

Ensuring Effective Forest Services to Mankind: Implications for Environmental Education in Nigeria

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Abstract

Forests are a part of environmental resources being degraded as a result of human activities for which environmental education should be designed for their effective management and protection. The paper highlights the benefits of forest and its resources to mankind as well as causes of forests loss (deforestation) and effects of forest loss on mankind. The paper also attributes forest loss to unsustainable human activities on forest areas which include: logging, agriculture, urbanization, industrialization and high population growth rate. It sees environmental education as a viable tool that can develop in individuals, appropriate knowledge, attitudes, skills, motivation and commitment required to take responsible environmental actions that would lead to the protection, conservation and sustainable management of forests. The paper concludes that it is through the provision of appropriate environmental education that the effective forest services to mankind could be achieved.

Keywords: Environment, forest, environmental education, deforestation.

1. Introduction

Environment is a broad and comprehensive term denoting all that surrounds human: air, water, soil and light. It is a condition or circumstance that affects living beings. Environment could be said to consist of all external factors and forces with which one interacts from conception until death. It includes the physical, chemical, biological, psychological and socio-cultural dimensions and indeed everything that makes up the context in which the individual lives (Oduro-Mensah, 1992). The environment has been traditionally regarded as a reservoir of unlimited resources to be exploited and managed for human purposes. This human-centered perception of the environment has been blamed for centuries of environmental destruction (Encyclopedia Britannica Online, 2008; Oduro-Mensah, 1992). This human-centered perception of the environment was blamed because it led to development models which address growth at the cost of environmental conservation resulting in global degradation of resources ultimately culminating in severe depletion of basic resources such as soil, land, forest, and water which are basic requirements for human survival. The degradation of environmental resources results in the contemporary global environmental problems such as climate change, global warming, acid rain, ozone layer depletion, pollution, green house effect, erosion, desertification, biodiversity loss and so on.

The solutions to these problems were being sought individually by different countries and regions of the world, an attempt which yielded no significant solutions because environmental problems are global in nature and existing across national frontiers. The reason for not achieving significant solution in the effort to address the problems was because while the developed countries preoccupied themselves with the problems of pollution, global warming, green house effect and depletion of ozone layer, the developing countries preoccupied themselves in finding solutions to more existential problems such as desertification, drought, soil erosion, deforestation, high population growth rate and toxic waste disposal (Phiri, 1991; Mbalisi, 2010). A later realization that environmental problems are global in nature and transcend national

boundaries reinforced the resolve and commitment to protect our ailing environment, hence, a call for urgent global cooperation and action.

This call led to convening of a conference on human environment by the United Nations in Stockholm, Sweden in 1972 otherwise known as The United Nations Conference on Human Environment (Only one Earth). The conference made environmental issues and concerns to be viewed not only in isolation but in relation to our social and economic development because almost every human activity directly or indirectly impacts on the environment. The conference noted the pervasive decay of the environment at global, regional and national levels and agreed on a plan of action to safeguard and enhance the environment for the benefit of present and future generations. It aimed at raising the standard of the ecological health of the planet by improving the physical and spiritual qualities of our relations to the earth. It also aimed at asserting the fundamental rights of man to live in an environment worthy of his dignity and well-being. Based on the aims of the conference, it therefore declared the building of a new era of international cooperation based on global partnership, integration, equity and environmental protection. Based on the aims of the conference, it therefore called in its recommendation 96 for the development of environmental education as one of the most critical elements of an all-out attack on the world's environmental crisis (UNESCO, 1975). Forests are a part of environmental resources being degraded as a result of human activities for which environmental education should be designed for their effective management and protection. Effective forest management and protection would ensure its effective services to mankind. It is against this background that this paper is designed to look into the contributions of environmental education in ensuring effective forest services to mankind.

2. The Concept of Forest

Based on the erroneous traditional human-centered perception of the environment, forests are one of the reservoirs of unlimited resources of the environment being exploited, managed and utilized for human purposes. Forests are vegetation types or plant formations in which trees are the dominant species. Forest could be seen as plant community, predominantly of trees or other woody vegetation, occupying an extensive area of land. In its natural state, a forest remains in a relatively fixed, self-regulated condition over a long period of time (Adam, 2009). In Nigeria, three types of forests exist namely: swamp (Mangrove), tropical rain forest (primary forests) and secondary forest.

