

AN OVERVIEW OF URBAN ROAD LANDSCAPE IN LOKOJA, NIGERIA

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Abstract

The significance of landscape in the structure and beautification of urban roads cannot be overemphasized. As a matter of fact, no city can survive without the landscape elements because the beauty and appearance of any city is often dependent on the quality and quantity of its landscape. This paper therefore investigates the level of landscape development in Lokoja city within the context of road transportation with a view to suggesting measures that can be employed in its restructuring to attain a sustainable city development. The study was conducted using questionnaires and field observation in the collection of data, while descriptive statistics such as frequency counts and percentage were employed in data analysis. The findings reveal that the level of landscape planning and development within the city is grossly inadequate while the few landscape elements that could enhance the aesthetic look of the city have dilapidated. To ensure that the city attains sustainable growth, the following recommendations were made: establishment of Landscape Development Control in the State Ministry of Environment and Housing for the implementation of strategic plans for developing the environment and enhancing urban transportation; introduction of enforcement agents to guard against habitual destruction of landscape elements in the city, and sensitization of the public to the importance of landscape planning for achieving sustainable city development.

Keywords: Landscape; planning; Urban; Road transportation; Sustainable city.

1. Introduction

All through the past century, the world's population had been rapidly assembling in urban areas. The urban population in the world was approximately 2.4 billion in 1995, a figure that is expected to double by 2025 (Antrop, 2000). Increasing population and urbanization are acknowledged as some of the most complex processes globally (Luis et al., 2007). Massive urbanization started during the nineteenth century industrial revolution; however, the decline of nature during the twentieth century increased public awareness to the necessity of introducing natural assets and components in urban context (Pregill and Volkman, 1999).

Urban growth has put great pressure on natural resources and on the environment, threatening to compromise 'urban quality of life'. Cities have never been self-sufficient as they demand "a complex set of importing and exporting arrangements for people, food, waste products and goods produced" (Mazza & Rydin, 1997). However, the metabolism of modern cities, that is, the import of large amounts of energy, materials, water, food, and other resource inputs essential for supporting urban populations, and the export of waste products, has reached levels that threaten the environment on a global scale (Rees, 1997). Beatley (2000), for instance, noted that "the amount of land consumed by urban growth and development far exceeds the rate of population growth, which leads to the loss of sensitive

habitat, destruction of productive farmland and forestlands and high economic and infrastructural costs". Urban growth has led to the loss of farmland and areas classified as 'natural while most of the urban green space has declined (Oloruntoba, 2010). This occurs as a result of inadequate urban landscape planning which could help to replace or replicate natural surroundings lost to city growth.

Urban landscape planning denotes the process of shaping, modifying and creating an attractive outdoor scene in order to effectively express the functional and supportive attributes of the public domains within an urban environment (Fadamiro, 2001). Public domain represents the collective shared spaces (streets, roads, markets, parks, playground and other open spaces) through which human beings carry out most of their day to day activities in the urban environment. Landscape itself is defined as the physical expression of land use by man (Fairbrither 1970; Oloruntoba 2010). It is also a cultural concept, sensory response, perceived, learned and recalled by the individual as he places himself in his surroundings (Falade, 1985) or a sensory response overlain by time not only within the life time of the individual but the lifetime of his culture (Fadamiro, 2001).

Landscape planning and design for sustainable city development requires the professionalism of the authors and conceivers of the built environment who are expected to use their skills to build sustainable cities that are aesthetically pleasing for living, working and moving (Oloruntoba, 2010). In connection with the above, Fadamiro (1998) opined that landscape planning strives to solve the problems relating to the use expected of the proposed area or location, climate, type of landscape prevalent on the region and topography. Moreover, landscape planning covers all decisions about materials, elements and arrangements within designated areas, thus the establishment of connection or relation between building site, space and environment (Fadamiro, 1995, 1997).

