources though considered to be inconsequential has evolved with the times and is now evident in uncontrolled urban growth, environmental degradation, deformation and depletion of man's supportive resources and increase in growth, his antagonistic ones. As such, the realisation that its reckless exploitation may spell doom or total annihilation for plants, animals and man alike.

The development of human skills in the use of natural resources to serve human purposes has gradually challenged the natural environment at the local level and then at the global level. However, such challenges did not reach a catastrophic stage until the late 1960s when concern over the deteriorating quality of air, land and forests gave rise to an increased awareness as well as the need to stem pollution and degradation to all components of the environment (Tairu 1998). The resultant situation culminates in what could be called an urban revolution.

The results of this *urban revolution*—congestion, crowding and pollution—are destroying the natural environment and eroding the quality of life for millions of human beings. Of the six billion people on earth, about *one billion* live in squalid slums that surround burgeoning cities in the developing world. In spite of these serious problems, experts predict that urban areas will *continue to expand,* and that in 20–30 years nine of the ten largest "mega cities" (with populations over 10 million) will be in the developing world, where public services are already strained beyond capacity. (Fadamiro 2006)

2. THE LANDSCAPE STATUS OF NIGERIAN CITIES

In the landscape of many Nigerian cities, certain elements of importance can be noted, they include plant materials such as trees, shrubs, ground covers and grasses, all are used in different areas of the design according to the required functions like accent, softening, screening, framing and shading. Not to be excluded are structural materials comprising of man made elements, used for enclosed areas, surfacing and communication or movement in and connecting the open spaces provided.

Order and beauty in man's surrounding are as much as prerequisite for his health as fresh air (Spreiregen, 1965; Fadamiro, 1999). Landscaping of the built environment of cities will enhance the scenic beauty of these cities. Beauty in cities is not an after thought, but rather a necessity because man cannot live long without beauty; otherwise, he becomes bored as a human being. Cities have been called mankind's greatest achievement

(Fadamiro 2006), yet they are also domains, which house some of the most complex and demanding problems known to have faced man. Growing cities are time and again related with booming financial systems as well as some vices that result from urbanisation.

3. IMPORTANCE OF LANDSCAPE

Worldwide adoption of landscaping can assist in developing a sustainable built environment, this however is yet to gain a good foothold in Nigeria as in many other third world countries. Places associated with landscaping in Nigeria are churches, educational institutions (nursery, primary schools, secondary and tertiary institutions of higher learning), sport complexes, squares, residential quarters, major roads and highways, parks, hospitals, industrial neighbourhoods, e. t. c., their major utility is for aesthetics, comfort and convenience.

The importance of landscape include the following:

a. ***Effects on locations:*** Landscaping improves the urban climate by providing shades along streets in hot regions. They can be open spaces with shades and lower temperatures in hot cities. They provide protection from cold winds in temperate climates.

b. ***Effects on the ecology:*** Landscaping reduces the impact of noise generated by traffic, neighbours and children at play, e. t. c. within and around residential areas. They act as agents that could retain and absorb rainwater, act as flood control and help protect natural flora and fauna. They are also beneficial in reducing air pollution from vehicles, manufacturing, heating installations and natural dust.

c. ***Socio-Psychological Effects:*** By providing spaces for play, children of different ages can interact. Other areas if earmarked for recreation among youths, adults and elderly persons

3.1 Factors Affecting Effective Landscaping

The limitless exploitation of man's living environment by the conscious and unconscious activities carried out to satisfy his needs leads to factors that affect the landscape. A reflection of this is seen in the environmental degradation, deformation and depletion of the earth's resources; all of which spell doom to man and his immediate environment if the necessary checks and balances against these factors are not put into place in good time. Some of these factors as identified from the study include:

1. ***Climatic and Environmental Factors:*** As an important consideration in landscape design, nature involves the world of forces and

processes in which we live and work; as such, man and all his activities are an inextricable part of it. Fairbrother (1974) stated that while users requirements are the starting point of any landscape design, the physical arrangement of the landscape materials should be undertaken as a creative exercise which evolved in the first place from a consideration of the interacting complex of climate, geology, vegetation, wildlife and all other elements in the natural scene.

