



**Coping with Climate Change and
Environmental Degradation in the Niger
Delta of Southern Nigeria**

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To our Lord and Saviour JESUS CHRIST
Who gave the Perfect Example of Love
For Humanity

And

To all Organizations and Individuals
Committed to the Development of
The Niger Delta

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CHAPTER ONE

INTRODUCTION

The Niger Delta

The Niger Delta is located in the Atlantic Coast of southern Nigeria where River Niger divides into numerous tributaries. It is the second largest delta in the world with a coastline spanning about 450 kilometers terminating at the Imo River entrance (Awosika, 1995). The region spans over 20,000 square kilometers and it has been described as the largest wetland in Africa and among the three largest in the world (CLO, 2002). About 2,370 square kilometers of the Niger Delta area consist of rivers, creeks and estuaries and while stagnant swamp covers about 8600 square kilometers. The delta, with mangrove swamps spanning about 1900 square kilometers has the largest mangrove swamps in Africa, (Awosika, 1995). The region falls within the tropical rain forest zone. The ecosystem of the area is highly diverse and supportive of numerous species of terrestrial and aquatic flora and fauna and human life. As opined by Iyayi (2004), it is richest wetland in the world. The region is divided into four ecological zones namely coastal inland zone, mangrove swamp zone, freshwater zone and lowland rain forest zone (ANEEJ, 2004).

Politically, the Niger Delta area cuts across nine states in southern Nigeria which include Abia (1), Akwa Ibom (2), Bayelsa (3), Cross River (4), Delta (5), Edo (6), Imo (7), Ondo (8) and River (9) States (Fig. 1.0). The region has emerged as one of the most ecologically sensitive region in Nigeria. Resources (oil and gas) from the region are the main source of revenue for the Nigerian state, accounting for about 97% of the country's total export. Oil was first discovered in the region in 1958 and since the early 1970s, oil has dominated the countries economy.

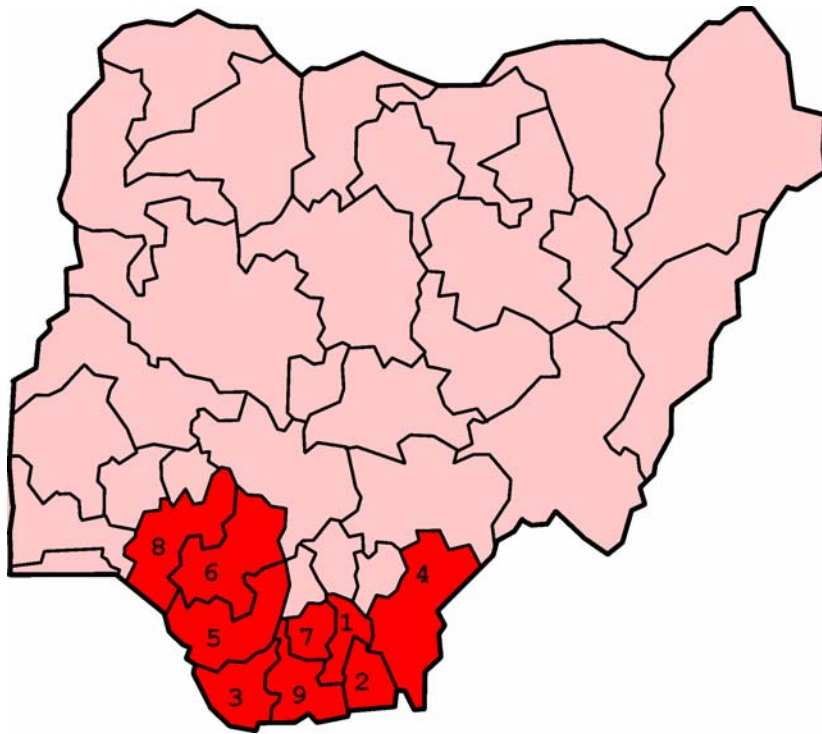


Fig. 1.0: Map of Nigeria showing the states in the Niger Delta
Source: <http://upload.wikimedia.org>

There are several ethnic groups in the Niger Delta. The Ijaws seem to be the oldest settlers in the region and the largest group (about 8 million in number). They occupy the whole of Bayelsa State and are found in River, Delta, Edo, Ondo and Akwa States. Other major ethnic groups occupying the region are the Ndoni, Degema, Egbema, Ogba, Ekpeye, Itsekiri, Urobo, Binis, Ishan, Efik, Okpo, Growhia, and Ibibio. The Ilaje and Ikale of Ondo, the Ohaji and Oguta of Imo State and the Asa of Abia State make up the western and eastern Delta. From the 1991 census, about 25% of the entire Nigerian population lives in Niger Delta (Table 1.0).

Table 1.0: Population of the states in the Niger Delta

State	Male	Female	Total
Abia	1.126	1.213	2.339
Akwa Ibom	1.168	1.242	2.410
Cross River	0.956	0.955	1.911
Delta	1.272	1.319	2.591
Edo	1.085	1.086	2.171
Imo	1.167	1.319	2.486
Ondo	1.882	1.904	3.786
River/Bayelsa*	2.240	2.070	4.310

*Bayelsa State was created out of River State

Source: Federal Office of Statistics, Annual Abstract of Statistics, 1999 Edition

Climate Change Adaptation

The environment is similar in many ways to a biological system. A change in any component of a biological system will cause a distortion in the entire system. The ecological system behaves in a similar way. Climate is a fundamental element of the environment and a change in climate will consequently cause a change in the entire environment, affecting other elements of the environment. The Intergovernmental Panel on Climate Change (IPCC), a body set up in 1988 by the World Meteorological Organization (WMO) and the United Nations Environmental Program (UNEP) to provide authoritative information about climate change phenomenon, produced enough evidence in their first report in 1990 to show that climate change is a reality and that it is being caused by anthropogenic activities. IPCC predicts that climate change, caused by the emission of greenhouse gases especially CO₂ will cause drought in some part of the world and flooding in other parts and the poor countries will be hit the most because of their low capacity to cope with the changes.

The first IPCC report led to the second World Climate Conference in 1990. Since then, the IPCC has produced several reports and highlighted on the phenomenon. The United Nations (UN) did not give serious attention to climate change issues until 1988. Responding to growing public environmental awareness and concerns for the consequence of climate change, the UN during the 43rd session of the UN General Assembly (UNGA) in 1988 adopted Resolution 43/53 titled “*Protection of Global Climate for Present and Future Generations of Mankind*”. The resolution of UNGA of 1990 led to the setting up of Intergovernmental Negotiating Committee, which drafted the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC was thereafter tabled for signatories during the United Nations Conference on Environment and Development in Rio, Brazil, in June 1992.