Ratciff (1974) and Oloruntoba (2010) observed that landscaping of any area is highly dependent on available water, types of bedrock, existing plants species, buildings or scenes of architectural and historical interest, all which should be used to the best advantage. Similarly, Fadamiro and Adam (2004) suggest that the constant improvements in the landscape qualities of outdoor environments in different neighbourhoods have a direct relationship to residents' perceived quality of living; such improvement can be done through vegetal landscaping which is appropriate for the tropics. The cost and effectiveness of this practice depend on the characteristics of the materials, the climate, ecological adaptability of the materials imposed on the cost and people's commitment to landscaping which is achieved through the uses of indigenous or native plants (Oloruntoba, 2010).

The landscapes of urban roads/streets showcase the beauty of the city, with the elements that make up the streetscape being the corridors for vehicles and pedestrians, buildings, open spaces, street trees, street flowers and street furniture. These elements impact the way the city looks and feels – the design and feel of the streets, the shape of the buildings flanking the streets, the quality of adjoining open spaces, the installation of street furniture and relationship between these elements – all these create a series of outdoor activity areas, leading to the production of quality experience of the urban environment that make up the city image (Ekan, 2007).

The interrelationship of the above elements provides opportunities for street/road activities. In most cases, such opportunities may be constrained by functional demand imposed by the movement and service of streets. However, the city's streets/roads must fulfil their roles. It

is not only important that the movement of vehicles be organized with safety and efficiency, but the walkways and street spaces must be safe and contribute to the visual and social quality of the city. Wang, Wang & Hong (2014) opined that roads play a vital role in shaping the landscape of the city and the function of roads is no longer limited to transportation, but also includes safety, convenience, aesthetics etc. In order to meet the needs of urban road landscape which is "on the wheels", it is necessary to integrate the various elements of the urban road landscape and facilitate people to perceive cities on roads.

Lokoja is the capital city of Kogi State and has a population of 195,261 (NPC, 2006). It serves as an intervening city between Lagos and Abuja (FCT). It is favourably located within the tropical region of the country. The city is fortunate to possess vital factors for the growth of essential and economic trees that can beautify the environment, subdue the heat of the dry season, control erosion, and serve as wind breakers. Unfortunately, tree planting has been rendered almost impossible because of human factors such as construction and building, inadequate development planning control, ignorance of people about the importance of city landscape and lack of official encouragement of the people through practical example. In actual fact, most of the government offices and institutions are deficient of trees, whereas tree planting and other landscaping element apart from the pleasant aesthetic, control soil erosion and provide calming shades during dry and hot seasons. This paper aims to show how the urban road landscape of Lokoja may be restructured to attain sustainable city development. The specific objectives are to: (i) identify various road landscape elements and their efficiency in Lokoja; (ii) assess the functions of road landscape elements in the study area; and (iii) examine the factors militating against the effectiveness of road landscape elements in Lokoja.

2. Literature Review

Land use refers to the various ways in which land serves to provide man with his needs and wants; which can be for the purposes of recreation, agriculture, transportation, mineral sources and water resources development (Oladeji, 2002; Umunnakwe & Nnaji, 2011). Fadamiro (2001) emphasizes that many studies carried out in some urban centres confirm the influence of people on the maintenance and conservation of the environment. The essence of landscape planning in a city or town is to ensure adequate quality of life that will showcase the aesthetic qualities of the environment where man lives. Moreover, Umunnakwe and Nnaji (2001) noted that the 'quality of life' concept as applied to the urban environment is usually understood in two ways: the first concerns the environment and involves the pattern of inequitable advantages and opportunities that affect each citizen through accessibility to services, facilities and amenities. The second relates to the natural environment in urban spaces. This approach holds that such factors as air, water and soil quality and the amount of green space available affect the ways we live (Senecal, 2002). As stressed by Fadamiro (2001), the general objectives of landscape planning is to ensure clean and orderly appearance of grounds, structures and facility, and to protect the health, safety and convenient circulation (movement) of the people within the urban centre using landscaping materials. In a research conducted by Anozie (1994) in selected major towns in Imo State, Nigeria and reviewed by Fadamiro (2001), the pace of urban growth and its pressure on open spaces, existing infrastructures and roads and the resulting generation of solid waste now constitute a major concern.

