

## SUSTAINABLE ENVIRONMENTAL PRACTICES: A REVIEW OF CONSTRUCTION AND GREEN SPACES

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### ABSTRACT

Construction and green spaces as aspects of environmental management are concerned with the management of interaction by the modern human societies with and impact upon the environment. This research is embarked upon with the aim of discovering the relationships between the environment and forms created. Also, it involves the management of the bio-physical environment in relation to human environment, such as the social, cultural, and economic environment. Such ideas, it is hoped will bring back nature into the urban environment, and will also raise consciousness of the role that nature will play in the challenges of the 21<sup>st</sup> century. Construction and green spaces are forms of art that will provide adequate recreation and leisure. The paper seeks to heighten awareness on sustainable construction and green spaces in Nigeria.

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**Keywords:** Construction and Green Spaces, Sustainability, Environmental Management.

### INTRODUCTION

The rapid urbanization which is generally described as a shift from rural to predominantly urban society requires adequate attention towards development of our environment through the development of construction and green spaces. This rapid urbanization is seen as arise of civilization which has been traced as the intellectual evolution of species with the ability to understand nature, and the capacity to control, rather than to be controlled by the environment. The human kind through invention of tools and knowledge has developed the capacity to mould both its environment and its future.

Often times, we see the environment as a place. Murphy (2007) suggests that it is better understood if we think of it as a process. The environment is best described as a complex of biological, physical and cultural systems engaged in a process of perpetual becoming. As construction, landscape and the society evolve some conditions of the environment conflict with our activities and interest. In conceptual terms, design is our way of intervening in the process of construction and landscape evolution to eliminate conflicts and improve the human condition. Design is a means of managing the continuing process of change to enhance quality of life and create meaningful and compelling places as settings for human activity.

Today, as we gain increasing power to change the environment through creative innovations, we also increase our responsibility to do so wisely, to protect it as a critical resource and invest the built environment with enhanced value and meaning

now and into the foreseeable future. To ensure that our designs lead to durable improvements in the human environmental condition, rather than temporary alterations to its visual form or style, there is need to consider all the salient facts of our environment including human interactions and the new activities to be accommodated, before deciding what transformed environment will become.

The dynamic and complex nature of the environment requires effective design that involves a comprehensive approach to the identification, acquisition, and integration of the knowledge needed to support sound design recommendations. This will enable designers to provide guidelines based on a broad understanding of people's interrelationship with the environment.

### **OBJECTIVES OF THE PAPER**

It is observed that the development of construction and green spaces have lost its importance due to poor management and inadequate development of the environment. In view of these, the paper aims at:

- i. To educate the government on the need for the development and proper management of constructions and green spaces as aspects of environmental management. This, it is hoped, will provide aesthetics experiences, functional organization, social interaction and ecological sustainability in the society.
- ii. To improve a better understanding of construction and landscape; thereby guiding against changing the environment negatively.

### **REVIEW OF CONCEPT**

#### **Sustainability**

"Sustainability" is a contemporaneous buzz word, whose concept has become a major factor influence on the decision paradigms across disciplines and borders, even though specifics of interpretation and content may vary. Definitions of the word and its derivatives keep evolving in an attempt to find the most acceptable version while reflecting the ideas that brought about its emergence in the first place. Morrison (2011) remarked that the history of the concept of sustainability started with focus on economic efficiency, output and growth. Later the focus shifted to concerns about social equity, particularly poverty alleviation; and presently environmental protection dominates discussions, initiatives and policies in this regard. However, the evolution of the concept is reflected in global perceptions of sustainability and the fact that when asked to define the term, emphasis is placed on the triple line of economic, social and environmental sustainability, albeit with regional variation in scales of preference. The triple line is also referred to as 3E principle of sustainability, the three Es being economy, equity and environment. Often there is tendency towards definition of each "type" of sustainability in isolation and as a result the importance of its tri-unity and the interdependence of the constituent parts are lost. Alternatively, other definitions de-emphasise the widely accepted categories describing these constituent parts, which results in a certain degree of ambiguity. The second tendency, however, better reflects that spirit of the term "sustainability" that eludes definitions of separate aspects. According to Kermath (2011) sustainability is "an idealized societal state where people live long,

dignified, comfortable, and productive lives, satisfying their needs in environmentally sound and socially just ways so as to not compromise the ability of other human beings from doing the same now and into the distant future” comes to mind.

