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Environmental Factors in Housing

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Abstract

The paper looks at the environmental factors in housing, national environmental problems, construction and the environment, Sustainable development, the study of the present situations, the effects, and the impacts of the environmental factors in housing. The natural phenomena include tropical storms, land erosion, windstorms, floods, drought, desertification, human diseases, coastal erosion, and diseases, wildfire, harmattan haze and landslides. Other potential hazards include earthquakes and volcanoes. The major man-made hazards include civil strife; road, water and air traffic accidents; and technological episodes such as oil spills, hazardous wastes dumping and industrial accidents. All of the above call for urgent action for the strengthening of our emergency preparedness to reduce our peoples' vulnerability and cushion the impact of disasters on our settlements, economy and environment. The paper reviews the existing literature on the environmental factors in housing, including an overview of Nigeria environmental issues. It considers the future plans for strengthening, improving and coordinating the implementation of environmental management by making necessary recommendations.

Keywords: Environmental Factors, Housing, Sustainability, Construction Industry.

1.0 Introduction

Environmental factors are facts, situations, effects, and behaviours, all things, small or big, that may have impact on the environment. Environmental factors are factors that exist in the physical surrounding around us which affects us (man), flora and fauna, either positively or negatively (Blurts, 2012). They are factors that arise most times as a result of the type of activities that take place in that locality. Members of the housing community recognize the need for environmental safeguards and support the objectives of environmental policy. All Nigerian have a stake in the protection of the natural environment to ensure that the air is safe to breathe and the water to drink, that the land and oceans remain productive, that environmental hazards do not pollute our homes and yards, and that our neighbourhoods are developed in aesthetic harmony with nature. However, housing professionals know first-hand the frustrations of elaborate regulatory reviews, the unnecessary costs associated with frivolous litigation, and the exclusionary effects of selectively expressed environmental concerns (Braconi, 1996). They also question the allocation of environmental costs, which too often seem to be passed on to those whose political voices are most diffused.

According to Civilengineergroup, (2011) many architects, construction and building engineers are ill-equipped by their training to deal with the emergent issues of global warming, acid rain and other ecological and environmental influences. Architects have the power to influence the consumption of energy in construction in the face of raised awareness of the potential damage to our ecological future. Concern with the ozone layer, global warming, acid rain, diminishing rain forests and the depletion of vital reserves, and the ever increasing demand for energy, has meant that ecology and the environment is rapidly becoming one of the most powerful influences on the design process. This is leading to an emerging trend based on a response to these criteria. Whilst everybody talks about ecological building, few Architects, construction engineers and building services engineers are truly able to deal with these issues. Their training has not prepared them. Consequently the construction industry must recognize that in order to prosper they must help designers with the critical information, without which, alternative design strategies based on misconceptions, prejudiced views and knee jerk reactions pose a strong, and unnecessary, threat against the use of other building materials.

The Habitat conferences and the Rio Earth Summit have already helped to raise international awareness of the potentially bleak ecological future of our planet if current trends continue unaltered (UN, 1997). There is no question that architects influence energy consumption in construction. The work of architects who aim to build with ecology and the environment in mind, tend to fall into two camps. In one camp are those who use earth or organic forms. They see traditional and vernacular methods and materials as the panacea for all environmental ills. The resultant buildings are characterised by their autonomous services, turf roofs, generating their own electricity supply, recycling rainwater, featuring composting toilets, or are even made of mud covering

and other discarded materials. Whilst praiseworthy in principle, they cannot often be called Architecture. The other camp the 'High-Techs' such as Future Systems are also contributing to the protection of the environment. They use modern technology and materials available to them in such a way as to minimise the strain on the earth.

One of the most commonly adopted measures for saving environmentally precious resources is to fully utilise whatever is in free supply. Air: the wind, passive air-flows; Water: using the sea, rivers, dams, ground water; Sun: Passive and active systems; Earth; thermal and acoustic insulation, cheap material; Fauna and Flora; and combinations of them. The material such as clay, gravel, sand, silt, soil, loam, mud is everywhere. The ground we walk on and grow crops in also just happens to be the most widely used building material on the planet. Civilizations throughout time have used it to create stable, warm, low-impact structures.

2.0 The Environment and Related Ecological Issues

Ecology is defined as the environment and its association with the living organisms. Ecology is the study of life and the interactions between organisms and the natural environment. Environmental issues have always been a major concern of mankind. According to Buzzle (2011), our environment forms an integral part of our life and a clean and healthy environment becomes a requisite for a healthy living. It is we, human beings, who should take efforts to deal with the environmental issues and show a deep concern towards ecology. Here is a list of the different environmental issues that we need to care when using materials for construction. There is pollution of soil, water, and air; habitat destruction and species loss; disease and other issues that could result from the use of materials for construction purposes. These include among others:

Health Related Issues: According to Buzzle (2011), these are some health issues that are related to environment and construction, with contaminated air a lot of diseases come in to play. Such as eye infections, skin diseases and all kinds of intestinal complaints. If one works out the hospital costs, medicines, doctors, nurse and maintenance pay, plus the hours lost at work, one can calculate large economic effects due to air pollution.

