Vol. 7 No. 2 (Special Edition) September 2024
JOURNAL OF ENVIRONMENTAL AND TOURISM EDUCATION
ISSN: 2659-0794 (PRINT) ISSN:2659-0808(ONLINE)
Content Available at: **https://jeate.net/index.php/Jete/issue/archive**

Sustaining Non-Timber Forest Products in Northern Senatorial District of Cross River State through Environmental Adult Education

[1]**Godwin Bullem Anthony, Ph.D**
anthonygbullem@gmail.com

[1]**Theresa Nkim Omang, Ph.D**

[1]**Ulayi Agnes I., Ph.D**

A

[1]Department of Continuing Education & Development Studies
University of Calabar, Calabar

Keywords
Sustaining, non-timber, forest, products, education

Correspondence Email:

Abstract

Undoubtedly, non-timber forest products play a significant role in the livelihood of both rural and urban dwellers; but the rate at which it is currently exploited in Northern Senatorial District of Cross River State, Nigeria is alarming. This paper examines the role of Environmental Adult Education in sustaining non-timber forest products in the study area. The paper gives a brief introduction of the situation on ground, defines the key concepts central in the study and looks at the classification/categorization of non-timber forest products. The paper further x-rays some non-timber forest products gathered in the study area, examines the relevance of non-timber forest products to man and the ecosystem and the problems associated with non-timber forest resources conservation in the area. The paper also examines the role of environmental adult education in sustaining non-timber forest products in the study area, finally summary and conclusion was drawn and recommendations were made

.

Introduction

The non-timber forest products or resources play a vital role in the livelihood of millions of rural and urban dwellers in the Northern Senatorial District of Cross River State and Nigeria as a whole. Non-Timber Forest Products (NTFPs) otherwise known as Non Wood Forest resources (NWFRs), Minor Forest Products (MFPs), special minor alternative and secondary

forest products constitute an important source of livelihood for millions of people in the study area. Non-timber forest products are associate/d with socio-economic and cultural life of the forest dependent communities.

A large percentage of the rural poor in Northern Senatorial district of Cross River State, Nigeria, depend solely on NTFPs for their daily sustenance. The non-timber forest has multiplier economic effect on the people in the area as it helps in generating employment for the forest communities, thereby increasing income in the downstream processing and trading activities. It also provides food, shelter, medicines, fibre, energy and cultural artefacts for most rural poor. The non-timber forest products also provide environmental functions such as clean water, carbon storage, rainfall, biodiversity conservation and fuel for the rural and urban population (Pandey et al., 2016).

Despite the importance of non-timber forest products or resources to man and the ecosystem, its depletion and indiscriminate exploitation by man is alarming; this has resulted to deforestation and degradation of the forest ecosystem. This ugly development may have serious adverse consequences to the environment and humanity. It is in recognition of this fact that the issue of sustaining non-timber forest products has attracted both local and global interest. It is therefore hoped that with the knowledge and skills acquired through Environmental Adult Education, non-timber forest products in Northern Senatorial district of Cross River State could be sustainably conserved and protected (Anthony & Omang, 2019). It is in this light that this paper is written to highlight the extent to which Environmental Adult Education could assist in sustaining the non-timber forest products in Northern Senatorial District of Cross River State.

The concept of Non-Timber Forest Products (NTFPS)

Non-timber forest products (NTFPs) could be referred to as all the resources or products that may be extracted from the forest ecosystem and are utilized within the household, marketed and have social, cultural or religious importance. Non-timber forest products or resources according to Pandey et al. (2016) are goods of biological origin other than timber from natural, modified or managed forested landscape. Non-timber forest products (NTFPs) are useful substances, materials or commodities obtained from logging of trees. The substances or materials harvested in NTFPs include game animals, fur bearers, nuts, seeds, mushrooms, oil sap, foliage, medicinal plants, bamboos, canes, fodder and forage, leaves, aromatic plants, edible plants, gum, peat, fuel-wood, tree oil, cork, region, decorative plants, among others.

