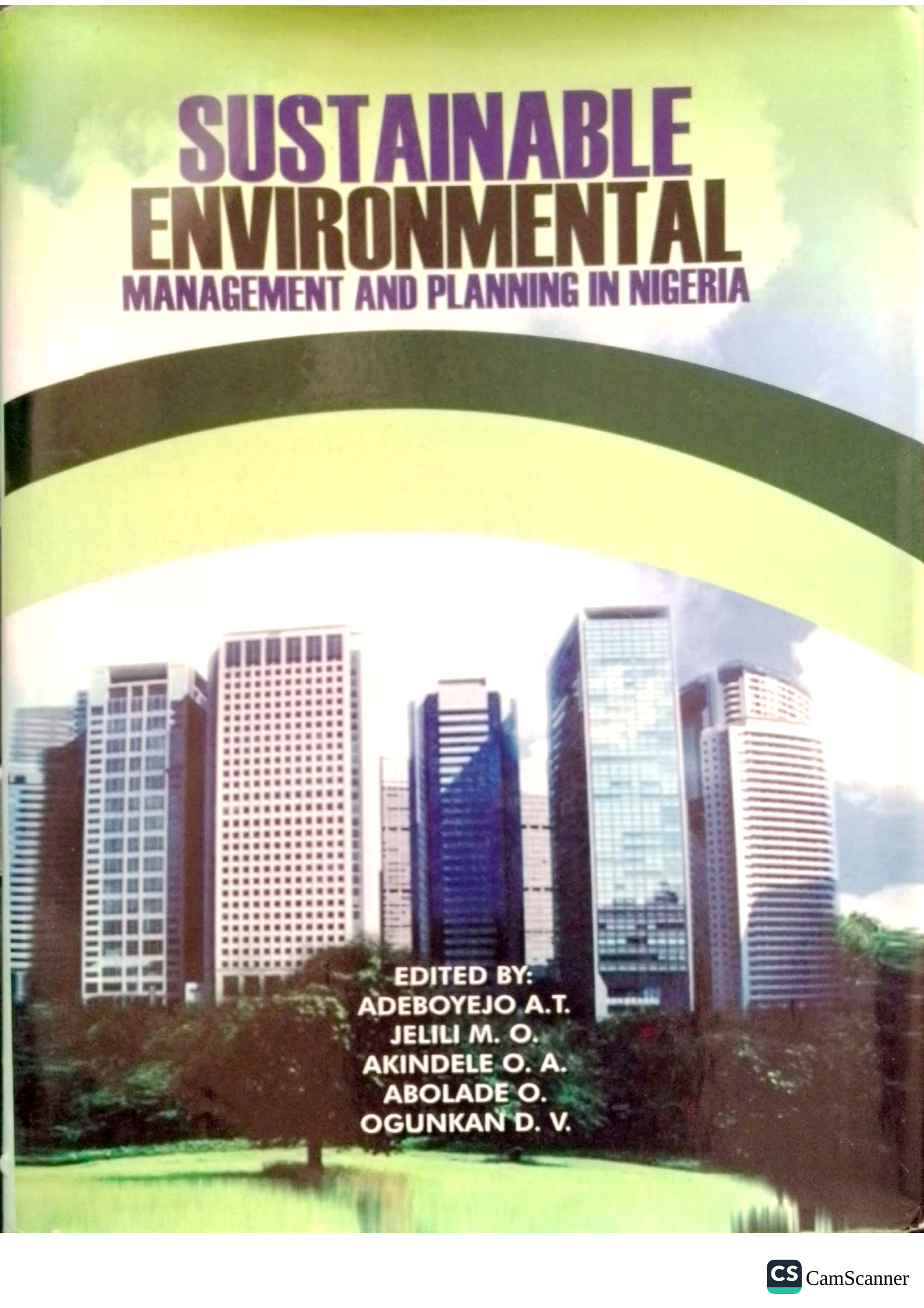


SUSTAINABLE ENVIRONMENTAL

MANAGEMENT AND PLANNING IN NIGERIA



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SUSTAINABLE ENVIRONMENTAL MANAGEMENT AND PLANNING IN NIGERIA

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GREEN SPACE DEVELOPMENT FOR SUSTAINABLE CITIES: ISSUES, CHALLENGES AND STRATEGIES

RAHEEM Wasiu

Introduction

According to the UNFPA (2007), urban growth is taking place at an unprecedented scale. It is estimated that more than 50% of the global human population is now living in urban areas. This unarguably means higher demand for land for various purposes and activities promising higher returns than green spaces. The latter in most cases being re-allocated for other land-uses with high returns and this negatively affects the size of available green space. Contributing to this reduction is ever increasing land rent in urban areas due to increasing demand for land for various activities. The increasing concretization of urban centres and cities particularly in the developing world has led to multifarious challenges, ranging from high temperatures, flooding and environmental pollution to urban heat island.