Erosion: Along the lines of Adelekan (2010), soil erosion is almost always as a result of human intervention. The trees are cut down and these trees existed to provide a cover against the rays of the sun which now dries out the soil, and the wind can than easily blow away the dust that is formed, this is wind erosion, because the trees are no longer there, whose roots bound the soil together, and because their canopies of foliage no longer exist the rain now has easy access to the unprotected, now dry surface and the rain waters wash away the top soils, this is water erosion

Acid Rain: The deposition of acidic elements in forms of precipitation in snow, rain or fog can be called as acid rain. The pollutants in the atmosphere react with moisture to form acidic substances that precipitate in the form of rain.

Air Pollution: The introduction of chemical substances, which can prove harmful to the environment, into the atmosphere is known as air pollution. Air pollution can prove lethal for many organisms and cause respiratory disorders in human beings.

Noise Pollution: The noise created by humans and machines that disrupts the balance of the human and animal life is termed as noise pollution. Automobiles, some industrial activities as well as aircraft and rail noise cause noise pollution. It can hamper the physical and psychological well-being of human beings.

Water Pollution: This is the contamination of water that makes it unfit for usage is known as water pollution. It is caused by the introduction of harmful chemical substances as also the industrial and human waste into water bodies. It has a deep negative impact on the plant and animal life in the aquatic environment.

Climate Change: A major change in the average weather of a region is known as a climate change. The natural processes as well as certain human activities can cause a change in the temperature, precipitation and wind patterns of the Earth's atmosphere.

Earthquakes: Energy changes in the Earth's crust create seismic waves that cause an earthquake. Earthquakes caused shaking of the Earth's surface and may trigger landslides and volcanoes.

Environmental Pollution: Apart from air, water and noise pollution, there are other types of environmental pollutions such as land pollution, radioactive and thermal pollution. The term, 'environmental pollution' encompasses all the activities, which involve the introduction of contaminants into the environment.

Endangered Species: It refers to a population that is on the verge of extinction. Know all about the endangered animals.

Global Warming: The increase in the average temperature near the Earth's surface and oceans is referred to as global warming. The increase in the levels of carbon dioxide leads to an increase in the temperature of the Earth's atmosphere, as carbon dioxide traps the atmospheric heat.

Greenhouse Effect: A disturbance in the thermal equilibrium temperature of the Earth is known as a greenhouse effect. Greenhouse gases absorb infrared radiation emitted by the atmosphere and the surface of the planet. The presence of gases, which absorb infrared radiation, in the Earth's atmosphere, causes the greenhouse effect.

Hurricanes: Strong and powerful winds blowing at tremendous speeds are referred to as hurricanes. They gain momentum when they blow over vast water bodies. Spirally moving strong winds that arise from an area of low atmospheric pressure are known as cyclones. Those moving in an anti-clockwise direction are known as hurricanes.

Landslides: Landslides involve a huge amount of ground movement such as rock falls, failures of slopes or debris flows. Landslides are an outcome of the change in the stability of slopes caused by groundwater pressure, loss of vegetative cover, erosion, earthquakes and volcanoes.

Melting Glaciers: Glaciers, massive bodies of ice, melt due to the atmospheric heat. Melting of glaciers is a natural phenomenon. Recent years have witnessed a rise in the rate at which glaciers are melting. This is primarily due to global warming.

Overpopulation: When the number of organisms exceeds the carrying capacity of their habitat, the phenomenon is referred to as overpopulation. An excessive increase in the world's population leads to an excessive consumption of resources, which can result in an imbalance in the availability of natural resources.

Ozone Depletion: The ozone layer is that part of the Earth's atmosphere, which serves as a protective layer, guarding the Earth from the harmful radiation of the Sun. Chlorofluorocarbon and Bromofluorocarbon compounds contribute to the depletion of the ozone layer, causing a hole in it.

Recycling: The process of collecting unused material that is considered as waste and reprocessing it in order to bring it into use, is known as recycling. Waste products are collected, sorted, processed and cleaned so that they can be recycled for manufacturing new products.

Soil Conservation: Soil is one of the most important natural resources. The idea of soil conservation refers to the implementation of strategies to prevent soil erosion.

Wildlife Conservation: Wildlife is an integral part of our natural wealth. The measures for the preservation of animal life and their protection from extinction are classified as wildlife conservation measures.

