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Emphasizing Landscape Elements as Important Components of a Sustainable Built Environment in Nigeria

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Abstract
Many residential areas in the built environment in the developing countries with reference to Nigeria are generally unattractive and lack basic landscape elements. Landscape elements encompass both natural and artificial features used to create a befitting visual presentation within the built environment; as such its role cannot be overemphasized. In line with the ethos of sustainable development, sustainability is an important concept in today's urban planning, as such landscaping can be used to play a revitalizing role in the continued depletion and degradation of the natural environment. This paper examines the poor state of many residential areas in the built environment in Nigeria and the impact on the physical outlook. It further discusses landscape elements and their use in the built environment and the benefits of landscaping to a sustainable built environment. Using a case study approach the study looks at two residential housing estates in Akure, Nigeria to ascertain the extent to which landscaping elements have been used. The case study established that landscaping elements do not exist in many parts of the estates and where there is, lack adequate maintenance. The paper concludes that landscaping plays a vital role in achieving a sustainable built environment and therefore need to be incorporated in the Nigerian built environment.
Keywords: Built Environment, Landscape Elements, Landscaping, Sustainability

1. Introduction

It is important at the onset of this study to clarify and acquaint readers with the fundamental concepts and definition of terms used; which includes, the built environment, landscaping and sustainability. The definitions of the built environment by various researchers are acknowledged. However, McMackin (2005); Curran et al. (2006); McKechnie (2008); Shah (2012); Dimuna (2011) refers to the built environment as a part of the physical environment and surroundings encompassing buildings, spaces, constructed elements of the environment created or modified by man. Similarly, Wikipedia.org (2012) defines it as 'the human-made space in which people live, work and recreate; it encompasses places and spaces created or modified by people' and includes buildings, parks and transportation. Summarising these definitions, Bartusla (2011) identifies the built environment as having four interrelated characteristics of being extensive, everywhere, provides context for human endeavours and it is humanly created. Going by the above, the built environment can be understood simply as the physical environment created or modified by man satisfy various daily needs.

From time immemorial, man has always been known to create amenities to meet various needs. These amenities as argued by Bartuska (2011) are intended to serve human needs, want and values. However, in serving mans' needs, Pearce and Vanegas (2002) noted that these amenities overtime create positive and negative impacts that may not be immediately noticeable and whose collective effects need to be minimised in order to meet the needs of man in the present without limiting the ability of the future generations to meet their own needs (WCED, 1987), hence, the need to sustainably develop the environment. Furthermore, the first step towards designing a sustainable built environment as noted by American Institute Architects (2012) is reducing environmental impacts. Using the WCED (i.e. the Brunndtland) definition of sustainability 'meeting the needs of the present without compromising the ability of future generations to meet their own needs' implies that to achieve sustainability, the social, environmental and economic needs must be in balance with each other for a sustainable out comes in the long run. A sustainable built environment therefore, must be able to provide a physical, social and psychological environment in harmony with the human behaviour as argued by Brandon and Lombardi (2011), in order to improve and not impact adversely on the present or future generations. Pohl (2011) argued that sustainability in the context of the built environment acknowledges the need to protect the natural environment for the future generations; consequently, what we build today should be sustainable throughout its life span. As such sustainable environment is expected to do less harm.

As noted from the definitions above, parks and recreation areas are part of the built environment. These are created through landscaping in order to improve the visual perceptions, aesthetics and health of the individual.

On one hand, landscape is a view or picture depicting an expanse of scenery (the free online Dictionary.com, 2012); the view or picture in relation to the built environment could depict mountains, buildings, water bodies, and all features as can be seen in a single view of whose interaction has given rise to various landscapes in the built environment. On the other hand, landscaping as noted from the web and researchers (Dave's garden, 2012; and Atolagbe, 2006) is the beautification or modification of the outdoor terrain by man for functional and supportive roles. It is any activity that modifies the visible features of an area of land, including living elements, natural elements such as landforms, terrain shape and elevation, or bodies of water; human elements and abstract elements (Archidude, n.d); This process involves the use of various elements such as trees, flowers, shrubs, grasses; construction of water fountains, sculptures, kerbs, pavement, drainage, walkways e.t.c.