The concept Environmental Adult Education

There is no generally accepted definition of Environmental Adult Education, because it means different things to different people. For Summer (2003), Environmental Adult Education is hybrid outgrowth of environmental movement and adult education combining an ecological orientation with the learning paradigm to provide the vigorous educational approach to environmental concern. According to Anthony (2012), Environmental Adult Education is the

type of education which aims at equipping the world population with desirable skills, knowledge and attitudes that will help them become aware and show concern about the environment and its associated problems, and work collectively toward a solution of the current problems and the prevention of new ones. The essence of environmental adult education therefore is to create an opportunity whereby both adult education citizens of the country and youth acquire knowledge, skills and attitudes that will help them to improve the quality of the environment. These knowledge, skills and attitudes could be acquired either through the formal, non-formal or informal ways.

Classification/categorization of non-timber forests products

The Non-timber Forest Products (NTFPs) can be classified or categorized differently based on their uses, including food, fuel, medicine, household utensils, farm implements, fodders, low cost building materials. NTFPs can also be grouped into such categories as floral green, decorative, medicinal plants, food, flavours and fragrances, fibres and saps and resins. They could also be grouped under medicinal plants, edible plants, gums and resin plants, dyes and colour-yielding plants, fibre and floss yielding plants, bamboos, canes, fodder and forage, fuel-wood, charcoal briquettes and leaves (Pandey, Tripathi & Kumar, 2016).

Some non-timber forest products in the study area

Okpei (1996) stressed that some non-timber forest products found and gathered in the Northern Senatorial district of Cross River State Nigeria include the following tabulated products:

Table 1: Non-timber forest products found in the Northern Senatorial district of Cross River State Nigeria

S/N	Common name	Biological name	Season Available
1	African locust bean	Parkia biglobosa	Dry season
2	Aligator pepper (hot)	Aframomum meleguata	Dry season
3	Alligator pepper (sweet)	A. hanburyi	Dry season
4	Bush onion	Afrotyrax lepidophyllus	Rainy season
5	Bush mango	Irvirginia gabomensis	Rainy/dry season
6	Bush pepper	Piper guineens	Rainy season
7	Bush locust bean	Parkia sp	Dry season
8	Bitter leaf	Vernonia sp	Dry/Rainy season
9	Bush bitter leaf	Gongronema latifoloum	Dry/Rainy season
10	Bush pumpkin	Telferia sp	Dry/Rainy season
11	Native pear	Dacryodes edulis	Mid- Rainy season
12	Mimussops	Bailonella toxisperma	Rainy season
13	Elephant mushroom	Plerotus tuberosus	Dry season
14	Ethiopian pepper	Xylopia aetheoplia	Late Rainy season
15	Oil palm	Elasis guineensis	Dry/ Rainy season
16	Salad	Gnetum africanum	Dry/ Rainy season
17	Achi	Brachystegia euryeoma	Dry season

18	Native cola	Cola acuminata	Dry season
19	Moimoi leaf	Thaumatococcus danielli	Dry/ Rainy season
20	Bitter cola	Garcinia cola	Dry season
21	Shellnut	Poga oleosa	Rainy season
22	Screwpine	Pandamus sp	Dry/Rainy season
23	Itambo	Megaphrymium sp	Dry/ Rainy season
24	Editan	Lasianthera Africana	Dry/ Rainy season
25	Atama	Heinsia Crinata	Dry/ Rainy season
26	Njansan	Pieinodendron heudelotii	Rainy season
27	Silk cotton	Ceiba pentandra	Dry season
28	Aidon fruit	Teltraplera tetraptera	Rainy season
29	Monkey cola	Cola asminata	Dry season
30	Giant land snail	Archahantina Marginata	Dry/ Rainy season
31	Crap	Cancridae	All seasons
32	Periwinkle	Littorina spp	All seasons
33	Ogbanmu		All seasons

The relevance of non-forest timber forest products to man and the ecosystem

According to Arnold (1995), non-timber forest resources or products has a plethora of benefits to man and the ecosystem. The benefits according to him include areas such as national economy, household needs, health benefits, house construction benefits, household nutrition benefits. Okpei (1996) on the other hand added that non-timber forest product is a source of income generation, provides nutrition, household utensils, medicines and fuel wood.