Green space development in urban centres has however been observed to offer a far reaching succor to the urban environment in general and its inhabitants in particular. This explains why planning concepts such as garden city, green belt, green fingers and greenways highlight the need to preserve the natural environment of urban areas by incorporating many green spaces into the design of cities (Collins, 2014a).

The urban green spaces literally encompass all public and private open spaces in urban areas mostly covered by vegetation which are directly or indirectly available for use (URGE, 2004). These include parks, gardens, allotments, wetlands, and urban trees among others. According to Chiesura (2004), urban green areas are strategic to the quality of life in cities. He argues that the empirical evidence of the benefits and importance of these areas is increasing, especially for environmental, ecological and visual benefits associated with them, such as air and water purification, wind filtration, noise pollution mitigation and microclimate regulation, besides the social services such as socialization, recreation and crime prevention.

However, most cities of the world, especially in the developing countries, have suffered from acute depletion of green spaces principally due to rapid urbanisation, low resource base of institutions on green spaces, lack of priority to green spaces, corruption, political instability and uncooperative attitudes of the local people (Collins, 2014b; McKinney, 2002). For instance, 41 percent of lands reserved for green spaces in Europe have been lost to different land uses (EEA, 2002). Also, rapid urbanisation amount of urban green spaces to urban sprawl and infrastructural developments (Fuwa *et al*, 2011).

In a related development, a study on urban sprawl in Abuja (the capital city of Nigeria) and its effect on the natural vegetation cover reveals a considerable loss of the natural vegetation to the expansion of settlements (Fanani *et al.*, 2011).

The consequences of outright absence and/or insufficiency of green spaces in urban area are enormous and challenging, both on the environment, and on the people. Environmentally, it has been established that lack of vegetative cover in urban areas makes many African cities “ecologically unfriendly” with configurations that compromise their resilience to climate change (FAO, 2012). The FAO report further states that lack of vegetation and the use of heat-retaining building materials raise city temperatures, which lead to shrinking water tables. Also, tampering with them could result in generating soil erosion, deforestation and their effects on the natural ecology of the environment and climate protection (Jubril, 2010).

Conceptual clarifications

Urban Area

What makes up an “urban” area? Humans live in a diverse range of places, which may be categorised as urban, suburban, and rural areas. In the Webster’s English dictionary, the term urban refers to “city”, “town” or “conurbation”, but is not commonly extended to rural settlements such as a village or a hamlet. Distinguishing characteristics of urban areas are the activities and the population involved. Urban areas are dotted with tertiary activities such as commerce, transportation, education and administrative services among others.

Urban areas also have higher population densities and intensive development in comparison to rural or natural areas surrounding them. Buildings and other structures are built closely together and are much higher than those in suburban or rural areas. All of these see “urban” as generally depicted as a separate entity from the natural environment (Beatley, 2000).

Urban Green Space

Urban green space may be defined in many ways. The UK defines urban green space as predominantly unsealed, permeable, soft surfaces such as soil, grass, shrubs and trees together with buildings and hard covered surfaces belonging to them (Dunnett *et al.*, 2002, p. 9). It emphasises the character of “predominant” because green space may incorporate buildings and other forms of hard surfaces inside. Such areas include parks, playgrounds and green spaces specifically intended for recreational use, as well as green space with other origins or purposes.

On the other hand, the European Union (EU) defines urban green space as public green space located in urban areas, mainly covered by vegetation which are directly used for active or passive recreation, or indirectly used by virtue of their positive influence on the urban environment, accessible to citizens, serving the diverse needs of citizens and thus enhancing the quality of life in cities or urban regions (URGE, 2004, p. 13).

In the United States of America (USA), urban green space refers to “outdoor settings that contain significant amounts of vegetation” (Bonsignore, 2003). And also a land use

cover project defines urban green space as “urban areas whose use does not require structures, or urban areas where non-conforming uses characterised by open land have become isolated. Those included are golf courses, parks, recreation areas (except areas associated with schools or other institutions), cemeteries, and entrapped agricultural and undeveloped land within urban areas”. However, in North America, these spaces are often referred to by the term urban open space, and both terms are used interchangeably (Swanwick *et al.*, 2003; James *et al.*, 2009).