As argued by Fadamiro and Atolagbe (2006), the 'environment is an interactive, indispensable medium within which man's life performance is carried out' as such landscape elements are important within the built environment. Although many of the problems within urban environments are acknowledged by kjellstrom and Mercado (2008) to be part of developmental problems of which Nigeria as a developing nation is not left out of the effects from the problem. However, there is the need to tackle some of the problems by improving on the quality of the built environment through landscaping in order to create a healthy environment for man.

The objective of this paper is to assess the extent to which landscaping elements have been used within two housing estates in Akure, Nigeria; highlighting the uses and benefits landscaping could play within these estates

2. Landscaping and the Nigerian Built Environment

The built environment of many Nigerian urban centres is unattractive, unorganised and overwhelm by the absence of landscaping elements due to the rapid rate of urbanisation and inadequate maintenance of existing infrastructure (Shuaeeb, 2010). Although, currently, there is great improvement in the physical outlook of major cities, however, a lot still needs to be done in terms of beautification through landscaping. As noted by Dimuna and Omatsone (2010) majority are in a state of chaos, characterised with physical deterioration which has resulted into slums and blight. Furthermore, Omoera (2012) corroborates the indiscriminate posting of bills in the urban centre which are not aesthetically pleasing; as such there need to be aesthetically pleasing physical changes in order to be consistent with the present and future human needs. This is because; sustainability cannot be achieved in other aspects of human development without the complement of the physical environment (Oduwaye, 2009).

As asserts by Dimuna (2011), the physical environment which comprises the home, the structural stability, amenities and location is a vital component of the environment with which the individual, community and organism is in direct contact with, whose effects are visible and tangible. Unfortunately, most of the urban centres in Nigeria were not planned but were products of grown developments (Ahiamba et al, 2008). In the view of Arigbola (2008) Land use activity is disjointed and uncoordinated due to the absence of a coordinating agency as such cannot result into a positive outcome of sustainable city development. In the same vein, Obong et al (2010) opined that for man to function well, the physical environment within which human activities take place requires planning and coordination in order to avoid poor physical outlook which in the long run have adverse consequence on human output.

Obong et al (2010) posit that the quality of the environment help in creating a healthy environment for human welfare and productive life. Supporting this, Akingbohungbe (2006) asserts that a good environmental feature such as quality landscaping and street furniture gives the environment a high status and urban aesthetics. At the same time it is an essential and important contributor to quality of life (Fadamiro, 2000). Therefore managing the environment as opined by Obong et al (2010) for fruitful, healthy and productive living is vital and central to human activities. Going by the above and in improving the aesthetics of the Nigerian built environment, (Adedeji et al (2010) suggests that for landscaping to be sustainable, landscaping must begin with a design that is functional, cost effective, visually pleasing, environmentally friendly and maintainable.

3. Landscape Elements and their uses in the Built Environment

As asserts by Beierkuhnlein (2002), landscapes are composed of elements of different nature which interacts to create a non random organisation in aggregates and pattern. Furthermore, landscape elements have important functions of serving as signal to different areas within a site, contributes to visitor orientation and understanding of the site's circulation patterns and scale (Mount Annan Botanic Garden, n.d). The elements fall into two categories of hard and soft materials and water bodies (Adedeji and Fadamiro, 2011; Atolagbe and Olorunfemi, 2012). The hard landscape include inanimate elements also referred to as inorganic (Raff, 2006; Archidude, 2012); which are structural in nature such as kerbs, stones, bollards, tiles, walkways, asphalt, paving, planters, sculptures. While the soft landscape include animate elements, also known as organic elements (Blake, 1999; Archidude, 2012), such as plants i.e. trees, shrubs, flowers, grasses and water such as pools, pond, and fountains.

