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THE ROLE OF LANDSCAPE TREES AND OTHER GREENS IN ENHANCING HOUSING USERS COMFORT IN NIGERIA

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Abstract

The practice of housing provision in Nigeria is generally devoid of proactive effort on landscaping as the concept of landscaping is often thought of as waste of money and time yet without any doubt, comfort in housing delivery is a crucial issue which in every way is dependent on landscaping . Many parameters both natural and man induced are often considered if housing provision is to satisfy the comfort yearning of the end users to some levels. One of the natural phenomenon that directly and indirectly impact on the end users' comfort as far as housing is concerned is the air temperature. Nigeria generally is in the tropics and there are varying impacts of tropical traits that affect expected comfort. Some areas are excessively hot while others are moderately warm, even others have temperate weather especially those on highlands and plateaus. Actually the issue of high air temperature is not peculiar to Nigeria alone as some other countries in other part of the world have temperature ranges doubling that of some hottest areas in Nigeria. This paper focuses on the excessively hot regions in Nigeria and what could be done to ameliorate the impact of it on housing provision to achieve comfort to some extent. Landscaping has been identified as one of the measures that could be adopted to moderate on air temperature if coordinately designed and applied within and around housing facilities. Four cities in Nigeria: Lokoja, Calabar, Makurdi and Maiduguri are sampled as the most hottest yet human beings live there but do not practically enjoy housing provision as expected in spite of the creative ability of housing designers hence this paper aims at what could be put in place to moderate on this harsh experience in order to enhance comfort to some extent. The methodology adopted is both primary and secondary sources. The primary approach was composed of site visits, observations, interviews and interactions with housing users. Secondary data were also used. The study revealed that landscape elements when properly designed and applied is a means of reducing harsh impact of high air temperature in the tropics. The paper concluded that adopting landscaping elements coordinately especially planting of trees and shrubs for shades and introducing some other landscaping equipment around and within houses could go a long way in moderating air temperatures to some bearable extent.

Keywords: Landscape Architecture, Housing, Landscaping, Air temperature.

Introduction

The trend of air temperature of recent is generally alarming and pervasively unbearable all over the world majorly due to ozone layer depletion without proactive action to stem the trend. It is generally accepted that climate in all regions world over have changed as air temperature has continued to increase yearly. In tropical Nigeria most places feel the pinch of heat, most drastically in the months of March to May and of recent it has been unbearable. In a city like Lokoja, it is as if the air temperature has been doubled as a night without electric light is frightening and enervating to human living. This makes the concept of landscaping within and around houses indispensable.

Landscaping is seen as an action that redesign the visual attributes of an environment which include flora or other natural features which creates comfortable environment within the landscape, natural elements such as land forms, terrain shape and elevations, or bodies of water, human elements such as structures, buildings, fences and other material objects created and installed by human beings". The foregoing activities in landscaping are extensive hence some professionals are trained in the art and the general activities of it and are called Landscape architects. They are specifically trained to design landscape elements and actually installed them for the sole aim of moderating on human environment especially around his buildings in order to moderate on excess air temperature, and radiated heat from immediate bare ground surfaces. Specifically landscape architecture as defined by Erler (2005) as the "profession that have engineering and design training necessary to enable the landscaper work with construction contractors for planting scheme". He further stated that "creative landscape designers can usually provide satisfactory plan for beds and boarders with a pleasing assortment of plants to enhance human environment". Also Fadamiro (1998), in his description of landscape architecture posited that it is the "establishment of connections or relations between settlements, building sites, open spaces and surrounding landscape". He further opined that "it strives to solve the problems relating to the use expected of the proposed areas or locations, climate prevalent in the region and the topography".

Above extracts show some activities and commitments involved in landscaping but in Nigeria, the perception and the attitude towards landscaping is generally plastic and even utter neglect as most developers do not see anything important in landscape projects around living environments. The building environment can be left bare after the main housing process is completed so far the envelope and roof are in place. This practice extends even to government housing projects in Nigeria. Several Government housing projects were completed and leased to final users with little or no commitment to landscaping work no matter the number of units. Usually government does not have any budget for design and installation of landscape elements hence impacting on housing sustainability adversely. The focus of this paper is partly on advancing cogent reasons for introducing landscape elements as means of enhancing comfort in housing.