China uses the term “urban green space” officially, referring to all the green land area covered by vegetation city-wide (Ministry of Housing and Urban-Rural Development, 2002). And in China, almost all urban green space is in public ownership except for that belonging to certain organisations/companies.

Concept of Green Infrastructure

This is the network of natural and semi-natural areas, features and green spaces in rural and urban, terrestrial, freshwater, coastal and marine areas (Naumann *et al.*, 2011a). It is defined as the Nation’s natural life-support system - an interconnected network of protected land and water that supports native species, maintains natural ecological processes, sustains air and water resources and contributes to the health and quality of life for America’s communities and people (Hellmund and Smith, 2006)

Naumann *et al.*, (2011a) sees green infrastructure as a broad concept, and includes natural features, such as parks, forest reserves, hedgerows, restored and intact wetlands and marine areas, as well as man-made features, such as ecoducts and cycle paths. According to Thoren, (2000) green structure “consists of all green areas of a city, private as well as public, gardens as much as areas of meadowland, woodland as much as parks or church yards, and even rivers, wetlands, ponds, etc.”

The term “green structure” has different layers of meaning. As an object, green structure looks at all green and blue areas in a city, including land, vegetation and water. It focuses on the physical qualities related to each object (e.g. a park or a tree) (Werquin *et al.*, 2005a). As an integrative structure, green structure emphasizes the way these areas fit into the urban fabric and are linked to one another and to other kinds of urban open space and constructions. It focuses on functional and physical relations where recreational areas, green spaces acting as “green lungs” and other areas of biological value are essential for local environmental quality and the quality of citizens’ lives.

Concept of Sustainable Development

The term sustainable development was popularized in “Our Common Future”, a report published by the World Commission on Environment and Development (WCED) in 1987, also known as the Brandt land report. It defines sustainable development as “development which meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, p.43). Others view sustainable development as a balancing act between the economy and the environment meaning that the economy is an entity that is separate from the environment, where the latter inevitably loses out (Caccia, 2001).

The concept was suggested as an alternative strategy for combining the survival of human society and protection of the environment. It is observed that increasing consumption, combined with population growth, means that humanity's demands on the planet have more than doubled over the past 45 years (WWF, 2008, p. 2). The Millennium Ecosystem Assessment also reveals that the provision of many critical ecosystem services such as water, biodiversity, fibre, and food is being compromised due to the impact of human development (*ibid.* 2010).

While the concept is widely accepted and sustainable development has been adopted as a desirable goal by many institutions, governments, businesses, and NGOs; the term sustainable development suffers from definitional ambiguity or vagueness (IPCC, chapter 12.1.2). No matter what conceptualization of sustainability is applied, the consensus appears to be that sustainable development has three pillars: social, economic and environmental. Given all these issues about the concept of sustainable development, one clearly defined intention of the concept remains that it is not just about altruistic intentions on the environment; it is about ensuring a livable world for both today's and tomorrow's children.

Compact and Green City

Since the late 19th century, many cities in the industrialized world have been applying garden city or green city ideas for the shaping of a pleasant urban form (Thoren, 2000). While the green city approach focuses on the importance of parks and other green space, and non-polluted air and drinking water to the inhabitants' health and quality of life, the compact city model implies that future needs for development should be met through densification within existing urban areas (Naess, 2001).

It emerged as a reaction to the mass increase in sprawling suburbs after the Second World War. Its broad goals are to limit the spread of cities, improve land use efficiency, improve public transport, protect the countryside and ecological diversity, and increase social mixing and cohesion. (Naess, 2001) In fact, Thoren, (2000) and Naess, (2001) refer to the green city concept as 'ecology within city', while they dub the compact city model as 'city within ecology'.

The consequence of the green city model is that new development takes place as a spatial extension of the city (Naess, 2001). The concern about the negative effects on resource expenses and environmental impact brought about by urban sprawl led to promotion of the compact city form, which contrasts strongly with the garden city concept which is much more space demanding (Thoren, 2000).

In some European countries (e.g. Netherlands) the compact city concept has been an overriding theme since the 1960s. This approach looks at town and country as separate entities and strives for compact urban development and preservation of rural open spaces (Thoren, 2000). However, the only drawback with compaction is that it has a negative impact on existing green space in cities because the densification process leads to land use competition with existing or potential urban green space.