Integrating these elements not only add to the aesthetics but also aid man's visual attraction and comfort within the built environment making it beautiful and functional.

Hard landscape is a landscape elements play a number of important functional roles in the garden acting as signal and points of reference for visitor orientation and circulation, as well as contributing to the garden's appearance and overall character and identity (Mount Annan Botanic Garden, n.d). Landscape design involves integrating these elements systematically within the environment to give it aesthetically pleasing visual effects. As a design element, hard landscape materials can make no contribution until the designer decides how to use them. Through design imagination, Ingels (2009) argued that hard landscape materials can be transformed into landscape features that can attract the eye, add mass and weight to the composition, create themes and add pleasure to the landscape. Not only does it reduce maintenance costs, in addition helps divide and define spaces in the landscape, orchestrate the way the landscape is viewed and enhance its beauty. For example, rocks in the landscape can create very unique looks and generate lots of interest.

Soft landscape as opposed to the inanimate hard landscape includes flowers, plants, groundcovers, hedges, shrubs trees and flower bed and in addition animals, Beaulieu (2008). Thus soft landscape serves the functions of screening and maintaining privacy, which breaks the monotony of view; provides habitat for animals which is important for biodiversity.

Some hard landscape elements and soft landscape elements; their usefulness and uses in landscaping are discussed in the works of Schlenger (2012); Synor (2001); Beaulieu (2012), Ayeni (2012); Archidude (2012) and are summarised below.

Collectively, trees, shrubs, flowers, hedges and lawn can be referred to as vegetation and categorised as soft landscape elements. Apart from serving the function of visual enhancement, they furthermore help in erosion control, defines pathway, noise pollution, microclimate modifiers, demarcations, shading, wind breakers as well as air purification.

Trees in landscaping are used not only for aesthetic purposes but also create shades, they can be arranged in rows to create vistas, used as focal points and can be placed in a straight line for effect. Also, Shrubs come in a variety of appearances, some flowering and others evergreen. They can be used as barriers, ground cover and to direct pedestrian traffic flow as well as serve as a barrier for unwanted foot traffic.

Flowers and flower beds give colour and attractive effects to the landscape. They can be grouped together, arranged symmetrically or in assymetrical patterns and in different shapes to give a beautiful design. Futhermore, Hedges can be used to mark property lines, screening views, provide barriers and also as wind breakers. They can be from trees or shrubs, planted close together in a row. Could be formal or informal, trimmed and prunned to add beauty to the landscape and can also be used in fences. Lawns are made from grass and other ground covers used in private gardens, public gardens and parks and used to create aesthetics.

While the water features which are also important landscape elements include ponds, lakes, pools, fountains provide visual satisfaction, focal point, swimming and add to the aesthetics of the environment.

Street lights, barriers or bollards, fences, railings, signage, walkways, rocks, bricks, seats, bus shelters, bins etc can be categorised under the hard landscape and street furniture. The walkways or paved paths help define movement and direction and come in different shapes, colours and sizes. The street furniture or site amenities provide comfort within the landscape. The signs give effective communication of information and show direction.

4. The Benefits of Landscaping to a Sustainable Built Environment

Although, adding to the beauty and aesthetics of the environment is a major benefit of landscaping, however, there are other vital benefits landscaping provide. This as corroborated by Frank (2003) can be grouped into economic, health and psychological, and environmental benefits. As opined by Riggin (2011), in addition to the aesthetics reasons are beneficial purposes that go beyond mere adding architectural decoration. Furthermore, apart from enhancing and complementing a space, it provides benefits such as health, economic and the overall sense of well being. As such landscaping does not serve the purpose of beautifying alone. As argued by Riggins (2011), it is important that people recognize that landscaping is not just a way of beautifying an area but also a way to encourage people to invest in it for functional and aesthetics purposes.

