IMPACT OF OIL EXPLORATION AND EXPLOITATION ON THE NIGER DELTA REGION: ENVIRONMENTAL PERSPECTIVE

Nnabuenyi, U. M.
Department of Sociology, Nasarawa State University, Keffi
E-mail: ujumaureen77@yahoo

ABSTRACT
Since the discovery of oil in Nigeria in 1956, the country has been suffering the negative environmental consequences of oil exploration and exploitation. Between 1976 and 1996 a total of 4647 incidents resulted in the spill of approximately 2,369,470 barrels of oil into the environment. In addition, between 1997 and 2001, Nigeria also recorded a total number of 2,097 oil spill incidents. In 1998, 40,000 barrels of oil from Mobil platform off the Akwa Ibom coast were split into the environment causing severe damage to the coastal environment. Several oil spill management policy and efforts are in place to reduce the menace of oil spill incidents in the country. Some of these policies and efforts were made by the Federal Government, Non governmental agencies and oil firms in the country. The use of oil trajectory and fat e-models is also incorporated in oil spill management policy in the country. The results from a hypothetical simulation with the model from a point around OPL 250 located about 150km off the Nigerian coastline shows that the simulated oil spill for wet season reached the shore around Penington River after 104hours, about 4.5 days. Also during the dry season, the results from the model indicate that the oil spill reached the shore at the entrance of Benin River after 162 hours, 6.5days. This paper examines the impact of oil exploration and exploitation which encompasses environmental degradation, social annihilation, and economic impoverishment in the Nigeria's Niger-Delta and the emerging socio-economic multiplier effects on the people of the region. The study employed tables and as well as percentages forms of statistical analysis. Data for the study were mainly secondary sources extracted from the National Bureau of Statistics (NBS) and the United Nations Development Programmes report. The study revealed that the emerging social disorder and HIV/AIDS prevalence in the region is as a result of the social and economic multiplier effects such as unemployment and high level of poverty. The study then recommends an integrated community based approach involving commitment from all stakeholders.

Keywords: Environmental Degradation, Oil Exploration, Oil Spillage, Economic Multiplier Effects, Integrated Development Strategy.

INTRODUCTION
The Niger-Delta area of Nigeria coincides approximately to the south-south geopolitical zone of the country. The region is the most blessed deltas in the world, in both human and material resources but the unfavorable manner in which these resources are harnessed overtime, is the bane of the regions predicament. Before the discovery of crude oil, agriculture was the dominant occupation of the people. Crude oil was discovered in commercial quantity in the region specifically in the present Bayelsa State in 1956 (Omofonmwa and Odia, 2009). Since then oil exploration and exploitation has continued resulting into what is termed environmental destruction due to neglect and less concern of the multinational companies in environmental management in the area causing environmental degradation resulting from the former.

Most of the studies in isolation only examined one of either economic or social. The environmental degradation resulting from oil and gas

production in the Niger-Delta has attracted the attention of environmentalists and other experts, who looked at the region within the larger context of globalization (UNDP Report, 2006).

The issue of environmental sustainability cannot be overemphasized in the Niger-Delta as this is fundamental to the overall well being and the development of the area especially the well being of future generation which is an important aspect of environmental economics. The Niger-Delta region is dominated by rural communities that depends solely on the natural environment for subsistence living. More than seventy percent of the people depend on natural environment for living and non-living livelihood (UNDP Report, 2006). Poor people are vulnerable to environmental dynamics because social, political and economic exclusion indicates they are left with few choices about where they live (Aluko, 2004). Hence, they bear the adverse effects of natural hazards, biodiversity loss and forest depletion, pollution and the negative impact of industrialization vis-à-vis oil exploration.

Environmental degradation issues are of topical concern to communities in the Niger-Delta as it is a major cause of productivity losses (Opukri and Ibaba, 2008). This is the main reason why oil and gas extraction impact on the Niger-Delta cannot be overemphasized as the dominant view blames the oil production and its attendant consequences for the declining productivity of the region which is predominantly based on fisheries and other agricultural activities as farming, dealing in timber businesses, etc. (Okoko, 1998, Aaron, 2006; Opukri and Ibaba, 2008). It is no doubt to say that oil production has worsened environmental disaster in the region.