3.0 Overview of Nigeria Environmental Issues

As stated by UN (1997), Nigeria has made significant effort since the Rio Conference to address the core environmental and sustainable development issues which were identified and agreed upon at the United Nations Conference on Environment and Development (UNCED). However, environmental problems are still visible five years after UNCED. Land degradation remains the greatest problems in Nigeria. In addition, we still witness high levels of water and air pollution while efforts to reduce the rate of natural resources depletion and desertification are yet to yield significant results. Moreover the debt situation in Nigeria is still a major hindrance to sustainable development and poverty alleviation. Apart from the national environmental problems, Nigeria has to contend with global environmental problems such as ozone layer depletion, global warming and the consequent climate change. The toxic wastes dump problem is still prevalent in spite of the relevant provision of the Basel Convention. Despite these problems, Nigeria made progress in setting up the necessary institutional framework geared towards sustainable development. For instance in 1992, the Federal Environmental Protection Agency (FEPA) was given a broader mandate over natural resources conservation and its functions were enhanced by according it ministerial status within the presidency. The enhanced mandate of FEPA as well as the establishment of the National Planning Commission along with the existing ministries provided the framework for the integration of environmental concerns into physical and socio-economic development policies of the nation. The institutional framework has fostered international cooperation on environmental matters between Nigeria and several overseas countries and international organisations (UN, 1997).

According to UN-HABITAT (2008), the unprecedented increase in population and rapid rate of urbanisation have brought about significant settlement problems of housing, overcrowding, traffic congestion, environmental degradation, inadequate infrastructure and services. Recognising these problems, the Government has not only featured in its National Rolling Plan the National Housing Policy but also the strategies for

implementing a number of programmes aimed at promoting sustainable human settlement development. Some major landmarks which were already made in Nigeria in the field of environment formed the basis of the new agenda for environmental protection and natural resource conservation in the country. The National Policy on the Environment and appropriate legislation, guidelines and standards for environmental impact assessment are being progressively reviewed and strengthened. Realising that climate is slowly and steadily varying due to human activities, systematic monitoring has since been ensured by Government through relevant agencies and departments in order to determine, in quantitative terms, the rate of variation. Such information becomes important for early warnings against natural disasters of flooding, erosion and drought among others. Also, several greenhouse gases are under surveillance for the purpose of determining the level of atmospheric pollution in the country. The Government has also evolved through relevant agencies sound planning and management of land resources in the country. Various programmes including soil survey, land evaluation, fertiliser testing, fertility management and soil conservation are being pursued with adequate consideration to their environmental implications. According to UN (1997), one major source of concern to the federal government of Nigeria is the persistent decline of national forest at an alarming rate of about 3.5 per cent per annum. Efforts towards sustainable forest management are made through the development of appropriate strategies and an action plan, afforestation programmes, a forest inventory as well as extension and advisory services.

The serious ecological and socio-economic implications of desertification and drought in Nigeria have informed the government to take certain steps in mitigating the problems associated with desertification and drought. Since Rio, Nigeria has also put in place a hazardous chemicals and toxic wastes dump programme and established a FEPA/University of Ibadan Linkage Centre to carry out research and training in the area of industrial, domestic and hazardous waste management. In recognition of the fact that broad public participation in decision making is a fundamental prerequisite for achieving sustainable development, Nigeria has made concerned efforts to involve the relevant groups in all its major activities. A Ministry of Women Affairs has been established. The activities and number of NGOs have been increased, local environmental action plans are under preparation, environment units are being established by most manufacturing companies, and the scientific and technological communities are getting increasingly active in environmental matters. In spite of the remarkable progress made, there are still substantial constraints. These include uncoordinated policies and legal instruments, weak data base, inadequate enforcement, institutional conflicts, inadequate and untimely funding, and lack of public awareness.

4.0 General Overview of the Environmental Issues

This was an overview of the different environmental issues in housing that we need to be concerned about. Ecology issues relate to all the living organisms and their environment. Our environment plays a vital role in our living; and so should we, in the maintenance of a healthy environment. In line with Braconi (1996), environmental requirements affect housing affordability in three principal areas. Environmental reviews affect the “soft” costs of housing development, including technical and legal expenses and short-term financing charges, while substantive environmental standards tend to raise both the “hard” costs of development and the operating costs of housing. NEPA affects housing development primarily through the program of the Department of Housing and Urban Development (HUD), regulations governing environmental review for its programs identify three types of projects: Those categorically excluded from environmental review, those requiring an environmental assessment and those automatically requiring an environmental impact statement (EIS). Most housing rehabilitation falls into the first category, while the majority of new housing construction falls into the second.

Environmental assessments are preliminary analyses conducted to determine whether a “full-blown” NEPA has proved to be a successful piece of environmental legislation. It has generally fulfilled its intention of forcing Federal agencies to consider environmental effects when planning programs or projects and, over the years, it has prevented or modified hundreds of environmentally damaging actions. Environmental review has also had a salutary effect on the housing development community by bringing more scientific rigor to the planning process, improving the liveability of housing developments, and stimulating innovation in housing and community design (Braconi, 1996). Environmental protection has come at some cost, however, especially with respect to State environmental review requirements that typically cover a broad range of State and local decisions affecting housing development

5.0 Environmental Standards and the “Hard” Costs of Housing Development

Environmental review procedures may sometimes lead to the termination of a housing project because its adverse impacts are judged to be too severe. More often, project approval is conditioned upon the developer's willingness to implement mitigation measures identified through the review process. Such requirements can raise the cost of housing development by introducing design complexities, these costs are usually passed on to the homebuyer or renter.