Nigeria generally has tropical climate as it lies slightly above the equator between Latitude 4^{O} N and 25^{O} N but also has pockets of temperate weather due to its peculiar relief like Jos in Plateau State and some other highlands. Other areas apart from being tropical are excessively hot for example Lokoja, Maiduguri, Calabar and Makurdi etc, although from recent findings, it is discovered that they are even some other hotter regions around the world which their air temperatures double that of some of the hottest cities in Nigeria . According to the Guinness Book of World Records (2013), " Tirat TsvI, a small religious city in Israel with a population of 654 people has a daily air temperature of 53.7^{O}C". The book further stated that "up to 18000 trees are planted in the city to cushion the effect of the extreme air temperature". From the fore going the community could only bear with such harsh and enervating air temperature through tree planting hence it is advocated that planting of trees should be made mandatory for a completed housing process for both government estates and private housing developments and if possible planning authorities should be empowered to enforce planting of trees around houses and ensure that lack of compliance be sanctioned.

In the light of the above the role of the landscape elements especially trees in reducing air temperature and amount of ozone layer depletion is very crucial. Trees by their natural peculiarities absorb carbon dioxide and release oxygen into the air which corroborate the fact that trees are human lives hence intuitively we should allow them to grow or budget for their planting around our houses. The problem of environmental air pollution especially in our urban scenery is often much as uncountable number of cars and industrial operations emit on burnt carbons so much but man is oblivious of it and the

effect on the general living environment. The idea of tree planting and their contributions to enhancing a comfortable environment was corroborated by Brian (1979) that"trees contribute to the wellbeing and comfort of the town dwellers in replacing oxygen, recycling water and improving the soil. They are capable of absorbing large quantities of dusts from the atmosphere". He further stated that some species notably "Conifers and evergreens, trap it on the surface areas of their leaves".

Above show the dire need for trees in our urban landscape. As pointed out above trees are our lives and so need to be incorporated in and around our buildings for improved comfort and livelihood.

Aim and Objectives

The paper focuses on landscaping as a means of moderating inclement weathers prevalent in tropical Nigeria and which limits expected users' comfort, and to debunk the innumerable benefits associated with well planted landscape trees. The objectives are:

i. To showcase benefits of landscaping in housing for enhanced comfort
ii. To explain peculiarities of tropical weather and necessity of landscape equipment in moderating harsh air temperatures
iii. To denounce the general belief that incorporating landscape elements in housing process is a waste of resource.
iv. To advocate necessity of incorporating landscaping in planning edicts as one of the requirements for plan approval.
v. To explain steps required in landscaping to enhance users' comfort.

Scope and Limitation

The paper is limited to studies on the harsh tropical air temperatures in Nigeria and how to exploit the natural peculiarities of landscape elements especially trees in ameliorating the negative impact of air temperature on housing users' comfort.

Theoretical Analysis

The pull and push to have shelter over the head is a natural urge in every social being. Even birds of the air have nets to return to roost after the day long fly about especially in their nights. So the concept of housing is not new to man as however reckless a man might be as a business man or civil servant, it is pertinent that he naturally thinks of what happen after retirement from office especially where to stay with family members. This compels savings to be able to have a shelter not minding the standard. On the general level, it is part of the social responsibility of government to subsidize cost of housing to her populace. The only inherent problem is adequacy and fulfillment in the housing provision to meet the holistic needs of the end users in the face of the natural phenomena especially where air temperature is persistently high.

Housing as defined by Omole (2001) is"a residential environment which man uses for shelter and the environs of the structure needed or designed for his physical and mental health as well as the social wellbeing". He further stated that in" a civilized society, it is an inherent right of every family to live in a decent home at a reasonable cost and in a desirable community where all the desirable infrastructures are provided". From the foregoing it is pertinent to note that most of the housing provisions we have in Nigeria either by government, corporate and private organizations lack these traits as given in the above definitions and hence are below minimum standards. People and government built houses just to ensure that users are physically sheltered without taking cognizance

of the health, physiological and psychological needs of the housing users. Today more problems are naturally being evolved as the ozone layer is yearly being depleted leading to increase in air temperature with little or nothing being concertedly done to cushion the impact.