Economically, it has been acknowledge by various researchers (Laverne and Winson-Geideman, 2003; Frank, 2003; Riggins, 2011) that, landscaping apart from increasing the aesthetics quality of property, landscaping can also increase the property value, by adding to the resale value of a building and speed its sale. It also cuts down on maintenance, and gives home and business owners more time to enjoy their gardens with their families, clients, employees and friends (Freeland, 2009)

At the same time a tree shading an outdoor air conditioner unit can increase its efficiency by as much as ten percent and reduce air conditioning cost by fifteen percent if used to block the sun from windows and walls.

Furthermore, trees, hedges, grasses and shrubs can protect your home from harsh winds and absorbs heat from the sun thereby reducing heat gains inside the building which in turn, reduces the demand placed on mechanical and electrical systems (Riggins, 2011).

Psychologically and health wise, Frank (2003) argued that workers with a view of natural elements, such as trees and flowers, experienced less job pressure, and reported fewer ailments than those who could only see built elements from their windows.

Another psychological and health benefit as asserts by Ames (1980) is having a stronger sense of community, enhanced communication with neighbours, and more control over their environment when residents participate in tree planting.

Frank (2003) noted that more vegetation in a common place within the neighbourhood encourages more use and at the same time foster informal social interaction. Health and strength also increase with the Physical activities that come with gardening (Freeland, 2009). Environmentally, as compiled from the works of Frank (2003); Freeland (2009) and Riggins (2011), plants serves as buffer for noise pollution blocking out surrounding noises, reduces runoff and also filters pollutants from rain water preventing it from becoming a source of water pollution. Furthermore, Plants improve air quality by removing smoke, dust, and other pollutants from the air. Control odours from livestock operations, and provides visual isolation and aesthetic enhancement

Riggins (2011) noted that plants in combination with other outdoor landscape elements and plazas can become spaces that can be used for organized events, casual meetings or simply ' taking a break'; also, the seating areas provided can encourage and give the visitor or user a sense of community cohesion. Furthermore, the wildlife attracted to a planted habitat sometimes results in pleasant natural sounds. Also, Freeland (2009) asserts that, in designing a landscape, framing vistas, introducing mystery, and creating year-round interest using plants and hardscape materials in harmony, will create a lasting beauty. Thus summarizing the benefits, Fillon (2010) and the Wordpress (2011) affirm that these benefits include water quality protection, reduced soil erosion, improved air quality, lower summer air temperatures, natural resource conservation, Stress relief, aesthetic quality, increases the resale value of property, natural attraction for birds and wildlife and helps the environment. Thus a sustainable built environment must be able to provide opportunity for landscaping which will enhance the beauty of the environment, pleasing and functional, attract development in order to be able to contribute to human well being and at the same time remain viable for the future.

5. Study Area and Methodology

Akure, the Ondo state capital, Nigeria is the study area within which the selected estates are situated. Akure, Located in the South Western part of the country, as shown in figure 1, is a medium sized city which became the state capital in 1976 (Akinbamijo, 2006; Ogunbodede, 2007) and has a population that has grown from 2.6 Million in 1996 (Aribigbola, 2008) to 3.4 Million in 2006 (Olajuyigbe and Rotowa, 2011). Akure is located on latitude 7^0 15' North of the Equator and longitude 5^0 14' East of the Greenwich Meridian; It occupies about 35 km^2 of land and is about 700 km Southwest of Abuja, the federal capital of Nigeria (Olujimi and Bello, 2009; Aribigbola, 2011). It is 350 kilometres from Lagos, Nigeria's former capital and lies within the tropical rain forest region of Nigeria (Aribigbola, 2011). Peculiar to Akure as with many other cities are the processes of urbanisation which has led to the creation of both public and private housing estates (Akinbamijo, 2006).