Clean Air and Water: In keeping with Crawford (1991), in an urban context, mitigation expenses arising from general environmental concerns are often minor. The Clean Air Act for example, requires specific mitigation measures for industry but not for housing, and the incremental automobile travel generated by modest infill housing is usually insignificant relative to a city's total traffic volume. Only when major urban redevelopment projects are contemplated or subdivisions of substantial size are planned for low-density areas do air pollution concerns involve major mitigation expenses. Nevertheless, some environmental mitigation requirements can add significantly to the construction costs of housing. For example, water quality concerns have resulted in a potentially serious new burden on housing construction. In cities where storm sewers are integrated with municipal waste treatment works, storm water surges can overload treatment plants and cause untreated effluent to be discharged into waterways (Crawford, 1991).

Site Contamination: According to Smith (1993), another environmental statute that has a universal effect on hard development costs is the Comprehensive Environmental Response. Consequently, lenders now require due diligence procedures for detecting toxic waste problems as a condition for granting loans. Environmental site assessments typically involve a search of public and private documents are performed to ascertain whether a site has had any history of uses that may have resulted in toxic contamination. The need to address potentially hazardous site conditions presents difficult problems for urban redevelopment. CERCLA has stimulated private environmental site assessments that protect the safety of future residents and protect developers and lenders from potentially disastrous investments (Harvard Law Review, 1991; Kass and Gerrard, 1991, 1993).

Radon: Not all hazardous site conditions are the result of human activities. During the 1970s and 1980s, it became apparent that naturally occurring radon gas poses a health threat to residents of homes subject to indoor build-up of the gas. Radon gas is produced by the decay of radium-226, a radioactive element found in many types of soil and rock, although they also occur in isolated contexts throughout the Nation. EPA estimates that from 7,000 to 30,000 lungs cancer deaths a year are attributable to radon exposure (U.S. Environmental Protection Agency, 1994).

Asbestos: Asbestos, a fibrous mineral widely used in construction materials because of its flame-resistant properties, is another source of indoor air pollution that has had a profound impact on housing, particularly on rehabilitation practices (Mossman, Bignon, Gee and Seaton, 1990). Since the early 1900s, chronic exposure has been a known cause of asbestosis (a form of pneumoconiosis) in asbestos miners, and during the 1950s and 1960s the mineral was linked to a variety of other lung diseases, including cancer. Research results now show that intact ACMs are generally better left in place and that careless removal can increase health risks for building occupants (U.S. EPA, 1994).

Lead Paint: Growing concern about household exposure to lead poses perhaps the greatest danger for the Nation's affordable housing stock. Ingestion of lead is known to cause severe, irreversible neurological damage to young children those results in learning disabilities, behavioural problems, and other serious health conditions. For both economic and health reasons, the paint industry gradually reduced the lead content of its products between 1940 and 1960, lead-based paint was eventually banned by the Consumer Products Safety Commission (U.S. General Accounting Office, 1994).

6.0 National Environmental Problems

The environment provide all life support systems with air, water and land as well as the materials for fulfilling all developmental aspirations of man. As in most other countries of the world, the Nigerian environment today presents a grim litany of woes. Every state of the federation suffers from one form of environmental problem or the other in varying degrees (U. N, 1997 & UN-HABITAT, 2008). The northern part of the country is being literally "blown away" by wind erosion while the southern part is being washed away into the ocean. Wind erosion could be quite severe in states such as Sokoto, Zamfara, Kebbi, Katsina, Kano, Jigawa, Borno and Yobe. Roads and sometimes huts and public buildings may be completely buried by active sand dunes rising sometimes up to 12 metres high.

Desertification and Drought: Population pressure, over grazing and the continuous exploitation of marginal

lands have aggravated drought and desertification. Nigeria is presently losing about 351,000 square kilometres of its land mass to the desert which is advancing southward at the rate of 0.6 kilometres per year. According to a recent survey by the Centre for Arid Zones Studies in Nigeria, desertification is by far the most pressing environmental problem in the northern states along the Niger Republic border. The outward and visible sign of the desertification process is the gradual shift in vegetation from grasses, bushes and occasional trees, to grass and bush and in the final stages, extensive areas of desert-like sand. Entire villages and major access roads have been buried under sand dunes in the northern portions of Katsina, Sokoto, Jigawa and Borno States with about 55 per cent of its land under siege from desert encroachment (Ngenvirons, 2010 & U. N, 1997).