Above corroborates the concept of substandard housing as the type that does not meet the ultimate and holistic needs of final users. The concept of substandard housing as pointed out by Omole (2001) is" houses built without compliance with building bye laws or planning regulations. It is a feature of unplanned area like in the slum where people think they can just put up a building to have something to live without approval or consultations with the planning authorities". From this extract, it is crucial to evolve means of cushioning the negative impacts of such substandard housing especially in the face of sustained inclement weather which is a regular natural trait in most tropical environments. Landscaping has been identified as a means of abating the problem of air temperatures to a large extent if all stake holders involved in housing provision could key into adopting its elements in and around living environments. The unfortunate thing is that even some enlighten developers find it difficult to understand the importance of landscaping as they think it wastes the money they would have used to further their construction works

The Peculiarities of Tropical Air Temperature and Influence on Housing Provision in Nigeria

Air temperature whether high or too low affect every realm of housing hence there is a close correlation between housing delivery and air temperature as posited by Salman (1999), " temperature affects the design and construction employed as it governs the measures to be taken to maintain comfort. Temperature can be reduced in a hot tropical climate by evaporative cooling through roofs and walls". The evaporative cooling cannot work in the face of sustained exposure of walls and roofs to sun rays if there are no measures to filter the direct sun rays so instead of evaporative cooling it will be hot airs filtering into houses. As noted before in tropical Nigeria, temperature is always high due majorly to long exposure to direct sun rays. During the months of January to May every year most buildings are exposed to 12 hours of sun shine as the sky is clear throughout this time. It becomes so enervating in the months of March to May except through intervention by some rain drops in between. This generates heat to the extent that some cities like Lokoja are so unbearable that people are bereft of living especially when electric light is not steady. Even where it is steady in the day time electrical equipment will begin to malfunction due to external heat. The only time people will have respite is between the months of June and September ending.

In the light of the above, Salmon(1999) surmised that it is " important for architects to be knowledgeable about climate and different design responses required, as some times in extreme cases, heating is needed to maintain comfort". He further stated that "a normally bearable average temperature range is between 16^{O}C and 27^{O}C, if average air temperature falls below or above this range, cooling or heating is generally desired". In this case, the concept of energy efficient buildings emerged as there is a need to adopt landscaping equipment for expected comfort.

Extremely Hot Areas around the World Today and the Impact on Human Comfort

As we ruminate on some hottest areas in Nigeria and how people strive to cope with such enervating clime we also reflect on some highly hot areas around the world some of which are called earthly burning hell. As shown in the table below some areas which are thought to be unlivable but due to

some natural adjustment and introduction of trees and shrubs have made possible for them to live in such environment as published by Guinness book of records, 2013.

Table1**: Extremely hot cities in the world**

S/N	Name of City	Name of country	Average air temperature in degree centigrade	Adopted solution to cushion the effect
1	Death valley, California	America	56.7	Tree planting
2	Bangkok	Thailand	40	
3	Timbuktu	Mali	Between 40 to 49	
4	Araune	Mali	54	
5	Granddames	Libya	55	
6	Alazizia	Libya	58	
7	Ahvaz	Iran	54	
8	Kuwait		Between 45 to 52	
9	Mecca		49.8	
10	Marrakesh	Morocco	49, average is 36	
11	Phoenix	USA	50	
12	Tirat Tsvi	Israel	53.7	Excess tree planting. Up to 18000 trees planted in the small city of 654 people.

Source**: Extract from Guinness Book of records, 2013**

Above table shows the spread of extreme high temperature all over the continent of the world debunking the threat of ozone layer depletion which calls for urgent international intervention. There should be a call for tree planting revolution if this problem is to be resolved to some extent if natural air calamity is imminent.

In Nigeria our case is not as extreme as the above yet housing users still clamor for moderation through any means. As shown in the table below is periods of highest and coldest temperature range:

Table 2: **Periods of highest and lowest air temperatures in some Nigerian cities**

S/N	Name of city	Feb.-May(average air temperature in degree Celsius)	June– August (average air temperature in degree Celsius)	November- January (average air temperature in degree Celsius). Few days of harmattan
1	Lokoja	32- 38	21 – 27	20 – 21
2	Makurdi	32 -36	22 – 26	19 – 22
3	Maiduguri	35- 4	30 -35	25 -28
4	Calabar	30 – 34	22 -26	22 – 24
5	Lagos	30 -32	24 - 30	25 – 27

Source: **Researcher surveys and observations, 2018 – 2019**

Above temperature ranges is comparatively lower than other areas in the world but necessary actions must be taken as temperature increase continues yearly as much as natural ozone layer keeps being depleted.