1) Non-timber forest products and the national economy: The importance of NTFPs in the national economy cannot be overemphasized. Many rural populace use non-timber forest products while a substantial part of it is obtained for income generation. In Nigeria and other developing nations of the world, many micro and small enterprises such as textiles and wearing apparel, food and beverages use non-timber forest products. These micro and small enterprises provide employment to about 60 percent of the rural population. Many rural populace and even the urban residents are involved in charcoal, palm oil, fuel wood, palm fruits and kernels and rattan trades. These trade are of economic benefits not just to households but to the nation at large since a significant proportion of the populace derive their income from extraction of non-timber forest products. People in the forest communities are also engaged in bee keeping, bamboo based craft enterprises, sericulture, bidi processing, rattan collection as well as lac (resin) production. All these help to enhance the economic status of the individual household and the nation at large.

2) Non-timber forest products and household needs: Non-timber forest products provide household needs which include food and other essential subsistence goods, cash for purchase of other goods and services, savings and social security. Arnold (1995) identified the following as household needs derived from non-timber forest: pestle, bush meat, canes, buildings materials, chew-stick, water, medicines sponge, wrapping leaves, snails, mushrooms, seed

collection, palm fruits, fuel-wood, building pools, roofing materials, sleeping mats, drying mats, mortars, charcoal, roof tiles, fish trap, forest foods and other household goods.

3) Non-timber forest products (NTFPs) and household food security: The concept of food security as applied to the people of Northern Senatorial District of Cross River State encompasses all factors affecting a household's access to adequate year round supply of food. It is not just concerned with household's production of food crops but also the availability of income to purchase food stuff. The concern here is to identify the quantity of food gathered by households that contributes to food security as well as saleable products that could supplement income needed to purchase food. Pandey, Tripathi & Kumar, (2016) maintain that part of plants harvested such as leaves, fruits, stems and roots provide green food security to billions of people in the form of food supplements, traditional medicines and fodder. He added that in most traditional forest communities, NTFPs are part of household subsistence strategies providing macronutrients carbohydrates, fats and proteins and various types of minerals. It could be used as coping strategies when regular access to agricultural commodities is not possible.

4) Non-timber forest products (NTFPs) and forest foods and household nutrition: Different kinds of food are gathered from forest. The forest also provides the habitat for commonly consumed wild animals and fish. Food gathered from the forest feature prominently in local dishes. They include vegetables, nuts, fruits, seeds, condiments, kernels and animals. Forest foods such as bush mango, hot leaf, bush pumpkin, elephant mushroom, Njansan, Ogbamu and salad are commonly gathered from the forest during famine period to supplement diets. All animals are also used for food except those regarded as totems by most forest communities. Forest food adds variety of diets, improves palatability and provides essential vitamins, minerals and calories.

Some species gathered from the NTFPs are rich sources of vitamins, minerals, proteins and fats. For instance, many fruits and leaves are good sources of vitamin A. Lack of vitamin A may result in blindness. Nuts, seeds, oil rich fruits and tubers, coconuts palms, protein rich leaves such as baobab as well as wild animals such as snails are forest foods with the potentials to combat protein-energy malnutrition. Wild animals including insects such as tree-ants, mushroom as well as some forest leaves are good in combating iron deficiency. Forest fruits and leaves have the potential to combat vitamin C deficiency. More so, forest and farm tree products are used throughout the year as snack foods and could be used to meet dietary shortfalls and to supplement household income during particular seasons in the year.

5) Non-timber Forest Products (NTFPs) and Medical/health uses: The use of forest products for medical and other health purposes in the Northern Senatorial District of Cross River State cannot be over emphasized. Both the rural and urban households depend mostly on forest plants and animals for treatments of some health problems. Colanut and bitter cola are, for instance, used as stimulants; Ethiopian pepper is used as a stimulant and for treating rheumantism; Aidon fruit is used for the treatment of nursing mothers stomach diseases and obesity; Vernonia leaves are used for treatment of stomach ache; Bitter cola and Aframonmum are used for the treatment of umbilical hernia; otashi-bush bitter leaf is used for stomach upset;

while annaaceac (enantia chlorantha) could be used for cure of malaria when the bark is steeped in fresh palm wine-gin.