OIL EXPLORATION AND ENVIRONMENTAL DEGRADATION: There are more than 7,000 kilometers of pipelines and flow lines and 275 flow stations operated by more than 13 oil companies (UNDP Report, 2006). So this study seeks to fill this gap by examining the various environmental and economic effects and its resultant social effects in the region. For instance a recent study by Omafonmwa and Odia (2009) on oil exploration and the impact on the Niger-Delta employing a theoretical analysis revealed that the causes of the crises in the region is sequel to the inability of the multinational companies involved in their explorations and exploitations of crude oil, and the federal government of Nigeria to mitigate the consequences of their activities in the region. This study reflects only one of the social effects of these oil activities on the region. The exploration and exploitation of crude oil in the Niger-Delta has resulted to a number of environmental problems for the region. These environmental problems related to oil operations in the region are examined in this section. Since 1956 when the first oil well was drilled at Oloibiri in the present day Bayelsa state, over 1,481 oil wells have sprang up producing from about 159 oil fields. Opukri and Ibaba (2008) in their study on oil induced environmental degradation in the region and conclude that it results into internal population displacement. They adopted descriptive survey method of analysis using secondary data but it reflected only on one of the social effects of these activities on the people of Niger-Delta. The productive and environmental impacts of the number of operators are at increase everyday in the region. The percentage of the land of the region occupied by the oil industry is less than five percent but the adverse effects associated with its operations are innumerable and region-wide. This oil related environmental problems are discussed below.

OIL SPILL INCIDENTS IN NIGERIA

Oil spill incidents have occurred in various parts and at different times along our coast. Some major spills in the coastal zone are the GOCON's Escravos spill in 1978 of about 300,000 barrels, SPDC's Forcados Terminal tank failure in 1978 of about 580,000 barrels and Texaco Funiwa-5 blow out in 1980 of about 400,000 barrels. Other oil spill incidents are those of the Abudu pipe line in 1982 of about 18,818 barrels, The Jesse Fire Incident which claimed about a thousand lives and the Idoho Oil Spill of January 1998, of about 40,000 barrels. The most publicised of all oil spills in Nigeria occurred on January 17 1980 when a total of 37.0 million litres of crude oil

got spilled into the environment. This spill occurred as a result of a blow out at Funiwa 5 offshore station. Nigeria's largest spill was an offshore well-blow out in January 1980 when an estimated 200,000 barrels of oil (8.4million US gallons) spilled into the Atlantic Ocean from an oil industry facility and that damaged 340 hectares of mangrove (Nwilo and Badejo, 2005).

According to the Department of Petroleum Resources (DPR), between 1976 and 1996 a total of 4647 incidents resulted in the spill of approximately 2,369,470 barrels of oil into the environment. Of this quantity, an estimated 1,820,410.5 barrels (77%) were lost to the environment. A total of 549,060 barrels of oil representing 23.17% of the total oil spilt into the environment was recovered. The heaviest recorded spill so far occurred in 1979 and 1980 with a net volume of 694,117.13 barrels and 600,511.02 barrels respectively. Available records for the period of 1976 to 1996 indicate that approximately 6%, 25%, and 69% respectively, of total oil spilled in the Niger Delta area, were in land, swamp and offshore environments. Also, between 1997 and 2001, Nigeria recorded a total number of 2,097 oil spill incidents.

Sabotage is another major cause of oil spillage in the country. Some of the citizens of thiscountry in collaboration with people from other countries engage in oil bunkering. They damage and destroy oil pipelines in their effort to steal oil from them. SPDC claimed in 1996 that sabotage accounted for more than 60 percent of all oil spilled at its facilities in Nigeria, stating that the percentage has increased over the years both because the number of sabotage incidents has increased and because spills due to corrosion have decreased with programs to replace oil pipelines (SPDC, 1996). Pirates are stealing Nigeria's crude oil at a phenomenal rate, funneling nearly 300,000 barrels per day from our oil and selling it illegally on the international trade market.