The terms “adaptation” and “mitigation” are two important terms that are fundamental in the climate change debate. The IPCC defined adaptation as adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderate harm or exploits beneficial opportunities. Similarly, Mitchell and Tanner (2006) defined adaptation as an understanding of how individuals, groups and natural systems can prepare for and respond to changes in climate or their environment. According to them, it is crucial to reducing vulnerability to climate change. While mitigation tackles the causes of climate change, adaptation tackles the effects of the phenomenon. The potential to adjust in order to minimize negative impact and maximize any benefits from changes in climate is known as adaptive capacity. A successful adaptation can reduce vulnerability by building on and strengthening existing coping strategies.

The Niger Delta is highly susceptible to adverse environmental changes occasioned by climate change because it is located in the coastal region of the world. Coastal regions of the world are already experiencing flooding due to rise in sea level. Amid the impact of climatic change, the region is also faced with myriads of environmental problems resulting from oil exploration and exploitation activities. Reports on the environmental state of the Niger Delta are conclusive that the area has become an ecological wasteland

Previous documentations on the region have focused on the environmental and climatic changes while suggesting mitigation measures. To the best of our knowledge, there is no existing documentation on the adaptation to climate change and other environmental changes in Niger Delta. Thus, the current study elaborates on the inherent adaptive strategies that has been adopted by the people of the Niger Delta and suggest way to strengthen existing capacity of the people to adapt to climate change and adverse environmental changes. Successful policy intervention will depend on an understanding of existing coping mechanisms of the affected people. The research also highlights in details the climatic and environmental changes that have occurred in the Niger Delta region and shows the relationship between these changes and poverty. It reveals the weaknesses and deficiencies in the Nigerian Constitution in administering environmental rights to the people and suggests institutional and constitutional solution to solving these problems in the region.

Method of Study

Methods used for the study include direct observation. This involves walk-through surveys to collect information. Data were also collected with interviews with key informants. The key informants are heads of communities, community chiefs, the spokesmen, elders and other opinion leaders. These informants are privileged to know the communities very well. They were visited in their homes and then interviewed. Focused group discussions (FGD) were held separately with the various groups of the communities that were sampled. The groups include the elderly men, the women group and then the youths. This was used to seek the views of the different groups separately, as their needs and views may be different and opportunity was created for thorough discussion. The project team also relied on existing literature or documentation on the area to complement the information that was collect during the field work. Such information was sourced for from relevant government and academic institutions and from traditional institutions in the area.

CHAPTER TWO

CLIMATE CHANGE AND THE NIGER DELTA

Costal Erosion and Floods

The Niger Delta region is a coastal environment. The rise in sea level has been linked with global warming by the IPCC. According to the IPCC (1990), working with records over the last 100 years, have shown that a strong correlation exist between greenhouse gases emission and climate change and between global temperature and sea level rise. Global temperature is expected to rise by between 0.2⁰C to 0.5⁰C per decade. The rise in temperature is expected to cause thermal expansion of sea and melting of polar ice. These will cause the sea level to rise for about 3-10 cm per decade during the next century.

Another report by the IPCC (2001) revealed that the large scale loss of land ice and thermal expansion of sea water has very likely contributed to the observed sea level rise. According to the International Federation of Red Cross (IFRC, 1999), sea level rise and flooding are already affecting millions of people world wide. IFRC report revealed that an estimated 10 million people are at constant risk of coastal flood and floods in general are making 3 million people homeless every year, and that the number of people affected by sea level rise is on the increase annually.

The occurrence of coastal erosion has been reported in the Niger Delta by Okon and Egbon (1999). The report of Udofa and Fajemirokun (1978) showed a rise in sea level along Nigerian coastal water. They did a mechanical analysis of tide data from 1960 – 1970 and reported mean sea level rise to be 0.462m above zero level of the tide gauge. Agbola and Olurin (2003) reported that the World Bank ranked coastal erosion as needing moderate priority attention in the Niger Delta (Table 2.0) Also, the Nigerian Environmental Study/Action Team (NEST, 2004), reported that sea-level rise and repeated ocean surges will not only worsen the problems of coastal erosion that are already a menace in the Niger Delta, the associated inundation will increase problems of floods, intrusion of sea-water into fresh water sources and ecosystems destroying such stabilizing system as mangrove, and affecting agriculture, fisheries and general livelihoods.

Table 2.0: Ranking of Environmental issues in the Niger Delta by the World Bank

Category	High Priority	Moderate Priority	Lower Priority
Land Resource Degradation	Agricultural land degradation Flooding (Moderate high)	Coastal erosion Riverbank erosion	Sea level rise
Renewable Resource Degradation	Fisheries depletion. Deforestation Biodiversity loss Water hyacinth expansion	Fisheries habitat Degradation	Mangrove Degradation Nypa palm expansion
Environmental Pollution	Sewage Vehicular emissions Municipal solid wastes Toxic and hazardous substances	Oil pollution Industrial effluents Industrial air emissions Industrial solid wastes	Gas flaring

Source: Agbola and Olurin (2003)

The most important environmental problem facing the Niger Delta is coastal erosion. Although the World Bank has rated coastal erosion as needing moderate attention in the region, it is the most important impact of sea level rise in the region and should be given high priority attention. Flooding of low-lying areas in the region has been observed. Settlements in the coastal region have been uprooted by coastal erosion. In some places, especially in Forcados, some oil wells have been lost to the ocean due to erosion. Coastal erosion poses serious problem for the economic activities in the Niger Delta especially natural sectors such as farming and fisheries (about 50% of the fishes consumed in Nigeria is from the Niger Delta). Coastal vegetation especially the mangroves have been lost to coastal erosion (Awosika, 1995).

The Niger Delta could lose over 15000 square kilometers of land by the year 2100 with a one meter rise in sea level. Calculations have also shown that a 20cm rise in sea level will inundate 3400 km² of the Nigerian coastland (Onofeghara, 1990). It is estimated that with a sea level rise of 30cm, about 1 to 2 million people will be affected. In all this, it is predicted that Nigeria will lose about \$9 billion as a result of the sea level rise while at least 80% of the people of the Niger Delta will be displaced due to the low level of the region.