Review of Literature

Urban Green Areas and Challenges

Many studies have established multifarious challenges of urban green areas in cities across the globe. For instance, while Collins (2014a) identifies insufficiency of urban planning regulation, Fuwape and Onyekwelu (2011), in the study of urban green spaces in African cities, attribute the problems of urban green space to infrastructural development and urbanization among many others.

Urbanisation

By and large, the chief among the various challenges facing urban green area in Africa is urbanization (Tibaijuka, 2007; Opkala, 2009). Fuwape and Onyekwelu, (2011), posit that rapid urbanisation has caused many cities in West Africa such as Lagos, Ibadan, Kano, Kaduna, Sokoto (Nigeria), Dakar (Senegal), Freetown (Sierra Leone), Abidjan (Cote D'Ivoire), Accra, Kumasi and Tema (Ghana) to lose substantial amount of urban green spaces to urban sprawl and infrastructural developments. This is not unconnected with the takeover of spaces hitherto meant for greening for the purpose of developmental projects.

Insufficient operation of urban planning regulations

Not limiting the problem to urbanization, Collins (2014a) observes that insufficient operation of urban planning regulations on the part of urban administrators also hamper the development of urban green areas in African cities. It is revealed that some of the urban planning regulations operating in some countries in Sub-Saharan Africa were made about 60 years ago, along the lines of the planning regulations of their colonial masters at that time, such as the British, French and Germans. For example, the 1946 Town Planning Ordinance of Nigeria, the 1948 Town Planning Act of Malawi (Njoh, 2009), the 1956 Town Planning Ordinance of Tanzania (Kironde, 2006) and the 1945 Town and Country Planning Ordinance of Ghana are still in operation.

Socio-economic and Political Challenges

Another serious problem militating against green space development in most cities of the world, particularly Africa, is obnoxious policies of government resulting in the pauperism of the populace. Poverty has been identified to contribute principally to the depletion of green space in Africa. The 2010 State of African Cities Report shows that as at 2003, about 47 per cent of urban dwellers in Benin and 57 per cent of urban dwellers in Burkina Faso lived on less than one dollar (\$1) a day. In 2004 and 2005, as many as about 66 per cent of urban dwellers in Niger and 65 percent of urban dwellers in Nigeria lived below one dollar a day respectively. This high rate of urban poverty in Africa has been linked to the depletion of Africa's green environment as many of the poor people tend to over-rely on natural resources for their survival (UN Habitat, 2010).

Similar findings came up in a study in South Africa which found many poor communities to rely much on the green environment for additional income or to improve their livelihood (Cilliers, *et al*, 2012). The resultant effect has been excessive destruction of green spaces in many urban areas in Africa by the poor to satisfy their needs. It also has been observed that lack of priority for green areas in the development agenda of some cities in Africa hinders

the growth of green spaces. Green spaces are found not to be among the main priorities of many African countries. Matters of poverty reduction and provision of social amenities such as housing, schools, hospitals and pipe-borne water dominate the priorities. This has influenced national governments and city authorities not to give much attention and commit the needed funds for the creation and maintenance of green spaces, thereby leading to outright absence or insufficiency of urban green spaces in these urban areas. Bolnick *et al.* (2006) succinctly puts this by indicating that in Africa much attention is given to “brown agenda” to the neglect of “green agenda” which focuses on preserving the green environment.

Benefits of Urban Green Areas

Various authors give the categorization of the benefits of urban green space; however, for the purpose of this work, categorization are reviewed under such headings as socio-cultural value, ecological value, structural value and economic value.

i. Socio-Cultural Value

From a socio-cultural perspective, the city structure should not only support the individual and social needs of human beings and the overall quality of city life, but also help in the promotion of city's healthy society. Urban green space provides social services essential to the quality of human life, which is a key component of sustainable development (Chiesura, 2004). This view attached more importance to the roles of urban green areas in providing “urban nature” for human psychological needs by accommodating outdoor activities for the public's social needs (such as meeting people, recreation, eco-education, and sports), improving physical living conditions for better public health, and carrying the cultural value of a city.

Recreational Use: Parks and nature in the city provide a peaceful and relaxing setting for stressed urban inhabitants. They are “second living rooms” for people living in confined quarters. (URGE, 2004). This is particularly gaining more ground in recent times as many people want to leave the monotonous confinement of their shelters for picnic and site seeing events.