Recurring terms and their uses in enhancing users comfort

The following are terms often associated with landscaping; their definitions, uses, benefits and application are explained for full grasp of their essence for comfort enhancement. This is shown in the table below:

Table 3: **Terms used in landscaping, their uses, benefits and application for comfort**

S/N	Terms	Definition/Description	uses	Benefits
1	Pergola	As defined by Littlewoods(1998), it is " a directional structure that is leading from one space to another, drawing the eye down its length to a focal point of entrance"	**I**t adds value to architects designed buildings especially at frontal façade	Enhances structural and aesthetic values of a house
2	Arbor	Littlewoods (1998) also defined the term as "a static place providing outdoor shelter to fit beneath a shade, alcove. It is usually connected to a building although could be free standing".	It is a flexible structure for outdoor sun or air baths for natural comfort	Augments comfort for housing users
3	Evergreens	AS defined by Encarta dictionary (2009), it is "trees, shrubs, bushes that retains their foliage throughout the year".	Provide enduring and sustainable shade from direct sun rays	Enhances physical, psychological, and physiological health
4	Fountain	An ornamental structure featuring a jet or jets of water often emerging from a statue into a pool.	For micro climatic moderation	If operation is sustained could reduce tensed air temperature to some level
5	**Gazebo**	A small, usually open sided and slightly elevated building situated in a spot that commands a pleasant view for use in a garden for shading from sun.	Used as a place for outdoor resting area especially in the day	Recuperation after days rest
7	**Court yard**	An area of ground that is surrounded by buildings which could lie inside a large building or adjacent a building and enclosed by walls	Used as a resting place during spring and hot periods	Provide as an extension of bed space during nights in the tropics
7	**Shelter**	According to Encarta (2009), it is "a structure or a building that provides cover from weather or protection against dangerous air temperature or heat".	Used as cover over users' head both day and night	Enhances essence of living

Source**: Researcher's field observations, and findings- March and April 2019**

If above terms are conscientiously designed and applied in and around houses there will go a long way in enhancing expected comfort as air temperatures would be reduced to some levels.

General apathy on landscaping in Nigeria as a pointer to sustained air temperature increases

Generally in Nigeria majority are oblivious of a need for landscaping their environment. Many believe that if one already has roof over his head he might not need to bother about landscaping. Government estates in Nigeria are devoid of coordinated landscaping what more of private

developers. Private and government developers will go to any extent within the available resources of building houses and doing some external works with the exception of landscaping all because of vague understanding of its importance and contribution to the total living of the housing users. This misconception is not particular to Nigeria alone but cut across most African nations. The white man has a contrary view as far as landscaping is concerned, and they even extend their desires to most of their colonies especially where it was discovered to have persistent high air temperatures.

In addition to the above, Lokoja the Kogi State capital is known for high air temperatures and was filled with planted trees by the former colonial masters which was a means to moderating harsh air temperature. At the creation of Kogi State most of those trees were felled as development began to take place in various places without any conscious effort at planting new ones. Actually kogi state is not alone in the general apathy but most states' and federal housing provisions are devoid of conscious effort at landscaping.

The table below shows effort of Kogi State government at housing provision at Lokoja but the unfortunate thing is no conscious attempt was made at landscaping:

Table 4: **Government housing provision since the state creation in 1991**

S/N	**Name of estate**	**Year of completion**	**Number of units**	**% rating of landscaping**	**Constraints at landscaping**
1	Adankolo housing estate	1993 to 1995	60	0-5	Oblivious of the need for landscaping project
2	Anebo quarters	1998	20	0-5	Oblivious of the need for landscaping project
3	Workers' village		150	10-15	Professional neglect especially during planning and designs
4	First 200 units housing estates	2000 to 2001	200	10-20	Professional and contractors' neglect
5	Second 200 unit housing estates	2002 to 2003	200	10-20	Lack of professional advice to government
6	Ganaza road 250 units housing estates	2004 to 2007	250	15 - 25	Lack of professional advice to government
7	Barracks road 250 units housing estate	2008 to 2012	250	15 -25	Omission during project execution
8	Commissioners quarters	2001 to 2002	20	5 -10	Exclusion from project bill of quantities
9	Permanent secretary quarters	2010 to 2012	20	5 -10	Lack of professional advice to government

