

ECOLOGICAL ENVIRONMENT, SOCIAL ENVIRONMENT, BUILT ENVIRONMENT AND THE SEARCH FOR CONVERGENCE IN NIGERIA

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Abstract

Three main groups of environments are recognized. These are the ecological environment, the social environment and the built environment. All these environments share certain convergence in some environmental issues. These issues are the ecological environment and its importance, the factor of man in the environment, pollution of the environment and climate change in the environment. Others are loss of biodiversity and natural hazards in the environment. These are all issues that must be taken into reckoning in managing these environments for sustainability. All academic programmes that have to do with these three groups of environment, must see to it that these issues are included in a course of study, for the students of these programmes. They need such a course to enrich their knowledge and to make them relevant in the knowledge economy of the 21st century world. This is besides adding value to their education as professionals-in-training and imbuing them with environmental education, needed by all people who lay claim to an all-round education.

Key Words: Ecological Environment, Social Environment, Built Environment, Pollution, Climate Change, Biodiversity and Natural Hazards.

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Introduction

The term environment is the surrounding of an organism in the place where it lives (Fatubarin, 2009). It includes such things as air, water, soil, light, temperature and other living things (Bellamy, 2007). Gilpin (1976), noted that an environment also includes such things as geographical location, climatic conditions and the terrain, which is the topography. The description above is in consonance with what ecologists recognize as “**ecological environment**”. However today, besides the ecological environment, we also have such other environments as the “**social environment**” and the “**built environment**”. The social environments is the environment involving the interactions of individuals of the species (Bellamy, 2007), while the built environment, is a well planned area, built and providing congenial conditions (Bellamy, 2007).

The ecological environment, is the environment of living things, plants and animals, while the social and built environments are the environments of human beings, with the social environment emphasizing the activities of human beings, through which interactions occur between individuals. It is these interactions among human beings that interest the social scientists, who study the features of the groups into which human beings aggregate in demography, the business activities they manage, in business administration and the ways the funds are managed in accounting. These social scientists also engage in economic activities (in economics), psychology of human behaviour (in psychology), management of human beings in establishments (in human resources management), among others. The built environment is the domain of

professionals, such as the architects, the town planners, the surveyors and the estate managers, among other professionals.

These environments be they ecological, social or built environments, are environments of living things. As earlier mentioned, while the ecological environment deals with the environment of other living things, the social and built environments deal with the environment of human beings. Since these environments are not operating in a vacuum, they too are composed of all those things that make up the basic components of the ecological environment. These have been earlier on listed to include the abiotic components of climatic conditions or climatic factors, the soil factors, also known as edaphic factors (Fatubarin, 2009a) and the topography or terrain, also known as topographical factors. Others include the air or the atmosphere, also known as atmospheric factor, the water or any other form of water supply, known as the water factor.

There are also the biotic factors, which include the plants, known as the flora, the animals, known as the fauna and the microorganisms, known as the microbes. In essence therefore, all the other environments, in the form of social environment and built environment, are operating within the ecological environment. They both have the components of the ecological environment as the surrounding of human beings in these social and built environments. Beyond this fact, is another special fact. This is the fact that most of what happen to the components of the ecological environments, also affect both the social environment and the built environment. Another important fact, is that which touches on the role of human beings in all these environments. In essence therefore, certain forms of convergence have emerged in the three main groups of environments. These forms of convergence are found in the following issues:

- i. The Environment and Its Importance;
- ii. The Factor of Man in the Environment;
- iii. Pollution of the Environment;
- iv. Climate Change in the Environment;
- v. Loss of Biodiversity in the Environment;
- vi. Natural Hazards in the Environment.

These are issues that affect the lives of all living things, be they plants, animals, microorganisms and human beings. They are of special importance to all scientists that ply their trades in the ecological environment, as in the case of the ecologists and those that ply their trades in the immediate environment of human beings, as in the case of the social scientists and the environmental scientists.