IMPACTS OF OIL SPILL INCIDENTS ON NIGERIAN COASTAL AREAS

Since the discovery of oil in Nigeria in the 1950s, the country has been suffering the negative environmental consequences of oil development. The growth of the country's oil industry, combined with a population explosion and a lack of enforcement of environmental regulations has led to substantial damage to Nigeria's environment, especially in the Niger Delta region. 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 (Akpofure *et al.,* 2000). The harmful effects of oil spill on the environment are many. Oil kills plants and animals in the estuarine zone. Oil settles on beaches and kills organisms that live there, It also settles on ocean floor and kills benthic (bottom-dwelling) organisms such as crabs. Oil poisons algae, disrupts major food chains and decreases the yield of edible crustaceans. It also coats birds, impairing their flight or reducing the insulative property of their feathers, thus making the birds more vulnerable to cold. Oil endangers fish hatcheries in coastal waters and as well contaminates the flesh of commercially valuable fish. In the Nigerian coastal environment a large areas of the mangrove ecosystem have been destroyed. The mangrove was once a source of both fuel woods for the indigenous people and a habitat for the area's biodiversity, but is now unable to survive the oil toxicity of its habitat. Oil spills in the Niger Delta have been a regular occurrence, and the resultant degradation of the surrounding environment has caused significant tension between the people living in the region and the multinational oil companies operating there. It is only in the past decade that environmental groups, the Federal Government, and the foreign oil companies operating in the Niger Delta began to take steps to mitigate the impacts. Large areas of the mangrove ecosystem have also been destroyed. The mangrove forest was in the past a major source of wood for the indigenous people. In some places it is no longer in a healthy state to

sustain this use (Nwilo and Badejo, 2005).

The Idoho oil spill traveled all the way from Akwa Ibom state to Lagos state dispersing oil through the coastal states, up to the Lagos coast. This culminated in the presence of sheen of oil on the coastal areas of Cross river state, Akwa Ibom state, Rivers state, Bayelsa state, Delta state, Ondo state and Lagos state. In many villages near oil installations, even when there has been no recent spill, an oily sheen can be seen on the water, which in fresh water areas is usually the same water that the people living there use for drinking and washing. In April 1997, samples taken from water used for drinking and washing by local villagers were analyzed in the U.S. A sample from Luawii, in Ogoni, where there had been no oil production for four years, had 18 ppm of hydrocarbons in the water, 360 times the level allowed in drinking water in the European Union (E.U.). A sample from Ukpeleide, Ikwerre, contained 34 ppm, 680 times the E.U. standard. Following the major Texaco spill of 1980, it was reported that 180 people died in one community as a result of the pollution. On several occasions, people interviewed by Human Rights Watch said that spills in their area had made people sick who drank the water, especially children.

Table 1: Ranking of Major Environmental

Problem Type	Problem Subset	Priority Ranking
Natural Environment	Coaster/River bank erosion	Moderate
	Flooding	High
	Sedimentation/Silt	Moderate
	Substance	Low
	Exotic (water hyacinth)	Low
Development Related	Land degradation/Soil fertility Loss	High
	Agricultural decline/ shortened fallow	High
	Delta forest loss(Mangrove)	High
	Biodiversity depletion	High
	Fishery Decline	Moderate
	Oil spillage	High
	Gas flaring	Moderate
	Sewage and waste water	
	Other Chemical	

Problems in the Niger-Delta
Source: Okon and Egbon (1999)**.**

AIR POLLUTION

About ninety-five percent of waste gases from the production fields and operation are flared. Gas flaring pollutes the air and it is common practice among companies in Nigeria especially in the Niger-Delta region which is hazardous to the ozone layer of the area and leading to climate change (IPCC, 2007). The flaring of gas has been practiced in the Niger-Delta for over four decades. This is the major source of air pollution in the area as well untreated waste disposal on the environment.