Health: Some studies have identified and assessed considerable effects of nature's influence on both physical and mental health e.g. mental health and vitality (Guite *et al.*, 2006 and Grahn & Stigsdotter, 2005); neighbourhood satisfaction, (Leslie & Cerin, 2008); reduced stress and obesity (Nielsen & Hansen, 2007); mental well-being (O'Campo *et al.*, 2009). Also epidemiological studies have provided evidence of a positive relationship between longevity and access to green space (Takano *et al.* 2002) In addition, nature or green space does not only promote sense of relaxation and re-generative enjoyment, but also a higher spiritual state of integrating oneself with nature (Chiesura, 2004). All these contribute to the quality of human life, and therefore to sustainable development of a city.

Aesthetics: Urban green space in all its forms contributes to the rich visual effects in urban settings. Aesthetic benefits of urban green space relate to people's experience of both the appearance of each element and the composition of them as a whole. Much of aesthetic experience is subjective in nature and has impacts on people's mental and emotional state (Tyrvaenen, *et al.*, 2005).

City image: A positive city image is essential for attracting people to live in a particular environment, this is important for developing a sense of identity for those living in a city, for encouraging investment, and for improving urban vitality. Therefore urban green areas contribute to quality of life and sustainable development of a city.

Because water and vegetation are pleasant to most people, they are according to Lynch, (1960) among the city elements with high imageability which contribute to the formation of a mental map of a city, as well as a positive image of a city. Lynch further posits that among the elements that help to make mental maps or support imagination of a larger attracting environment are paths, edges, districts, nodes, and landmarks. Therefore, urban green space that helps improve the perception and quality of these features will generally contribute to a better image of a city.

ii. Ecological Value

From the perspective of ecology, the urban ecosystem is a basic set of conditions for both human and other species (Tjallingii, 2005a, p.135). To this effect, Werquin *et al.*, (2005), opine that urban green areas perform the role of habitats for wildlife and as spaces for enhancing natural processes, such as facilitating water infiltration, flood water retention, providing shade, acting as wind breakers, reducing the urban heat island effect; improving air quality, and enabling organic waste recycling. The authors however, submit that certain factors determine the ecological performance of urban green spaces, these according to them are the overall provision of green spaces, their size, diversity, distribution, history, and the design and management of each green space (Werquin *et al.*, 2005).

Biodiversity: Biodiversity issue is part of the sustainability agenda, which has among its goals preservation of natural resources for future generations (Millennium Ecosystem Assessment, 2005) For example, the 1992 Convention of Biodiversity accepted at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro aims to preserve genetic diversity, the diversity of species, and the diversity of biotopes. Therefore in recent time biodiversity is emphasized in cities, as ecological research has revealed during recent decades that cities can be surprisingly rich in species (Sukopp *et al.*, 1995).

This implies that in cities, the areas consisting of spontaneous nature should be considered important for urban sustainable development. Thoren, (2000), however, argued that the knowledge of urban nature at the local level is often limited, which poses a challenge for concrete actions.

Examining many cities around the United States, Canada and Europe including Portland, Seattle, Denver, Vancouver, Copenhagen, Stockholm, Amsterdam, and Barcelona, Beatley (2004) explores a wide range of findings and suggestions for greening of urban areas (p. 48).

He re-emphasizes the importance of containing sprawl, promoting compact urban infill development, increasing diversity, reconstructing walkability culture, supporting small, local community, protecting, restoring and designing-in nature, and revitalizing ecology, heritage, resources, cultural life, and local renewable energy resources that are native to any given location or place.

While offering solution to the modification of urban land scape by human beings through their activities, the 2009 Green Urbanism Summit, one of the fore front events in the Green Urbanist movement, also establishes that “a combination of principles and practices with a high level of ambition such that the end result could address the vast scale of urban problems in the 21st century” (p. 3). The agenda of the Summit guides professionals and experts toward developing “a post-carbon economy that is based on local cycles of investing, making, fixing, trading, and growing, instead of pure consumption of globally produced goods” (GU Summit, 2009, p. 4). The Summit poses and attempts to answer critical questions such as: “How do you design a city like an ecosystem?” “What is the right benchmark for a sustainable city?” “How do you integrate the many components of urbanism to generate the synergies necessary to create a sustainable place?” (GU Summit, 2009, p.14).