Table 2.1: Total land loss (km²) due to coastal erosion and inundation estimated from different scenarios of sea level rise

	Low Estimate				High Estimate			
Sea level rise	0.2m	0.5m	1.0m	2.0m	0.2m	0.5m	1.0m	2.0m
Niger Delta	2,846	7,453	15,125	18,398	2,865	7,500	15,332	18,803

Source: Awosika et al, 1992

Table 2.2: Estimated number of people (in millions) displaced by sea level rise at different scenarios of sea level rise

Sea level rise	0.2m	0.5m	1.0m	2.0m
Niger Delta	0.10	0.25	0.47	0.21

Source: Awosika et al, 1992

Other adverse effect of sea level rise in the Niger Delta is increased salinity of both surface and underground water due to the intrusion of sea water. This will lead to the death of aquatic plants and animals that can not tolerate high salinity. The brackish water is the home of several species of fishes and it is the breeding sites for several others. The ecology of the brackish waters will greatly be affected by this phenomenon and this may lead to lose of species. Some terrestrial plants that have low tolerance for high salinity will also be affected. Sea water intrusion will have serious impact on food security in the region; because of it impacts on coastal agriculture. The salinization of underground water will lead to shortage of fresh water. Inhabitants of the region depend on underground water as their main source of water for drinking and for other domestic use. Other impact of sea level rise on the region is the emergence of health-related hazards.

General Flooding

While climate change will lead to increase aridity and desertification in northern Nigeria, it will lead to increase in flooding in the southern part especially in the coastal regions. Adverse impact resulting from the phenomenon will increase if sufficient effort is not made globally to tackle the problem. Apart from coastal erosion, flood in general has impacted negatively the livelihood of many communities in the region. Flood and erosion remove top soil, destroy roads, affect fresh

water resources and threaten lives and properties. Many people have been rendered homeless by floods and several roads have been made impassable. The usefulness of several roads has become seasonal, only passable during the dry months of the year.



Plate 2.0: Flood in Benin City

In Egor and Ogida communities in Edo State, several houses have been abandoned by the owners due to floods and many more areas in the region are vulnerable to floods. Owners of the affected houses did not anticipate the problem they now find themselves when their houses were being built. For occupants of some of the affected houses who are unable to relocate for financial reason will have to cope with the situation. This makes them vulnerable to different kinds of water-related disease such as malaria, dysentery, cholera, and diarrhea. Trauma resulting from the problem can lead to non-pathogenic diseases such as hypertension and diabetes. In some other instances, some areas are cut off from other parts of the community as a result of flood.

Floods paralyze economic activities in many towns and cities in the region. Major roads, some linking states are flooded causing hardship to motorists. When these roads were constructed, the flooding problems were not there, and the companies that constructed the roads probably did not anticipate the problem. One common consequence of flooding is increase in transport fare. Commercial drivers, to make up for the distance they drive to avoid flooded roads, usually increase their fare putting the burden on their passengers causing the general increase in the cost of goods and services.

Change in Rainfall Pattern

Meteorological data have shown that rainfall pattern in Nigeria has changed in the past decades. Oladipo (1995) reported that the decline in rainfall in Nigeria started at the beginning of the 1960s when a decade of relatively wet years ended. According to him, the persistence of below-mean rainfall in the last two decades in Nigeria is an indication of an abrupt change in climate. The Niger Delta lie predominantly in the tropics having two seasons – the wet and dry seasons. The wet season occur from May to September, while the dry season begins in October and ends in April.

Food security has been defined as the ability of people to grow and obtain food (Sarah La Trobe, 2002). The agricultural sector in Nigeria is highly sensitive to rainfall pattern especially in southern Nigeria where rain-fed agriculture is mainly practiced. It has been predicted that climate change will pose serious threat to food security. Climate change creates uncertainty in the rainfall pattern (timing and amount) and affects agricultural activities. Agriculture in the Niger Delta is highly dependent on rain and irrigation is seldom practiced. The changes in the rainfall pattern have greatly affected the agriculture in the region. Farmers in the region begin cultivation at the end of the dry season, when the rain begins to fall. They plant their crops after the first or second rain in the month of March, and sometime in April. After the first rain, the rain falls periodically till the months of June/July (the peak of the rainy season), when rain fall more or less continually. The periodic rainfall pattern before the peak in June enables farmers to cultivate various crops.

Because of the change in rainfall pattern, farmers who plant after the first or second rain in run into huge loss when the rains are delayed beyond the usual due to climatic changes. The crops are scotched causing huge economic loss. Before this time farmers can predict the rain and they know precisely when to plant their crops. The crops after they are planted are watered periodically by rain before the peak of the rainfall in June. The amount of rainfall within the period before the peak is necessary for the optimum performance of many crops most especially the maize which is widely consumed in every part of Nigeria.

Change in Vegetation

One important feature observed in the region is the almost complete absence of primary forests. This may be partly due to climate change and partly due to human activities. Uncontrolled logging, agricultural activities, acid rain, oil exploration and exploitation, urbanization and mining activities contribute to lose of vegetation. The vegetation of some part of the Niger Delta is dominated by grasses, sedges and shrubs with few scattered trees and they were mainly palm trees. In other parts, trees grow close to one another to form thick canopy over undergrowths.



Plate 2.0: Vegetation in a community in River State

The changes in vegetation will have great implication for biological productivity consequently affecting biomass production. It will lead to the impoverishment of biodiversity and various plant species presently growing in the region may die off. The regeneration rate of biomass may also decline significantly affecting the amount of fuel wood available for local people. Fall in the availability of biomass for local energy generation will bring more hardship to local people. Many will have to travel long distance in search for fuel wood, women and children will be affected the most since they are traditionally charged with the responsibility of fetching fuel wood for the house.

CHAPTER THREE

OTHER CAUSES OF ENVIRONMENTAL DEGRADATION

Acid Rain

The major cause of climate change is the release of greenhouse gases (GHG) such as CO₂, nitrous oxides, chlorofluorocarbon, hydrocarbons such as methane, ozone, aldehydes and water vapour into the atmosphere. Some of these gases especially CO₂ and the oxides of nitrogen are dissolved in rain water and fall to the earth as acid rain. CO₂ dissolved in water to form carbonate acid while nitrous oxides dissolve in water to form nitric acids. Because of the high level of ionization of these acids, they erode metallic surfaces and destroy biodiversity. Acid rains erode roofing sheets of houses at alarming rate, that the people of the Niger Delta are force to change their roofing sheets every now and then.

Most houses in the region are roofed with zinc-plated galvanized sheets. These sheets are susceptible to rusting when they come in contact with water. The rate at which they rust is increased when acidified rain fall on them. The life span of zinc-plated roofing sheets is greatly reduced when acid rain fall on them. Owners of houses are made to change their roofing sheets more often than usual. People are often forced to spend enormous resources replacing their roofing sheets. Money that would have been spent on other areas of the home that will improve the standard of living of the people is used for changing the roofs of houses. This further impoverishes many, especially those in the rural communities.