Swamp (Mangrove) forest is a forest type characterized by an entangled dense growth of stems and aerial roots (OnlineNigeria, 2011). This type of forest is mostly found in Niger Delta region of Nigeria.

Tropical rain forests are characteristic of central Africa and the Amazon watershed. Plant growth is profuse, and because the fall and regrowth of leaves occur gradually throughout each year, the forest is always active. Tree species are highly diverse but usually have smooth, straight trunks and large, simple leaves. Peters in Ogunleye *et al.* (2004) notes that species richness or large number of plant species per unit area is one of the fundamental and known characteristics of tropical forests. Nigeria's forests according to Mongabay.Com (2010) contain 1,085 million metric tons of carbon in living forest biomass.

Secondary forest is a type of replanted forest with one or more types of species of tree dominating. Examples include rubber and palm plantations.

3. Benefits of Forests

Forest services manifest in the benefits forests provide to human beings most which are social, economic and environmental in nature. They include among others:

wood (both hard and soft) for cooking and heating, construction of houses, making of furniture, poles, baskets, boards plywood, woodpulp for making of papers and textiles etc;

environmental services such as air and water purification, watershed protection to control runoff, soil stabilization, nutrient cycling, carbon sequestration (storage). These activities contribute to combating climate change and global warming;

recreational facilities such as game reserves, zoos etc;

medicinal plants for the treatment of various types of ailments; and

food in the form of Non-Timber Forest Products (NTFP). These refer to a wide array of economic or subsistence materials that come from forests excluding timber. They range from food or food additives (nuts, mushrooms, wild fruits, herbs, spices, aromatic plants); plant materials (fibres, creepers and flowers); plant derivatives (raffia, bamboo, rattan, cork and essential oils) to animal (game and bees) and animal products (honey, silk) (Olumide, 2009; Oriola, 2009; Aiyeloja & Ajewole, 2006).

These forest benefits contribute to a great extent to the development of socio-economic wellbeing as well as maintain good health conditions of human beings. The awareness of the benefits of the forest leads to intense exploitation of forest resources for improved standard of living of human beings. This intense exploitation of forest resources leads to forest degradation otherwise known as deforestation.

4. Deforestation

Deforestation is a deliberate removal of forest and other forms of vegetative covers from a site without replacement. It is the alteration of natural arrangement of trees, a process of depleting without reforesting the flora and fauna within the forest. It is a process whereby trees are felled for several purposes, but without replanting to replace the ones felled (Omofonmwan & Osa-Edoh, 2008; Nzeneri, 2010). According to Mongabay.Com (2010), 9.9% or about 9,041,000 ha of Nigeria is forested and of this, 2.38% (409,650 ha) is lost yearly between 1990 and 2010. Nigeria has lost a total of 47.5% (8,193,000 ha) of her forest between 1990 and 2010. The main cause of this forest loss (deforestation) has been attributed to unsustainable human activities on forest areas including logging, agriculture, urbanization, industrialization and high population growth (Salau, 1993; Bisong & Mfon, nd; Ogunleye *et al.*, 2004; Omofonmwan & Osa-Edoh, 2008).

4.1 Logging:

Logging is removal of trees from the forest for the purpose of producing, using and exporting of timber. This practice does not only reduce the population of tree species in the forest but also damage or injure the unlogged trees thereby leading to their death. When this happens, tree crowns and canopies that provide shelter and protection to non-timber forest products in the forest are damaged thereby leading to their death. This eventually leads to extinction of all species of flora and fauna (plants and animals) in the forests leaving the forest area deforested.

4.2 Agriculture

Agricultural activities such as farming, livestock and monoculture plantation establishment start with forest clearing. This results in modification of the original vegetation which Allen and Barnes in Ogunleye *et al.* (2004) maintain occur in areas with heavy dependence on forest lands for subsistence and shifting agriculture largely found in developing countries. Ogunleye *et al.* (2004) and Salau (1993) identified

farming activities such as bush clearing and burning, shifting cultivation as causes of deforestation in Nigeria.