The Environment and Its Importance

All environments, be they ecological environment, social environment and built environment, have in them certain basic components that make the surrounding of living things, plants, animals and human beings, in these environments. These components of the environments earlier claimed to be similar to the components of the ecological environment, are important for the following reasons:

They provide for living organisms, certain necessities of life which included the following:

- a. Sunlight – a climatic factor that provides the planet earth with the light that makes visibility possible on earth.
- b. Sunlight also has solar energy, the energy that makes photosynthesis possible in plants, a process through which plants obtain their food and through which products of commercial importance, such as woods, fruits, seeds, drugs et cetera

- are got. The by-product of photosynthesis is oxygen, which helps in purifying the air of the environment.
- c. Sunlight also makes all other forms of energy possible in the planet earth. Such energy forms include thermal energy that accounts for temperature on earth. Sunlight is therefore the ultimate source of energy on earth.
 - d. Rainfall, a major source of water in the tropics, is also a climatic factor that makes water available in the planet earth.
 - e. Temperature, a climatic factor, makes possible appropriate heat energy needed for the metabolism of all living things, including human beings.
 - f. The air of the atmosphere contains oxygen, which makes aerobic respiration – a metabolic process of importance in the survival of most living things.
 - g. The carbon dioxide of the atmosphere makes possible photosynthesis in the plants. It is a raw material in the process of photosynthesis.
 - h. The water of the environment provides the water needed for many living processes in living organisms. Water makes photosynthesis possible in plants. It makes a large number of other metabolic processes possible in all living things. It also serves as the aquatic environment where aquatic organisms live. Water also has a large number of important uses for human beings, in such things as domestic uses, industrial uses, commercial uses, scientific uses and agricultural uses, among several others.
 - i. The lands, soils, rocks, minerals and mineral ores that are components of the abiotic environment, are parts of the natural resources around which several agricultural, commercial, industrial and scientific activities of human beings revolve. The activities of the built environment for instance, thrive on the existence of lands, trees, among other requirements.
 - j. The plants and animals, which constitute the biota of the environment, are not only important as natural resources of the environment, they also provide a large number of benefits to human beings. These benefits are later discussed in the issue of biodiversity of the environment.

So important are the components of the ecological environment, that it could be claimed that without them, human beings can not be in existence, talk less of getting involved in the interactions that characterize the social environment or the activities of human beings in the built environment.

Man and the Environment

Man that is often referred to in the literature, as humankind human, being and *Homo sapiens*, is a special living organism, whose activities cut across all forms of environments, be they ecological, social or built environments. He is in fact the king of all species, who is specially endowed with a large number of characteristics never found in other living organisms, not even in the apes their closest relatives. Fatubarin (2009b), gave an account of these characteristics, that have enabled humankind to tilt the equilibrium of life to himself, in what ever environment he finds himself. So important is the factor of man in the ecological environment, that this factor of man, has been termed anthropogenic factor.

Man through his activities in the ecological environment where other organisms, plants, animals and microorganisms abound, is known to have adverse influences on the atmosphere, the water, lands, soils and minerals and other components, such as the vegetation and the wildlife. These adverse influences of man on the ecological environment, are through all those activities that form the bulk of the other issues recognized as major issues of convergence of the environments. These issues are pollution of the environment, climate change and loss of biodiversity. Other activities

of man that have adverse influences on the ecological environment, are those activities carried out by man in the process of his interactions in the social environment and in the process of enhancing the built environment.

These activities of man that have ecological consequences, are agriculture and related activities, such as crop production, forestry management, animal husbandry and others such as wildlife management, fisheries and horticultural services. Many of these activities of man, involve massive land clearing, burning and use of fire, establishment of monoculture in place of natural forests and wood land savannas, use of pesticides and other agrochemicals, among others.

Man through his activities in the social environment and in the built environment, also carry out a large number of activities that have ecological consequences. These activities include taking possession and utilizing the lands within the environment that carry on them natural vegetation. Such lands are massively cleared for developmental purposes, thereby destroying their natural vegetation and whipping out their wildlife. Similar activities with their attendant consequences, also accompany transportation, land reclamation and creation of man-made habitats, such as zoological gardens, city parks, fish ponds, arboretum and city gardens, among others.