An alternative to zinc-plated roofing sheets is the use of aluminum roofing sheets. Aluminum sheets are highly resistant to corrosion by acid rain. However, they are much more expensive than the zinc plated sheets, hence many cannot afford aluminum roofing sheets. For instance, to roof a house measuring 29ft by 72ft with aluminum roofing sheets will cost about Seven Hundred and Fifty Thousand Naira (US \$5905.50), while to roof a house of the same dimension with zinc-plated sheets will cost only about Twenty-one Thousand Naira (\$165). Zinc-plated sheets have life span of about 10 year; this is however reduced due to acid rain.

Acid rain leads to loss of biodiversity. Forests and economic crops are destroyed by acid rain. The dominance of grasses and shrubs in some part of the Niger Delta is an indication of loss of natural forest. This may be mainly due to acid rain, although there are other factors that may lead to this such as agricultural activities and exploration and exploitation activities of multinational oil companies. Some respondents opined that their farm land had been destroyed and is no longer fertile for cultivation of crops, hence they can no longer involve in farming.

Gas Flaring

The flaring of gas has been practiced in the Niger Delta region for over four decades. Today, there are about 123 flaring sites in the region (Energetic Solution Conference, 2004), making Nigeria one of the highest emitter of green house gases in Africa. Carbon dioxide emissions in the area are among the highest in the world (Iyayi, 2004). Some 45.8 billion kilowatts of heat are discharged into the atmosphere of the Niger Delta from flaring 1.8 billion cubic feet of gas every day (Agbola and Olurin, 2003). Gas flaring has raised temperatures and rendered large areas uninhabitable. Between 1970 and 1986, a total of about 125.5 million cubic meters of gas was produced in the

Niger Delta region, about 102.3 (81.7%) million cubic meters were flared while only 2.6 million cubic meters were used as fuel by oil producing companies and about 14.6 million cubic meters were sold to other consumers (Awosika, 1995).



Plate 3: Gas flaring site at Rumuekpe community in Cross River State
Photo by: Claire Taylor

Gas flaring is environmentally unethical and has contributed significantly to the degradation of the environment in the region. Acid rain is caused by the flaring of gas. The concentration of acid in rain water appears to be higher in the Niger Delta region and decreases further away from the region, there is need to do more research on this. The practice may have altered the vegetation of area, replacing local vegetation with “stubborn” grasses, a grasses that can grow in very harsh environment. The presence of these grasses connotes that the soil where it grows is no longer fertile for cultivation of crops.

The location of gas flaring sites close to inhabited areas is an important environmental anomaly that was observed. In one of communities visited, Rumuekpe Community in Emuwa Local Government Area of River State, the community hosting ELF collection centre, AGIP collection centre and Shell Petroleum Development Company (SPDC) flow station and booster station, a flaring site was located about 250 meters from inhabited houses in the community. The community members complained of high ambient temperature from the flaring site. The farm lands of local people have been taken from them to flare gas. Vertical gas flaring was previously practiced by the oil companies. This method involved raising the flaring nozzle high up into the sky. This method makes the practice conspicuous. Due to opposition to gas flaring in the region, the oil companies now use the horizontal flaring method to obscure the practice.

Oil Spill

The Niger Delta environment is continually degraded by frequent oil spills. Seismic blasts and the discharge of untreated effluents directly into water bodies, some of which serve as the only source

of water for the people are common in the region. Water bodies polluted with oil affects the amount of dissolved oxygen in the water, which consequently impacts the lives of aquatic plants and animals. Oil spreads over the water surface preventing contact with atmospheric oxygen. Oil spills occur with high frequency in the region. Records revealed that between 1976 to 1990, the region experienced 2676 cases of oil spills (Civil Liberties Organization report, 1996) and an annual average spills in Rivers, Bayelsa and Delta States are 300 cases. The devastating impacts of these incidents on the farmlands, crops, economic trees, creeks, lakes, fishing equipment is such that the people can no longer engage in productive farming and fishing.

Several major rivers are heavily polluted and also farmlands are under acid rain and oil spills. Oil canals and network of pipelines is making it impossible and dangerous for people to undertake economic activities on it. It is estimated that between 1976 and 1996 a total of 2,369,470.40 barrels of crude oil was spilled into the rivers and lands of the Niger Delta (Table 3.0).

Table 3.0: Time Series Analysis of Oil Spill in the Niger Delta

S/No	Year	No of Spill	Quantity Spilled (barrels)	Quantity Recovered (barrels)	Net volume lost to the Environment (barrels)
1	1976	128	26,157.00	7,135.00	19,021.50
2	1977	104	32,879.25	1,703.01	31,176.75
3	1978	154	489,294.75	391,445.00	97,849.75
4	1979	157	94,117.13	63,481.20	630,635.93
5	1980	241	600,511.02	42,416.83	558,094.19
6	1981	238	42,722.50	5,470.20	37,252.30
7	1982	257	42,841.00	2,171.40	40,669.60
8	1983	173	48,351.30	6,355.90	41,995.40
9	1984	151	40,209.00	1,644.80	38,564.20
10	1985	187	11,876.60	1,719.30	10,157.30
11	1986	155	12,905.00	552.00	12,358.00
12	1987	129	31,866.00	25,757.00	25,757.00
13	1988	208	9,172.00	1,955.00	7,207.00
14	1989	228	5,956.00	2,153.00	3,803.00
15	1990	166	14,150.35	2,785.96	12,057.80
16	1991	258	108,367.01	2,785.96	105,912.05
17	1992	378	51,187.90	1,476.70	49,711.20
18	1993	453	8,105.32	2,937.08	6,632.11
19	1994	495	35,123.71	2,335.93	32,787.78
20	1995	417	63,677.17	3,110.02	60,568.15
21	1996	158	39,903.667	1,183,807	38,716.860
Total		4,647	2,369,470.04	549,060.38	1,820,410.50

Source: Agbola and Olurin (2003)

From the Table 3.0, between 1976 and 1996, 4,647 cases of oil spills were recorded. Iyayi (2004) opined that the figures are bound to be much higher if taken into account what he described as official lying index. According to him, the official lying index indicates the degree to which official figures are deliberately falsified to vary from the real facts on the ground. The official lying index is proportional to the level of corruption of a regime and the emotional involvement of its leaders in maintaining their version of reality as the truth. Thus, official figures therefore need to be multiplied by a certain factor in order to arrive at the correct estimate of the level at which the situation actually exists. By suggesting an official lying index of 1.5 and multiplying it by the

official figure, Iyayi (2004) calculated the actual number of oil spills during the period to be in the neighbourhood of 6, 971 with a total volume of 3,554,205.6 barrels of crude oil spilled.