4.3 Urbanization

Urbanization is a problem that is caused by high population growth rate and rural-urban migration. This involves increase in the concentration of human population in a particular location. This phenomenon requires large land for infrastructural development (such as houses, roads, schools, electric power stations, health centers and so on) to cater for the needs of the people in the densely populated location. Forests in this area are cleared in an attempt to provide these infrastructural facilities.

4.4 Industrialization

Establishment of industries is also another activity that involves forest clearing. Forests are cleared to construct buildings, access roads, car parks and other things required for the smooth operation of industries. Akachukwu in Onuche (2010) asserts that petroleum exploration, exploitation, and oil spillage are together destroying large areas of swamp forest in Nigeria. Industries also explore and exploit forest resources as raw materials for the production of goods and services peculiar to them. The exploitation and exploration most times is unsustainable which degrade the forest and its resources.

4.5 High Population Growth

Forest resources (timber and non-timber forest products) sustain human life. So, increase in the population of human beings results in the increase in the rate of exploration and exploitation of forest resources. Onuche (2010) noted that exploitation that outstrips regeneration constitutes a threat to the sustainability of forest resources in Nigeria. Over-exploitation may result from increase in the population growth rate accompanied by increase in the needs of people which are met with forest resources. To satisfy these needs, pressure is mounted on the forest and its resources resulting in over-exploitation. Salau (1993) identified rising demand for fuelwood, pulpwood, poles, and other types of wood for building purposes as reasons for much pressure on the forest. Stock in Onuche (2010) also identified fuelwood as the bulk of Nigeria's forest production, consumed as wood or charcoal to meet the demand for fuel in rural and urban neighbourhoods as the cost is cheaper compared to that of petroleum products or any other commercial fuel substitute. This according to Onuche (2010) has, over the years increased forest depletion.

5. Effects of Deforestation

Salau (1993); Omofonmwan and Osa-Edoh (2008); and Onuche (2010) identify the following as major effects of deforestation:

depletion of wildlife and biodiversity leading to loss of many non-timber forest products which sustain majority of the rural population. Biodiversity refers to the variety of all species of plants, animals and micro-organisms, their genetic make-up, habitats and ecological processes;

loss of soil fertility leading to scarcity of food which may invariably result in hunger and death of the poor;

erosion leading to destruction of properties, crops and animals;

liquidation of wood-based industries due to unavailability of required quantity of wood needed as raw materials. This leads to unemployment of those that would have been employed by the liquidated industries;

loss of foreign exchange accruable from export of timber products;

loss of medicinal plant materials;

loss of recreational potentialities and values of forests;

global warming and climate change due to increase in the concentration of green house gases since according to salau (1993), forests constitute a major factor in carbon exchange with the atmosphere and after the oceans, are the biggest sink in which atmospheric carbon may be stored. As stated earlier, Nigeria's forests contain 1,085 million metric tons of carbon in living forest biomass;

desertification due to loss of trees that would have prevented wind from carrying sand across fertile lands;

flooding leading to loss of life, properties, plants and animals.

The need to protect our forests and their resources to ensure the continuity of the benefits and services provided by forests to human beings as well as forestall the phenomenon of deforestation and its excruciating effects on human beings call for appropriate environmental education in Nigeria.

6. Implications for Environmental Education in Nigeria

Environmental education (EE) is a learning process that increases people's knowledge and awareness about the environment and its associated challenges, develops the necessary skills and expertise to address the challenges and fosters attitudes, motivations and commitments to make informed decisions and take responsible actions (United States Federal Register, 1996). According to UNESCO (1986), environmental education involves the development of critical thinking about integrated environmental problems and that they can be resolved by participation at the community level. Deforestation with its attendant multiplier effects is one of the environmental problems that affects forest stability, diversity and complexity from which human beings derive their livelihood and for which environmental education is designed to address.