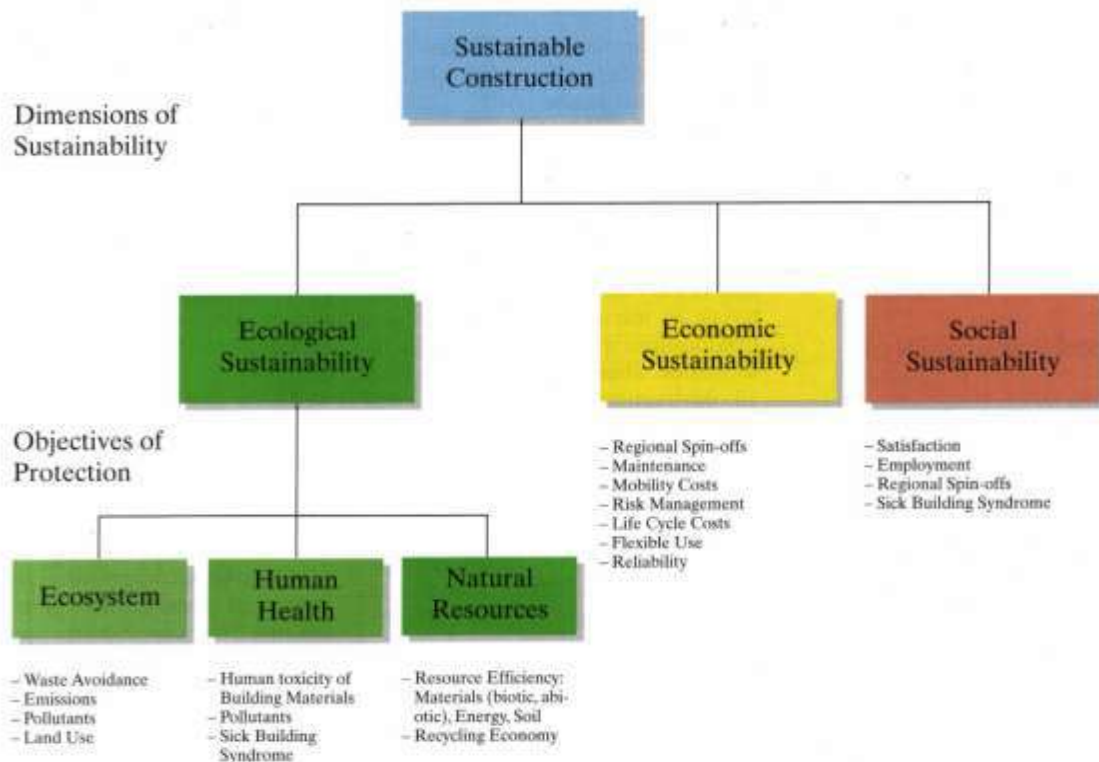


Fig. 1: Dimensions of Sustainability and Objectives Protection

Source: Morrison (2011)

## SUSTAINABLE ENVIRONMENTAL PRACTICES IN NIGERIA

### Culture, Traditional and Religious Practices

Culture is essentially people's collective deep-held values and beliefs, is a critical factor in shaping people's conceptions of the world around them. In the African and even Nigerian context there is no single authoritative tradition to refer to as a guide and each ethnic group (or "tribe") has its own distinct language, culture, and religion; and it is estimated that Nigeria alone has over four-hundred and fifty distinct ethnic groups and languages. Unlike the documented scientific system, much of the remaining traditional ecological knowledge in Africa exists only in oral form, passed on from knowledgeable individuals through shared practice and story-telling (Lalonde, 2009).

Hens (2006) outline religious and traditional practices that are common to many tribes in Nigeria and Africa generally:

- Some trees are regarded as housing spirits and should not be felled without performing rituals. This custom had a protective effect on trees.
- Animals in a particular habitat may be regarded as sacred and are therefore protected from hunting.

