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BIODIVERSITY AND CONSERVATION

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This paper looked into biodiversity and conservation. The need to achieve substantial and improvement in any country is by integrating biodiversity and creating awareness on conservation into national policy for sustainable economic development and national transformation. The presentation involved meaning of biodiversity, types of biological variety, threat to Biodiversity in Nigeria, meaning of Conservation, groups of conservation, Need or Reasons for Conservation, Methods of conserving wildlife, water, forest, soil, air, mineral resources, Importance or Benefit of Conservation of Natural Resources, Benefits of water resources conservation, Benefits of Forest, soil, air and mineral resources conservation. Ways of ensuring the conservation of Natural Resources, Examples of agencies for conservation, Some game reserves in Nigeria Problems and Difficulties Associated with Conservation, Some major challenges to Conservation Practices in Nigeria. Several recommended were made among which is that government should ratify the remaining convention and treaties in biodiversity conservation, the implementation of the millennium development goal with emphasis on poverty reduction which will reverse the degradation of the environment water and sanitation. Also, government should create more awareness on benefit of conservation, and sponsor teachers on attending seminar, conference and workshop on conservation

Keywords: Biodiversity, conservation, Reasons, method, grouping of conservation

INTRODUCTION

Nigeria as a country is endowed with a variety of plant and animal species. There are about 7, 895 plant species identified in 338 families and 2, 215 genera There are 22, 000 vertebrates and invertebrates species.

The goal of the plan is to conserve Nigeria's biodiversity and enhance its sustainable use by integrating biodiversity conservations into national planning policy and decision making process while emphasis is placed on biodiversity conservation within protected areas such as forest reserves and national parks and 37 gazette and proposed games reserves and sanctuaries exist in Nigeria. There is also the maintenance of a register of introduced species (about 53 alien plant species and 12 exotic animal species). The Nigeria conservation Foundation (NCF) are developing a plan to promote tourism in the park, stimulating the economy through conservation efforts .Nigeria is rich in Biodiversity.

MEASURING BIODIVERSITY

A variety of objective means exist to empirically measure biodiversity. Each measure relates to a particular use of the data, and is likely to be associated with the variety of genes. Biodiversity is commonly measured in terms of taxonomic richness of a geographic area over a time interval (Sala, 2009).

MEANING OF BIODIVERSITY

Biodiversity simply refers to as biological variety and variability of life on Earth. Biodiversity is a measure of variation at the genetic, species, and ecosystem level. Terrestrial biodiversity is usually greater near the equator, which is the result of the warm climate and high primary productivity. Biodiversity is not distributed evenly on Earth, and is richer in the tropics. While these tropical forest ecosystems cover less than 10% of earth's surface and contain about 90% of the world's species Marine biodiversity is usually higher along coasts in the Western Pacific, where sea surface temperature is highest, and in the mid-latitudinal band in all oceans. There are latitudinal gradients in species diversity Biodiversity generally tends to cluster in hotspots, and has been increasing through time, but will be likely to slow in the future as a primary result of deforestation. It encompasses the evolutionary, ecological, and cultural processes that sustain life (Gaston, 2013).

Biologists most often define biodiversity as the "totality of genes, species and ecosystems of a region" An advantage of this definition is that it seems to describe most circumstances and presents a unified view of the traditional types of biological variety previously identified:

1. Taxonomic diversity (usually measured at the species diversity level)
2. Ecological diversity (often viewed from the perspective of ecosystem diversity)
3. Morphological diversity (which stems from genetic diversity and molecular diversity)
4. Functional diversity (which is a measure of the number of functionally disparate species within a population (e.g. different feeding mechanism, different motility, predator vs. prey, etc.)
5. Ecological effects of biodiversity
6. Biodiversity supports many ecosystem services

More so, the impacts of diversity loss on ecological processes might be sufficiently large to rival the impacts of many other global drivers of environmental change. Maintaining multiple ecosystem processes at multiple places and times requires higher levels of biodiversity than does a single process at a single place and time. It plays a part in regulating the chemistry of our atmosphere and water supply. Biodiversity is directly involved in water purification, recycling nutrients and providing fertile soils. Experiments with controlled environments have shown that humans cannot easily build ecosystems to support human needs (G. Miller, 2012).