Research has also shown that the rapid growth of urban centres has generated management problems, such as encroachment of open spaces and roads, environmental and health issues including waste management, water supply, housing and water pollution (Fadmiro, 2001; Umunnakwe and Nnaji 2011). Shonibare (1996) had earlier noted that the encroachment of open spaces and road sides by market and service industries is one of the major environmental management problems facing Nigerian urban cities such as Akure. This finding is similar to that of Alabi (2009) with regard to Lokoja, which reported that most of the open spaces and roads in the city had been encroached upon by the people for commercial activities or other uses. Lokoja, being an emerging metropolis, had begun to show the characteristics of urbanization with inadequate consideration for the landscape and open space development. Green belts were continually being built up largely due to pressure from increasing population and in most cases political and economic conditions (Alabi, 2007). Recently in Lokoja, areas originally planned as open spaces were being systematically replaced deliberately by other land uses. Multidimensional economic and transportation activities had all been merged into one sphere (Alabi, 2009). This scenario results to high demand and competition of several land uses, with problems such as blockage of sewers, congestion along major routes, construction on prime agricultural lands and wet lands, and inadequate setbacks to buildings, particularly those built along transportation routes. The spread of commercial activities through the town without provision of adequate parking space due to the loss of reserved open spaces as well as haphazard development over available land invariably result into traffic congestion (Olorunfemi, 2013). Fadamiro and Atolagbe (2006) attributed this to a paucity of three elements: pursuit of landscape planning, urban planning and design, and management in promoting land use development in Nigeria.

2.1 Sustainable City Development and Road Landscape

Sustainable city is a development approach that is currently receiving much attention in the world and has been advocated by many international organizations such as the World Bank and the United Nations (Aboagye & Collins, 2013). The ideal of sustainable city came out of Brundtland Commission (WCED, 1987) where sustainable development was conceptualized to mean “development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Several authors have defined sustainable development in different ways. Some see it as the use of environmental resources in prolongation of existence (Wright, 2008; Singh, 2009; Kanagasabai, 2010; Joseph, 2009; Jay & Scott, 2011; Harris, 2006; Gabriela & Ronnie, 2009; Ashana & Ashana, 2010; Ibimilua, 2014). This thought has been transferred to achieving sustainability in several dimensions of the world. Antrop (2006) defined sustainable city as a city that strives to achieve quality living standards in various components of the city such as economic, social, ecological, cultural, political, and institutional aspect without leaving a burden on future generations. Zheng (2005) gave broad characteristics of sustainable cities to include features such as maintenance of balance among resources, promotion of social progress, economic use of resources, ecological security, free flow of resources between inner and outer urban system, and in all satisfying the needs of urban development at present and at the same time meeting the city’s future needs. Characteristic features such as a compactness, mixed land-uses, high density, diversity in activities, and sustainable transport system have also been highlighted to support sustainable urban development (Jabareen, 2006; Dumreicher, Levine, & Yanarella, 2000).

Landscape planning could be regarded as an environmental approach to the realization of sustainable development (Ibimilua, 2014). Road landscape in the context of sustainable development cannot be over emphasized. This is because it adds to the aesthetic qualities of roads by providing shield and green environment for the people through planting of trees, shrubs and soft grasses. However, perception of roads is not only related to these material entities but also human beings. Wang et al. (2014) opined that urban road landscape is a visual concept in a narrow sense, and its elements can be divided into natural and artificial factors. Natural factors include mountain, terrain, water, vegetation, weather conditions etc. Artificial factors generally include the road itself, buildings, structures, historical rudiment, customs, and facilities along roads. In the pursuit of the sustainable urban transport agenda, emphasis is most often given to public transport systems and measures that favour cycling and walking (Jabareen, 2006; Kenworthy, 2006). No wonder, the 2012 world conference on sustainable development, Rio+20, emphasized the need for various sustainable development agendas to focus much attention on road safety (Watkins, 2012; Aboagye and Collins, 2013). This is because road networks support the majority of transport modes in the world with several development activities depending on them; unfortunately, thousands of lives are lost each year through road accidents. This makes it imperative for various countries and cities of the world to embark upon regular road care and beautification to keep their road networks in good shape and to enhance the welfare of the general public by minimizing casualties on roads, thereby ensuring efficient movement of people and goods, improving social equity, health, promoting cultural heritage, and productivity of goods and services (Aboagye & Collins, 2013).