Land Degradation: On the word of Daramola & Ibem (2010), the intensification of the use of fragile and marginal ecosystems has led to progressive degradation and continued desertification of marginal lands even in years of normal rainfall. Gas flaring and the resultant problems of ecosystem heat stress, acid rain and acid precipitation have prompted destruction of freshwater and forests resources in the coastal areas of the country. Global estimates indicate that the flaring of petroleum associated gas in Nigeria alone accounts for 28% of the total gas flares in the world. The problems of exposure to radiation, creation of artificial ponds associated with bad mining practices and non-reclamation of mining waste lands as provided for in the Minerals Acts are common in the mine fields of Jos Plateau, Enugu and other locations (Ngenvirons, 2010 & U. N, 1997).

Erosion: According to United Nations (1997), gully erosion is particularly severe in Abia, Imo, Anambra, Enugu, Ondo, Edo, Ebonyi, Kogi, Adamawa, Delta, Jigawa and Gombe States. Anambra and Enugu States alone have over 50 active gully complexes, with some extending over 100 metres long, 20 meters wide and 15 meters deep. Coastal and marine erosion and subsidence occur particularly in the coastal areas of Ogun, Ondo, Delta, Rivers, Bayelsa, Akwa Ibom and Cross River States. The most significant case of coastal erosion and flooding is the overflow of the Bar Beach of the Atlantic Ocean now a regular feature since 1990, threatening the prime property areas of the Ahmadu Bello Way, Victoria Island, Lagos (Ngenvirons, 2010, United Nations, 1997& Buzzle, 2011).

Flooding: In line with United Nations (1997), flooding occurs throughout Nigeria in three main forms: coastal flooding, river flooding, and urban flooding, Coastal flooding occurs in the low-lying belt of mangrove and fresh water swamps along the coast. River flooding occurs in the flood plains of the larger rivers, while sudden, short-lived flash floods are associated with rivers in the inland areas where sudden heavy rains can change them into destructive torrents within a short period.

According to Adelekan (2010) urban flooding occur in towns located on flat or low lying terrain especially where little or no provision has been made for surface drainage, or where existing drainage has been blocked with municipal waste, refuse and eroded soil sediments. Extensive urban flooding is a phenomenon of every rainy session in Lagos, Maiduguri, Aba, Warri, Benin and Ibadan. Virtually every Nigerian is vulnerable to disasters, natural or man-made. Every rainy season, wind gusts arising from tropical storms claim lives and property worth millions of Naira across the country. Flash floods from torrential rains wash away thousands of hectares of land. Dam bursts are common following such flood (United Nations, 1997).

Deforestation: Uncontrolled logging and tree felling from which government generate paltry taxes accentuated by lack of re-stocking are the order of the day in many parts of the southern states of Nigeria. This carries with it loss of precious biological diversity. Nigeria's wildlife is rapidly declining due to habitat loss and increased pressure from hunters, poachers and bush burning. Also an estimated 484 plant species in 112 families are threatened with extinction because of habitat destruction and deforestation (Ngenvirons, 2010 &United Nations, 1997).

Many of our cities are turning into concrete jungle where plants are no longer used for home landscaping. The rampant bush burning is threatening the growth of trees and wildlife species and reducing the ecological diversity of the area; gravel mining for construction is aggravating the problem of erosion and surface run-off; while indiscriminate discharge of particulates from construction sites is already leading to pollution and siltation. More recently, areas earmarked as green belts and recreational areas are being systematically converted into building sites.

Pollution: The problems of industrial pollution are enormous. Nigeria has about 5,000 registered industrial facilities and some 10,000 small scale industries operating illegally within residential premises. In places like Kano, Kaduna and Lagos, coloured, hot and heavy metal-laden effluents especially from the textile, tannery and paints industries are discharged directly into open drains and water channels, constituting direct dangers to water users and biota downstream. Also disturbing is the practice whereby some industrial facilities bury their expired chemicals and hazardous chemical wastes in their backyard threatening the ground water quality. They are also

aesthetically unpleasant; the siting of public buildings and residential quarters on flood-prone areas as well as unsettled and improperly reclaimed dump sites. Such ecologically sensitive areas are often converted into plots for the erection of residential quarters and public buildings such as market stall (Crawford & United Nations, 1991, 1997).

Poverty: According to U. N & UN-HABITAT (1997, 2008), poverty is a cause as well as a consequence of environmental degradation. Poverty, particularly in rural areas, and its attendant malnutrition and under nutrition are closely linked to degradation of the environment, as poverty depletes natural resources which in turn exacerbates the sufferings of the poor. It is often said that the two groups particularly responsible for a disproportionate share of environmental degradation are the world's top richest and bottom billion, that is, the poorest of the poor. The former always tries to satisfy wants and not needs. In contrast, the bottom billion, due to economic necessity born out of survival instinct and lack of options, scavenge marginal lands to survive today at the expense of tomorrow. Thus, they are caught in the perpetual web of poverty and environmental degradation. In the final analysis, the poor are usually both victims and agents of environmental damage (U. N, 1997).