6) Non-timber Forest Products (NTFPs) and house construction: Many houses constructed in the rural setting in Northern Senatorial District of Cross River State and many in the urban areas use forest products such as canes, lianas, raffias or twins made from other fibrous plants. Many roofs in the rural areas are also covered with grass, bamboo, reeds or leaves.

7) Non-timber Forest Products (NTFPs) and household utensils: Many household utensils and handcrafts are derived from forest products. For instance, bamboo is used for the construction of caps, shelves bed and others; cane is used for weaving baskets, trays, sieves and fishtraps and others; palm fronds are used for making of brooms and roofing of houses; Itambo and srewpine are used for floors, sleeping and roofing mats while hardwoods are used for bowls, plates, mortars and pestles.

8) Non-timber Forest Products (NTFPs) and the environment: Non-timber forest products is very relevant to the environment at large According to Herman (1995), in natural forests, where diversity is generally much greater than in plantation forests, the environmental value of NTFPs is much higher since these products are parts of the forest ecosystem where every components (living and non-living) of the forest relates with each other. In the forest ecosystem, they exist an interrelationship between the biotic and abiotic components. Biotic components such as plants, insects, mammals and birds are linked in the cycles of energy, nutrients, water and materials. Non-timber forest products or resources play a significant role in this relationship. NTFPs supply nutrients for other living organisms in the forests, help in forest regeneration and maintenance of forest habitat quality.

Problems associated with non-timber forest products conservation

There are a plethora of problems associated with non-timber forest resources conservation in Northern Senatorial District of Cross River State, Nigeria. Some of these problems include poverty, population increase, land tenure system, education, lack of conservation education, lack of awareness among the forest communities, deforestation, bush fire effect, forest ecosystem pollution, current consumption level of the forest communities, social relations including gender and problem of enacting and enforcement of anti-deforestation laws.

1. Poverty and non-timber forest products conservation: Poverty is a state of lack or inability to provide the basic needs of the family. It is the condition that is said to exist when people lack the means to satisfy their needs (Anthony & Bisong, 2005). Poverty constitutes one of the most devastating form of environmental problems in developing countries. A poor community that concentrates on meeting its basic needs may not consider the future of the environment. Poverty therefore may trigger many people in forest communities to deplete non-timber forest products since they have no other means of livelihood. People who have no hope for the future always think of short gains not long term survival.

2. Population growth rate and non-timber forest products conservation: Population growth rate poses a constraint to the sustainable management of non-timber forest resources in the Northern Senatorial District of Cross River State, Nigeria. According to Anijah-Obi (2001),

rapid population growth rate is one of the greatest challenges of the 21st century. Ajah (2006) stressed that the dramatic increase in the world population is adding pressure to the environment and its resources. Rapid population growth is considered as a global problem because it brings undue pressure on non-timber forest resources and adversely affects the environment and wellbeing of the society. Rapid population growth is also tied to other issues such as land tenure and poverty.

3. Land tenure system and non-timber forest products conservation: Land tenure is the characteristics of the people of Northern Senatorial District of Cross River State, Nigeria. Fewer people in the study area are land owners leaving majority of the people with no choice but to encroach on the forests. Obot (2010) lamented on the effect of land holding tenure system. According to her, the land holding tenure system of small portions of land by family members restricts them from farming, discourages large scale-mechanized type of farming and leaves families without sufficient plots of land with no choice but to deplete the forests resources.

4. Inadequate/lack of training for forestry staff and non-timber forest products conservation: Inadequate or lack of training for forestry management staff such as the forest guards is one of the major factors confronting effective management and conservation of non-timber forest resources in the Northern Senatorial District of Cross River State. Since most of the managers of the Forest Estates are not well trained on the issues of forests conservation, instead of protecting non-timber forest products from being depleted, they end up being predators to the resources themselves.