Road, according to Wang et al. (2014), can be divided into two types: roads for living and roads for transportation. People's activities and their ways of travelling on these two types of roads vary, hence the way they understand road landscape and their requirements are diverse. In terms of roads for transportation, people usually use them for motorized travel, and they move quickly in cars, causing the fast movement of their sights, and a weakening of their recognition ability. Close-up view is instantly observed by people of some objects which are farther and more stable. The landscape design of roads for transportation should therefore pay more attention to the viewing effect from intermediate and long distance and the scale of such road landscape should be enlarged to ensure that people can identify and appreciate these landscape elements under moving vision. Regarding roads for living, it is more complicated, because they are used for diverse purposes, including motorized travel, non-motor vehicle travel, walking, and so on. The driving speed on such roads are much slower and has less impact on people's vision, thus the landscape of those roads can be designed under the principle of the low speed or static view. People's feelings of the landscape are comparatively more attractive when walking, and the ways they appreciate the landscape are not in a single perspective, but with diverse perceptions. As a result, the landscape design of roads for living should pay attention not only to the design of shapes and profiles, but also to the design of details, in order to bring gorgeous landscape experience and improve the visibility of road landscape.

3.0 Research Methodology

3.1 The Study Area

Lokoja, the study area, is located on longitude $70^{\circ} 48^{\prime} \text{N}$ and latitude $6^{\circ} 44^{\prime} \text{E}$. It is approximately 162 kilometers from Abuja, Nigeria's Federal Capital Territory; 65 kilometers from Kabba and 52 kilometers from Okene. It was a local government headquarters before it became the capital of Kogi State in 1991, since when the level of

physical, economic and population growth has increased. This geometric growth in term of development of the area has led to the influx of people to the city for the purpose of employment and other related activities. As a matter of fact, Lokoja is highly favoured by nature as the location of the meeting point of Rivers Niger and Benue, a factor which has attracted people to the area, most especially those who engaging in fish farming activities.

The urban planning problems in Lokoja are similar to those of other big cities in Nigeria such as Lagos, Ibadan, Port-harcourt, Kaduna etc. with regards to their non-habitability and environmental problems as reported by Olarewaju (1990) and quoted by Fadamiro (2001). According to Fadamiro (2001), the scale of these problems ranged from traffic congestion, slum settlement through open spaces and roadside encroachment to the poor management which is now beyond the coping ability of the respective government.

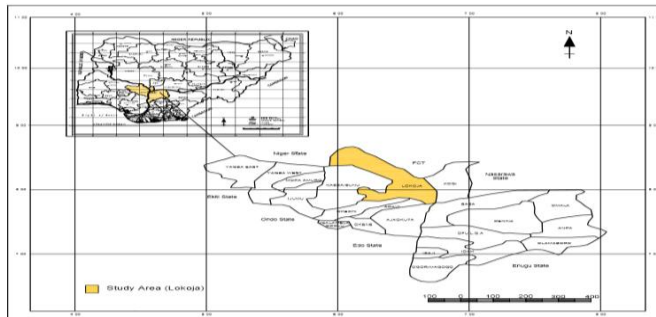


Figure 1: Map of Lokoja in the National Setting.
Source: Kogi State Ministry of Land and Environment, Lokoja, 2012