7.0 Global Environmental Issues

Apart from the major national problems catalogued above, Nigeria also has to contend with such global environmental problems such as climate change, ozone layer depletion, drought and desertification.

Global Warming: Climate Change or Global Warming is caused by increasing concentrations of atmospheric warming gases or Green House Gases (GHG) especially carbon dioxide whose concentrations have increased from 280 ppm to about 370 ppm now. These gases warm the atmosphere by their capacity to trap heat and cause changes in the weather pattern of the earth. The increase in temperature causes the polar ice caps to melt and ocean waters to expand. These in turn result in sea level rise leading to submergence of many low-lying areas of the world (Ngenvirons, 2010 &United Nations, 1997).

Ozone Layer Depletion: Ozone Layer Depletion is linked with certain "miracle" chemicals of yesteryears, namely Chlorofluorocarbons (CFCs), Halons and Carbon Tetrachloride which destroy the ozone layer. This is nature's shield which filters off ultraviolet B radiation in the stratosphere, protects human beings, animals and plants from the harmful effects of these ultraviolet (UV) rays which could cause skin cancer, eye cataracts, loss of body immune system.

Tran's boundary Movement of Hazardous Wastes and Toxic Chemicals: Another important environmental problem is the non-natural but trade-related environmental problem of Tran's boundary movement of toxic chemical wastes, expired and contraband chemicals and pesticides. As Nigerians, we cannot forget the Koko Saga involving 3,780 tonnes of toxic wastes from Italy in 5 shipments. That incident was nearly a national embarrassment but for the swift and decisive response of our government (Ngenvirons, 2010 &United Nations, 1997).

8.0 Improving and Coordinating the Implementation of Environmental Management

In order to build on the gains so far achieved in environmental protection efforts and ensure that environmental protection programmes are anchored on solid foundation the Figures 1,2,3,4 and 5 bellow demonstrate some important factors to be considered to achieve sustainable society and the following should be implemented as part of the necessary pre-requisites for the achievement of sustainable development in Nigeria: Integrating environment into development planning and decision-making, Strengthening the legal basis for sustainable development, creating and improving capacity for sustainable development, harmonizing federal, states and local governments responsibilities for environmental management, adopting and promoting the use of existing environmentally friendly technologies, promoting research and development of environmentally sound technologies, forging viable partnerships among various stakeholders and interest groups both at national and international levels, managing environmental information and education to generate adequate public awareness for decision making, internalizing environmental costs through the use of economic instruments in the management of natural resources, alleviating poverty, and improving the funding for sustainable development.