2. ***Lack of Topographical Maps:*** This map is essential for any meaningful landscape site analysis by showing the contour structure, shape of the land, ground forms and other physical properties. These topographical maps when analysed give site scenery patterns, slope access and communication

3. ***Site Factor****:* Site planning provides the introduction of functional elements that will serve against wind, noise and help screen undesirable views into or out from the site. They give privacy as visual link to frame views or form focal points, to outline shades and create space division within the context of any functional planning.

4. ***Cost:*** This is an important consideration particularly in the rural settings where poverty has eaten deep into the economic fabric thus leading to other psychological effects.

5. ***Maintenance****:* To achieve the purpose of landscaping, a good maintenance programme or attitude is essential; else the maturity in the form envisaged would not materialise. The maintenance schedule should accompany the site plan.

6. ***Use Factor:*** These can be considered as a part of the basis for any meaningful site design and planning. They include primary function of the site, subsidiary functions or multiple uses, density of use, access and traffic requirements, the appearance of the landscape both within and beyond the site to mention a few.

4. THE STUDY AREA

Akure city is one of the second generation state capitals and a rapidly growing middle level city in Nigeria, located around latitude 7^{o} 15^{1} North of the equator and 5^{o} 14^{1} East at an approximate altitude of 370m above sea level with an estimated population of 256,000 by 2006 using 2% yearly increase. Its development within the last thirty years stemmed from the political status of the town which was initially a provincial headquarters and later a state capital thus serving as the seat of both the Local and State

Governments since 1976. This also accounted for the influx of people to the city for employment and other related reasons (Fadamiro 2006). Spotlight on Ala Quarters, a state government owned residential estate, was extracted from a larger research done on the city. Ala Quarters, a government residential quarter is located between Oluwatuyi, Alagbaka and Sijuwade areas of Akure, Ondo State.

Plate 5.0: City main axis - Oba Adesida Road, Akure.

Source: http://www.ondostategovernment.net/people.php

5. RESEARCH METHODOLOGY

Questionnaires were administered to 66% of the total 110 housing units for data collection and some pictures were taken as shown below. An initial survey to identify all landscaped open spaces within the area was carried out.

5.1 Data Analysis and Discussions

Plate 5.11: Entrance into Ala Quarters

Plate 5.12: Bad road leading into the estate

Plate 5.13: Planted shrubs along the fence with emphasis on colour transition

Plate 5.14: Open space for recreation and relaxation showing bad lawn

Plate 5.15: Use of interlocking stones for Demarcating flooring with colours

Plate 5.16:Use of bamboo culms for fence, gardens and property

Plate 5.17: Use of wire mesh for demarcating gardens and property and for fence

Plate 5.18 Deciduous trees plated along fence for shading and windbreakers

Table 5.1.1: Stakeholder Groups

Group of stakeholders	**Frequency**	**Percentage**
Landlord's Association	19	31.7
Residents/Tenants	20	33.2
Private Mgt Team	3	5.8
Govt. Planning Authority	7	11.7
Youth Vanguard	8	12.9
Others	3	4.7
Total	60	100

Source: Researcher's Field Survey, 2008.

The group of stakeholders to which the respondents belong are as shown above. 31.7% are in the Landlords' Association group, 33.2%, 5.8% and 11.7% are in the Resident / Tenants', Private Management Team and Government Planning Authorities respectively. The Youth Vanguard constitutes 12.9% while people from other stakeholders dominate the remaining 4.7%.