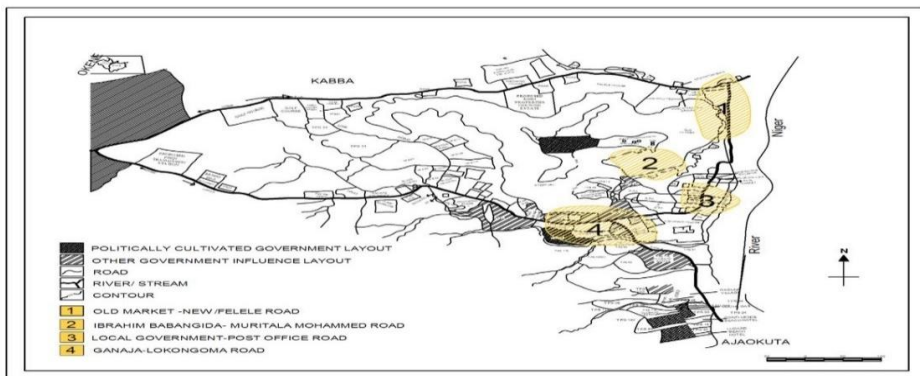


Figure 2: The selected road locations in Lokoja.
Source: Kogi State Ministry of Land and Environment, Lokoja, 2012.

3.2 Data Collection and Analysis

The sources of data for this research include both the primary and secondary data. To determine the sample size for the study, a count of buildings along the major roads of study was carried out, to get a total of 209 buildings. Each building represents a major research population and the owners stand as respondents for the study. 10% of the total sampled was selected by systematic sampling, taking every 11th \ building. Due to the proximity of the buildings to the road side, virtually all of them had been converted and used for commercial

purposes, generating enormous human and vehicular traffic to the area, and therefore encumbering the landscape elements along the roads. The research instrument used was a well-structured questionnaire in which the variables were structured in question form and responses sought from the respondents in pre-coded alternatives. Six research assistants were trained by the authors to administer the questionnaire through face-to-face interaction with the respondents (the building owners). They were instructed to read and interpret the questions to the respondents. The analysis of the sample size of the buildings as numbered along the selected roads is shown in the table below.

Table1: Name of selected Roads

Name of the Road	No of Buildings	10% of Buildings Sampled
Ganaja-Lokongoma Road	500	50
Old Market-Felele /New Market Road	1261	126
Local Government - Post office Road	70	7
Ibrahim Babangida- Muritala Muhammed Road	255	26
Total	2086	209

Source: Authors’ Field Survey, 2015

4.0 Discussions and Findings

4.1 Available Road Landscape Elements and its Efficiency in Lokoja

The available road landscape elements in Lokoja include trees/shrubs, grass, pavements, street lights, fountains, sculpture and historical artifacts. All these elements are put in place to produce an aesthetically pleasing environment. It is unfortunate that the purpose of designing and placing of these elements in Lokoja has been defeated as many respondents (59.8%) affirmed that the available road landscape elements are inefficient (see Figure 3). For instance most of the trees/shrubs planted for the beatification of the city have withered away while the fountains and street lights have deteriorated. This supports Olorunfemi (2013) which reported that most of the open spaces within the city had been converted to other uses without taking into cognizance the consequences of such changes of use for the city. This can be attributed to the poor monitoring exercise of the Physical Planning Authority in the city. As noted by Fadamiro (1998) most private spaces intended for urban beautification are neglected, thus, rendering the landscape elements inefficient.



Plate1: Dilapidated Road Landscape at New Market Motor Park, Lokoja

4.2 Functions of Road Landscape

The importance of landscape to the environment cannot be overstated, most especially its contribution to the improvement of aesthetics. Fadamiro (1998) had observed that in a well-landscaped area, users such as customers at a shopping centre, workers in an industry and

the students on campus are all soothed and refreshed by the well-planned landscape. Businessmen have discovered that customers gravitate toward a drive-in or service station under the shade of a tree; just as well-designed roads with adequate and functional landscapes attract and keep people around because of the shade and fresh air they enjoy. The functions of urban road landscapes identified in this study include aesthetics, provision of fresh air to the environment, provision of shade for pedestrians, protection from environmental agents, and property value.