EE goal as declared in Belgrade charter of 1975 and modified and adopted later in Tbilisi Declaration of 1977 is to aid citizens in becoming environmentally knowledgeable and above all, skilled and dedicated human beings, willing to work individually and collectively toward achieving and maintaining a dynamic equilibrium between quality of life and quality of the environment (UNESCO, 1994). The Tbilisi Declaration of 1977 according to UNESCO (1986) identified the objectives of EE to include:

to help individuals and social groups acquire an awareness of and sensitivity to the total environment and its allied problems;

to help individuals and social groups acquire basic understanding of the environment, its associated problems and humanity's critically responsible presence and role in it;

to help individuals and social groups acquire social values, strong feelings of concern for the environment and the motivation for actively participating in its protection and improvement;

to help individuals and social groups acquire the skills for solving environmental problems;

to help individuals and social groups evaluate environmental measures and education programmes in terms of ecological, political, economic, social, aesthetic and educational factors; and

to help individuals and social groups develop a sense of responsibility and urgency regarding environmental problems so as to ensure appropriate action to solve these problems.

The EE objectives could be achieved through formal, non-formal and informal learning approaches.

6.1 Formal Environmental Education

Formal Environmental Education occurs commonly in schools or certified environmental education centers where specific guidelines and curriculum are involved. In the schools, it is targeted at specific student-teacher relationships and often is designed to fit within school regulation regarding curriculum content. It is characterized by fairly homogeneous groups assembled for the purpose of learning. They are most often found in classrooms, but may leave the school for field experiences in non-formal sites.

6.2 Non-Formal environmental Education

Non-Formal environmental Education is an organized educational activity outside the established formal system. Non-formal environmental education serves formal, homogeneous groups and those who assemble themselves for reasons other than learning. Non-formal environmental education occurs in special places for learning that are not classrooms but have opportunities for learning. They are environmental education institutes, camps, non-profit environmental organizations, museums, parks, natural sites, zoos and other environmental groups that aim at educating the public on environmental issues.

6.3 Informal Environmental Education

Informal Environmental Education is the truly lifelong process whereby every individual acquires attitudes, values, skills and knowledge from daily experience and the educative influences and resources in his/her environment. It could be through mass media, parents, friends and personal experience (Fortner, 2001; Henegar, 2005).

When the EE objectives are achieved, they could motivate individuals to take responsible actions individually or in groups that could lead to the protection, conservation and sustainable management of our forests. The responsible actions according to UNESCO (1986:52) are grouped into five major categories of persuasion, consumer action, political action, legal action and ecomanagement.

Persuasion: This involves convincing oneself and others on ways of exploiting forest resources without tempering with ecological make-up of forests ecosystem. It also involves discouraging actions that dislodge the diversity of forest ecosystem which makes the forest ecosystem to lose its aesthetic, economic and natural values.

Consumer Action: This involves purchase of forest products (timber and non-timber forest products) that are sustainably exploited. It also involves finding alternatives to forest products, an action which will help to a greater extent reduce pressure on forest resources.

Political Action: This involves preparation of legislative bills that will ensure conservation, maintenance and protection of the forest and its resources as well as lobbying for the passage of the bills into law. This also involves persuading representatives of the common people in the legislative arm of government either to sponsor legislative bills or support bills meant to protect the forest and its resources.

Legal Action: This involves instituting a law suit against any violators of laws on forest conservation, maintenance and protection.

Ecomanagement: This involves participating in activities that will ensure protection, conservation and maintenance of the forest and its resources. Such activities may include afforestation, reforestation and mounting of guard.

The responsible environmental actions manifest in sustainable lifestyle choices with regards to exploration and exploitation of forest resources. The lifestyle choices may include the following:

selective utilization of available forest resources;

reduction in the rate of deforestation;

identification of alternative sources of resources;

regeneration of already utilized resources or their alternatives.

7. Conclusion

Nigeria's forests deserve to be protected owing to their significant contributions to the growth and development of human beings as well as maintenance of balance in natural processes. This need for forests protection calls for appropriate environmental education that will develop in individual citizens, appropriate awareness, knowledge, skills and attitudes that will trigger motivation and commitment for actions among individuals towards forests protection. It is through the provision of appropriate environmental education that the effective forest services to mankind could be ensured.

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