Today, there are about 123 flaring sites in the region making Nigeria one the highest emitter of green house gases in Africa (Uyigue and Agho, 2007). Some 45.8 billion kilowatts of heat are into the atmosphere of the Niger-Delta from 1.8 billion cubic feet of gas everyday (Aaron, 2006). It is not an exaggeration that gas flaring is environmentally unethical and has contributed significantly to the degradation of the environment in the region. This practice may have altered the vegetation of the area, replacing natural vegetation with stubborn grasses and the presence of these grasses indicates that the soil is no longer fertile for cultivation of crops. A major example could be seen in Opuama and Sekewu communities in the Warri North Local Government Area of Delta State in the region. It is evident that gas flaring has affected the ozone layer of the region leading to climate change that is unhealthy to crops cultivation (IPCC, 2007).

OIL EXPLORATION AND ENVIRONMENTAL DEGRADATION

The exploration and exploitation of crude oil in the Niger-Delta has resulted to a number of environmental problems for the region. These environmental problems related to oil operations in the region are examined in this section. Since 1956 when the first oil well was drilled at Oloibiri in the present Bayelsa State over 1,481 oil wells have sprang up, producing from about 159 oil fields. There are more than 7,000 kilometers of pipelines and flow lines and 275 flow stations operated by more than 13 oil companies (UNDP Report, 2006).
The productive and environmental impacts of the number of operators are at increase everyday in the region. The percentage of the land of the region occupied by the oil industry is less than five percent but the adverse effects

associated with its operations are innumerable and region-wide. This oil related environmental problems are discussed below.

WATER POLLUTION

The Niger-Delta region is located in the coastal part of Nigeria and this is a water-logged area as more than eighty percent of the oil producing communities is on water. Before the discovery of oil in the region, it was characterized by natural clean long stretch fresh water and healthy water lettuce that add beauty and flavor to the environment. According to Bisina (2006) the oil activities in the area has resulted to situations whereby complete polluted water is bequeathed to the children. The communities' shorelines have been washed away or eroded due to the high volume of deep-sea exploration and exploitation activities. One of the major oil induced water pollution is oil spillage. With the expansion of oil production, the incidence of oil spills has greatly increased. Available records show that a total of 6,817 oil spills occurred between 1976 and 2001 with loss of approximately three million barrels of oil in the region. Approximately twenty-five percent spilled in swamps and sixty-nine in off-shore (UNDP Report, 2006).

Table 2: Time Series Analysis of Oil Spills in the Niger Delta

	No. of Spill	Quantity Spilled(in barrels)	Quantity Recovered (in barrels)	Quantity Loss to the Environment (in barrels)
	128	26157	7135	19021.5
	104	32879.25	1703.01	31176.75
	154	489294.75	391445	97849.75
	157	94117.13	63481.2	630635.93
	241	600.511.02	42416.83	558094.2
	238	42722.5	5470.2	37252.3
	257	42841	2171.4	40669.6
	173	48351.3	6355.9	41995.4
	151	40209	1644.8	38564.2
	187	11876	1719.3	10157.3
	155	12905	522	12358
	129	31866	25757	25757
	208	9172	1955	7207
	228	5956	2153	3803
	166	14150.35	2785.96	12057.8
	258	108367.01	2785.96	105912.05
	378	51187.9	1476.7	49711.2
	453	8105.32	2937.08	6632.11
	495	35123.71	2335.93	32787.78
	417	63677.17	3110.02	60568.15
	158	39903667	1183807	38716.87
	4647	**2369470**	**549060.38**	**1820410.5**

Source: Uyigue and Agho (2007)

Besides oil spills as source of water pollution, canalization and wastes discharged into freshwater swamps and into the sea are other sources (Akpofure, 2008). In an attempt to shorten travel time and improve access to oil fields and production facilities, oil companies have constructed canals that in some cases have caused salt water to flow into fresh water zones destroying freshwater ecological systems. The table below shows time series data on oil spills in the region.