- Many wildlife species are regarded as totems due to their historical or socio-cultural significance. Totem animals vary significantly over tribes and clans and include mammals (leopard, elephant, lion, monkey, and buffalo) and birds (falcon, raven, and parrot), turtles, crocodiles, snakes (python), scorpions, crabs and fishes. There is a belief that an intimate relationship exists between the totem animals and the tribe. Therefore, the members do not eat, kill or trap these animals.
- There are sacred groves, which are pieces of land set aside for spiritual purposes, which range from a few square meters to several hectares. Apart from the collection of medicinal herbs (after the agreement of the elders), and their use as burial ground, the sacred grove areas are untouched. Farming, hunting, burning, tree cutting and firewood gathering are prohibited.
- Traditional farming practices are champions in sustainable land and water management. They involve land rotation and shifting cultivation allowing the land for more than 10 years to restore its natural fertility.
- Many lagoons and other bodies of water have long periods during which no fishing is allowed. These resting periods coincide with the period when the fish lay their eggs.
- Hunting and trapping wild animals is subject to restriction.

According to Adeleke (2009) conservation strategy mainly rests on community solidarity, customary practices handed down from generation to generation and taboos. Age-grades and groups constitute an enduring management system in some Nigerian societies, where those who fall into a particular age range constitute an age-grade. Each age-grade has special or designated roles. Indigenous knowledge is the information base for a society, which facilitates communication and decision making. In the emerging global knowledge economy a country's ability to build and mobilize knowledge capital, is equally essential for sustainable development as the availability of physical and financial capital.

## **SUSTAINABLE CONSTRUCTION**

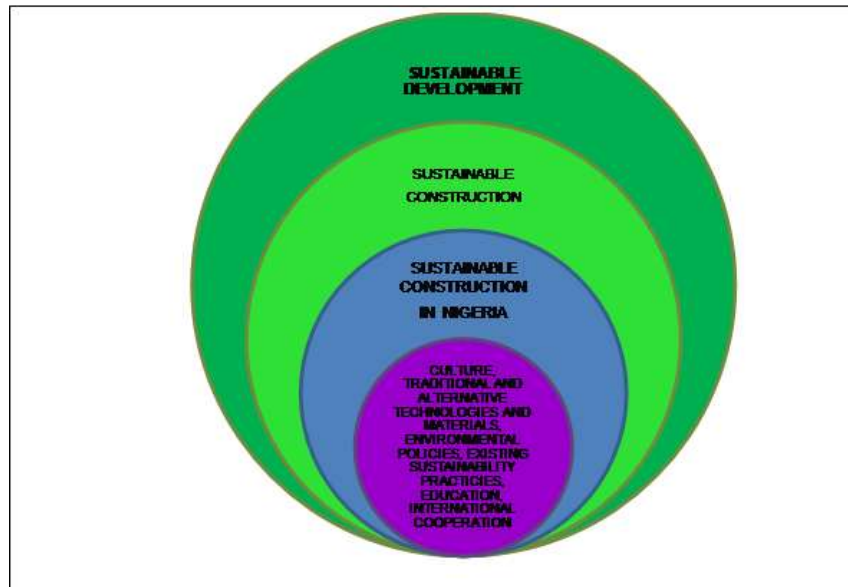
Construction, being at the very heart of development, is inexorably linked to shaping our future. Sustainable construction is a way for the building industry to move towards achieving sustainable development. Presently materials used in building account for 40% of natural resource use, 30% of CO<sub>2</sub> emissions and 40% of waste and, in countries like UK, buildings take up 45% of the total energy use. The Agenda 21 for Sustainable Construction was developed and published in 1999. It referred to construction as "the broad process/mechanism for the realization of human settlements and the creation of infrastructure that supports development, including the extraction and beneficiation of raw materials, the manufacturing of construction materials and components, the construction project cycle from feasibility and design to deconstruction, and the management and operation of the built environment". Sustainable building practices form an integral part of this process. The need for internationally agreed agenda for sustainable construction has also been identified

as well as the differences across the globe, which found reflection in Agenda 21 for Sustainable Construction in Developing Countries. This document focused on identifying the challenges and barriers that might be encountered in developing countries with respect to implementation of the Agenda so as to allow for developing different approaches. These challenges include:

- The main sources of foreign income for most developing countries remain agricultural products and raw materials, and with the declining value of these commodities, these countries find it increasingly difficult to access the financing necessary to move towards industrialization and a knowledge economy.
- There are also high levels of inequity within developing countries, many countries having developed a dual economy with wealthy elite that has developed consumption patterns equal to those in developed countries, and the rest of the population living in abject poverty.
- The developing world is further characterised by a lack of infrastructure and basic services and the capacity and resources to improve and maintain existing infrastructure, let alone cope with the demands of rapid urbanisation.
- While the developing world consumes far less resources, and releases far less greenhouse gasses than the developed world, the environmental degradation experienced has a more direct and visible impact and presents a more immediate threat to the physical survival of the poor.

