

AN ASSESSMENT OF ENVIRONMENTAL PROBLEMS ASSOCIATED WITH OIL POLLUTION AND GAS FLARING IN THE NIGER DELTA REGION NIGERIA, C.1960s-2000

Dr AOY Raji & Dr TS Abejide,

*Department of History & International Studies, Al-Hikmah University, Ilorin
(Nigeria)*

ABSTRACT

This paper explores the impact of oil production by oil corporations on the Niger Delta region environment over time, with particular attention paid to the case of Ijaw oil-producing community. It focuses on the environmental impacts of oil production and associated pollution in the Ijaw area, and discusses the increasing internal contradictions involving the Ijaw youth and their elites in perpetuating environmental problems on their own land. It traces the controversy that surrounds the allegations from the local people whether oil was the only factor responsible for environmental pollution. By using scientific reports and statistical data, this paper further argues that the environmental problems facing the Niger Delta people were many, whilst oil and gas were mere contributory factors with attendant effect on water and land degradation. Using the Ijaw's case the paper have identified that lack of complaint with environmental laws and institutional structure for enforcing them in the Niger Delta oil-producing region have continued to undermine their desire for a clean environment, particularly toward a sustainable development of the Niger Delta and Nigeria at large. It concludes that there is urgent need for the Federal government to establish new oil and gas regulation that should have a statutory body for proper implementation of those laws. This would ensure peace and stability, a safe, clean and habitable environment for the inhabitant of the Niger Delta to benefit from the profit accruing to the oil corporations and the Nigerian government.

Keywords: Environment, Pollution, Sabotage, Hydrocarbon, Acid Rain, Ijaw Community

INTRODUCTION

Niger Delta region is rated as the most oil-impacted environment and polluted area in the world most especially by environmental experts from the UK, the USA and Nigeria. (Kia, 2009; Ikelegbe, 2005; Obi, 2000). A major contributor to this is the perennial flaring of associated gas during oil production, which has impacted on the natural and human environment, making these areas a danger to local communities. The United Nations Environmental Programme is now focussing on reducing the effects of gas flaring around the world, particularly in the Niger Delta (Leslie, 2005). Flaring is a means of disposing of waste gases that are a natural by-product of oil production (Omoweh, 1995), and occurs during the processing of crude oil through the top of a pipe or stack in which the burner and igniters are located (Aghalino, 2002; Okogun, 2004; Eweje, 2006). This illustrates that gas in the production process burns clean until oil enters into the flare pipelines through the operating machine, and this has become common practice (Ikporukpo, 1986). Gas flaring began in Oloibiri in 1958 (Ockuko, 2011), when the economic

value and market for gas was low and there were no pipelines or storage tanks to preserve it. However, burning gas was wasteful and destructive to the Ijaw and Niger Delta environment, (Public Records Office, PRO file 371/1671170) as recognised by British Trade Commissioner J.S. Sadler in 1963:

... Shell's need to continue, probably indefinitely, to flare off a very large proportion of the associated gas they produce... it will be interesting to see the extent to which the oil companies feel it necessary to meet these criticism by spending money on uneconomic method of using gas.

The Niger Delta region was found to be the second largest flare site in the world, after Russia, with World Bank report showing that over 150 million cubic meters of natural gas were flared or vented annually in Nigeria, worth up to \$30.6 billion dollars and equivalent to 25 percent of US gas consumption, or 30 percent of European Union (EU) gas used in a given year (World Bank, 2008; World Bank, 2009).

STATEMENT OF THE PROBLEM

Attempt has been made by individuals, government, non-governmental organizations, World Institutions like UNO, World Bank, most especially by scholars to address the lingering environmental pollution associated with oil spills and flaring of gas in the Niger Delta. Scholars like Aghalino, (2009; 2002), Ashton, (1995), Akujuru, (1992), Augustine & Sanford (1976), Brouwer, (1971), Emoyan, (2008), Frynas, (2000, 2001), and Fagbami, (1988), in their research works has attempted to address the perennial problems associated with the causes of gas flaring and oil spills. Some international institutions like the World Bank (2009, 2008), and the WHO, (2002), have equally reported facts on what constitute the causes and effects of oil and gas on a particular environment like the Niger Delta region. That the flaring of gas has continued to impact negatively on the vegetations in the oil-producing community of Niger Delta is undoubted. Again, that oil spills which contaminated the sources of drinking waters and rivers in the Niger Delta, particularly on their farmlands and fish ponds, need urgent attention is glaring. In another perspective, base on the use of primary and secondary sources, particularly some statistical data and scientific reports, this paper addresses the perennial controversy over oil pollution and gas flaring. It addresses some challenging questions like: How has oil and gas constituted major environmental problems in the Niger Delta? Was lack of implementation of environmental regulation a major factor? To what extent can the youth be blame for environmental pollution?