Table 3.1: The Major Transnational Oil Companies in the Niger Delta.

No	Oil Company	Shareholders	Operators	Share of National Production
1	Shell Petroleum Development (SPDC)	NNPC – 55% Shell – 30% Elf – 10% Agip – 5%	Shell	42.0%
2	Mobil Producing Nigeria	NNPC – 50% Mobil – 42%	Mobil	21.0%
3	Chevron Nigeria	NNPC – 60% Chevron – 40%	Chevron	19.0%
4	Nigeria Agip Oil	NNPC – 60% Agip – 40%	Agip	7.5%
5	Elf Petroleum Nigeria	NNPC – 60% Elf – 40%	Elf	2.6%
6	Texaco Overseas (Nigeria) Petroleum	NNPC – 60% Texaco – 20% Chevron – 20%	Texaco	1.7%
TOTAL				93.8%

Source: Iyayi (2000)

Pipeline Vandalizations and Communal Conflicts

Pipeline vandalization is caused by youth restlessness resulting from the economic hardship in the Niger Delta. Several cases of pipeline vandalization have been reported. In 1993, seven cases were reported, in 1996, 33 cases were reported and in 1998, 57 cases were reported. The number of cases of pipeline vandalization rose astronomically to 497 in 1999 and over 600 cases in 2000 (Fig. 3.0). The dramatic increase of cases of pipeline vandalization from the 1990s to 2000 is suggestive that the more the people are deprived of their means of livelihood, the more restless they become. Hence the poorer the people become, the more the cases of pipeline vandalization. Other reasons youths in the Niger Delta are involved in the vandalization of pipeline may be to express their grievances over the destruction of their environment by multinational oil companies without adequate compensation from these companies.

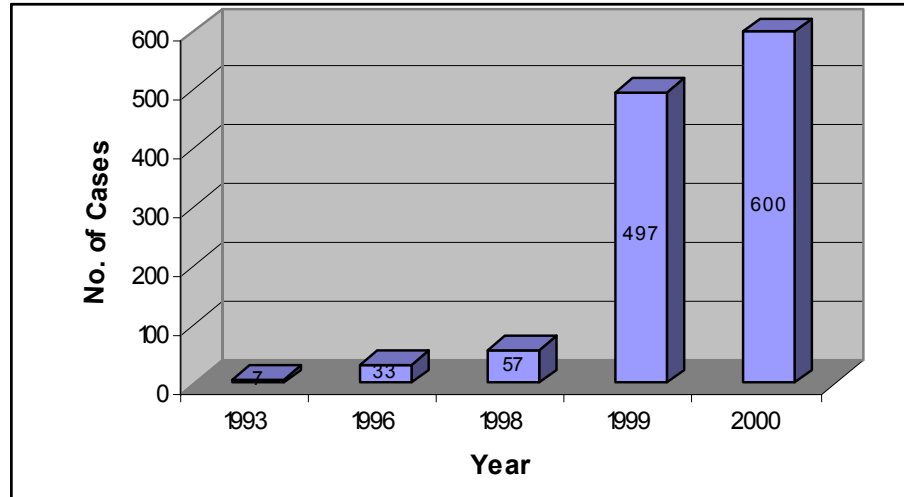


Fig. 1: Number of cases of pipeline vandalism reported between 1993 and 2000
Source: Okecha, 2003

Pipeline vandalism, in many cases, is associated with fire outbreak and leading to the loss of lives and properties. In 1998, about 1000 people lost their lives in Jesse Village in an inferno resulting from the vandalism of petroleum pipeline. The year after, over 12 people lost their lives in a similar incidence in Ekakpamre in Ughelli Local Government Area in Delta State. In 2000, over 50 people lost their lives at Nngiji and Umuegbede in Abia State, 300 persons lose their lives in Egborode village in Okpe Local Government Area of Delta State (Okecha, 2003). Other impacts of pipeline vandalism are deforestation, destruction of vegetation, pollution and loss of revenue. Nigeria lost an estimate 4.4 Billion Naira (34.6 million Dollars) in 400 pipeline damages in oil-producing states between January and August 2000 (ANEJ, 2004). Forest and vegetation are also destroyed when pipelines are being laid.

Communal clashes have increased with time in the Niger Delta. Conflicts may occur between one ethnic group and another (inter-ethnic), or within ethnic groups (intra-ethnic) or between communities and state or between communities and multinationals companies. Inter-ethnic and intra-ethnic clashes are caused by the struggle for the ownership of resources, usually land. Communal clashes are also caused by youth restiveness. Iyayi (2004) attributed conflicts in the region to the divide and rule policies of the Nigerian state and the oil companies operating in the area. He attributed the inter-ethnic war between the Ijaws and the Itsekiri which started in 1997 to the double standard used by the Federal Government in siting local government headquarters. A new dimension to the conflicts between youths and multinational companies is the formation of militant groups whose mode of operation is holding hostage staff of oil companies and asking for ransom from the oil companies.

Till date, communities in the region are still involved in several forms of resistance (demonstrations and protests, petition writing, legal action, hostage taking, armed uprising and community mobilization). Protests in the region began before flag of independence of the Nigerian State in 1960. Resistance and protest are different from the intra- and inter-ethnic conflicts. Protests and resistance are directed against the Nigerian state and its collaborators in the Niger Delta and have objective of drawing attention to and reversing the situation of exploitation and

underdevelopment (Iyayi, 2004). For example, between 8th and 18th of July, 2002 some Itsekiri women from Ugborodo Community in Delta State protested and occupied the Chevron-Texaco oil terminal at Escravos. The occupation ended when the company met the demands by the women which included hiring of their youths, building of schools and provision of electricity.

CHAPTER FOUR

COPING WITH THE CHANGES

Community-based adaptation has become an important term in the climate change debate. It recognizes the fact that environmental knowledge and resilience to climate change lie within societies and cultures (Mitchell and Tanner, 2006). Thus an understanding of how communities cope with climate change is important to develop community-based adaptation projects. The goal of community-based adaptation project is to increase the climate resilience of communities by enhancing their capacity to cope with less predictable rainfall patterns, more frequent droughts, stronger heat wave, different diseases and weather hazards of unprecedented intensity (Mitchell and Tanner, 2006). We have already seen that the people of the Niger Delta are vulnerable to climate change. In this section, we will highlight the different ways communities and individuals have been coping with changes. First we will briefly discuss the level of poverty in the region as it relates to environmental changes.