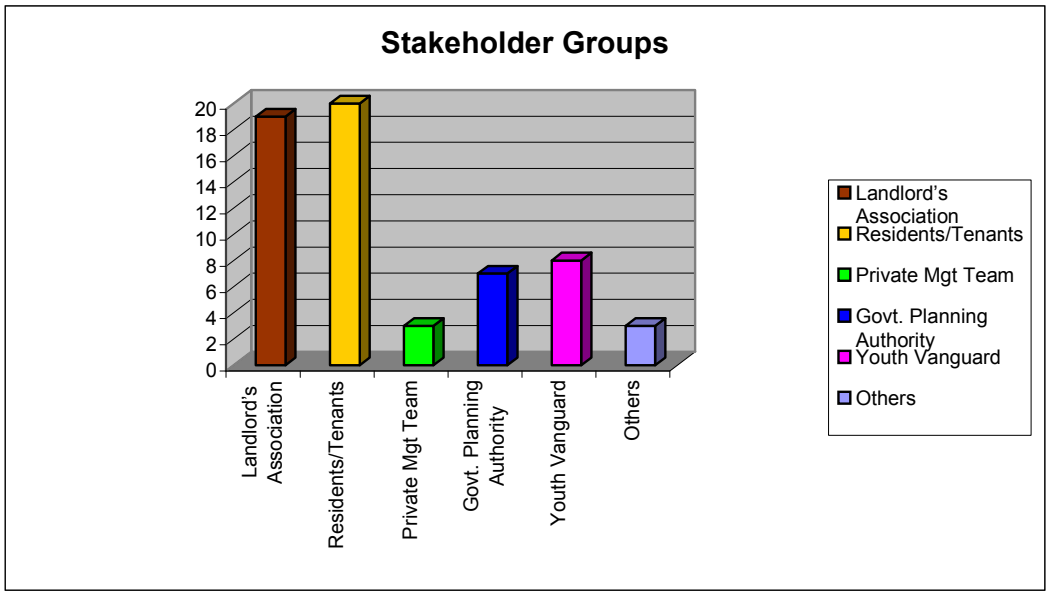


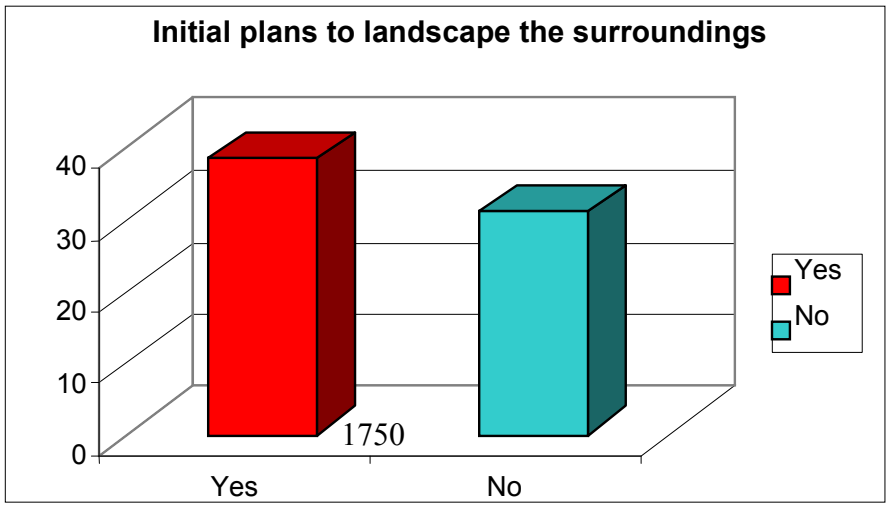
Figure 5.1.1: Stakeholder Groups

Table 5.1.2: Initial plans to landscape the surroundings

Plans	Frequency	Percentage
Yes	33	55.4
No	27	44.6
Total	60	100

Source: Researcher's Field Survey, 2008.

From this table, it can be deduced that 55.4% of the total number of respondents had the initial plan to landscape their surroundings while the



remaining 44.6% never had the intention to landscape their surroundings. With this, one can actually say, majority of them are aware of the importance of landscaping the environment and its impact on people.

Figure 5.1.3: Initial plans to landscape the surroundings

Table 5.15: Percentage of Paved Area to Green Area

Paved Area/Green Area	Frequency	Percentage
10/90	7	10.8
30/70	13	21.6
40/60	9	15.8
60/40	8	13.7
70/30	9	14.4
90/10	5	7.9
Nil	9	15.8
Total	60	100

Source: Researcher's Field Survey, 2008.

This table shows the percentage ratio of paved area to green area. In landscape architecture, greenery forms the major part of landscape coupled with the fact that it helps to reduce microclimate effect of the environment on the residents. 10.8% have the percentage ratio of paved area to green area as 10:90, 21.6% and 15.8% have it at 30:70 and 40:60 respectively. 13.7% have it at the ratio of 60:40, 14.4% at 70:30 and 7. 9% at 90:10. The last 15.8% form the category of those with nothing to vary.