Source: **Researcher's field observations, and findings- March 2010 to April 2019**

Above shows major effort by the various governments of Kogi State at housing provisions with little or no effort at landscaping around the houses . Although above statistics are not empirical however it is clear from years of observations and site visits that government does not lay much emphasis on landscaping.

Methodology

The methodology adopted is both primary and secondary approaches. The primary approach was composed of site visits, observations, interviews and interactions with housing users. Secondary data

were also used. The study revealed that landscape elements when properly designed and applied is a means of reducing harsh impact of high air temperature in the tropics as corroborated by Time Safer Standards for Landscape Architecture(2009) that "the micro climate of an outdoor space can be changed through the careful placement of trees and shrubs to block excessive sun and winds". The paper concluded that adopting landscape elements coordinately through proper planning and designs and giving appropriate professional advice to people in authority especially for planting of trees and shrubs for shades and introducing some other landscaping equipment around and within houses could go a long way in moderating air temperatures to some bearable extent and hence improve comfort of housing users to some extent.

Findings and Discussions

Results from data collected from interactions, observations are presented in tables as shown below:

Reasons and benefits of landscaping our environment

Economic, Environmental, Health, and Social benefits of landscaping: A well designed and maintained home landscape reduces erosion, sediment losses and storm water runoffs. A 5% increase in tree cover reduces erosion by 2%. They are other varied benefits of landscaping as pointed out by Landscape Queensland industries Association (2019) as presented in the following table

Table 5**: Reasons and benefits of landscaping**

S/N	Economic	Environmental	Health	Social
1	Increase the value of your home	Reduction of storm water runoff reducing local flooding	Creates a healthier home by filtering pollutants and providing cleaner air	Creates green buffer zone to increase the livability of our communities
2	Makes your home more attractive to prospective users	It controls temperature extremes stay cooler in summer and warmer in winter	Keep the family fit by fostering an active life style	Local noise and heat reduction
3	Reduces the time your property will be on the market	Erosion control reducing loss of soils in water ways	Create a beautiful environment to decrease your stress levels	It creates an attractive environment for entertaining and relaxing
4	Reduces heating and cooling cost	Reduction in evaporative and soil degradation	It provides privacy	Enhances livability of high density development

Source: **Landscape Queensland industries association incorporation** 2019

Above table shows the innumerable benefits of landscaping the environment but they could be many others. In spite of the above the orientation about landscaping is generally poor because of so many reasons. At the level of training to be a landscape architect majority of people and even academic planners are oblivious of it especially in Nigeria and generally in Africa.

Number of Tertiary Institutions Offering Landscape Architecture: This is generally few compared to other sister profession especially Architectural design. As shown in the table below, very few universities in Nigeria offer landscape architecture while so many university and polytechnics offer General architectural training. This is contrary to what is obtainable in foreign

countries for example in the United States of America alone up to 27 universities offer landscape architecture at different levels, and even landscape architecture is a popular business there.

According to the society of landscape architects in Nigeria, the following are the lists of universities that offer landscape architecture at B.Tech. PGD. And MLA levels.

Table.6 : **Lists of Universities offering Landscape Architecture in Nigeria**

S/N	Name of university	Level of study	comments
1	Federal university of technology owerri	B.Tech.	Generally it has not been long these few programs have commenced in the universities and non of the universities run BSc degrees
2	Federal university of technology Akure	MLA.	
3	University of Lagos	MLA	
4	Ahmodu Bello University Zaria	PGD. MLA	

Source: Researcher's survey, 2019.