Water management: Protecting water resource and water structures for today and for the future is a key element of the sustainability concept. Studies have shown that water and green areas often have a common history in a city, usually in a form of green spaces along river valleys (Werquin *et al.*, 2005). Water structures are essential for cities in many senses. They were key elements in the pre-urban landscape. They carry the identity and the history of a city. Water structures are often ‘carriers’ of urban green spaces, providing a structural frame. Hough, (2004) however establishes that, as a result of urbanisation and construction, water structures are impaired, the natural way of water circulation disturbed and even result in the sinking of ground water tables. From this perspective, water and green areas are natural allies and share a common future. Urban green areas are essential for water arrangement issues, such as flood control, rainwater retention and natural purification. (Hough, 2004; Tjallingii, 2005a; Tjallingii, 2005b). Also, in upstream mountains and hills, reforestation can be an effective erosion prevention strategy. Keeping floodplains open and green is a strategy for flood control (Werquin *et al.*, 2005). According to a recent study on flood disaster in Ibadan, greening the metropolis through planting of trees, shrubs and ornamental plants is recommended as the most potent preventive measures against flooding (Ajayi, *et al*, 2012).

Climate and air quality: Climate and air quality are important factors in the urban environment. They directly connect with quality of urban life and survival of wildlife (Werquin *et al.*, 2005). Studies have shown that urban green spaces contribute to mitigating bad climate and air conditions connected with hard urban structures. Green spaces provide shade, windbreaks, enhance ventilation, reduce temperatures and improve air quality (*ibid*, 2005). Green corridors, for example, play a positive role for ventilation and air quality of a city (Tjallingii, 2005b).

Woodlands or tree belts help to reduce air pollution from roads by slowing down air circulation and accumulating dusts, while trees and hedgerow contribute substantially to reduction of storm and havoc on building. Urban green space cover reduces surface temperatures, and therefore helps mitigate the heat island effect typical of urban areas. A study in Munich shows that an increase of vegetated surface cover by 10% reduced surface temperatures by, on average, 1°C, and that one tree is equivalent to 5 room air-conditioners running for 20hrs a day (Pauleit & Duhme, 2000). Urban climatologists also stress the

importance of having a great range of different microclimatic conditions within walking distance (d²150 m) (Tjallingii, 2005b), while avoiding climate extremes. Gomez et al. (2001) discuss appropriate sizes of green zones in order to improve local climate conditions.

Organic matter: Achieving sustainable development requires a city to as much as possible close the ecological loops within its own boundary. The handling of organic matter is an important consideration for achieving this goal. Nowadays, organic waste of a city is seen not just as problem to society, but also a resource of nutrients, energy and compost (Werquin et al., 2005a).

Urban green space has the potential to accommodate the ecological cycles of organic waste. For example, the maintenance of urban green space needs fertile soil and nutrients which are ingredients from organic waste products.

iii. Structural Value

Vegetation, urban green spaces and natural landscape are architectural structures for urban space, just like buildings and infrastructures. It has been established that the structural functions of urban green space are often used in urban planning and design by defining urban structure and urban form, regulating urban development, buffering between city zones, organizing traffic and the architectural use for planning and design (URGE, 2004). In many theories of city form, for example, the Linear City theory proposed by the Spanish engineer Arturo Soria Y Mata, and the Garden City theory proposed by British social planner Ebenezer Howard among others, green spaces have played an important role in organizing urban development until today (Liu, 2005).

It is also worthy to note the role of urban green space in buffering city zone. An example can be seen in the planning concept of "Albertslund South", a new town planned in the south west of Copenhagen in the late 1960s. A large community park was planned between a highway intersection and residential areas. Buffering noise from highways and providing quality environment for the new town were among the major planning concepts for this area. Green spaces are especially valued in a compact city form. They provide a natural balance to build form and can be developed as a green network to ensure contact with the natural world (URGE, 2004).

Traffic Organization: Vegetation and green space contribute to high quality streetscapes and public space. Well-designed streets and public spaces encourage walking and cycling, and promote a safer environment by reducing vehicle speeds and use (CABE Space, 2004). For example, street greening in cities has played an important role in separating pedestrians and vehicles, and organising traffic for over 2000 years in China (Yu et al., 2006). Today, such parkways, boulevards and greenways still shape and channel traffic spaces and provide for different users moving on foot, bicycle or motor vehicle.

iv. Economic Value of Green Space

The economic value of nature can be defined as "the total amount of welfare that nature generates for society", and which has social, economic, environmental, merit and financial dimensions (Rodenburg et al., 2001, p.106). Of course, all other benefits of urban green space have an economic component; however, the direct economic benefits of urban

green space include values of market-priced products, such as those generated through wood production, urban agriculture and urban horticulture industry etc. However, the most relevant values of urban green spaces are their indirect economic values, and they have no market-price (Tyrvaäinen *et al.*, 2005).