At the same time it was recognised that:

- Developing countries still have strong traditions of cooperative society and have developed sophisticated methods of conflict resolution and reaching common agreement.
- There is strong grassroots ability for innovation in the use of building materials, settlement development and institutional structuring that can be regarded as one of the most important resources in developing countries.



**Fig. 2: Sustainable Construction Practice in Nigeria.**

Source: Murphy (2007)

### SUSTAINABLE GREEN SPACE

According to Adeleke (2009) green space is a land (green lungs) that consist the most part that is open, permeable, soft surfaces such as soil, grass, shrubs and trees. It includes all areas of parks, play areas and other green spaces specifically intended for other recreational use. Green space performs important functions for people's needs in Built- Environments, both in a natural way by providing contact with nature, aesthetic functions, recreation and socially by providing a place for interaction, privacy and creating a sense of community identity.

The importance of green space in any built environment is vital, because no environment can grow strong without green spaces. The beauty of visual forms and images of metropolitan areas are wholly dependent on the quality and quantity of green spaces. When a harmony exists between metropolitan buildings and green spaces, it is simply functional, livable, amenable and enjoyable.

Glasgow and Clyde (2006) asserted that green spaces are essential parts of our environments which constitute a determining element of the character, quality and functional value of metropolitan areas. It is expected to address a breath of stakeholder needs from the local and neighborhood level through planning for towns, cities and metropolitan areas and the delivery of national policy agendas.

Cergia (2009) is of the opinion that the issue of conscious shopping and the arrangement of green spaces has always been a subject of discussion among architects, landscape architects, planners, sociologists and environmental psychologists, due to escalated urbanization associated with environmental degradation which has generated a debate on how much urban green space has been lost due to urbanization.

Zain (2008) noted that urbanization and development within the metropolitan regions in developing countries are aimed only towards accelerating the economic growth. Large areas of urban green spaces are declining on daily basis due to the fact that integrated means of addressing the ecological and environmental, economic and social concerns are not properly addressed in the frame work of development.

Planning the built environment is a subset of urban development which is the totality of the urban landscape and environment. As a process, it is normally expected to precede action; more so, in the area of most Nigerian metropolitan areas have grown on their own without any form of physical planning for guidance.

Urban design practice in Nigeria is still in its infancy. In the few metropolis in which physical and urban planning has been attempted, the philosophy and designs are based on foreign cultures and values alien to the real society which has made it difficult to secure cooperation of the people with the laws and regulations. Due to the foreign origin of most of the standards and criteria, it has been retarded rather than enhanced the development and livability of cities (National Urban Development Policy, 2006). The world's population is becoming concentrated in cities, giving rise to concerns that it is becoming increasingly isolated from nature (United Nations, 2008). Urbanization as stated by Miller (2005) has significantly isolated people from experience of nature.

It is observed that in Sub-Sahara region of Africa, little attention has been given to spatial distribution of green spaces in metropolitan areas. Many communities are becoming more urbanized with no attention to green spaces. Such cities in Nigeria include- Kaduna, Maiduguri, Kano, Jigawa in the North; Jos, Minna, Makurdi, Lokoja, Ilorin in the North Central; Onitsha, Enugu, Aba in the South East; Asaba, Benin, Port Harcourt in the South- South region; and Ibadan, Abeokuta, Akure in the South West (Adeleke, 2009).

Sati *et al.*, (2006) noted that during the colonial era, planning the built environment recognized the importance of green space in enhancing environmental quality and aesthetics. Streets were lined with trees, government reserve and public areas were planned with lawns, parks and gardens. However, many of these parks and green spaces today are not welcoming, because most of the beautiful sights have disappeared, leaving mostly desolated landscape.

Green space is a space designed by the architect as an integral part of the architectural composition as it is a prelude to the architectural form that complements the architectural composition that is expected to manifest. Alagesan (2008) asserted that beauty in architecture rest largely on the harmony between buildings and nature such as green space. In the renaissance period the garden was an extension of the main design. It was a middle term between architecture and nature. The transition from house to landscape was logically effected by combining at this point formality and design with naturalness of material. The garden was thus an integral, an architectural element in the art. To live according to nature means to built and integrate indoor living with the garden or the exterior according to nature.

Scot (1966) asserted that the architect's work is a hymn of creation and faithfully reflects the typical laws and limits the specific character of all that nature presents.