Reasons for low consciousness of landscaping in Nigeria

Many reasons are adduced for low consciousness of landscaping in Nigeria. Many are oblivious of the need for landscaping even among the elites they believe that investment in landscaping is an outright waste of money. Also as pointed out by Wawsoski (2000), " we human beings think of ourselves as rational species but when you consider how we have been landscaping for the past centuries you will wonder if that is really true". The following are some reasons why landscaping does not go down the minds of Nigerians:

i. **General lack of awareness of the profession:** Many believe that they can have the best in housing without landscaping. They also believe that landscaping is a foreign idea and so could be done away with in housing delivery
ii. **Very few universities and polytechnics available for training of prospective and aspiring landscape architects**: While almost all the universities and polytechnics in Nigeria offer the general architectural designs from the lowest level of National Diploma, very few of this institutions offer landscape architecture. None of the federal polytechnics offer landscape architecture as of today.
iii. **Poor national orientation on the need for landscaping in housing process**: the historical development in housing development in Nigeria depict that we have very poor orientation about the need for landscaping. The federal government in Nigeria has severally initiated housing provision but with little attention on landscaping either on designs or in the external works.

Failure on the Part of Academic Program Planners in Nigeria: Academic planners like national board for technical education and National university commissions failed in the area of initiating or compelling institutions under their influence to introduce landscape architecture as a program that will foster the overall development of Nigeria. The following may be the reasons:

i. **Lack of interest of the management of higher institutions in Nigeria in landscape architecture**:

ii. **Lack of human resources**: There are available few institutions in Nigeria today that offer the landscape architecture and its not been long when the program would have been approved so they are few hands available to train more persons hence management of the higher institutions in Nigeria are not willing to submit request to run the program.

iii La**ck of physical resources to mount such program**: The nation's economy is on the down side and to provide enough facilities for the ongoing programs has been difficult hence there is foot dragging in proposing and seeking for approvals of new ones.

Landscaping equipment for successful landscape business: In Nigeria very few persons are aware of the business possibilities in landscape architecture but in foreign lands it is a good and prominent business. The business requires tools for cutting, digging, moving earth and even tending earth. According to Heidi (2019)"the tools and equipment that landscapers use makes their work easier and faster allowing them to perform billable works and more competitive and profitable services". He further gave the following equipment that could be used for successful landscape business:

i. **Hand tools**: landscapers use a variety of hand tools to cut, dig, gather and move natural materials such as fallen leaves and soils. Such basic hand tools for cutting include pruning shears, hedge trimmers, sharp curved landscaping knife and pruning saw. The ones used for digging include sharp spades, wide shovels and post- hole diggers.

ii. **Power tools**: This makes landscaping work easier and faster. Leaf blowers, gas and electronic hedge trimmers and chain saws make the work of rakes, manual trimmers and cutters go much faster.

Iii **Heavy equipment:** These include tillers, tractors, and mowers for moving soil and turfs. A basic service landscapers perform is lawn cares requiring lawn mowing edging, grading so the equipment allows landscapers to work more efficiently.

Iv **Personal protective equipment**: The work of landscapers requires attention to safety and use of personal protective equipment to prevent accident and injuries. For example safety goggles protect eyes from flying debris from mowers, blowing equipment and cutting tools equipment etc.

Impact of Ozone layer depletion on housing development in Nigeria

The natural layer covering the direct penetration of sun rays into outer atmosphere is yearly being depleted which has affected air temperature generally and has led to the phenomenon of climate change. This has immensely affected comfort in housing provision especially in tropical regions of the world. Our air temperature has continued to soar high every year affecting negatively expected comfort no matter how much designers have striven. The following are adduced as reasons for the sustained scenario:

i. Uncontrolled atmospheric pollutions:
ii. Emissions of unburnt carbon matters into the air: The number of cars and other engines in factories has continued to increase due to technological advancement all over the world, and these all emit unburnt carbon dioxide gases into the air which naturally affect the ozone layer.
iii. Trees release oxygen into the air and absorb carbon dioxide yet very few understand this natural phenomenon and so have no initiative to plant trees for such purposes.