Poverty in the Niger Delta

The people of the Niger Delta are highly dependent on their environment for their source of livelihood. The region has been described as the richest wetland in the world and the home of numerous species of aquatic and terrestrial plants and animals. Before the discovery of oil in the Niger Delta, the people depended so much on the resources from their natural environment. They made their living from the exploitation of the resources of their land, water and forest as farmers, fishermen and hunters. They were attached to their environment. The economic activities of the people were soon distorted as a result of the environmental degradation caused by climate change and exploration and exploitation activities of multinational oil companies. These devastating effects on their farmlands, crops, creeks, lakes, economic crops and rivers are so severe that the people can no longer engage in productive farming, fishing and hunting as they used to do.

Hence, the dominant economic activity of the people is trading. Only very few are employed in the industries and in the civil service. Though some still engaged in farming and fishing, they work more with little in return. Their fishing and farming have been impaired by the deplorable environment. This is a major cause of poverty in the region. The cost of goods and services are quite high compared to other parts of the country. For example, the cost of table water (popularly called “pure water”) is Ten Naira (₦10) in Port Harcourt while in other parts of the country it is sold for Five Naira (₦5). The high cost of living in the Niger Delta is caused by the presence of the multinational companies; their workers earn huge sum of money and are willing to pay for goods and services irrespective of their cost. But this is at the detriment of the local people, causing them much poverty. The more costly the prices of goods and services the more the local people are impoverished. Most painful to the people is the fact that indigenes are not employed by the companies operating in the area; the few that are employed are given appointment at the lower cadre of the companies.

The World Bank reported that despite the vast oil resources in the Niger Delta, the region remains poor. GNP per capita is below the national average of US\$280. Unemployment in Port Harcourt, the capital of Rivers State, is 30 percent and is believed to be equally high in the rural areas. The rural population commonly fish or practice subsistence agriculture, and supplement their diet and

income with a wide variety of forest products. Education levels are below the national average and are particularly low for women. While 76% of Nigerian children attend primary school, this level drops to 30-40 percent in some parts of the Niger Delta. The poverty level in the Niger Delta is exacerbated by the high cost of living. In the urban areas of Rivers State, the cost of living index is the highest in Nigeria (Iyayi 2004).

Table 4.0: Poverty Levels by Geo-political Zones in Nigeria

Geopolitical Zone	Percentage		
	1985/6	1992/3	1997
North East	53.2	N/A	68.0
North West	48.4	N/A	62.0
Middle Belt	48.4	N/A	53.0
South East	30.9	N/A	79.5
South West	42.0	N/A	74.1
South – South	38.0	N/A	78.6
Nationwide	43.0	34.10	69.2

Source: National Policy on Poverty Eradication

Informal sector jobs such as fishing, farming, trading and artisanship dominate in the communities. Apparently, income levels in many of the communities are low because of the dominance of informal sector jobs over the formal sector jobs (formal sector job includes employment by companies and civil service). In a particular community where a survey was carried out, it was found that about 22% of the respondents earned ₦5000 (approximately US \$39) or less per month. According to the World Bank, anybody living on less than US\$1.00 a day must be considered poor. The most popular occupation in many communities is fishing. In some rural communities especially those located in the riverine areas, about 100% of the population are fishermen. Those involved in informal sector jobs were estimated to be about 70% while those involved in formal sector jobs were estimated to be about 15%, with only about 2% employed in companies. The dominance of the informal sector jobs has implications for income levels in the communities. This is because the informal sector is plagued by low productivity and low income. Recent studies in Nigeria and other parts of sub-Saharan Africa showed that whereas the informal sector accounts for as high as around 75% of employment, the sector accounts for only 25% of overall income.

Cope with Environmental Changes

Change of Occupation

All parts of the earth will be affected by climate change, but the degree of damage resulting from the phenomenon will differ from region to region and will depend on the capacity of the different regions to cope with the changes. Many people in the Niger delta whose source of livelihood once depended on natural sectors such as farming and fishing had to change their means of livelihood. Because of the degradation of their environment, they can no longer engage in farming and fishing. For this reason, many are now traders, dealing on different kind of goods. Few persons work in the civil service, still fewer ones are employed by the multinational oil companies operating in the area. Many engage in multiple activities in other to increase their income. For example some in the civil service combine their civil service work with trading.

Change in occupation will have adverse impacts on the agricultural sector in the region. An estimated 50% of the fish consumed in Nigeria come from the Niger Delta. With more people changing their means of livelihood from natural sectors to non-natural sectors, this will lead to the decrease in agricultural and fishery products. Change in occupation appears to be the only way many can cope with the changes affecting their environment. The major reason why many of the people in the region change their occupation from natural sectors is to raise their income to meet at least their basic needs. However, the high cost of living in the region seems to have impaired this objective. Many of the inhabitants still live below the poverty line of less than one Dollar per day.

Change in occupation has caused the rate of rural-urban migration. This has particularly affected the workforce in the rural communities. Many people of the youthful age group migrate from the rural areas to the urban areas to seek for jobs in the formal sectors and to involve in trading creating a scenario where the urban areas are highly populated with people belonging to the country's workforce. The elderly men and women are left in the rural communities. Change in occupation seems to be the only option for the people since their natural environment they once depended on has been adversely affected.

Coping with Floods

As has been noted earlier, some parts of many communities in the region are affected by flood and they are cut off from other parts of the community. The use of pedestrian bridge has been developed locally so that the affected areas can have access to other parts of the community to enable them carry out their daily activities. The pedestrian bridge are made of wood, in some other cases they are constructed with earth materials such sand, pieces of broken building blocks or some cases large granite stones. The bridges are constructed on community efforts and initiative, usually after waiting for the government for a long time without results. The bridges constructed with wood have one disadvantage; wood is biodegradable and thus have short life span. Those constructed by heaping sand are soon eroded by water.

At extreme cases of flood, many abandon their houses and completely relocate to other areas that are not affected by flood. Some other affected persons live in their houses for few months of the year during the dry season, after which they relocate and come back when another dry season begins. Shelter is one of the basic needs of man and no one can do without it. In some other instances where the affected people can not relocate, they are forced to live with the flood. This makes them vulnerable to various water-borne diseases such as malaria, diarrhea, cholera and typhoid fever. Trauma resulting from the circumstance can also cause non-pathogenic diseases such as high blood pressure and diabetes.