LAND DEGRADATION AND FOREST DEFORESTATION

Vegetation in the Niger-Delta is comprised of extensive mangrove forests, brackish swamp forests and rainforests. The large expanses of mangrove forests are estimated to cover approximately 5,000 to 8,580 km² of land (Oil Spill Intelligent report, 1978). Mangroves remain very important to the indigenous people of Nigeria as well as to the various organisms that inhabit these ecosystems. It is unfortunate that these oil activities have destroyed the extensive mangrove forests in the area. Apart from the illegal logging brought on by increased accessibility to forests, oil exploitation itself has depleted biodiversity, especially at ramp sites, flow stations and terminals. A lot of land degradation and forest deforestation were caused by oil induced fire and pollution on the environment such as the Jesse fire incident that occurred in October 17, 1998. The unfortunate thing was that this fire incident did not only destroyed farm lands or natural ecology but also killed more than 1,000 people of the community (Ofehe, 1999). Another fire incident occurred in September, 2004 in Okirika community, Rivers State that lasted for 3 days and destroyed the plants and animals inhabiting the affected area (Zabbey, 2004).

Another fire scourge occurred in Ugbomro community and a study was carried out to ascertain the effect on the soil and it was discovered that contrary to the popular opinion that fire improvises bush fallowing for cropping, the site witnessed severe impoverishment not

only from the fire incidence but also from the oil spill on the site (Osuji and Ukale, 2000). Other sources of land degradation and loss of biodiversity as well as forest and crops destruction in the region are acid rain from gas flaring.

THE MULTIPLIER EFFECTS OF OIL EXPLORATION AND ENVIRONMENTAL DEGRADATION IN THE NIGER DELTA

The devastation of the environment and ecological balance by oil and gas exploitation in the region has multidimensional implications for the people of the region. The various environmental hazardous issues vis-à-vis: air pollution, water pollution as well as land degradation. There is no doubt that the source of income of the region is hampered with, which has multivariate social implications for the people. The region leads in the production of timber, pineapple, gin and fish. Other things produced in the region are cocoa, cashew, rice, yam and oranges in large quantities but these are history in the region now (Omofonmwan and Odia, 2009). Hence, this section analyzes some of the economic and social dimensional effects on the people.

Economic Multiplier Effects

The economic multiplier effects of the oil induced environmental degradation experienced in the Niger-Delta are identified as follows:

Alarming Unemployment Rate: With the destruction of the main source of income and productive activities of the region, one of the economic concerns of the region is the resultant increasing unemployment (Okon and Egbon, 1999). Most of the farm lands are destroyed and the rivers are polluted leading to death of fishes, most of the farmers and fishermen are thrown into confusion of joblessness. The table and the figure below show the unemployment rate in the region compared to

Table 3: Unemployment Rates by States in the Niger Delta

States	Comp	Urban	Rural
Abia	10.6	8.70	10.8
Ak-Ibom	36.9	29.8	37.1
Bayelsa	23.6	20.7	24.1
C-Rivers	16.6	7.30	18.3
Delta	23.3	23.5	19.0
Edo	14.3	24.0	11.8
Imo	22.3	23.8	32.8
Ondo	17.0	14.0	19.8
Rivers	34.2	27.5	35.2
All Nigeria	18.1	14.2	19.8

It is observed from the above table and figure that unemployment rates are high in the core Niger-Delta states (Akwa-Ibom, Bayelsa, Delta and Rivers) compared to the national average. In the above states, the region is much more critical and main oil producing states. The situation is much worse in the rural areas where the bulk of the population lives in the riverine areas. And the main oil activities takes place in the rural areas of these states. The table revealed that in the rural areas, unemployment rate is 37.1, 24.1 and 35.2 in Akwa-Ibom, Bayelsa and Rivers respectively compared to the national average of 19.8. What comes after such unemployment problem is alarming poverty.