Findings

From discussions, interactions, extracts from texts, surveys and observations carried out thus far, it was found out that landscape trees and greens contribute immensely in reducing air temperature and enhancing comfort of housing users as it is depicted in the following reasons adduced:

a. **Landscape trees for filtering direct sun rays on façades of buildings:** The impact of direct sun rays on buildings in tropics is tremendous especially on west facing walls, so trees can be planted along such facades to filter direct rays and hence reduce heat absorbed in such walls and hence enhance the expected comfort.
b. **Trees being used as wind breakers:** Stormy winds could affect building roofs and sometimes cause roof up thrust, so trees can be planted along such wind path to break the impact by filtering violent winds thereby reducing the tendencies to remove roof and so enhance psychological and physical comfort on users.
c. **Psychological impact of greens on man:** Every green sight affect man's perception, feelings and physical state and so could increase human life span. This is why it is advocated that green environment should be brought close to man including his external and internal housing environments.
d. **Necessity of landscape plants to man at all times as air is needed:** Actually all greens contribute immensely to sustain human livelihood hence God attested to the fact that trees are human life and so should not be felled indiscriminately. Physically plants are needed to beautify the façade of our buildings as attested to by landscaping 1, 2, 3 (2001), that "landscaping around the front door of a house will make your home well coming and attractive. Also you might need some plants to supply privacy, others to dress up the front of the house and still others to add interest to backyard patio"
e. **Shaded trees used as natural gazebos for open air baths during hot sun shines in spring times:** During this period the tensely sun is often harsh and unbearable to stay in rooms so shaded trees like umbrella trees are used as places for rest and sometimes people build seats around it for rest and that enhance expected comfort. Sun shines around this period could be up to 12 hours daily thereby making staying in rooms enervating hence people find succor in hanging around such evergreens.
f. **Trees releases oxygen into the air and absorb excess carbon dioxide emissions**: It reduces rate of ozone layer depletion that has contributed to increase in air temperature yearly and has adversely affected expected comfort.
g. **Landscape trees as means of site stabilization to avert erosion**: Roots of trees and shrubs contribute in no small measures in soil stabilization so where there is a threat of soil erosion, trees, shrubs and soil covers could be planted to reduce loose soils and hence resist erosion.
h. **Radiated heat could be brought to minimum through plants around houses**: When the immediate housing environments are covered with natural covers like trees, flower, and shrubs and other greens, they reduce the tendency of bare ground absorbing heat which will later be radiated onto walls that might generate heat in rooms. This stance is corroborated by Fadamiro (1998), who posited that " trees can be provided as shades to prevent direct rays of the sun from heating up the building and its surroundings thereby curbing such diseases from excessive heat like cough, measles and rashes during dry season".

Conclusion and Recommendations

The paper concludes that landscape architecture has immense role to play in enhancing housing users' comfort if landscape elements especially trees and other greens are purposely planned, designed, billed and incorporated into housing environments. This in essence means that all the

stakeholders in housing delivery including governments, corporate and private housing developers should be involved in a renewed orientation about adopting trees and other greens in over all housing process. The first step is to understand the importance of trees then inculcate it in design proposals and ensure they are actually planted and cared for until maturity, and necessary maintenance sustained. The following are the recommendations:

i. Government should spearhead renewed orientation about landscape architecture by approving landscape architecture study programmes in higher institutions in Nigeria both at technological levels and other higher levels in universities.
ii. All plans approval agencies of government should ensure that housing designers specify landscaping of housing environment to be part of all external works as a requirement for approving a proposed set of plans.
iii. Wherever there is a proposed government housing estates, government should ensure landscaping especially tree planting is incorporated in the external works and a proactive follow up be done in the implementation.
iv. Landscaping trees contribute immensely to the total wellbeing of man hence medical bodies should be encouraged to undergo intensive public enlightening campaign on planting of trees around houses for shades and other public places for receiving natural air baths in times of excessive sun shines.
v. Where government cannot plant trees around housing estates it should subsidize tree seedlings at affordable prices to motivate people into tree planting.
vi. Academic institutions should be encouraged to plant trees around their facilities as high air temperatures also affect negatively academic concentration and performance.
vii. Trees planting enhances the beauty of an urban landscape and also stabilizes terrains, so trees should be planted along major roads in cities.
viii. Designers and construction crew members should professionally guide developers on the need to incorporate landscaping into their housing developments if final users are to have enhanced comfort.
ix. Government estate users should be compelled to plant trees around their houses as a condition for leasing houses to them on owner occupier basis.

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