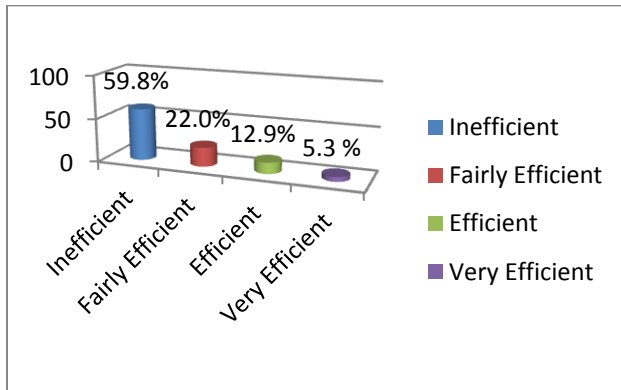


Figure 3: Efficiency of Road Landscape Elements
 Source: Authors' Field Survey, 2015.

About 40.7% (see Figure 4) of the respondents agreed that road landscaping could serve all the functions identified. However, while aesthetics and provision of fresh air were regarded as the most important functions, increase in property value was rated as the least important. This may be due to the low level of awareness of people about how good landscape could enhance the property value in the environments.

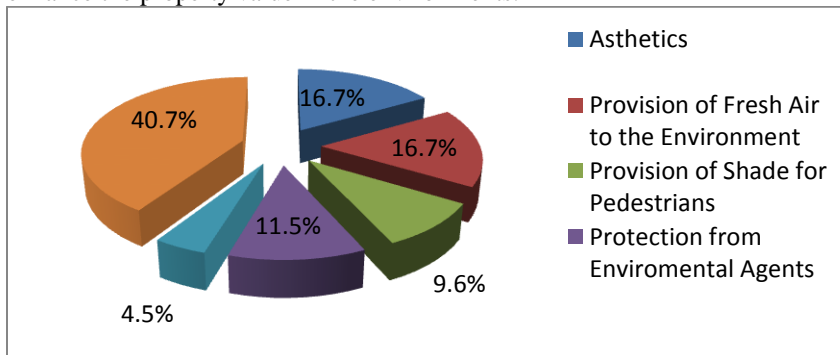


Figure 4: Functions of Road Landscapes
 Source: Authors' Field Survey, 2015

4.3 Factors Militating Against the Effectiveness of Road Landscape Elements in Lokoja

The inefficiency of the road landscape elements reported by respondents in the Lokoja city has been traced to the following factors: lack of public awareness about the importance of road landscape, inadequate enforcement of laws protecting road landscape element and poor

monitoring. 38% of the respondents opined that a combination of all the factors stated above cause road landscape elements to dilapidate and become inefficient.

Table 2: Factors Militating Against Road Landscape Element in Lokoja.

S/N	Factor	Frequency	Percentage
1.	Inadequate public awareness about the importance of road landscape	30	14.4
2.	Inadequate law enforcement for protecting road landscape elements	39	18.7
3.	Poor monitoring	60	28.2
4.	All of the Above	80	38.2
	Total	209	100