Coping with Changes in Rainfall Pattern

Many in the Niger Delta depend on climate-sensitive sectors such as agriculture and fishery. The changing climate has created uncertainty in the rainfall pattern (timing and amount of rainfall) in every part of Nigeria. The problem is more severe in the rain forest zone of the Niger Delta where rain-fed agriculture is mainly practiced. Because of the uncertainties in predicting the rain, farmers now delay their time of planting. After the first or second rain, they watch the rain for sometime to ensure that the rain fall regularly enough before planting. They do this to prevent their crops from being killed when rain is delayed. The government authorities in charge of climate data need detailed record of rainfall data from year to year and pre-inform farmers on the time to start

planting working with the rainfall data from previous year. This will help to strengthen this strategy for adapting to variation in rainfall pattern.

Another way farmers in the region are overcoming this problem is by the use of fast-maturing varieties. Fast-maturing varieties of maize with high yields have been introduced and are being used by farmers. The risk involved in this strategy is that local species are being displaced by these species, though some farmers still cultivate the local ones. The risk involved in this strategy is that in future, new hybrid species may completely displaced local species; this may lead to the extinction of local ones. It is important that the right mechanisms are put in place to protect local species from extinction. Other crops such as cassava that are not affected by excess rainfall can be planted close to the peak of the rainy season, although fast-maturing species of cassava are also being used by farmers.

Coping with Acid Rain

As we saw earlier, acid rain impacts livelihood in two ways; loss of biodiversity through the destruction of vegetation and corrosion of metallic surfaces such as zinc-plated roofing sheets. Many people in the region are overcoming this impact by painting the surface of metallic roofing sheets vulnerable to corrosion by acid rain with gloss paint. The paint will prevent the roofing sheets from having contact with acid rain, thus reducing the rate of corrosion.

CHAPTER FIVE

DEVELOPMENT IN THE NIGER DELTA

The Nigerian Constitution and Development in Niger Delta

The weakness in the Nigerian constitution to administer environmental justice and bestow the control of resources from the Niger Delta on the local people is a major limiting factor to development in the Niger Delta. There is no provision in the constitution that allows the inhabitants of the area to have even an iota of control over the resources from their land. Thus the Nigerian constitution allows the Nigerian state and the oil companies to have total control of the oil resources from the region. This privilege bestowed on the state by the law has been greatly abused by the state or rather by government officials. It has become a case of 'scavenging' from the region and diverting the proceeds to other region or for other trivial issues rather than improving the lives of the people in the region whose livelihood has been taken from them. More severely is the mismanagement of these resources by government officials.

The laws governing the ownership and control of oil mineral resources of the Niger Delta region are the same laws governing ownership and control of natural resources in Nigeria. The Nigerian constitution vested in the state (Federal Government of Nigeria) the ownership and control of natural resources. This is contained in Petroleum Decree of 1969 now enacted as Petroleum Act of 1990. Section 1 of this law states as follows:

(1) The entire ownership and control of all petroleum in, under or upon any lands to which this section applies shall be vested in the state (that is the Federal Republic of Nigeria).

Also, the Territorial Water Act Laws of 1990 as amended by Act No. 1 of 1998 and the Exclusive Economic Zone Act of the Federation Laws of 1990 as amended by the Act No. 42 of 1998 vest ownership and right of exploitation of minerals and natural resources in the territorial waters and exclusive economic zone of Nigeria in the Federal Government of Nigeria. Similarly, the Land Use Act of 1990 appropriates the petroleum resources of the Niger Delta region in favour of the Nigerian Federation. The Land Use Act has been incorporated into the 1999 constitution and can only be repealed or amended through a cumbersome constitutional amendment procedure. Still another legislation that makes the oil mineral the sole property of the Nigerian state is stipulated in Section 44 (3) of the 1999 constitution.

Moreover, the definition of the term 'environment' is absent from the 1999 constitution of the Federal republic of Nigeria. Although the term has been defined in other legislations such as the Federal Environmental Protection Agency Act, these legislations are however inconsistent with the Nigerian constitution. The only hope for the protection of environmental rights seems to come from the implementation of international environmental treaties. However, the provision in the constitution states that '*No treaty between the Federation and any other country shall have the force of law except to the extent to which any such treaty had been enacted into law by the National Assembly*'. Thus

international treaties are dependent on legislation by the National Assembly. Nigeria is currently a signatory to many of these treaties. One of them is the African Charter on Human and Peoples' Right and Article 24 state that '*All people shall have the right to a general satisfactory environment favourable to their development*'.

The environmental commitments provided in the Nigerian constitution are not justiceable. Pertaining to the right of fair hearing in respect to the environmental rights, the constitution is silent. The question as to who can prosecute when there is a breach in environmental rights is unresolved in the constitution. The tradition has been that it is the responsibility of the state. Onyeagucha (1999) of Environmental Rights Action/Friends of the Earth, Nigeria said "*There can not be enjoyment of environmental rights if people do not control their resources in other to determine how it is exploited.only people who will directly suffer the negative impact of the activities, should reserve the power to make the environmental laws guiding those activities*".

Participation of Stakeholders in Development in the Niger Delta

In an attempt to define development in academics, it was observed that there is no consensus about the meaning of development, thus what obtains are different school of thought. Little (1982) puts it, "there can be no objective definition of development and therefore, no universally acceptable indicator (of development). The best one might hope for would be to get some rough consensus on objectives and hence on how progress toward these objectives can be measured. But I very much doubt whether this can be achieved". Since there is no universally acceptable definition of the term development, it suggests that indicators for development may vary from region to region and community to community. This therefore gives relevance to the need for participatory approach to development.

One major factor that has hindered development in the region has been lack of participation of stakeholders in the planning and implementation of projects. The local people are the primary targets of development and development can only be precisely defined by them. It is only the definition given by the local people to whom development is directed at that are acceptable. Thus every development strategic must seek to view development from the perspective of the local people. The United Nations Declaration on the Rights to Development of 1986 recognized that the human person is the central subject of the development process and that development policies should therefore make the human being the main participant and beneficiary of development. According to the report of World Commission on Dam (2000), decisions on projects affecting indigenous and tribal peoples should be guided by their free, prior and informed consent.

Previous Efforts by the State to Develop the Niger Delta

There were previous initiatives by the Nigerian state to develop the Niger Delta. The recommendation of the Wilkins' Commission in 1958 led to the birth of the Niger Delta Board in 1961. This did not however achieve much. Another effort to develop the region was the setting up of the Niger Delta Basin and Rural Development Authority in 1976. Thereafter the presidential task force was set up as a result of the youth restiveness in the region. Still for the same purpose of the developing the region, the Oil and Mineral producing Areas Development Commission (OMPADEC) was set up in 1992. All of these

did not make any tangible impact, not because of the people, but because of the failure in the governance system. The failure in the Nigerian governance system has been a major factor hindering development in Nigeria. The laxity in accountability in the governmental system in Nigeria has done much damage to development in the Niger Delta in particular and Nigeria in general.