THREAT TO BIODIVERSITY IN NIGERIA

- i. Biodiversity Nigeria is seriously under the threat of extinction from climate change, economic development, land use changes from agriculture, invasive species and pollution crude oil exploration and exploitation, canalization that has threatened mainly the mangroves, deforestation, desert encroachment, over hunting, land use, road and residential buildings construction etc.
- ii. It is the fear of species extinction emanating from the poor attitude of both government and the citizenry towards the protection of biodiversity in Nigeria that has necessitated this work so that conservation practices should be implemented and taken seriously in the country to avoid a catastrophe of species extinction in the nearest future Africa and incidentally Nigeria have rich and varied biological resources forming its natural wealth in which its socio-economic system is based.
- iii. Other threats to terrestrial habitat include bush fire especially in the savanna, soil preparation for agriculture, over fishing, deforestation, roads, residential and commercial centers construction etc.
- iv. The problems of gully erosion in Agulu-Nanka of Anambra State and Imo state. [9] Stated that all the 36 states of Nigeria including Federal Capital Territory (FCT) are adversely affected by soil erosion. But the intensity and type vary from region to region. While wind erosion is common in the northern part of Nigeria where the soils are sandy, coastal erosion affect all the states bordering the Atlantic Ocean that includes; Ogun, Lagos, Ondo, Delta, Edo, Akwa Ibom, Rivers state, Bayelsa and Cross River state.

- v. Anthropogenic activities that have resulted in the degradation of the forest include, clearing and burning of forest; over harvesting of plants and animals, indiscriminate use of persistent or recalcitrant chemical pesticides, draining and filling of wetlands, destructive fishing practices, air pollution and the conversion of protected lands for agricultural and urban development purposes.

CONSERVATION

The word conservation can be defined as the planned or controlled exploitation or judicious use of natural resources to ensure their continuous availability and to preserve the quality or original nature of the environment. In other words, conservation is the preservation of natural resources from loss, waste or exploitation through rational use and to ensure the continued use or availability and preserve the quality or original nature of the natural resources.

GROUPS OF NATURAL RESOURCES

There are two groups of natural resources namely:

- i. Renewable natural resources
- ii. Non-renewable natural resources.

I. Renewable natural resources:

These are the natural resources that are recoverable. Examples are rain, animals, planet, plants, water, air, food and soil.

II. Nonrenewable resources:

These are resources which when exhausted cannot be replaced or recovered. Examples are mainly mineral resources like petroleum, coal, tin, copper etc.

NEED OR REASONS FOR CONSERVATION

- i. To prevent destruction of natural environment or to allow for continued use of natural resources for man's benefits.
- ii. To preserve rare and valuable species of plants and animals for the future generation or to save them from extinction or permanent destruction.
- iii. To preserve naturally beautiful sceneries for their aesthetic values.
- iv. To promote the recycling of some scarce mineral resources e.g., water
- v. To prevent the destruction of natural ecosystem, this will allow the organisms in the ecosystem to survive
- vi. Forest which provides medicinal materials must be conserved to ensure easy availability and continued existence.
- vii. Natural resources e.g., wildlife, forest, minerals etc. provide basis for research purposes/

NATURAL RESOURCES THAT NEED TO BE CONSERVED

Natural resources that need to be conserved include wildlife, water, forest soil, air and mineral resources.