High Level of Poverty: People are hungry not because there are no foods but they cannot afford to buy it (Eregha, 2001). The statement above shows the link between unemployment and poverty as it affects the region that account for the main source of foreign exchange earnings for the country. It is no doubt to state that if oil sector sneezes the country will catch cold. This emphasized what the Niger-Delta region means to the country. The contextual meaning of poverty is really emphasized and

defined to a lay man by the environment and the ways of life of the people. The incidence of poverty is at increase in the region as revealed in the table below.

Table 4: Incidence of Poverty in Niger Delta

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
States		1980	1985	1992	1996	2004
Edo Delta		19.8	52.4	33.9	56.1	78.44
C/River		10.2	41.9	45.5	66.9	41.61
Imo/Abia		14.4	33.1	49.9	56.2	49.66
Ondo		24.9	47.3	46.6	71.6	42.15
Rivers/Bayelsa		7.2	44.4	43.4	44.3	49.07

Source: Eregha and Irughe (2009).

The table revealed that in Edo/Delta States, the incidence of poverty increased from 19.8% in 1980 to 52.4% in 1992. It later increased again to 78.44% in 2004. The case is almost the same for other states. For instance in Cross Rivers, the figure increased from 10.2% in 1980 to 41.9% in 1985 which is more than 3times increase after five years. In Imo/Abia states the figure increased from 14.4% in 1980 to 33.1% 1985 and later increased to 49.9% and 56.2% in 1992 and 1996 respectively. In the UNDP report, poverty in the region is termed as people who cannot pay school fees for their children or meet any needs such as food, having no farmland and cannot farm well, having no house to live.

Table 5: Poverty Level by Geo-Political zones in Nigeria

Column 1	Column 2	Column 3	Column 4
Zone		1985/86	1997
North West		48.2	62.0
Middle Belt		48.4	53.0
South East		30.09	79.5
South West		42.0	74.1
South South		38.0	78.6
North East		58.2	68.0

Source: Eregha and Irughe (2009)

It is also evident from the table above that poverty is high in the region. The South-south geo-political zone is the core Niger-Delta region and the figure revealed in 1985/86 that poverty level in the south-south was 38% but increased to 78.6% in 1997. Some parts of south-east are Niger-Delta region and the figure in that geo-political zone is high also compared to others.

Other economic effects are high illiteracy rate, low human development, underemployment, low productivity, cheap labor and child labor which are cumulative effects of the link between the alarming unemployment rate and high level of poverty as well as the prevalence of HIV/AIDS analyzed under social effects.

Social Dimensional Effects

The emerging social effects as a spillover from the economic multiplier effects analysed above are alarming rate of social disorder, youth restiveness, robbery, militancy, rape, conflicts and hostage taking. Other social effects are HIV/AIDS prevalence and population displacement arising from oil induced fire outbreaks.

Conflicts, Youth Restiveness and Hostage Taking*:* The oil-rich Niger-Delta region has experienced an explosion in the number of conflicts ranging from intra-community to inter-community as well as communities and oil company conflicts. Social unrest has been the order of the day in the region. It is not an exaggeration to state categorically that most of these conflicts lead to loss of lives and destruction of properties of this poor people. The region is also experiencing various forms of hostage taking for financial and political gain. The exponential increase has largely been the result of activities of various militant groups. Youth restiveness and violence, acrimony and confrontation have been the ugly situation in the region. Youth restiveness is the direct resultant effect of poverty and unemployment and worst of all is the prevalence of HIV/ AIDS.

HIV/AIDS Prevalence: The prevalence of HIV/AIDS in the region is among the highest in the country, higher than the average for Nigeria. This is due to fact that the region is flooded with people from all over the world as a result of the oil activities in the region. The people seen in the area are foreign expatriates,

soldiers and mobile policemen used by the oil firms as well as commercial sex workers. By personal observation as a son of the soil, the people of the region are not aware of the implications of the dreaded disease. Nearly half of the Niger-Delta states have either the same or higher prevalence rates as compared to the national average. This is evident in the statistics and analysis below.

