

# **The Devastating Effects of Environmental Degradation - A Case Study of the Niger Delta Region of Nigeria**

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**Key words:** Environment, Degradation, Pollution, Economy, Health.

## **SUMMARY**

In Nigeria, like many developing nations, the resultant environmental problems are legion: aggravated soil erosion, flood disasters, salinization or alkalisation, and the desertification due to the effects of shifting agriculture on fragile soils, forest clearing in erosion prone and flood-prone areas, bush burning, animal over-grazing and poor construction and maintenance of roads and irrigation system; pollution of water, air and land due to improper disposal of domestic and industrial wastes; pollution through oil spillage; pollution from noise; proliferation of slums in urban areas, unsanitary and unsafe housing; congestion of traffic and houses in urban areas and lack of open spaces for active outdoor recreation. All these affect human well-being (the most affected groups are women and children) especially the health and socio-economic well being of the people of the Niger Delta in Nigeria in particular and in the world as a whole. Therefore, this paper highlights the dimensions, nature and characteristics of these phenomena. And further examines the implications of the environmental degradation on the health and socio-economic well-being of the people of the Niger Delta.

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## **1. ENVIRONMENT**

The Oxford Advanced Learner's English Dictionary of Current English defines environment as conditions, circumstances, etc affecting people's lives. It is the complex of physical, chemical and biotic factors that acts upon an organism or an ecological community and ultimately determines its form and survival (Encyclopaedia Britannica, Vol. 4). Viewing the human environment from the economic point, Odiette (1993) describes it as natural, capital and analogous to financial capital assets. In this case, any damage done to the environment runs down capital, which sooner or later reduces the value of its recurrent services.

## **2. DEGRADATION**

Environmental degradation is the deterioration of the environment through depletion of resources such as air, water, and soil, the destruction of ecosystems and the extinction of wildlife.(Wikipedia)

When the environment becomes less valuable or damaged, environmental degradation is said to occur. There are many forms of environmental degradation. When habitats are destroyed, biodiversity is lost, or natural resources are depleted, the environment is hurt.

Environmental degradation can occur naturally, or through human processes. The largest areas of concern at present are the loss of rain forest, air pollution and smog, ozone depletion, and the destruction of the marine environment.

Pollution is occurring all over the world and poisoning the planet's oceans. Even in remote areas, the effects of marine degradation are obvious.

In some areas, the natural environment has been exposed to hazardous waste. In other places, major disasters such as oil spills have ruined the local environment.

## **3. HUMAN ACTIVITIES ON THE ENVIRONMENT**

Human activities and the environment are inter-related. This is because any activity of man is done in the environment and the resultant effect is either positive or negative to man. Human activities are diverse. According to Uchegbu (1998), negative effects on man arise from these economic and domestic activities. For instance, agriculture requires pesticides that pollute the atmosphere or enter drainage system via run off and sewers. Other activities which lead to pollution include thermal power stations, burning of fossil fuels, exhaust fumes. All these emit harmful pollutants like sulphur dioxide, carbon monoxide, etc, that cause acid rain, global warming, and the malfunctioning of human haemoglobin, etc. Ukpong (1994)

categorised human activities capable of causing environmental nuisance and the degradation as;

- Destructive logging of forests
- Overgrazing and over-cropping of arable lands
- Strip mining etc. This may be extended to include oil exploitation, industrialization, improper disposal of domestic solid waste and human excretal including liquid waste, over-utilization of non-degradable materials for packaging among others.

All these human activities have combined to deplete the earth's resources, degrade the environment and cause loss of biodiversity (Uchegbu 1998). The environment in which these human activities takes place is the outer physical and biological systems of the earth in which man and other organisms live. Although complicated, there are many interacting components (Adeniye, 1986).

According to encyclopaedia Britannica vol. 4, the environment is the complex of physical, chemical, and biotic factors that act upon organisms or an ecological community and ultimately determines its form and survival. Canter (1975) categorised the environment into air, water, noise, biological, cultural and socio-economic environment. These views are all embracing. However, in a physical sense, Holderness and Lambert (1982) claim that the physical environment is made up of air, water, and land. From all indications, human activities impinge on the environment, which as noted earlier, may have either positive or negative effects on man. However, the positive effects would be well taken by man but what are of concern to man are the negative effects especially as the concern degradation.