Source: Authors' Field Survey, 2015

4.4 Need for Road Landscape Control to Achieve City Sustainability

The need for road landscape restructuring in the context of sustainable city development is paramount. It adds to the aesthetics of roads by providing shield and green environment for the people through planting of trees, shrubs and soft grasses. The contribution of the natural and artificial elements of the urban road landscape identified by Wang et al. (2014) to aesthetics suggests the need to restructure them to achieve sustainable cities. This was supported by a significant majority (72%) of the respondents in the study area since they will not only add to the aesthetics of the city but will also help in the control of climate. Tree planting could help deflect winds and shield people from the inclemency of the tropical sun. Street lights help to reduce the incidence of road accidents at night, illuminate traffic signs and assist in reducing the incidence of crime especially at night in the city centers. Broken down vehicles on the road are noticeable from a distance with the presence of street light. Okoko (2006) had identified the importance of street lights to include enhancement of safety for all street users by aiding accidents reduction in the night; provision of security particularly for pedestrians during the night hours and facilitating the lighting levels along the footways while aiding the journey of both the public and private transport users. Apinya (2010) opined that there is the need for urban planning and landscape improvement which will in turn promote public transportation by providing convenient linkage; encourage non-motorized transportation with pedestrian linkage priority, improve crosswalk and street furniture; encourage job-housing balance of surrounding land use; improve visual perception and distinct identity and promote public green space that supports urban activities such as pocket parks, sidewalk cafes and shops.

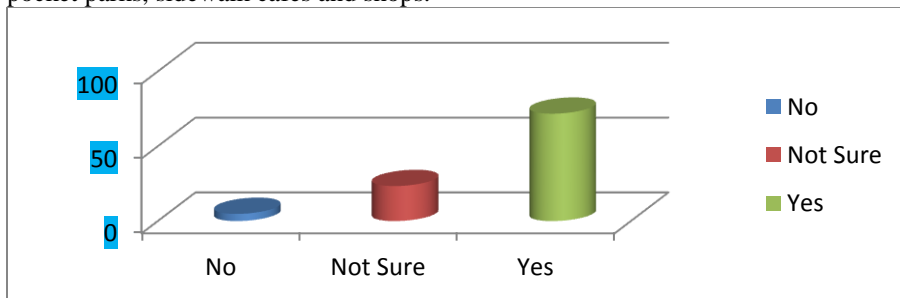


Figure 5: Need for Road Landscape Control to achieve Sustainable City

Source: Authors' Field Survey, 2015

5.0 Recommendations and Conclusion

The study has revealed the need for restructuring urban road landscapes particularly in Lokoja the capital city of Kogi State, Nigeria. Landscape planning is a necessity for

sustainable urban road transportation system and needs to be entrenched in the structure of land use pattern and planning in the country for the purpose of achieving aesthetically pleasing environments in terms of walking, living and accommodation. In achieving these, it is paramount that statutory policies be instituted, as this will improve the awareness and management prospects of the concerned agencies and the people. In view of the above, the following policy issues are recommended.

Government should institute Landscape Monitoring Control Department in the Ministry of Environment and Housing to control and monitor the implementation of strategic plans that will be of benefit to the people within their immediate environments. Such plans should include tree planting, provision of walkways, street lights, fountains, open spaces and other monument elements that aid city's beautification and road users' activities. The department/agency should have responsibility for development control to forestall any illegal projects or development that can impair the landscape structure of the city.

Findings revealed that road landscape functions include; provision of fresh air to the environment and shade for pedestrians, protection from environmental agents and enhancement of property value. Based on this, government should encourage tree planting right from the inception of road construction to the end. This will help in controlling climate and other environmental degradation while boosting the green nature of the city. Community participation should also be encouraged in the provision of road landscape elements within each street of the city. By so doing, government will be able to educate the people about the importance of landscape in the environment and get them involved in the planning and design through the implementation to management stages.

In conclusion with the above, government should empower the local authority in collaboration with other enforcement agencies or street task force to enforce regulations on protection of road landscape element. Enforcement will support broader objectives by ensuring a higher turnover of users and a more efficient and equitable use of the limited resources. This method will help to guard against sabotage of road landscape elements in urban areas, particularly in Lokoja where it has been discovered that inadequate law enforcement toward sustainable road landscape element remains one of the factors militating against the effectiveness of road landscape elements.

Adequate attention should be paid to city illumination right from the major walkways of the urban roads to the lesser arteries and slow-speed streets as well as the pedestrian streets. There should be adequate and well-designed street furniture like street benches, bus stop shelters, street light etc. All these will go a long way in facilitating urban movement and enhance road users' activities.

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