Table 6: HIV/AIDS Prevalence in the Niger-Delta
Source: UNDP Report (2006).

Column1	Column 2	Column 3	Column 4	Column 5
States		1999	2001	2003
Abia		3	3.3	3.7
Akwa Ibom		12.5	10.7	7.2
Bayelsa		4.3	7.2	4
Cross River		5.8	8	12
Delta		4.2	5.8	5
Edo		5.9	5.7	4.7
Imo		7.8	4.3	3.1
Ondo		2.9	6.7	2.3
Niger Delta		5.5	6.6	5.4
Nigeria		5.3	5.7	4.8

The impact of HIV/AIDS has been particularly harsh in the region. It is well known that the disease wreaks greater havoc where there is poverty, social inequality and general political marginalization (UNDP Report, 2006). There is a link between HIV/AIDS and poverty. The increasing poverty level leads to increase in the scourge as a result of reduction in access to information, education and services that could reduce the spread of the virus (UNFPA, 2002).

On the other hand, HIV/AIDS also induce poverty increase as those with the virus fall ill and die which led to the family or community losing much needed human capital or productive resources. And the increasing poverty as revealed earlier is generated majorly by oil induced destruction of the natural ecology the people relied on. A social problem generating serious concern is the increase of commercial sex workers patronized by oil company workers. Informants lamented the increasing social decadence and decline in the traditional social values as prostitution is now rampant in the area. The appeal for easy money is a serious temptation to both ladies in the region and from other areas as well as the poverty-stricken families (EMRI field survey, 2005 as cited in the UNDP Report, 2006).

RECOMMENDATIONS

The Nigeria Sat-1, would help in monitoring oil spill by providing the spill position which would serve as input data into the oil spill model. It would also give the extent of coastal water and coastal areas polluted. These information are vital for quick clean up of oil impacted areas. In order to reduce the response time and qualify the decision-making process, application of Geographic Information Systems (GIS) as an operational tool has been suggested.

Information on the exact position and size of the oil spill can be plotted on maps in GIS and a priority of the combat efforts and means according to the identified coastal sensitive areas can be carried out. The creation of regional spill response centers along coastlines would help in managing oil spill problems. The canters will use oil spill models for combating oil spill problems. Data collected with an airborne system could serve as inputs in the model.

The petroleum industry should work closely with government agencies, universities and research centers to combat the menace of oil spill incidents. More funds should be provided by all the stakeholders in the oil industry for further research in the development and use of oil spill models in the country. The adoption of the model developed in this research work and the procurement of other oil spill models would serve as a basis in carrying out more research in this area. The creation of NDDC by the Federal Government would go a long way in reducing the tension in the oil rich communities. However, the Federal Government, State Governments and other non-governmental agencies should ensure that the social amenities and needed infrastructures are provided for the oil rich communities.

CONCLUSION

In this paper, we have highlighted the devastation of the Niger-Delta environment as a result of several decades of oil production and the profound changes that had adverse effects on

the local livelihoods and social well-being. The Niger-Delta environment has suffered degradation as a result of oil and gas exploration leading to air pollution, water pollution and land degradation from oil spillage, gas flaring and canalization.

We also stated that such devastating activities on the environment on this poor people who relied on the environment for livelihood has resulted into a number of multiplier effect on the people. These effects range from economic to social dimensions as well as health and psychological dimensions. A number of social vices experienced in the region are direct effects from the economic implications introduced into the region by oil activities. As established so far, the region is faced with myriads of environmental problems and diverse of social economic constraints that are making life unbearable for the people of the region. Today the Niger-Delta is in turmoil, restive, poor, backward and neglected.