5. Educational level of rural populace and non-timber forest products conservation: Many rural dwellers who live in forest communities in the study area are not well educated. The residents of forests communities need conservation education to enable them to be informed and become conscious of the need to wisely exploit and use non-timber forest products. Many people believe that forest resources are natural gift from God thus they could be exploited anyhow. It is in light of the above that Anthony (2012) stressed that Nigeria as a whole and Cross River State in particular need new orientation or another ethical revolution to change the attitude of the people and behavioural patterns towards sustainable management of forest resources. According to him, this could be done through education which is a "change agent".

6. Lack of environmental awareness and non-timber forest products conservation: Awareness creation campaign is key in the management of non-timber forests resources. Indisputably, awareness creation plays a potent role in forest resources conservation. According to Anthony (2012), lack of awareness among the forest communities has been largely responsible for the depletion of non-timber forest products in Cross River State, Nigeria. He suggested that awareness could be created through, informal discussion, formal campaigns, jingles, debates, publication of articles, conservation clubs, environmental games and posters.

Anijah-Obi (2002 identified illegal grazing of livestock in the reserves, incessant outbreak of fire, attitude to the people living within the forest communities and population growth as major factors that pose constraints to the management of non-timber forest products. Ojah (2006)

maintained that inappropriate policy reforms, inadequate training, poor financial institutions, inadequate public awareness on the need for conservation and frustration of the development agencies are the principal factors responsible for the challenges of non-timber forests resource conservation in Cross River State.

The role of Environmental Adult Education in sustaining non-timber forest products

Environmental Adult Education is very pivotal in the sustenance of non-timber forest resources/products in Cross River State. According to Anthony and Essien (2018), for equitable and sustainable development to strive, they must be continuous learning process based on respect for all life and such education must contribute to human and societal transformation as well as ecological preservation. Anthony and Awhen (2012) stress that Environmental Adult Education plays a potent role in helping people put positive attitudes towards the environment, assist them to have strong feeling and concern for the environment and motivate them to actively participate in its protection.

Anthony (2012) identified awareness creation strategy as one of the ways which the people in the forest communities could be educated on the need to sustain forest resources. He identified a myriads of public awareness creation programmes such as:

- Formation of conservation clubs in school and colleges.
- Organization of environmental games to display the effect of non-timber forest resources depletion.
- Formal campaign through electronic and print media.
- Formal and informal discussions among residents.
- Organization of school debates on forest resource depletion.
- Printing of posters and handbills to educate and inform the public on the effect of forest resource depletion.
- Organizing seminars for stakeholders on forest resources conservation.
- Jingles and television discussion and
- Publications of articles and editorials in relevant journals on forest resource conservation.

Ntia (2010) stressed that through Environmental Adult Education, the forest communities could be sensitive on the negative impact of human activities on non-timber forest conservation. These human activities include deforestation, bush burning, crude farming methods, and dangerous hunting. According to him, bush burning is a predominant feature in land preparation for cultivation in the rain forest zones. He said that farmers should be informed to always demarcate their farmlands for which they wish to burn so that the fire will not go wild and destroy other parts of the forest thereby destroying non timber forest products therein. He suggests that farmers should be advised to adopt poly-cultural farming method which has been scientifically approved instead of mono cropping. On the issue of hunting, he stressed that the concern of Environmental Adult Education is not to stop people from hunting but to advise them on the best way to carry out the activities.

Okukpon (2008) is of the view that with acquisition of knowledge skills and desirable attitude about the environment, the adult citizens become functionally literate about the environment and will not participate in activities that can cause harm to the environment. She said that environmental functionally illiterate persons do not usually possess the basic knowledge, awareness, skills and attitude which should have been helpful in making them to be committed to the effective control and management of the environment. Such a person need understanding, support and cooperation to be an environmental asset. She described the educated but environmentally mischievous person as clients who are directly or indirectly involved in unwholesome environmental degrading activities.