METHODS OF CONSERVING NATURAL RESOURCES

a. Methods of conserving wildlife

There are various methods namely:

- i. Establishment of game or forest reserves
- ii. Control of hunting to prevent extinction of some animals species
- iii. Prohibition of killing or poaching extinction of animals in game reserves
- iv. Creation of awareness on the values of wildlife
- v. Prevention of pollution to prevent the destruction of aquatic life
- vi. Prohibition of bush burning as this may lead to migration or displacement of wildlife.
- vii. Prohibition of deforestation and encourage of afforestation or re afforestation.

b. Methods of conserving water

These include the followings:

- i. Trapping or storage of water in tanks or wells
- ii. Prevention of water pollution by sewage and chemical from industries and homes.
- iii. The existence of vegetation also brings about the formation of rainfall
- iv. Treatment and recycling of used water.
- v. Tree planting which provides vegetation and promote retention.

c. Methods of conserving forest

These include the followings:

- i. Cutting of trees without destroying the under growth
- ii. Re afforestation or encouraging the planting of trees
- iii. Prevention of bush burning or careless forest fires
- iv. Educating the public on the value of forests and importance of conservation
- v. Prevention of plant pests and diseases

d. Methods of conserving soil

These include the followings:

- i. Prevention of over grazing which may cause soil erosion
- ii. Prevention of indiscriminate felling of trees or deforestation which exposes the soil to erosion
- iii. Adoption of better farming practices e.g crop rotation so as to prevent erosion, leaching, water logging or acidity.
- iv. Prevention of pollution of land so as not to destroy useful soil organism
- v. Prevention of bush burning which may expose the soil to erosion

e. Methods of conserving air

These include the followings:

- i. Prevention of effluents from factories or factory chimneys which may pollutes the air or cause acid rain.
- ii. Prevention of fumes automobile or thermal plants which may affect aerial life or render air unfit for organisms
- iii. Proper treatment and disposal of sewage
- iv. Proper burning of waste so as to prevent smoke or soot from polluting the air
- v. Proper disposal of dust from construction sites which may cause air pollution

f. Methods of Conserving Mineral Resources

These include the followings:

- i. There should be legislation against indiscriminate mining of mineral resources
- ii. Effective and efficient extraction methods of mining should be adopted to prevent wastage.
- iii. Over dependence on a particular mineral resource should be discouraged as this can lead to the depletion of such mineral resources
- iv. There should be effective and efficient utilization of available mineral resources human's use.

IMPORTANCE OR BENEFIT OF CONSERVATION OF NATURAL RESOURCES

- i. It provides food for human consumption e.g., meat, fish, eggs etc.
- ii. It generated revenue for government
- iii. It can serve as tourist centres for pleasant and relaxation
- iv. It provides research work for scientists
- v. It can generate employment for some people.

Benefits of water resources conservation

These include the followings:

- i. It serves as sources of food supply e.g. fish, prawn, Cray fish
- ii. It is used for hydro-electric power (HEP) generation which provides electricity e.g. Kainji dam
- iii. Water is useful for agricultural purposes i.e. irrigation
- iv. Water serves as a medium of transportation in rivers, lakes and oceans
- v. Water provides employment for people e.g. fishermen, canoe or ship builders.
- vi. Water can be used for recreational and tourist purposes

Benefits of Forest conservation

These include the followings:

- i. Forests are sources of food supply e.g., fruits, vegetables, meat etc.
- ii. Forests are sources of timber for construction purposes.
- iii. Forest provide medicinal herbs
- iv. Forest provide employment for some people e.g., forest guards, lumbermen and hunters
- v. Forests provide raw materials for industries e.g. cotton, rubber, ropes and twine, latex.

Benefits of Soil Resources Conservation

These include the followings:

- i. Soil supports agricultural or farming activities.
- ii. Soil also supports forests and its resources
- iii. Soil supports wildlife resources
- iv. It supports the growth of valuable wood for building and furniture making
- v. It is the home of some organisms

Benefits of Air Resources Conservation

These include the followings:

- i. Air provides oxygen used in respiration by plants and animals
- ii. It provides carbon dioxide used by plants for photosynthesis
- iii. Air also provide gaseous nitrogen used by plant to manufacture proteins
- iv. Air is the habitat of most organisms e.g birds, insects etc.
- v. It makes life more meaningful and comfortable

Benefits of Mineral Resources Conservation

These include the followings:

- i. Minerals resources provide fuel e.g., coal, petroleum and natural gas, for use.
- ii. They are used for construction purposes, e.g. iron, zinc, and aluminium.
- iii. Some are used for industrial development e.g., diamond, iron, copper, silver, etc.
- iv. Minerals are sources of foreign exchange
- v. They also provide employment e.g., miners, drillers, marketers.