Figure 5.15: Percentage of Paved Area to Green Area

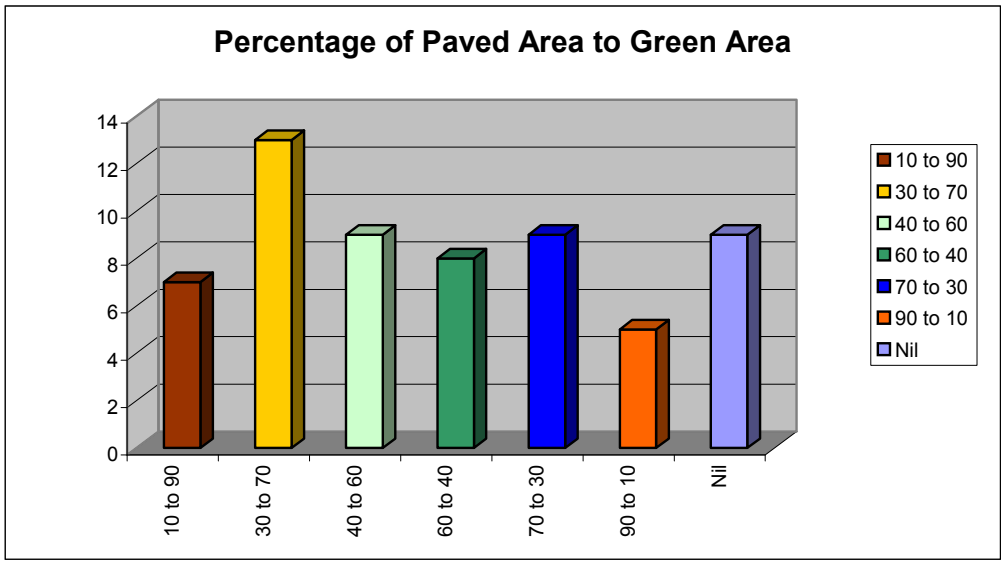


Table 5.16: Type of Open Spaces Around

Open Spaces	Frequency	Percentage
Building set back	17	28.3
Buffer zone	10	16.6
Adult rec. areas	2	3.5
Children play area	15	25
Incomplete bldgs lots	4	6.6
Unused spaces	12	20
Total	60	100

Source: Researcher's Field Survey, 2008.

To effectively have a good landscaped environment depends on the availability of open spaces in the environment. 28.1% said the open spaces around them are the building setbacks. 17.3% are of the opinion that they are buffer zones. 3.6% and 24.5% believe they are adult recreation spaces and children's play area respectively. Incomplete buildings lots make up 6.5% and 20.1% are left over and unused spaces.

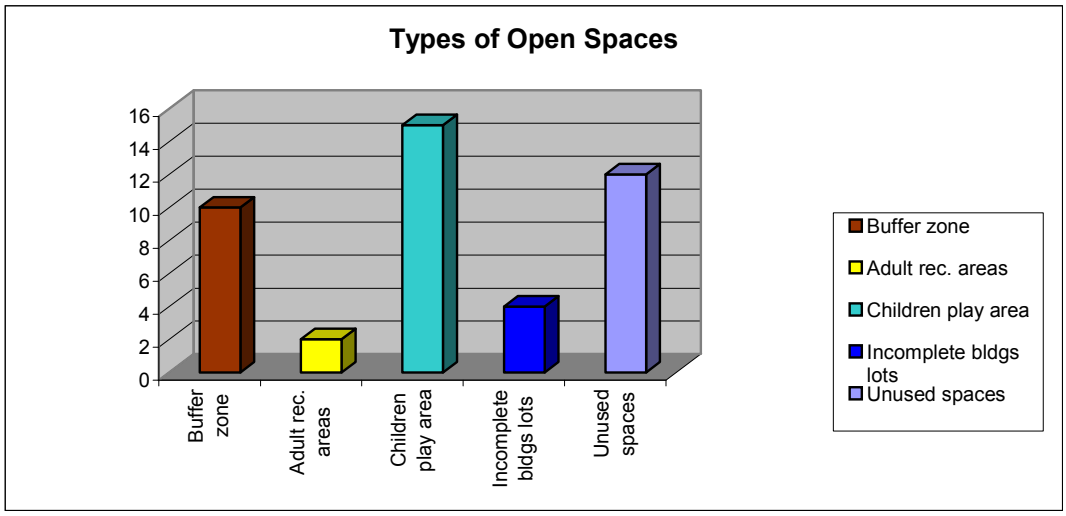


Figure 5.16: Type of Open Spaces Around

Table 5.17: Problems Associated with the Open Spaces Around

Problems	Frequency	Percentage
Air/Water Pollution	9	15
Dangerous Reptile	10	16.7
Flooding/Erosion	21	35
Bad People	17	28.3
Others	3	5
Total	60	100