Anijah-Obi (2001) maintains that environmental literacy and education can provide the necessary knowledge for the interpretation of the complex phenomena that shape the environment as well as how to manage it sustainably. One of this phenomena is the depletion of non-timber forest products. An illiterate person cannot save the environment but can only be a slave of his environment. For environmentally sound development to take place, people are required to acquire environmentally sound literacy education which could either be informal, formal or non-formal. An illiterate or environmentally ignorant farmer may not understand what it takes to engage on sustainable farming, communicate freely with other farmers on issues of resource conservation and function effectively in whatever environment he may find himself. Environmental literacy whether formal, informal, or non-formal, remains a necessary precondition for the sustenance of non-timber forest resource or product. With environmental literacy people will be educated on how to control and manage their environment, encouraged to grow trees, check desert encroachment, participate on agro forestry, stop bush burning, killing of animals and how to properly sustain or manage non-timber forest resources in a particular environment.

Environmental literacy requires a myriads of strategies to ensure that non timber forests are sustained (Ntia, 2010). This include:

1. Using community penetrating strategies to achieve desired results. These include meeting with the chiefs, elders, opinion leaders, using of folk media and local language in addressing the audience.
2. Use of public enlightenment campaigns such as film shows in the rural areas to sensitize the rural dwellers on the need to preserve the biological resources.
3. Formation of environmental clubs and societies in educational institutions where guest speakers with specialization on environmental education will present talks from time-to time.
4. Immediate incorporation of environmental education as a full academic subject in primary and secondary schools.
5. The use of the mass media - radio, television, newspaper, magazine - to effectively mobilize the citizenry on conservation of non-timber forest resources.

6. Training and deployment of a crop of intelligent, hard working, enthusiastic and adequately motivated environmental extension workers to the nooks and crannies of the rural areas of northern senatorial district to educate the people on issues such as biodiversity conservation.
7. Mobilizing humanitarian groups and non-governmental agencies to help raise concern about poverty and reduce the poverty level in the study area.

According to Obot (2010), without literacy education programmes, new knowledge, skills, attitudes and motivations essential to bring about development will be slow. She advocated that literacy programmes should be able to solve problems such as food production, high unemployment rate, population explosion and provision of functional skills, as these will in turn reduce over dependence on non-timber forest products.

Through environmental adult education the people of northern senatorial district will develop a sense of responsibility, commitment and ensure that appropriate action is taking to solve the problem at hand. It should be noted that awareness creation, knowledge acquisition, skill acquisitions and attitudinal change cannot solve the problem of over depletion of non-timber forest products unless people are committed to take action that will help to conserve the resources. Such action may include replacing the used resources, reducing consumption rate, reducing poverty and having a moderate population growth rate.

Anthony (2012) maintain that environmental adult education is a continuous learning process base on respect for all life such as non-timber forest resources. Through this process of education people could be empowered to actively participate in environmental conservation programmes which will help to reduce over exploitation of non-timber forest products in the study area.

Eldon and Bradley (2001) are of the opinion that environmental adult education is instrumental in changing people's attitudes toward the environment. According to them, environmental adult education plays a significant role in helping people to put positive attitudes toward nature thereby assisting them to have a strong feeling and concern about the environment and motivate them to actively participate in its protection. By changing people's attitudes toward non-timber forest resource depletion, bush burning, over conservation, careless harvesting of product, among others, it will help to protect and conserve the resources.

One cardinal role of environmental adult education is to help adult learners acquire the skills of preserving environmental resources. Skills acquisition has to do with the psychomotor aspect of learning. With the acquisition of skills by the adult learner, he can embark on activities that will help in conserving the biological resources which abound in the forest ecosystem. He can plant trees, carry out sustainable agricultural practices, stop bush burning and replace any non-timber forest resources that is over exploited.

Conclusion

Non- timber forest products play a very vital role in the livelihood of millions of people in the study area especially the rural poor who depend solely on such resources. The extraction of non-timber forest products is of great economic benefit to people in the Northern Senatorial District of Cross River State as it generates employment opportunities for both the adult populace and teeming youths, and heps to reduce poverty and hunger to the barest minimum. Despite the vital role played by timber and non-forest products in the people's livelihood, its depletion is becoming increasingly alarming and indiscriminate. This ugly development needs to be ameliorated; if not, generations yet unborn will not forgive the present generation. It is therefore hoped that through environmental adult education, people could learn either through the formal, non-formal, or in-formal way to conserve non timber forest resources in their locality.