Since the objective of the study is to assess the extent to which landscaping elements have been used within the built environment, the study utilised the qualitative method of data collection and adopted the case study approach using two residential housing estates in Akure, the Ondo State capital, Nigeria. Although there are four major housing estates in Akure, however, two were selected using the convenience sampling method.

Apart from the primary source of data collection, relevant materials were also sourced from publications, internet, journal articles, and books amongst others. The primary source using the case study approach was preferred in order to have an in-depth understanding of the availability and the need of landscaping elements within the selected estates. As noted by Zainal (2007) case study method enables a researcher to closely examine the data within a specific context. Prior to the site visit, an intensive reconnaissance assessment to the selected estates was carried out to identify notable landscape elements used or absent within the estates. Data was collected using field notes, photographic evidence and general observation, and analyzed using the simple narrative approach.

6. Selected case studies and Findings

6.1 Case study 1- Ijapo Housing Estate

Ijapo estate is one of the estates in Akure managed by the Ondo State Housing Cooperation. It is a government estate in which residential properties were developed by private individuals (Olujimi and Bello, 2009). The

estate is basically a housing estate and has a general unifying characteristic that serve several functions. These include churches, market, schools, hotels and a football field.

During the appraisal and observation visits on the use of landscaping elements in the months of April and May 2012, the following were noted.

1. The road network was well structured for ease of movement within the estate which has four entrances. However, some of the roads were in bad state.
2. Natural landscape elements were used sparingly to landscape the immediate environment of the individual properties, some well managed while others were left bushy.
3. The only form of provision for recreation is the football field within the estate; however, there are several hotels where people spend time for relaxation in the evenings.
4. Very few houses have varieties of landscaping elements, some used stone fencing, others plants. But no deciduous trees to create shades.
5. Also noticed was the adequate open spaces which can be landscaped to serve recreational needs.
6. Through the entire estate, no water features were noticed except for the stream that flows across the estate. Lighting features were also absent, lawns, street furniture were all none existing at the time of visit. Figures 1 to 6are pictures from the visit showing areas within the estate.

6.2 Case study 2- Federal Housing Estate Shagari Village

Unlike Ijapo estate which is being managed by the Ondo State Housing Cooperation, the Federal Housing Estate popularly called Shagari estate is managed by the Federal Housing Authority. It is a federal government estate in which residential properties mainly bungalows were developed by the government and sold to individuals. The estate has large expanse of land which is sold to interested private individual, however only allowed bungalows with specific designs and specifications. The estate has few religious buildings, schools, but no recreational facilities provided. The following were noted during a visit to the estate in the month of May, 2012:

1. Although there is good road network, however, most of the roads are in bad state.
2. The only plants that exist in the estate are natural plants which surrounds the estate and serves as habitat for wildlife and few within the estate
3. There is adequate open space within the estate which can be landscaped for residents to benefit
4. Very few residents planted flowers within their allocated compounds
5. There are no other forms of landscape elements such as water, lighting, street furniture etc. Within the estate. Figures 7 to 12 show the state of the estate at the time of visit.

7. Discussion of Findings

The study set out to investigate the extent to which landscape elements were used within the Ijapo estate and Shagari estate Akure, Nigeria and findings from the study are discussed based on the existing situations in the two selected estates visited. The built environment as identified from the literature is the physical environment created or modified by man to serve human needs and includes buildings, spaces, constructed elements and beautification (Dimuna, 2011; Bartuska, 2011; Shah, 2012).

Although the environment is created by man to meet man's daily needs, with time bring with it negative consequences within the built environment. These problems as identified in the literature are created as a result of rapid urbanization, leading to uncontrolled development, slum creation, unattractive and unorganized environment which can be tackled and a healthy environment created through landscaping and beautification. Unfortunately, man, especially in developing countries with reference to Nigeria are not aware of the benefits landscaping brings not only to the environment but also to the well being of the individual. A sustainable built environment satisfies man socially, environmentally and economically by improving on man's well being and that of the environment and not impact negatively on the present and that of the future.