WAYS OF ENSURING THE CONSERVATION OF NATURAL RESOURCES

- i. **Establishment of agencies for conservation:**

The agencies are establishment to ensure that natural resources are conserved e.g., Preservation of wildlife, forest resources, water resources, air, soil and mineral resources.

Examples of agencies for conservation are:

1. Nigeria Conservation Foundation
 2. Forest departments
 3. Federal Environmental Protection Agency (FEPA)
 4. River Basin Development Authorities (RBDA)
- ii. **Establishment of game reserves or national parks**
These deals with game reserves or national parks serve for the protection of wildlife, rare or endangered species and for recreational purposes as well as scientific purposes as well as scientific purposes.
- Some game reserves in Nigeria include:**
- i. Yankari game reserve in Bauchi
 - ii. Borgu game reserve in Niger State
 - iii. Shasha river forest in Ogun State
 - iv. Olomu forest reserve in Kwara State
 - v. Mamu river forest reserve in Anambra State
 - vi. Zamfara forest reserve in Zamfara State
- iii. **Making of conservation laws, edicts or decrees:**
This implies laws, edicts or decree are made by the government to regulate the felling of trees, hunting or exploitation of endangered species or indiscriminate exploitation of mineral resources. These laws must be obeyed.
- iv. **Conservation education:**
This serves to inform the populace about the need to conserve natural resources and the consequence of extermination or exhaustion of such resources like trees, wildlife and minerals.
- v. **Setting standards for pollution control:**
These standards help to protect land, water and air resources from certain level of pollution from industries, vehicles, power plants and homes.

PROBLEMS AND DIFFICULTIES ASSOCIATED WITH CONSERVATION

The following Problems or difficulties are encountered in the process of conserving natural resources namely:

- i. Soil erosion caused by natural wind, rainfall and run – offs.
- ii. Land , air and water pollution
- iii. Occurrence of natural disaster such as earth quakes and floods
- iv. Overgrazing caused by domestic livestock
- v. Indiscriminate bush burning and felling of timber leading to eradication of wild plants and animals
- vi. Indiscriminate fishing leading to depletion of aquatic life
- vii. Adoption of poor farming methods e.g. bush fallowing , sifting cultivation and continuous cropping which leads to depletion of soil nutrients
- viii. Problem of oil spillage which leads to loss of terrestrial and aquatic life.

SOME MAJOR CHALLENGES TO CONSERVATION PRACTICES IN NIGERIA

- a. There are many governmental agencies in charge of environmental matters that they work at cross purposes to the extent that statutory delineation is not adhered to. Such attitude may stem from corruption of some officials in agencies. (Aghede, 2004).
- b. Conservation projects are seriously threatened by economic development that needs the areas for exploitation, mining, exploration, road expansion and highway networks [8]. Others

are lack of conservation project sustainability, inadequate finance to fund projects, poverty among the local communities etc.

- c. Paucity of trained man power and basic information on biodiversity conservation practices.
- d. National Legislation on Biodiversity is non-existent
- e. Threat of climate change
- f. Incomplete knowledge of the species of organisms and their total worth is still unknown.

CONCLUSION

The importance of biodiversity as a natural resource cannot be over emphasized because of the basic needs they satisfy and their role as the vital cultural heritage of the nation, Therefore, there must be a concerted effort by the government and citizens to make wise use of these natural resources to avoid their degradation and depletion.

RECOMMENDATIONS

- Government should ratify the remaining convention and treaties in biodiversity conservation.
- The implementation of the millennium development goal with emphasis on poverty reduction which will reverse the degradation of the environment water and sanitation.
- Poverty reduction through the application of modern agricultural practices such as taungya farming alley cropping, agro pastoral, improved fish farming and possible wildlife domestication.
- Government should create more awareness on benefit of conservation
- Government should sponsor teachers on attending seminar , conference and workshop on conservation
- Non-Governmental Organisation should partner with Government agencies to create Environmental Conservation Club for students in order to be enlighten about safety in the environment.

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