Recommendations

The following recommendations are made:

1. The government should do everything possible to reduce or stop over exploitation of non-timber forest resources in the study area. This could be done by enacting laws, formulating policies and enforcing the policies so far formulated.
2. Teaching of environmental adult education in schools and out of school programmes should be encouraged to enable both the literate and illiterate members of the society acquire knowledge, skills and have positive attitude toward non-timber forest resources management.
3. The polluter's pay principle should be adopted in handling issues of over exploitation of non-timber forest products.

References

Ajah, P. O. (2006). *Environmental Conservation and Ecological Foundation*. Calabar: Mark ventures.

Anijah-Obi, F. N. (2001) *Fundamentals of Environmental Education and Management*. Calabar: University of Calabar Press.

Anijah-Obi F.N, (2002) *Environmental Protection and Management: Planning Processes and Strategies.* Calabar: University of Calabar Press.

Anthony, G. B. & Bisong, C. K. (2005). The impact of poverty on environmental degradation. *Education for Today,* 5(1), 90-95.

Anthony, G. B. (2012). Awareness creation through environmental Adult education as a means of cubing the problem of deforestation in Cross River State. *International Journal of Educational Administration Planning and Research (IJEAPR)*, 5(1), 19-28.

Anthony, G. B. & Awhen, V. D. (2012). Environmental adult education: A veritable tool for combating global warming and climate change. *The LEAJON: An Academic Journal of Inter disciplinary Studies.* Calabar. 4(1), 114-127.

Anthony, G. B. & Essien, C. K. (2018). Sustainable management of solid waste in Nigeria urban centres. *LWATI: A Journal of Contemporary Research,* 5(3), 1-11.

Anthony, G. B. & Essien, C. K. (2018). Environmental awareness creation through the mass media: An important tool in sustainable forest management in Ogoja Local Government Area of Cross River State, Nigeria. *LWATI: A Journal of Contemporary Research*, 15(4), 1-13.

Anthony, G. B. & Omang, T. N. (2019). Adult literacy: A pivot for environmental sustain ability. *LWATI: A Journal of Contemporary Research*, 16(1), 131-147.

Arnold, J. E. M. (1995). Socio- Economic benefits and issues in Non-wood product use. *Non-wood forest products 3: Report of the international Expert consultation on Non-wood forest products.* Rome: FAO, 89-123.

Eldon, D. E. & Bradley, F. S. (Eds.) (2001). *Environmental Science: A study of Inter-relationships*. New York: McGrraw-Hill.

Herman, H. (1995). Environmental dimensions of non-wood products. *Non-wood forest products 3: report of the international expert consultation of non-wood forest products*. Rome: F.A.O., 281-300.

Ntia, N. U. (2010). Disseminating environmental education information within the rural sector agencies. In E. M. Ukpong, U. U. Ntia, A. E. Obot, and E. N. Usang (Eds.), *Community Environmental Education*. Lagos: Macmillan Nigeria publishers limited.

Obot, A. E. (2010). Environmental education practices in community life. In E. M. Ukpong, N. U. Ntia, A. E. Obot & E. N. Usang (Eds.), *Community Environmental Education*. Lagos: Macmillan Nigerian publishers Limited.

Okpei, C. E. (1996). Women and resource use in the support zones, villages of Cross River State, Okwango division. In E. Obot and J. Barker (Eds), Essential partnership: the forest and the people. Proceedings of workshop on the rain forest of south Eastern Nigeria and South Western Cameroun. October 20-24th 1996, 39-47.

Okukpon, L. A. (2008). *Element of Environmental Education*. Lagos: AMBIK press.

Pandey, A. K. Tripathi, Y. C., & Kumar, A. (2016). Non-timber forest products (NTFPS) for sustained livelihood: challenges and strategies. *Research Journal of Forestry*, 10,(1), 256-231

Summer, J. (2003). Environmental Adult Education and Community sustainability: new direction for adult and continuing education. Retrieved from https://onlinelibrary.wiley.com/doi/10.1002/ace.108