These indirect economic values include value gained by reduced costs for environmental control, energy consumption and even public health, enhancement of local and regional economy by promoting tourism and attracting investment and human resources, increased property values, improvement of business benefits through drawing customers and increasing workers' productivity. (CABE Space, 2004; Tyrvaäinen *et al.*, 2005).

To sharpen our understanding of value of nature for urban development decisions, an increasing number of studies have tried to transfer these non-priced values into a priced form (Jim & Chen, 2006; Luttik, 2000; Tyrvaäinen, 2001). The methods for doing this according to Tyrvaäinen *et al.* (2005) include the contingent valuation method (e.g. willingness to pay), the hedonic pricing method (e.g. housing market price), the travel cost method, tree pricing and environmental benefit valuation (Tyrvaäinen *et al.*, 2005). In an example from Guangzhou city, China, willingness to pay for recreational use of urban green space was found to be RMB 17.4 (about 1.6 EUR) per person/ month (Jim & Chen, 2006).

Studies however, identified some general factors that influence the economic value of urban green space. For example, the factors that influence a park's impact on property values include security and layout, park age, park size and maintenance (CABE Space, 2005).

Environmental and energy savings: Green space, if strategically placed and managed, can act as a "living technology" and contribute to more liveable urban places. Studies in the USA have shown that because trees contribute to reducing heat-island effect, improving air quality and storm water management, provision of trees in a city can save the expenses that would otherwise be incurred for these purposes (Urban forest values, 1998). For example, a tree of about 7.5 metres high reduces annual heating and cooling costs of a typical residence by 8% to 12%, producing an average 10 dollar savings per American household per month (Economic fact sheet, 2008).

Tourism and outdoor recreation: Commercial recreation and tourism in urban green space can bring direct income to its management organisations, through direct use of the green spaces such as parks, garden and others as recreational centres. It can also increase property values because studies have shown that the value of a property decreases when its distance to parks, greenbelts and other green spaces increases (Economic fact sheet, 2008; Tyrvaäinen & Miettinen, 2000). Many cities see redevelopment of high-quality public spaces as a regeneration strategy for an area, because improved environment can raise commercial property prices in those areas. Well-planned and managed public space also has a positive impact on nearby residential house prices. Studies in the Netherlands show that garden bordering water can increase house prices by 11 percent, while a view of a park increases prices by 8 percent, and having a park nearby raises real estate value by 6 percent.

In comparison, a view of an apartment block can reduce price by 7 percent (Luttik, 2000; CABE Space, 2005).

Historical Perspective and Past Policies/Plans/Programmes of Green Space.

Incorporating nature into our cities and conserving and preserving city landscapes have existed since the beginning of urban planning. This at the time was meant to ensure aesthetics, health, recreation and amenity (Wilson, 2008). The Geddes concept of the regional city incorporating place, folk and work can be analogized to the strands of modern sustainability, which are, the environment, society and economy (Hough, 2004 in Wilson, 2008). The historical basis of green space in cities is also firmly entrenched in the work of Ebenezer Howard's garden city where neighborhoods are separated with greenbelts to serve as buffers. His Garden Cities of Tomorrow Concept (Howard, 1902) outlines a model of a self-sustained town with planned satellite communities surrounded by green belts, carefully balanced areas of residences, industry and agriculture (Wilson, 2008).

According to Hough (2004), landscape architects and planners targeted to improve the appearance of cities and the health of the inhabitants by providing areas for rest and recreation for the crowded urban population. Other landscape architects such as Olmsted who designed the New York Central Park viewed the park as an extension of the rural character into the city. In a more recent development, the colonial Township Ordinance of 1917 in Nigeria sought to surround the entire township including the Non-Europeans reservation and the Non-Residential area with live hedge. In a similar pattern, and for three basic reasons, a non-residential area (Greenbelt) was created between the European and Native Reservations to (1) avoid exposing Europeans to the attack of the mosquitos infected with the germs of malaria or yellow fever in native reservations, (2) guard against the bush fire which was rampant in the Northern Provinces in the dry season and (3) remove the inconvenience of the noise coming from the native reservations to the Europeans. To also serve as protection against wind borne insects, the ordinance provided that a belt of trees be planted close to the native reservation (Obateru, 2012). All these are pointer to the fact that the concept of green space is not a new one in the field of urban and regional planning neither are the benefits.