#### **4. SOME ENVIRONMENTAL PROBLEMS IN THE NIGER DELTA**

##### **POLLUTION**

This phenomenon occurs whenever potentially harmful substances are released into the environment. Pollution on the whole is caused principally by human activities, though it can also be a natural process. It is usually classed according to the receiving agents of air as emission, water as effluent and land as dumps and disposal (Ukpong, 1994).

Pollution can be categorized into three major types: air pollution, water pollution and noise pollution.

##### **Air Pollution**

Air pollution is the contamination of the air with unwanted gas, smokes, particles and other substances. Air pollution is also considered as waste remaining from the ways we produce goods and generates energy to heat our environment. According to the World Bank Report (1980), air pollution is the presence in the outdoor atmosphere of one or more contaminants such as dust, fumes, gas, mist, odour, smoke or vapour in such quantities, characteristics and duration as to make them actually harmful or potentially injurious to human, plant or animal

life or property, or which unreasonably interfere with the comfortable enjoyment of life and property

Environmental air pollution arises from people economic and domestic activities such as modern agriculture, which requires pesticides that pollute the atmosphere or enter water systems via run-off and sewage. Industrial activities are responsible for a wide range of pollution. Thermal power stations, burning fossil fuel and moving vehicles emit harmful pollutants like sulphur dioxides, nitrogen oxide and carbon dioxide that cause acid rain, global warming and malfunctioning of human / animal's haemoglobin's.

In the Niger Delta, due to its oil rich region has a lot of pollution resulting from various human activities.

### **Water Pollution**

Mba (1996) identified the major sources of water pollution in Nigeria to include industrial plants, decomposed waste, solid mineral mining activities as well as petroleum mining operations. In his own view, Odiette (1994) identified water pollution sources as arising from soil erosion, the discharge of industrial and household effluence wastes (untreated) into the water bodies and the growth of water hyacinth. Okorie (1992) identified the distributed of unchecked gully erosion as a source of water pollution as follows: 600 in Anambra; 300 in Imo; 59 in Akwa Ibom and 130 in Cross River State. According to him, gully erosion has destroyed extensive farmlands and development projects.

In addition to the above discourse, another major environmental problem is flooding. According to The UNDP (1995), Lagos flooding arises from rivers and streams overflowing their banks. The occurrence is seasonal and is usually during and after the raining season. In some areas it is an annual occurrence. Rain fall has been identified as a primary causative factor for flooding. In addition, clay soils are more prone to flooding and many states in the Niger Delta Region are liable to flooding.

### **Noise Pollution**

Noise is most often defined as unwanted sound. Noise is usually measured in decibels (dB) and is generated mostly in high-density urban areas or even in the industrial areas that usually use industrial plants as their sources of energy.

In fact, other environmental degradation factors which affect both men's and women's health and other socio-economic well-being of the people of the Niger Delta and Nigerians at large includes the following: desertification and deforestation, water hyacinth, loss of biodiversity, global warming and ozone layer depletion. These are issues that have cut across international boundaries and have posed special serious problems to Nigerian women's health and their socio-economic status.

## **5. OTHER SOURCES OF ENVIRONMENTAL DEGRADATION**

### **SOLID WASTE**

Solid waste has become the number one serious environmental problem facing the country with its consequent effects on the pollution of water, air and land, not to mention its hazards to women's health and their social well-being (Uchegbu 2002)

The problem of solid waste in our urban rural areas can be said to be a recent development. The oil boom era with its high pace of consumption and population opened the floodgate for serious waste generation. At the moment, virtually all our major cities and towns across the country are faced with the problems of solid waste management. In Lagos State, for instance, these heaps limit the roads to single narrow lanes, resulting in perennial traffic jams as well as the production of offensive odour. Apart from that, a number of communicable diseases such as typhoid, dysentery, cholera, yaw; malaria, yellow fever, and relapsing fever that affects women are associated with improper disposal of wastes.

The mode of transmission can either be through biological vectors, physical and mechanical means, air-borne disease, water supply, food supply, direct contact or other means related to socio-economic status of women and her households. In addition water supply by leaching and run-off during rains and others may kill valuable and rare vegetation of wildlife (Uchegbu 2002)

As women who are engaged in street markets spend most of their time at home where these eyesore litter, there is every likelihood that this may affect their health and socio-economic well-being. In realization of the fact that environmental and public health implications of inadequate solid waste management are considerable. Nigeria urgently needs institutional, attitudinal and infrastructural reforms in order to tackle effectively the problems of solid waste.