Then in 2000, the Federal Government of Nigeria set up the Niger Delta Development Commission (NDDC) with a mandate to conceive, plan and implement projects and programmes for the sustainable development of the Niger Delta area and to undertake infrastructural development in the region. The NDDC began operation in 2001. Although, NDDC has implemented some projects, some critics however are on the opinion that NDDC had little impact on development in the region. Some accuse the commission of not carrying the communities along in planning development projects and thus there is lack of ownership of projects. The major criticism facing the NDDC is its lack of transparency and collaboration with stakeholder in its operations. Akpe (2003) reported the massive abandonment of projects by the NDDC.

Need Assessment

The people of the Niger Delta listed several items as their needs when need assessment was conducted in the region. They however rated access to clean water, health facilities, roads, education, employment and sand filling as needing high priorities. Other items listed by the people as their needs are micro credit, public toilet, modern market, scholarship, skill acquisition, contracts, transportation, fishing gears, drainage system, resettlement and canalization. Any development strategy that will be sustainable in the region must consider the needs of the people. The needs of the people also vary among the various groups – men, women and children. These differences among the groups should be studied in details to plan sustainable development plan.

CHAPTER SIX

CONCLUSION

Integrated Approach to Developing the Niger Delta

We can see so far that the people of the Niger Delta are faced with myriads of environmental problems caused by climate change and the activities of multinational oil companies operating in the region. We therefore propose an integrated approach in solving the problem in the Niger Delta. By an integrated approach, we mean a combination of several development strategies packaged into one piece in a way that it will be more effective. The integrated approach must have this key element. It must be participatory. The local people are the primary targets of development and development can only be precisely defined by them. It is only the definition of the local people to whom development strategies is directed at that is acceptable. Thus every development strategic must seek to view development from the perspective of the local people. The United Nations Declaration on the Rights to Development of 1986 recognized that the human person is the central subject of the development process and that development policy should therefore make the human being the main participant and beneficiary of development.

The integrated approach must x-ray the needs of the local people and design an all-encompassing strategy to address these needs. The needs of the local people vary from community to community and among the different groups in the society – the men, women and youths. An integrated approach will target the different groups. It is of utmost importance to conduct detailed studies to ascertain the priority needs of communities before embarking on any project. The needs of the various communities should be addressed in order of priority, starting from the most important to the least. For example, if the priority need of a particular community is the provision of portable drinking water, the people may feel dissatisfied if they are provided with electricity.

Integrated approach must also seek to understand the existing coping strategies of the local people to changes in their environment and build on them through policy formulation with adequate participation of the local people. An effective coping strategy will reduce vulnerability to climate change and other changes in the environment. An in-dept understanding of how individuals, communities and natural system can prepare for and respond to changes in climate and non-climate shocks is important to reducing vulnerability to adverse changes in the environment.

In this integrated approach, all actors should be involved – the government, international organizations, civil society based organizations, non-governmental organizations, the private sector, academia, agencies of the United Nations, financing organizations like the World Bank and the communities. The government as a primary developmental partner should work closely with grassroots organizations that are privileged to have good knowledge of the communities. Government-private-sector partnership as well as partnership with other actors should be an integral part of the integrated approach.

While it is a palpable truism that industrialization enhances socio-economic development, it is important to note that industrialization without the right technologies is unsustainable and may become inimical to the local people. This is the case in the Niger Delta. Industrial development should be accomplished with technologies that are environmentally friendly. The multinational oil companies operating in the region should develop technologies that will minimize the impact of their activities on the environment. For instance, old-fashioned flaring of gas can be replaced by converting the gas into other useful products. Chemical experts are on the opinion that instead of flaring gas, it can be converted to alcohol and put into diverse uses. The government and the multinational companies should be involved in environmental restoration activities. Such activities may include aforestation, support for sustainable agriculture and fishery, establishment of environmental management institutions and research institution, and policy formulation for the preservation of wildlife and other endangered species.

There cannot be enjoyment of any resources if the people do not have control over their resources. It is a case of forcefully taking from the people what belongs to them and given it to somebody else. This is unethical and legislations supporting such acts are criminal. If resources are discovered in any community that are of commercial value for the state, the government should carry out adequate consultation with the community and enter into agreement with them before the exploitation of the resources. The consultations and agreements should be well documented. The provision in the Nigerian constitution vesting the control of all resource in Nigeria solely in the states should be repealed. The constitution should therefore allow the local people gain control of the resources from their land.

In the Nigerian constitution, at the bridge of environmental rights, there is no provision for individuals, agencies and communities to sue for enforcement of environmental rights. The power to sue for environmental rights is vested only in the state. The question is what happens when the state or its collaborators are the one directly involved in the breach of environmental rights? Therefore, provision should be given in the constitution to allow individuals, communities and agencies to sue for enforcement of environmental rights. When there is a breach in environmental rights, individuals, groups and communities are the ones affected. For sustainable development to be achieved in the Niger Delta, the region must gain control of their land and mineral resources taken away from them through military decrees that have been enacted into laws in the Nigerian constitution.

Community Research and Development Centre (CREDC)

Community Research and Development Centre (CREDC) is a non-governmental and a non-profit organization that provides services that ensure that sustainable development is attained in our communities – urban and rural communities. CREDC ensures that people have access to safe and healthy environment and that environmental resources are managed in the most sustainable way to achieve socio-economic development. CREDC subscribe to the fact that development cannot be achieved where information about the environment and environmental resources are lacking; hence CREDC will provide up-to-date information on the state of the environment and environmental resources.

CREDC will achieve its goals in the following ways:

- Embark on advocacy activities and work in partnership with local and international organizations.
- Carrying out research on the state of the environment and the lives of the local people.
- Build capacity in the local people to enable them participate actively in decision-making processes and developmental issues.
- Carry out local campaigns to oppose anthropogenic activities that are injurious to the environment and support efficient environmental management practices
- Act as the voice of the local people in local, national and international conventions.
- Help to mainstream gender in decision making processes involving environmental issues, health and development
- Embark on direct intervention projects.

CREDC has been actively involved in the promotion of renewable energy and energy efficiency in Nigeria as climate change mitigation strategy. The organization has carried out activities to enhance the participation of stakeholders in the on-going global climate change debate.

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