#### STEPS TO BE CONSIDERED FOR SUSTAINABLE DEVELOPMENT

- i. **Re-Use and Improve the Performance of Existing Built Assets.** On buildings and civil engineering works, meeting clients' functional requirements may not require new buildings or structures. Refurbishment and/or renovation to improve their sustainability performance may be a better solution than to build new units.
- ii. **Establish any New Development in Appropriate Localities.** We need to avoid inappropriate localities and, ideally, ensure that a new building is in harmony with its surroundings, both physical and human.
- iii. **Design for Minimum Waste and Effective Use of Resources.** For the whole life cycle we need to design for waste minimization. Specify materials with care and seek more-efficient use of resources. We also need to consider using recycled materials whenever it is appropriate.
- iv. **Design for Life.** We need to carefully consider the appropriate life of our buildings taking into account likely changes of use and the need for adaptability, plus the need to disassemble it, rather than simply demolish it, at the end of its useful life.
- v. **Aim for Lean Construction.** We need to work on continuous improvement in performance, waste elimination, a strong customer focus, delivering value for money alongside high environmental quality, with high-quality management of projects and improved communications with the stakeholders.
- vi. **Energy Consumptions.** We need to design for minimum whole-life energy consumptions, including combined heat and power, passive systems using natural light, air movement and ventilation. Construction in an energy efficient manner and operating built facilities efficiently.
- vii. **Do Not Pollute the Wider Environment.** Reduce to a practical minimum the chances of polluting the environment surrounding the project. Use a formal Environment Management System that meets the requirement of ISO 14001 or the Eco-Management and Adult Scheme (EMAS).
- viii. **Preserve and Enhance Natural Features and Bio-Diversity.** Throughout the project phases, from conception to construction of raw materials and landscaping, we must always look for opportunities to provide, improve and protect wildlife habitats.
- ix. **Conserve Water Resources.** We should design for increased water efficiency in building services and for water consideration in the overall built environment, for example using grey water recycling for uses that do not require potable water.



- x. **Respect people and their local environment, and seek to minimize the adverse social impacts, and maximize the positive social impacts of the project.**

Finally we need to involve and be responsive to the local community in planning and understanding our projects. We need to provide a safe and respectful working environment for staff and construction workforce, to design to minimize nuisance to neighbors during construction and operational phases.

### **VALUES OF CONSTRUCTION AND GREEN SPACES**

From a synthesis of various literature sources and field experiences of the researcher, the development of green spaces as aspects of environmental management will provide benefits that are not adequately present. These benefits are:

- i. Provision of functional organization;
- ii. Provision of comfort and convenience;
- iii. Provision of social interaction;
- iv. Provision of human health and safety;
- v. Ecological sustainability;
- vi. Provision of aesthetic experience;
- vii. Ease of maintenance;
- viii. Provision of sense of place- expression.

### **CONCLUSION**

Environment as defined by the Webster Universal Dictionary and the Thesaurus means the external conditions and surroundings, especially those that affect the quality of life, of plants, animals and human beings. The environment determines man's actions and existence on earth surface. Man's activities in the space to attain satisfaction have produced the concept of "environmental possibilism" (Golledge, 1975). The development of construction and green spaces provides essential structural and functional contribution to cities so as to make them more attractive livable.

In modern times, public demand for these aspects of environmental management is becoming stronger because of their valued roles for purpose of aesthetics and improved urban recreation. On the contrary, what exists in our environment, (within the cities, towns and rural areas) is that natural resources including forest and water bodies are cleared and reclaimed respectively to create space for buildings and road systems. This has resulted into cities and towns lacking proper environmental management for leisure. To ensure a safe comfortable and friendly environment for people, these aspects of environmental management had been applied to promote towns and cities in places like Britain, Singapore and Malaysia, with attempt made in Abuja, Nigeria's capital city. This has resulted into cities becoming more functional, welcoming and aesthetically pleasing to their inhabitants.

### **RECOMMENDATION**

From the following conclusion, it is viewed that construction and green spaces as an aspects of environmental management seems not welcoming in the developing countries, because they are gradually disappearing than in the developed countries. Therefore, the paper proffer the effective development of construction and green spaces, for it is an applicable way of making a wide range of positive contribution

towards the promotion of individual and community health, safety, aesthetics, convenience, ecological social inclusion and regeneration.

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