### **OIL POLLUTION**

Oil spillage is another potential environmental hazard. The Niger Delta region which are oil producing areas have, from time to time, suffered from the effect of oil spillage.

The vast majority of Nigeria's oil and gas is produced in the Niger Delta. While this generates billions of dollars for the Nigerian economy, it causes major environmental problems for the inhabitants and the ecosystem.

Oil facilities and operations are located in key ecological areas, including important fishing grounds, mangroves and tropical rainforest. These areas are often heavily damaged by the oil leaks. Drinking water is polluted, people become ill and farmers lose their income because they can no longer cultivate the soil.

More gas is flared in Nigeria than anywhere else in the world. The smoke released is damaging to people who live nearby such a flare. The flares affect their livelihood and expose them to an increased risk of premature deaths, child respiratory illnesses, asthma and cancer.

The flaring produces acid rain in the Niger Delta, which is harmful to vegetation and crops. The smoke is also a major contributor to greenhouse gases.

There are periodic incidences of oil spillage in the Niger Delta. Not only does oil spillage cause consequences similar to those caused by gas flaring, but it has caused the instant death of the fish and wildlife population, and also the instant death of human population caused by explosion and fire, as a result of the spillage.

When there is an oil spill on water, spreading immediately takes place. The gaseous and liquid components evaporate. Some get dissolved in water and even oxidize, and yet some undergo bacterial changes and eventually sink to the bottom by gravitational action. The soil is then contaminated with a gross effect upon the terrestrial life. As the evaporation of the volatile lower molecular weight components affect aerial life, so the dissolution of the less volatile components with the resulting emulsified water, affects aquatic life.



Leaking pipelines, running through villages, farms, creeks and rivers in the Niger Delta, are a major source of pollution, sickness and economic ruin for the people of the Niger Delta. Farmland polluted by oil is rarely rehabilitated, destroying livelihoods. Fish contaminated by oil cause sickness among the people and further economic ruin as fish stocks decline.

The spillages are a regular feature of life in the Delta. They are rarely dealt with promptly. In some cases, minor leaks are left for months, resulting in major pollution.

This oil spillage has implications for marine life and coastal vegetation. In some cases, the ground water supply of the local inhabitants becomes polluted. The chemical compound from

industrial polluted areas causes respiratory and chromosome damage in women. Moreover, it causes still births and cancer in women. (Uchegbu 2002) This is because women use the polluted water for washing and laundry activities and other economic activities within the vicinity of oil polluted areas.

In addition, the oil industry affects the socio-economic life of women in number of ways such as loss of farm lands, cash crop, economic trees, fishing grounds and homes. There is also the problem of tremendous heat as a result of continuous flaring of natural gas, which produces gaseous emission and contaminants.

## **URBAN POVERTY**

Poverty and its pervasiveness in Nigeria pose a grave danger to the environment in the Niger Delta Region. This leads to the intensive exploitation of marginal lands, to exploitation of primary commodities or single cash crop economies. Consequently, poverty is conceived as the single biggest force against effective policy options for sound environmental management.

## **GLOBAL WARMING**

This is the continued build-up of greenhouse gases in the atmosphere. These gases, which include carbon dioxide, methane, nitrous oxide and chlorofluorocarbons, block some of the heat radiated from the earth to cause a greenhouse effect. According to the inter-government panel on climate change (IPCC), the last two decades of the 20<sup>th</sup> century were the hottest on record (UN, 1998).

Some of the major causes of increasing emissions of greenhouse gases are the burning of fossil fuels for energy and transport, the clearing of forest which reduces carbon dioxide absorption, cattle raising which produces methane emission as a by-product, and the use of technology that pollutes.

Accordingly, global warming leads to the rise in seawater level and to soil erosion, flooding and drought.

## **OZONE LAYER DEPLETION**

The ozone layer is basically found at a height of about 20 – 30km above sea level. The ozone layer provides a protective layer, which prevents the penetration of the sun harmful ultra-violet rays. The pollution of the atmosphere from the release of Chlorofluoro carbons (CFCS) gases causes the depletion of the ozone layers and this results in environmental degradation. According to Ukpong (1994), most of the skin diseases and the low productivity in agriculture are caused by ultra- violet rays. Also an increase in ultra-violet radiation effects water bodies, disturbs aquatic life, which supports the food chain, and causes the death of fishes that feed us. It also causes the deterioration of synthetic materials such as paints, and other products used in the building industry, invariably causing deterioration delivery to our ever- increasing human population.