It must however be admitted that it has not all been stories of woes concerning the activities of humankind with the environments. He has been able to impact the environments positively through a number of his activities. Examples of such impacts are seen in the following:

- i. Improving agricultural productivity, thereby providing foods and making available raw materials for the agricultural and allied industries;
- ii. Controlling a large number of diseases, pests and parasites of man and those of his beneficial plants and animals;
- iii. Effecting to a large extent, the conservation of the natural resources that constitute the biotic and abiotic components of the environments;
- iv. Effecting control of environmental pollution to some extent;
- v. Effecting control of human population, through family life education;
- vi. Making life comfortable for human beings through his developmental activities in urbanization and industrialization;
- vii. Bringing about the advanced knowledge in the form of information and communication technology (ICT), that is presently transforming the knowledge economy of the 21st century world.

Pollution of the Environment

Pollution is a term that covers all forms of undesirable changes in the surrounding of living organisms, resulting from the discharge of materials and energy into the environment by man, in quantities which are harmful to man or harmful to other valuable environmental resources of man (Fatubarin, 2009c). Pollution has several years ago been alluded to by the author, as the price humankind has to pay for his civilization (Fatubarin, 1982). Pollution occurring as air pollution, water pollution, land and soil pollution, results from release of pollutants in the form of sewage, garbage and refuse, pesticides, industrial effluents and crude oil spillage. Others include effluents of exhaust pipes of motor vehicles, mine wastes, mutation-inducing radiations, noises, among others, that have diverse adverse influences on man himself and his natural resources.

Such adverse influences include those that affect the health of man himself and the health of his animals. It is many of these pollutants that are responsible for water and soil-borne diseases such as cholera, diarrhoea, dysentery, among others. Certain air pollutants such as industrial effluents such as oxides of sulphur, cause emphysema and respiratory problems such as asthma and bronchitis. Noise besides annoying people, causes headaches, disturbs concentration and in extreme cases, causes deafness.

Olaniyi, Oriye and Olanusi (2009), noted that air pollution may result in greenhouse effect, ozone-layer depletion, acid rain and smog. Water pollutants in the form of oil spillage besides making such water unavailable for productive uses, usually destroys the water animals of affected places, such as fishes, prawns and lobsters. Pollution is a phenomenon that affects all environments of not only human beings, but also the plants and animals within all these environments. It has also been implicated in the phenomenon of climate change – a global phenomenon that is currently threatening the existence of humankind on the planet earth.

Climate Change in the Environment

Climate change is a global phenomenon which is of interest in all forms of environments where human beings and other living things are found. Anuforum (2009) cited United Nations Framework Convention on Climate Change (UNFCCC) as viewing climate change “**as change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability over comparable time**”. He also cited Intergovernmental Panel on Climate Change (IPCC), as having defined climate change, as “**any change in climate over time, whether due to natural variability or as a result of human activity**”.

Climate change has manifested itself in several recognizable changes in climate over years. These changes have been summarized by Fatubarin, (2009d) and their manifestations in the northern and southern parts of the country, defined by him. He also noted the manifestations of this climate change in other parts of the world.

So important and serious is climate change, that it has been described as “**the greatest crises ever faced collectively by mankind**” (Foley, 1991). It has therefore attracted the attention of scientists whose studies have to do with any of the three environments earlier defined. They have made far-reaching observations on the recognizable changes that are evident in climate from the previous years, the causes of these changes, the manifestations of climate change in the different climate zones of the world, its consequences on sustainable development and how best to tackle the challenges of climate change.

Fatubarin (2009e) noted that virtually all the major issues in sustainable development of a nation are affected by climate change. He listed these issues to include human health, human populations, agriculture, food security, biodiversity, drought and desertification, lands and soils and water resources. Others include energy, coastal and marine environments, urbanization and industrialization, transportation and communication, floods, erosions, among many others. The most disturbing thing about climate change is the remark by Anuforum (2009), that if an end is put to climate change today, its effects will linger on for the next 50 years. Still more disturbing is the fact that mankind may for some time to come, not have any control over some of the causes of climate change. One notable example is cement manufacture which is claimed to account for close to 5% of the global man-made carbon dioxide emissions (Anuforum, 2009).

There is also the methane that ruminants such as cows, horses, sheep and goats exude from their mouth, when they belch following a meal of pasture (Anuforom, 2009). This methane he claimed is 23 times more potent than carbon dioxide as a greenhouse gas. There is also the cases of the carbon dioxide that are generated from volcanic activities such as those of Lake Nyos in the Cameroon, that shares its boundaries with the four State of Cross River, Adamawa, Benue and Taraba in Nigeria (Ojah, 2012). Of course there are the greenhouse gases such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and ozone (O₃), which Adeyewa (2009), noted have increased in the 1990s as a result of combustion of fossil fuels, such as petroleum, gas, charcoal and coal and agriculture and massive land use activities involved in the built environment.