Based on the consequences of oil activities in the region, we hereby recommend an integrated approach which is a combination of several development strategies. This calls for the establishment of community based integrated approach that needs joint committed efforts from the government and the multinational companies as well as other stakeholders. This integrated approach should focus on the following issues: building of human and institutional capacity to improve fish production and management; testing and recommending suitable environmental management measures; reduction of water hyacinth infestation; Identification of the causes of water quality deterioration; initiation of community and commercial as well as central forestry programs; improvement of fish quality for exports and domestic consumption; improvement of land use practices and other agricultural activities; youth re-orientation and access to quality education; establishment and access to technical and vocational studies.

REFERENCES

Aaron, K. K. (2006). *Human Rights Violation and Environmental Degradation in the Niger- Delta.* In: Activating Human Rights (Porter, E and Offord, B Eds.), Peter Long, Oxford, Borne, New York, Pg 193-215.

Akpofure, E. A. (2008). Oil Spillage in the Nigeria's Niger-Delta. Psycho-morphological and Empirical Overview, International Association of Impact Assessment, Opulence Environmental Service Ltd.

Aluko, M. A. O. (2004). Sustainable Development, Environmental Degradation and the Entrenchment of Poverty in the Niger-Delta of Nigeriaa; *Kamla-Ra. Journal of Human Ecology* **15 (1):** 63-68.

Bisina, J. (2006). Environmental Degradation in the Niger-Delta (Unpublished).

Eregha, P. B. (2001). *The Socio-economic Effects of Unemployment Among University Graduates in Nigeria.* Unpublished B.Sc (Ed.) Project. University of Ado-Ekiti, Nigeria.

Eregha, P.B. and Irughe, I.R. (2009). Oil induced environmental degradation in the Nigeria's Niger Delta: the multiplier effects. *Journal of Sustainable Development in Africa* **11 (4):** 160-175

Gabriel, A. O. (2007). Women in the Niger-Delta. Environmental Issues and Challenges in the third Millennium, cited in Egbe, R.E. (2010) Environmental challenges of oil spillage for families in oil producing communities of the Niger Delta region. *JHER* **13:** 24-34.

IPCC (2007). *Climate Change: Synthesis Report.* Cambridge University Press, Cambridge.

Nwilo, P.C. and Badejo, O.T. (2006). *Oil spill problems and management in the Niger-Delta.* International Oil Spill Conference, Miami, L.orida

Ofehe, S. (1999). Hope for the Niger-Delta. The Netherlands. HNDC.

Oil Spill Intelligent Report (1978). How does it spill? Arlington, MA.USA. (www.waado.org).

Okoh, R. N. and Egbon, P. C. (1999). *Fiscal Federalism and Revenue Allocation. The Poverty of the Niger-Delta.* In: Fiscal federalism and Nigeria's Economic Development Selected Papers of the 1999 Annual Conference of the Nigerian Economic Society (Aigbokhan, B.E. Ed)

NES, Ibadan.

Omofonmwan, S. I. and Odia, L. O. (2009). Oil Exploitation and Conflict in the Niger-Delta Region of Nigeria. *Kamla-Raj. Journal of Human Ecology* **26(1):** 25-30.

Opukri, C. O and Ibaba, S. I. (2008). Oil Induced Environmental Degradation and Internal Population Displacement in the Nigeria's Niger-Delta. *Journal of Sustainable Development in Africa* **10 (1):** 173-193

Osuji, L. C. and Ukale, E. E. (2000). Post-oil Spill Fire at Ugbomro (Niger-Delta): A New Vista in Soil-Pollution Studies. Port-Harcourt. Petroleum Chemical Research Group.

United Nations Development Report (UNDP) (2006). Niger-Delta Development Human Report. United Nations Development Programme, Abuja.

United Nations Population Fund (UNFPA) (2002). Preventing HIV infection, promoting reproductive health: UNFPA response. United Nations Population Fund, New York.

Uyigue, E. and Agho, M. (2007). *Coping with Climate Change and Environmental Degradation in the Niger-Delta of South Nigeria.* Community Research and Development Centre (CREDC), Benin.

Zabbey, N. (2004). *Impacts of Extractive Industries on the Biodiversity on the Niger -Delta Region, Nigeria.* Centre for Environment, Human Rights and Development, Eleme