In Nigeria, there is a gradual awareness on the importance of beautification of the environment; few state capitals are being transformed in segments. However, a lot of urban centers are still being neglected; hence the investigation within the two selected housing estates. Several benefits were highlighted in the literature; also as stated in the literature, a healthy human life can be achieved through a good quality environment and at the same time help man to function well. As such good landscaping contributes to quality of life.

Evidence from the two case studies; Ijapo estates and Shagari estate visited show the lack of landscape elements within both estates, and shows the extent of neglect from the concerned authorities. And also shows the unawareness of residents on the several benefits that landscaping brings or not.

Both estates, though managed by the state and federal government respectively, most of the properties are owned by individuals. From investigation, only a few houses have scanty landscape elements. The road network in both estates are good, however, many of the roads are in bad shape. Trees were the dominant landscape element within both estates as other landscape elements were visibly absent. Similar to both estates were bushy

surroundings and open spaces that could be converted for relaxation and recreation purpose to foster community cohesion.

8. Conclusion and Recommendations

The study established from the case study that landscaping elements are absent in both estates visited. Only a small number of properties have very scanty landscaping within the compounds. This can be overcome by the management, by creating a horticultural section within these estates and providing varieties of plants (trees, shrubs, hedges) and other landscape elements at minimal cost and training for residents.

Landscaping has so many benefits that contribute to man's well being. Apart from awareness on the need for attractive environment, there need for the awareness also on the benefits through enlightenment program on beautification.

Furthermore, many of the open spaces seen within the estates were bushy and unkempt. The management could carve out open spaces specifically for children playground or family relaxation to encourage oneness and unity within the estates.

The paper has elaborated on the importance of landscape elements, its uses and benefit to built environment and human well being. In order to achieve a sustainable built environment, this study suggests that apart from government's input in transforming the environment, individual should also be involved and awareness create.

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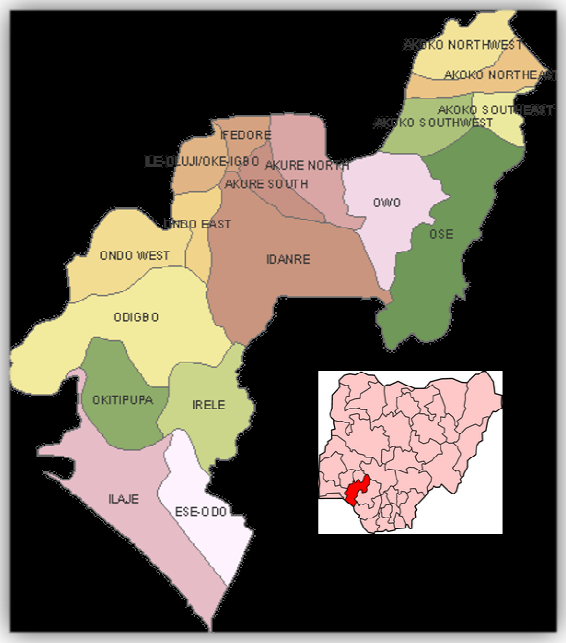

Figure 1: Map of Ondo State and Map of Nigeria (inset). Retrieved from: http://grandioseparlor.com/2007/04/ondo-state-elections-inecs-test-of-fairness-and-integrity/ accessed on 25/08/12

Figure 1

Figure 2

Figures 1 and 2 showing a brick fence, drainage, un-tarred road, sparing landscape features

Figure 3

Figure 4

Figures 3 and 4 showing a bushy properties, few trees and worn out tarred road

Figure 5

Figure 6

Figures 5 and 6 showing bad sections of different roads due to erosion and few trees

Figure 7

Figure 8

Figures 7 and 8 showing the state of the road and the estate setting

Figure 9

Figure 10

Figures 9 and 10 showing the terrain, the natural vegetation and state of the estate

Figure11

Figure 12

Figures 11 and 12 showing the natural vegetation and spaces that can be landscaped