Problems facing urban green space in the developing world

Green space development especially in the developed world is chronically faced with daunting challenges, most of which are both institutional and attitudinal in nature

1. **Lack of control over all lands by city authorities:** Even with the extant Land Use Act 1978, which vested the governors with the right to administer urban lands, individuals, chiefs and families still hold sway in the sales cum administration of lands in most, if not all the urban centres. This development does not give urban administrators absolute power to zone land uses for green space development.
2. **High land rent for other uses in the city:** Land in cities commands high rents and as such, owners and developers put their lands into high yielding investments to be able to recoup their profits on time. In the scheme of things therefore, urban green space management

is the least considered option when it comes to dealing with lands in the urban centres.

3. Lack of understanding of many local residents and land owners in the city of the relevance of green spaces: Quite a few number of city residents have the basic understanding of the benefits of green space, while the few who really understand the importance see those benefits of green space as secondary rather than primary.

4. Lack of comprehensive spatial plan for the creation, maintenance and management of green spaces: Most cities in the developing nations do not have master plans, and hence lack comprehensive plans for urban green space development and management. The development of green space in almost all of these cities follows a haphazard pattern Liu (1999) refers to as “filling in” method in urban green space planning and restricting green space to only areas of the land that cannot support any development such as steep slopes, erosion ridden plots and river banks among others (Raheem and Adeboyejo, 2016)

5. Poor management of green spaces thus making them havens for criminal activities and refuse sites: The poor management of green space by urban managers as well as uncommitted attitude of the local residents hampers the development of green space in urban centres, as such; the few ones available are turned to havens of the criminals and the lunatics. Such unkempt places also attract refuse dumping thereby defacing city landscapes.

Sustainable Strategies for green space management

In the face of the various problems that green spaces encounter in cities and urban centres, there are still available strategic options for its sustainable development so as to ensure it really plays its numerous roles in maintaining a healthy urban life. Some of these strategies are highlighted below:

1. There is need for city authorities to officially commission a land use plan or at least urban renewal plan aimed at allocating spaces for green space in the urban centres. Since all lands in cities are already saturated with development leaving negligible space for urban green, government should make use of eminent domain power to acquire space, compensate the owners and develop those areas as green allotments.
2. Private developers, owners of housing facilities and educational institutions should be encouraged to maintain private gardens and green spaces. This is important because many housing facilities and properties are owned by private persons and institutions in the city. This will have a far reaching effect in bringing back the green virtue to the city. A form of awards for owners of housing facilities that comply with the green space development could be institutionalized to serve as motivation for others to follow suit.
3. The highest proportion of city area is concretised using hard landscaping (Raheem, 2015), there is therefore the need for government to use its planning apparatus to intensify efforts by making sure all available spaces considered not fit for development are greened in order to compensate for the vast hectares of built ups in the city centre. Areas such as rail lines, power lines and steep slopes as well as river courses and hilly

lands should be maximally utilized in this direction.

4. There should be sensitization campaigns on the importance of maintaining green space around human habitat and people should be mandated to maintain greening culture both inside and outside all existing structures whether residential or commercial.
5. The use of planning approval strategy and development control tool should also be employed to reinstate the lost beauty of our cities. New developments in cities should be made to comply with green city plans before approvals are granted, while old ones are encouraged to plan and maintain green space within their plot coverage. Also, there should be a vibrant development control mechanism to ensure compliance.
6. Massive tree planting should be prioritized in the urban centres. All streets in the cities should be aligned with trees to serve as shade for the road users. Governments and stakeholders in city managements should ensure that all road setbacks, median and shoulders are planted with green vegetation. This, in addition to beautification, will also reduce urban temperature emanating from the macadamized road surfaces. This is to conform to the world best practices and enhance sustainable city development.
7. Greening of urban spaces should be embarked upon as corporate social responsibility by companies, banks and other big private investments in the cities. Conspicuous roundabouts, streets and roads can be allocated to companies and corporate institutions for the purpose of green space development and maintenance and by way of rewarding such gesture, sign posts and banners advertising their companies and products can be placed in such areas at no cost to the government.
8. Massive greening, education and enlightenment campaign, should be organized by the government and all stakeholders should be brought on board to educate the populace on the importance of maintaining green spaces on the one hand and the grave dangers of its absence in our environment on the other hand. Radio stations, media, print and social media platforms can be used to achieve this exercise.

Conclusion

The important roles played by green spaces in the sustainability of cities and environmental planning cannot be over emphasized. This chapter has therefore highlighted the numerous benefits of green space development in cities. The challenges and the possible strategies to ensure its sustainable management have also been discussed. In spite of the challenges facing its development and maintenance, the chief of which are urbanization and lack of space among others, the strategies suggested if adequately applied will go a long way in addressing the challenge of sustainable management of green space and thus help in maintaining sustainable cities.

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