## **LAND DEGRADATION**

Land degradation is one of the worst environmental problems facing many people world – wide. Over 40 million are affected in Nigeria.

The intensification of the use of fragile and marginal ecosystems has led to progressive degradation and continued desertification of marginal agricultural lands even in years of normal rainfall. It is feared that the damage by drought and population pressure may have resulted in the genetic loss of a vast array of valuable plant species. Pressure on the dwindling resources in the arid prone areas has caused in a number of devastating socio-political and sectarian conflicts in the country with concomitant death, injury and heavy economic losses.

Some of the causes of land degradation as noted by Ukpong (1994) include

- Improper resources management
- Destructive logging of our forest
- Overgrazing and over – cropping of arable lands
- Flooding and wind erosion menace
- Strip mining in some parts of Nigeria
- Land degradation with pesticides and fertilizers
- Some known natural land slides etc.
- Destruction of wetlands and marches for development.

Ukpong also identified other indirect causes of land degradation to include population growth and population influx, property ownership issues, lack of control, enforcement measures and jurisdictional overlap which are due to lack of authority and the use of inappropriate technology for farming and even for producing manufactured goods.

## **FLOODING**

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

Urban flooding occur in towns located on flat or low lying terrain especially where little or no provision has been made for surface drainage, or where existing drainage has been blocked with municipal waste, refuse and eroded soil sediments. Extensive urban flooding is a phenomenon of every rainy session in Lagos, Maiduguri, Aba, Warri, Benin and Ibadan.

Virtually every Nigerian is vulnerable to disasters, natural or man-made. Every rainy season, wind gusts arising from tropical storms claim lives and property worth million of Naira across the country. Flash floods from torrential rains wash away thousands of hectares of farmland. Dam bursts are common following such flood. In August 1988 for instance, 142 people died, 18,000 houses were destroyed and 14,000 farms were swept away when the Bagauda Dam



collapsed following a flash flood. Urban flooding such as the Ogunpa disaster which claimed over 200 lives and damaged property worth millions of Naira in Ibadan, are common occurrence (National Implementation of Agenda 21)

## **6. EFFECTS OF AIR POLLUTION IN THE NIGER DELTA**

In Nigeria, the reduction in air quality we breathe is as a result of over crowding, traffic congestion, and the general deterioration of our urban environment.

### **Sources of Air Pollution**

- Pollen grains
- Fungus spores
- Salt spray
- Smoke from forest fires
- Dust from volcanic eruptions
- Volcanic ash
- Automobiles industrial processes
- Aircraft, ships, railways and other combustion engines
- Domestic fires, domestic refuse incineration and bush burning.

### **Problems and Effects of Air Pollution**

Air pollution could degrade the environment, contribute to an increase in hospital admission, lead to absence from work and school and increase in mortality rate.

### **Effects on human health**

Sulphur dioxide, acts as a pungent suffocating irritant gas on the upper respiratory tract under moderate exposure, which could lead to the damage of the respiratory system. These sulphur compounds also affect visibility, reduction of sunlight, unpleasant smells, irritation and smarting in the eyes, nose and throat.

### **Effects on Animals**

An animal's health may be in danger when the animal feeds on plants covered by toxic particles such as fluorine. Fluorine

### **Effects of Air Pollution on Materials**

Air pollution affects materials by the soiling of building surfaces, clothing and structures. The sulphuric acid present in the air is mostly responsible for the attack on the cloth material or fabric, which leads to bleaching and discoloration. Hydrogen sulphide corrodes materials such as paints, electrical contacts and textiles.

## **Effects of Air Pollution on Vegetation**

Gaseous pollutants such as sulphur dioxide enter the plant via the stomata in the course of their (plants) normal respiration leading to the destruction of the photosynthetic activity of the plant. Damage to plants ranges from collapse of the leaf tissues, bleaching or colour changes, and reduction in growth rate to the complete death of the plant. Other gaseous pollutants responsible for these damages include chlorine, hydrogen chloride, ammonia and mercury. All these gaseous pollutants that attack vegetations are known as photoxicants.