Source: Researcher's Field Survey, 2008.

Here, 35.3% claimed that the open spaces in their area are faced with the problem of erosion and flooding, 17.3% are of the opinion that it harbours dangerous reptiles and animals. 15.1% claimed it allows for air and water pollution, 28.8% believe it serves as a hideout for people of nefarious character.

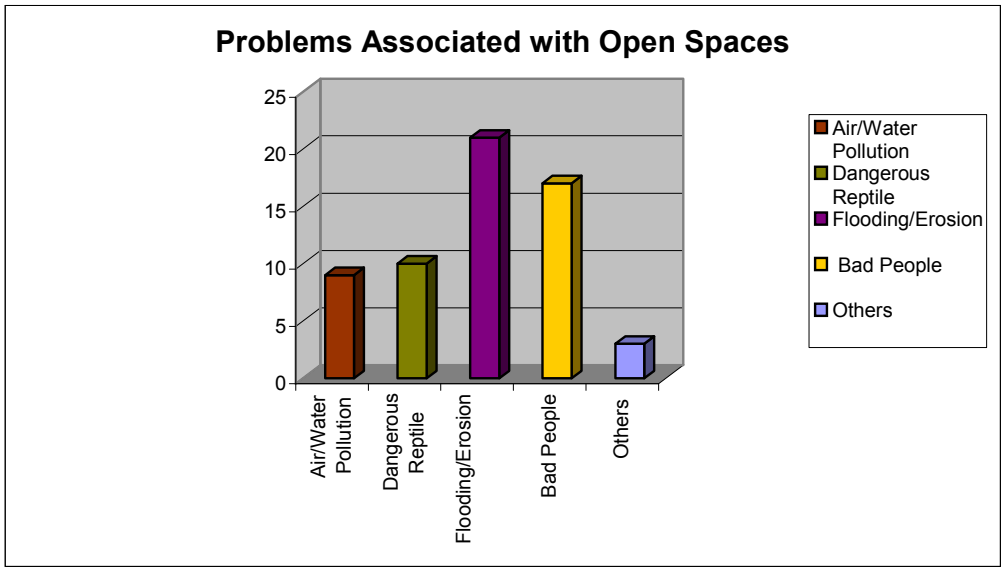


Figure 5.17: Problems Associated with the Open Spaces Around

6. SUSTAINABLE ENVIRONMENTS

The sustainability of the intrinsic environment promotes less depletion of natural resources, pollution and consumption of energy. When this done, a gradual reduction of the green house gases comes into play. Some countries with successful green building programs, architects, engineers, and builders are employing largely existing methods and simulation tools as well as off-the-shelf technologies to create and build facilities with lower environmental impact, reduced resource consumption, and significantly improved interior environments.

7. BENEFITS OF SUSTAINABLE LANDSCAPING

i. Contribution to mental health as a result of restorative effects of nature.

ii. Contribution to physical health through utilisation of recreation parks, open spaces and playing fields designed and maintained in a sustainable manner.

iii. Environmental benefits through bio climatic influence of trees and plant materials leading to lower temperatures and increased emission of oxygen.

iv. Economic benefits through emergent job opportunities, tourism and a resultant improved property values.

v. Social benefits resulting from community participation in developmental programmes.

8. CONCLUSION

Landscaping is one of the most cost effective tools for improving and sustaining the quality of life and the living environments: be it in the city or in the rural areas. Although impeding factors such as climatic conditions, funds, and ignorance among others as identified above exist, landscaping should be embraced and inculcated in the general master plan and design of a community. The success of landscape improvement rests on the level of commitment of the community's involvement in development programmes of this nature and as such must not be overlooked.

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