Industrial activities have also led to the massive production of chlorofluorocarbons (CFCs) in such activities that are involved in aerosols and other equipment that utilize chlorofluorocarbons, and in another industrial product in form of carbon tetrachloride (CCl₄). In the built environments, where in many water-logged places and places with small pools and puddles, land filling is carried out, such land fills, do produce land fill gases (LFGs), which are primarily methane and carbon dioxide. These are greenhouse gases, which according to Ilevbare and Adesanya (2009), make up about 90% of the LFGs. The other 10% is made up of gases such as carbon monoxide, nitrogen, alcohols, hydrocarbons, organic sulphur compounds and heavy metals (Ilevbare and Adesanya, citing El-fadel *et.al.*1997).

Loss of Biodiversity of the environment

By biodiversity is meant the plants and animals on the planet earth, either living in their natural environment or have become domesticated and are now sharing the environments with man, for example in the built environment. Krebs (1994) describes biodiversity as the species richness of a place. Adeyewa (2009), classified biodiversity into two groups of plants biodiversity, also known as floral biodiversity and animal biodiversity, also known as faunal biodiversity. These floral and faunal biodiversity are of importance to mankind in such issues as economic benefit, provision of food for man and his animals, provision of shelter, provision of clothing, and provision of educational materials. Other benefits include provision of drugs and dressings, being of aesthetic value and of recreational value and sources of energy. The plants are also of ecological importance in providing shelter for wildlife as well as their breeding grounds. They also provide oxygen for the atmosphere to purify the atmosphere. All these benefits are of interest to the ecologists, the social scientists and the scientists interested in the built environments.

Biodiversity has now attracted a global attention because of the rapid way they are being destroyed in many parts of the world. This destruction which is resulting in gradual decrease in the number of species and the population of the various species, has led to the term “**loss of biodiversity**” and the clamour in many quarters for “**biodiversity conservation**” – a term which means a carefully planned scientific management of biodiversity, to ensure their sustainability for life.

Natural Hazards of the Environment

If the man-made problems of the environment which include burning and abuse of fires, pollution of the environment, climate change and loss of biodiversity, are all what humankind has to contend with, he must have had more than enough! But nature has not spared mankind of other challenges within the environment that are often described as natural disasters and acts of God. These natural disasters are really disasters, in the

sense that they are what in ecology are referred to as density- independent factors. This implies that their effects on living populations are not determined by the population of the species of organisms. Their effects not only impact adversely on the ecological environment, but also the social environment and the built environment. For instance, all the diverse types of hurricanes that have been witnessed in United States of America, with hurricane sandy, being the latest, have impacted adversely on human beings, floral and faunal biodiversity as well as thousands of structures in the built environment.

These natural hazards include floods, water and wind erosions, drought and desertification. Others include coastal erosion, stream bank erosion, land slides, hurricanes and tornadoes and occasional fires, resulting from rock boulders falling off from big mountains. Others still include volcanic activities, such as those of Lake Nyos in the Cameroons and silting of natural water bodies, such as being encountered with Lake Chad, where the portion of the Lake in Nigeria, has virtually dried up.

The implications of the Convergence of diverse environmental issues

It has been established in this paper that a number of issues in ecology, have relevance not only in ecology, but also in social sciences and the programmes in the built environment. Such issues include the importance of the ecological environment to all living things, plants animals and human beings and the role human beings play in all environments, be they ecological, social or built environments. It has also been hammered upon that the global challenges of the environments, have implications not only in the ecological environment, but also in the social and built environments.

The relevance of these ecological and environmental issues in the academic programmes of the social sciences and the environmental sciences are underscored in the convergence of these issues in all forms of environments, be they ecological, social and built environments. It therefore stands to reason that social and environmental sciences, need to include a course incorporating these issues of convergence in their environments, into their academic programmes. This is necessary not only to enrich the knowledge of these students in these issues, but more importantly, to make them relevant in the world of the 21st century. This is a century which Adelegan (2009), described as a knowledge economy, in which the knowledge must be made relevant towards exploring and exploiting the natural resources of all countries of the world, for development in the various countries.