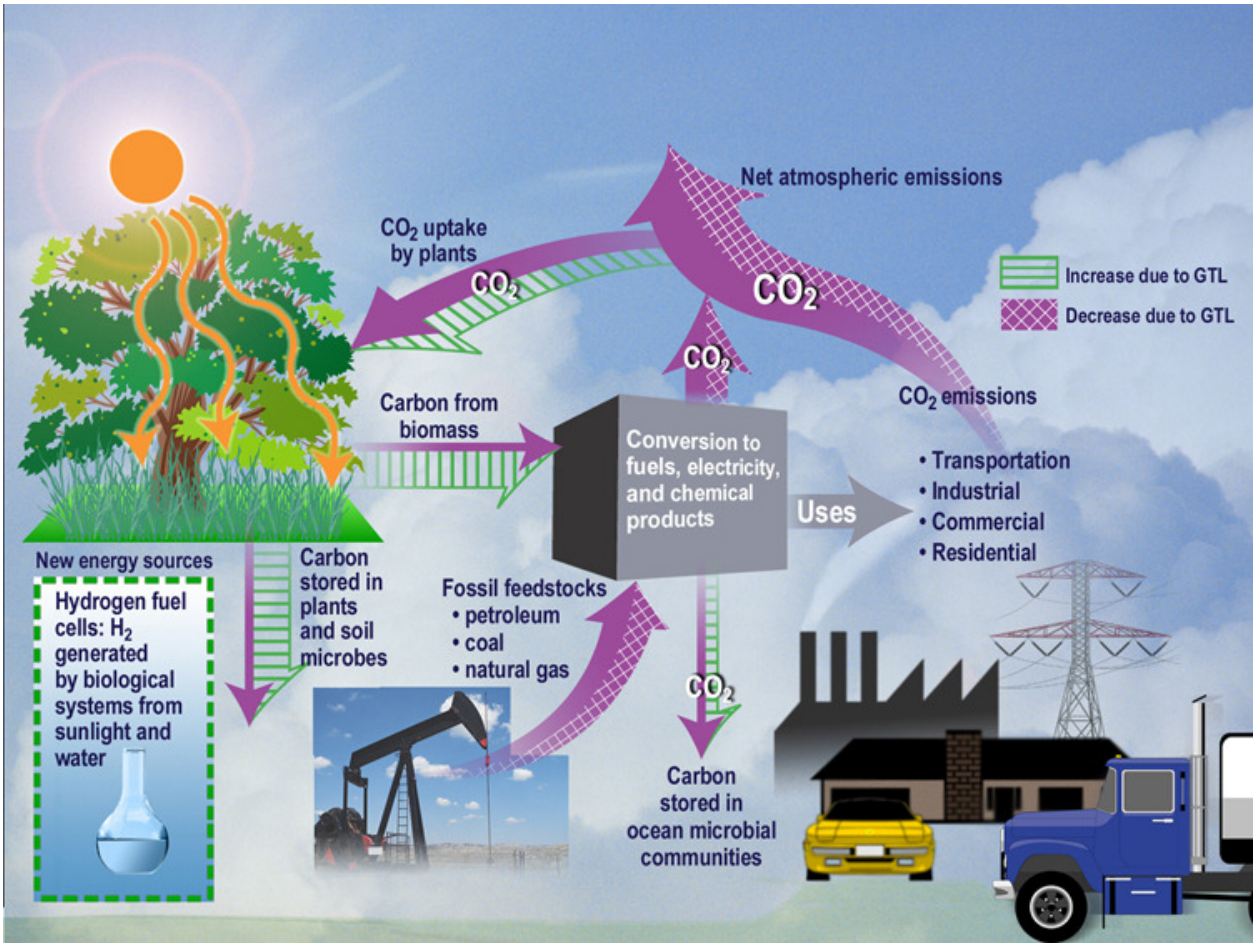

Figure 1 Flow of CO2 in an ecosystem, Source: U.S. Department of Energy Genome, 2007.

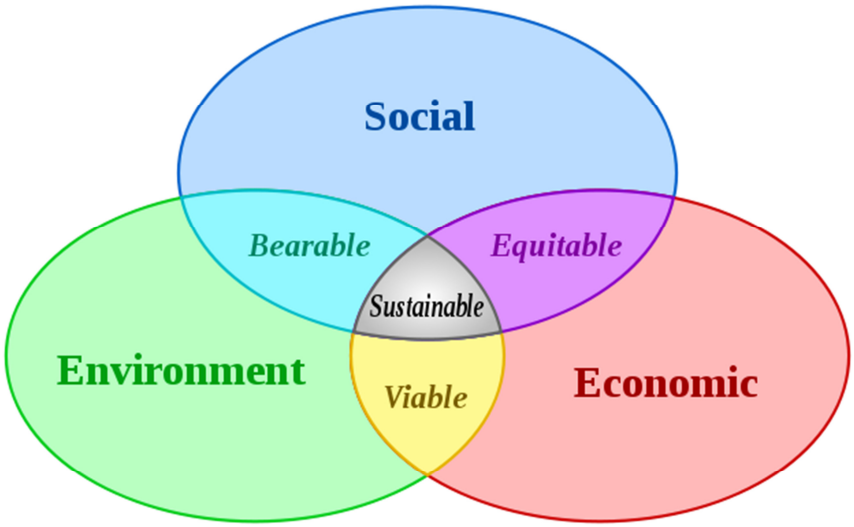

Figure 2 Scheme of sustainable development: at the confluence of three constituent parts Source: Dréo, J. (2006)

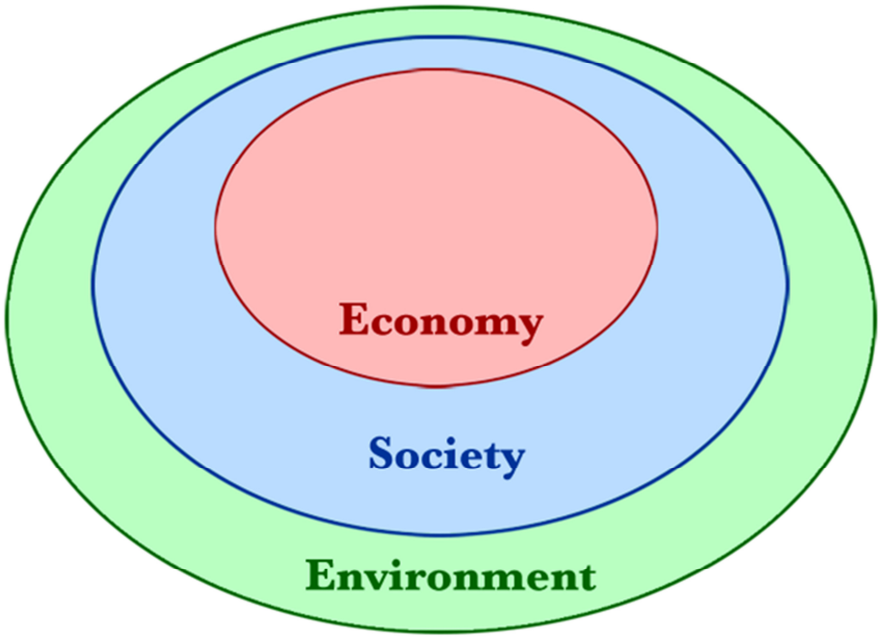

Figure 3 The relationship between the three pillars of sustainability suggesting that both economy and society are constrained by environmental limits Source: Sunray, I. (2009)