## **7. EFFECT OF ENVIRONMENTAL DEGRADATION ON WOMEN**

In Nigeria, like in many developing nations, the resultant environmental problems are legion: aggravated soil erosion, flood disasters, salinization or alkalisation, and desertification due to the effects of shifting agriculture on fragile soils, forest clearing in erosion prone and flood-prone areas, bush burning, animal over-grazing and poor, construction and maintenance of roads and irrigation system; pollution of water, air and land due to improper disposal of domestic and industrial waste; pollution through oil spillage; pollution from noise; proliferation of slums in urban areas, unsanitary and unsafe housing; congestion of traffic houses in urban area and lack of open space for active outdoor recreation. All these affect human well-being especially the health and socio-economic well-being of women in Nigeria in particular and the world as a whole.

### **Environmental Problems Confronting Women and its Implication for Their Health and Socio-Economic Well-Being**

#### **Energy Consumption Habit**

The use of fuel wood for energy to cook, boil water, heat and light the home contributes to environmental degradation. The rising cost of gas and electricity for domestic use encourages greater use of biomass sources by the low-income group (Puerto 1985). According to Adedipe (1992) more than 8% of the population of Africa still relies on fuel wood for cooking and heating. The combined effect of fuel wood production and over-grazing has brought untold hardships to women in the Niger Delta region and Nigeria at large.

Emission from biomass fuels is a dangerous source of air pollution in the home where women cook all the year round (WHO, 1984). Wood fuels produce pollution concentration higher than fossil fuels under slow burning conditions and some studies have shown that cooks suffer from more smoke and pollutants than residents of the dirtiest urban environments. They are affected by a higher dose than is acceptable under WHO recommend level or any national public standard (Smith et al, 1983). In one study quoted, benzpyrene (a poisonous gas from burning fuel) is equivalent to smoking twenty packs of cigarette a day.

Other environmental effects associated with wood and other biomass burning on women's health is that it contributes to various respiratory and eye disease in women. Moreover constant exposure may lead to bronchitis, pneumonia and death among women where

respiratory defence is impaired and where emissions contain high concentrations of carcinogens. Nasopharyngeal cancer is common among women who have been exposed since childhood.

Rural women living close to cities carry heavy loads of firewood sometimes over 35kg thus carrying beyond the maximum weight of 20kg allowed by the ILO (ILO 1966). These heavy loads damage the spine and cause problems with child bearing. The backbreaking work of cutting, collecting and transporting wood, exhibited by poor nutrition, further undermines health problem. Where women are always involved in these time-consuming economic activities, the environmental problem involved affects women's health; it encourages high mortality and morbidity rate in women. Furthermore, this can place women in low-income yielding profession if time is not taken.

### **Incompatible Land Use**

The incompatible land use in our urban centres has resulted in the proliferation of small trade and craft stands; open mechanic workshops, vulcanisers, corners shops, shoeshine and shoe-mending stalls, and gas sales. Others include kiosks, stalls and stores. The environmental degradation caused by the mechanic workshops and these activities include the spill of toxic battery acids, engine oil, grease, and petroleum and underground water. Basically, women in Nigeria are the greatest participators in these environmental degradable areas. Most women do their daily activities such as shopping, food selling, hawking, and other services in these environmental degradable areas to earn a living. All the aforementioned environmental degradable areas are the centres for epidemics, and thus a death trap for women. In November 2008, ten women and two children died in a collapsed building in Abuja Nigeria where they were selling food. The more time a woman spends in environmental degradable areas, the lower her health standard and socio-economic status.

### **Street Trading, Hawking and Begging**

Closely related to the conversion of vacant land into urban farm is the ubiquitous street-side artisan market. Every spot on the urban landscape is quickly converted into a trading post consisting of make-shift stalls of crude little tables not more than one square meter in size, often with a little shed or polythene, zinc, mat, cardboard, or wood to protect the trader from the sun or rain.

Prominent in street vending is the Nigerian style fast food, featuring the frying of bean cakes(akara), plantains, yam, breadfruit, roasting of corn, provide instant and fast breakfast, lunch or dinner especially for low-income group earners. In Nigeria, women dominate the street food business. Used pure-water bags completely mask the surface of the street tarmac testifying the degradation consequences of street trading.

More worrisome than the litter is the fear that whiles the low income group, who cannot afford refrigerators and deep freezer, may enjoy cold water, they may ultimately poison themselves by drinking ice water of unknown resources and unguaranteed purity. The health

implications of this merchandise have not been fully determined but the Lagos State Government banned it in 1995, and also in 2007. Coupled with these problems is the ramification of the street beggars in our cities especially where women do their daily economic activities. Most of these street beggars carry some communicable diseases. Sometimes, during constant body contact with the market women, the health of the women can be endangered. Once women are affected with any of these diseases from the street beggars, there is every likelihood that both their health and her socio-economic well-being will be reduced to the barest minimum.