There is also the issues of personal education of every individual not only for relevance in the global arena, but also to be knowledgeable in issues that affects not only one's health but also one's profession. It is also in the interest of all educated people, irrespective of their professions, to be interested in the issue of sustainability of our environments, in the collective interest of human beings on the planet earth.

Concluding Remarks

There is no doubt about the fact that in the knowledge economy of the 21st century, knowledge is becoming increasingly interrelated, so much so that the knowledge acquired in one discipline is now finding relevance in a large number of other disciplines. This is particularly so for all forms of knowledge that have bearing with the environments. All issues of the environment, should therefore be of interest to all such disciplines and professions that involve the ecological environment, such as the sciences and the applied sciences and those that involve the social environment, like the professions of the social and management sciences.

This is also true of the professions involving the built environment. All professionals must of necessity, in build the major environmental issues that are sufficiently topical to be of global importance, in the preparation of their students. This is necessary to make the students adequately prepared to be relevant in the knowledge economy of the 21st century world.

References

- Adelegan, A.: Life in the 21st Century: Maximizing your Potential to Prosper. Lecture delivered at the special convocation week of Joseph Ayo Babalola University. Ikeji Arakeji. (2009) 6pp.
- Adeyewa,Z.D.: Your Planet needs You-Unite to combat Climate Change. Lead Paper presented at the 2nd Annual Conference of the Institute of Ecology and Environmental Studies and Gold Environment Award. Volume 2. Obafemi Awolowo University, Ile Ife Nigeria. (2009) 20pp.
- Anuforum, A.C.: Climate Change and National Development Model for Nigeria. Keynote Address delivered on the occasion of the 2nd Annual Conference and Gold Environment Award of the Institute of Ecology and Environmental Studies. Obafemi Awolowo University, Ile Ife. Nigeria. (2009) 21pp.
- Bellamy,: Dictionary of Environment. Academic (India). Publishers. (2007) 483Pp
- Fatubarin, A.: Environmental Education and The African Child. Journal of the Sciences Teachers' Association of Nigeria. 20(2): (1982) 124-130.
- Fatubarin, Ayo: Tropical Ecology. Keynotes Publishers Ltd.Ilesa. Nigeria. (2009a) 127pp.
- Fatubarin, Ayo: Man and His Environment. Keynotes Publishers Ltd. Ilesa. Nigeria. (2009b) 123pp.
- Fatubarin, Ayo: Nigeria and The Global Problems of the Environment. Keynotes Publishers Ltd. Ilesa. Nigeria. (2009c) 94pp.
- Fatubarin, Ayo: Towards an Effective Communication of Climate Change and Its Consequences in Nigeria. Proceedings of Nigerian Meteorological Society. International Conference on Climate Change and Sustainable Development. December 6-11. (2009d) pp. 231-236
- Fatubarin, Ayo: Climate Change and its Consequences on sustainable development of Nigeria Proceedings of International Conference on Climate Change and sustainable development held by Nigerian Meteorological Society in Osogbo Osun State. December 6-11. (2009e) pp. 237-245.
- Foley, G.: Global Warming: Who is taking the heat? Patos Publishers Ltd. London. UK. (1991) 104Pp.
- Gilpin, A.: Dictionary of Environment Terms. Rout ledge & Kegan Paul Ltd. (1976): 191Pp.
- Ilevbara, F. and Adesanya, A.A.: Attitudes towards Solid Waste Management, Quality of life, self monitoring, Locus of Control and Gender as Predictors Lagos State as a Case Study. *Journal of Library studies*. Vol 2 (2009), pp. 22-27
- Krebs, C.J.: Ecology. Harper Collins College Publishers New York. (1994) 801Pp.
- Olaniyi, O.A., Oriye, O. and Olanusi, B.: Air Pollution, Climate Change and Human well being in Urban Area – A case study of Ado Ekiti. Nigeria. 2nd Annual Conference and Gold Environment Award of the Institute of Ecology and environmental Studies. Obafemi Awolowo University. Ile Ife. Nigeria (2009) Vol. 2:204-206.