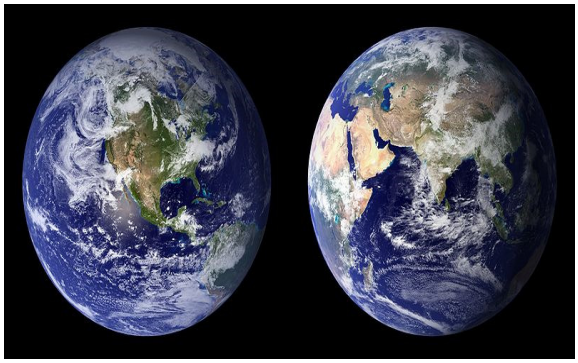

Figure 4 Achieving sustainability will enable the Earth to continue supporting human life as we know it.

Source: NASA, (2009)

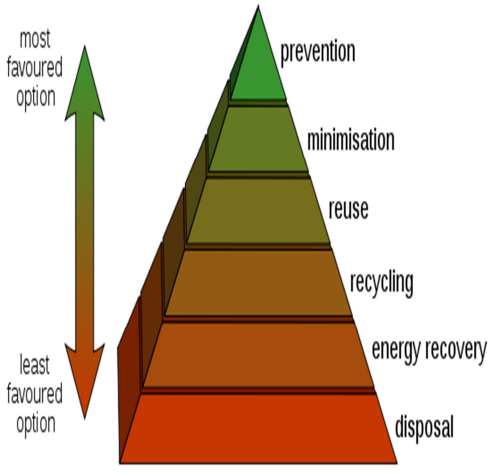

Figure 5 The waste hierarchy

Source Waste-hierarchy.png, 2008

Expand the fundamental objectives and state policy in the constitution to include the clause on sustainable development as a national goal, Government to adopt the "Polluter Pays Principle" as an instrument of environmental protection policy and management strategy, Ensure speedy translation of international agreement protocols and conventions on environment and consignation into national laws and regulations and ensure their enforcement, Improve the provisions of the Environmental Impact Assessment (EIA) Decree 86 of 1992, and ensure its proper implementation,

In line with the current practice at the federal level, state governments should establish Sustainable Development Units (SDU) in their Budget and Economic Office with the same responsibility and function as the S.D.U. in the National Planning Commission and the Urban and Regional Planning Department of the Ministry of Works and Housing to enable land use management for sustainable development, Adopt the system of national accounting to adequately reflect the extent to which economic development activities have increased or decreased environmental pollution and natural resources on which future economic and social development depend.

9.0 Future Plans for Emergency Preparedness and Management

To be able to mitigate promptly the negative impacts of natural and man-made disasters on human settlements on national economy and the environment. Nigeria has had a number of emergency situations arising from disasters - natural and man-made that calls for urgent action for the strengthening of our emergency preparedness to reduce our peoples' vulnerability and cushion the impact of disasters on our settlements, economy and environment. The following strategies are to be adopted: Government is to prepare comprehensive hazard maps and vulnerability analysis for the country by; compiling historical data of disaster occurrence, analysis of meteorological, seismological, agricultural and environmental records and employing satellite imagery and the GIS system to prepare the hazard maps.

Establish very effective early warning systems for meteorological, geological, biological, social and industrial hazards by; enhancing the meteorological services, effective monitoring of disease epidemics, resuscitation of seismographic stations and the existing seismological centres, development of reliable biological indicators and building of a viable network for early warning information dissemination. Develop and maintain prompt emergency response mechanisms and contingency plans by making an inventory of all existing resources for emergency response for easy marshalling at times of disasters, establish a body to coordinate emergency response to reduce duplication of efforts and enhance accountability, formulate a national emergency policy and an emergency plan. Mount a sustained public awareness and education programme hazard preparedness by: engaging military and paramilitary forces as well as voluntary organisations in drills on emergency response including search and rescue etc. Preparing and integrating emergency preparedness into school curriculum.

10.0 Conclusion

The environmental regulations cumulatively have had a profound effect on the development, management, and, ultimately, the cost of housing. To the degree that sounder development patterns and practices have evolved and safer housing has been built, those effects are to be welcomed. Ironically, some environmental policies affecting housing encourage degradation rather than protection of the environment. It has been widely noted, for instance, that local growth controls can promote suburban sprawl, generating an increased amount of traffic congestion and air pollution. Likewise, other environmental policies may discourage high-density housing and more efficient urban lifestyles. The environmental and housing communities should seek to focus environmental laws and regulations more directly on matters affecting the natural environment or individual safety. The housing and development community can assist, particularly in the early stages of the legislative process, by ensuring that industries or activities responsible for environmental degradation are held accountable.

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