## 8. CONCLUSION

The panacea to some of the environmental problems discussed above is the adoption of policy of sustainable development. Sustainable development is defined as the development that meets the needs of the present without compromising the ability of future generations to meet their needs (UN 1990).

According to Odiette (1993), to achieve sustainable development involves a judicious use of natural resources such that the carrying capacity and the productive capacity are not over-exploited.

In order to survive our environmental crisis degradation and maintain the earth as a place for human habitation, we must reduce the massive pollution of the biosphere.

The reduction of the massive pollution of the biosphere and the control of air pollution emission can be achieved by the following methods:

- Gravity
- Surface sink / tree planting
- Precipitation
- Degradation
- Smokeless fuels
- Air pollution reduction by exhaust
- Treatment
- Bag filters
- Wet collectors
- Adsorption
- Incineration
- Source Separation
- International / National Legislations.

It should be noted that Nigeria stands to lose both financially and in manpower resources if it maintains an unhealthy working environment especially in the Niger Delta Region. Therefore all hands will be on deck to see that the efforts being made to revitalize the environment are not wasted. However, the Federal Government should enforce the establishment of environmental protection agency boards at both the state and local government levels in the region.

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## BIOGRAPHICAL NOTES

Mrs. **Angela Kesiena Etuonovbe** has a B.Sc.(Hons) degree in Surveying, Geodesy & Photogrammetry from the University of Nigeria, Enugu Campus. She is a Registered Surveyor and the first female Surveyor in Private Practice in Delta State. With over fifteen years of experience in the practice of Surveying, Engineering and Mapping. She also has a Master in Business Administration (MBA), at the moment she’s is undergoing a master degree program on project management (M.Sc. Management).

She is the Principal Consultant of AnGene Surveys & Consultants, She is a Federal surveyor, a consultant of no mean repute, a prolific writer, a Lady of the Knights of Saint Mulumba Nigeria, Member of the Nigerian Institution of Surveyors, the indefatigable Public Relations Officer of the Nigerian Institution of Surveyors (NIS) - Delta State Branch, the Secretary, Association of Private Practicing Surveyors in Nigeria (APPSN) - Delta State Branch and the National Coordinator, Women – In - Surveying Nigeria. She is also one of the Editors in the Newsletter for under re-presented groups at the International Federation of Surveyors (FIG).

Over the period, she had successfully executed a research work on

- Road Construction In Nigeria – Defects And Solutions”,
- Solutions To Erosion Problems In Delta State Nigeria.
- Flooding in Nigeria: Issues, Problems, and Prospect.

And she is currently on a research On Lasting Solutions to Power Outage in Nigeria Using Delta State as a Case Study.

From her school days, she has always been an icon to female Surveying Students and has been championing the course of Gender inequality in the Survey Profession in Nigeria.

She has presented various papers at the International Federation of Surveyors (FIG) events.

They are as follows:

- Under Represented Group – Projecting the Image of the Nigeria Female Surveyor. A paper presented at the XXIII International FIG Congress at Holiday Inn, Munich, Germany.
- Administering Marine Spaces: The Problem of Coastal Erosion In Nigeria – A case study of Forcados South Point, Delta State. A paper presented at the XXIII International FIG Congress at Holiday Inn, Munich, Germany.
- Economic Benefit of Hydrography: Land Reclamation in Bayelsa State Nigeria, A case study of Saipem Camp in Yenagoa. Presented at the FIG Working Week 2007 in SAR, Hong Kong.
- Coastal Settlement and Climate changes- the Effects of Climate Change / Sea Level Rise on the People of Awoye in Ondo state Nigeria. Presented at the FIG Working Week 2007 in SAR, Hong Kong. May 2007.
- Sustaining Coastal Management / Adaptation of Climatic Change and Sea Level Rise in the Niger Delta. Presented at the FIG working week 2008 in Stockholm, Sweden. 14-19 June 2008.

She had authored eight informative, educative exciting and highly spiritual books currently on the Bookshelves. Over 5000 copies of God the Father Loves You Personally have been printed in the past two years and distributed freely to prisons, hospitals, communities, youths, schools and the needy.

She is excited at challenges the Survey challenges not an exception.

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