THE ENVIRONMENTAL IMPACT OF GAS FLARING

Shell BP and *Chevron* acknowledged that it was the main ecological problem facing the Niger Delta (Interview Shell & Chevron Staff, 2010), but since natural gas was produced as a by-product of oil it was not possible to have one without the other (Moldoveanu, 1999). Gas could not be re-injected into the oil reservoir because of the low technological and industrial base for energy use in Nigeria. Although, in retrospect, these companies had taken steps to reduce the cause of flaring in the affected communities, *Shell BP* took responsibility for cleaning up the polluted area of Oloibiri oil site and paid compensation to the landowners (SPDC, 2003, SPDC 2009).

Table 1: Gas produced and flared in the Ijaw area between 1958/1994

YEAR	GAS PRODUCTION(mm3)	GAS FLARED(mm3)
1958	46	-
1959	140	-
1960	144	-
1961	310	-
1962	487	-
1963	626	-

1964	1,029	-
1965	2,250	-
1966	2,907	-
1967	2,634	-
1968	1,462	-
1969	4,126	-
1970	8,039	7,957
1971	12,975	12,700
1972	17,122	16,848
1973	21,882	2,487
1974	27,170	26,776
1975	18,656	18,333
1976	21,276	20,617
1977	21,924	20,952
1978	21,306	19,440
1979	27,618	26,073
1980	24,885	22,904
1981	17,202	14,612
1982	14,830	11,940
1983	15,207	11,948
1984	16,251	12,817
1985	18,426	14,846
1986	15,580	12,291
1987	20,212	14,737
1989	26,300	18,730
1990	28,163	21,820
1991	31,587	25,934
1992	32,465	24,588
1993	33,445	25,406
1994	33,928	25,934

Source: Niger Delta Environmental Survey (NDES), 1996, VOL 1, Socio-Economic Characteristics Lagos: NDES

Table 1 above shows the growth in natural gas production that lay behind the wanton devastation of the environment through gas production (Aghalino, 2009; NAE 384/2004; NNPC, 1997). The environmental impact (Emoyan, Akpogorie & Akporhonor, 2008) has to some extent been established through scientific evidence that shows temperatures at the sites as high as 1,100⁰c, damaging vegetation growth, animal life and the ecological balance. (Augustine & Sandford, 1976) submits that flare sites, such as Ebubu, Bomu, Elenlewe, and Ibigho north of the eastern Delta, recorded leaf temperatures within 100 to 120 metres (m) of the stacks varying by up to 6⁰ c between the upper and lower surfaces of the blades. Tests conducted on the soil temperature at a depth of 10 centimetres (cm) further showed it to be about 100⁰ c higher at 15m from the stack, and between 50⁰ c at 50m. This affects the atmospheric conditions necessary for soil fertility and plant growth.

According to Brouwer, (1971) and Sandford (1974) soil temperature over 30⁰c leads to decreased agricultural yields, with the major impact being desiccation and damage to the micro flora. Air quality was also affected, with damage to vegetation, the microclimate surface and groundwater, as a result of the high concentration of volatile oxides, carbon, nitrogen, sulphur oxide and particulates that exceeded the standard set by FEPA in 1991. Nitrogen dioxide reacts with water from rain to form nitric acid (HN⁰ 3), falling as acid rain, harmful to human health and the environment (Turco, 2002) as it causes acidification of drinking water in reservoirs, corrosion of metals, and damage to crops and the Niger Delta forest.

Excessive carbon-monoxide, an odourless gas, formed by combustion of carbon materials in the presence of insufficient air (UNEP, 2005) had a serious impact on the health of the Ijaw people and animals, by attacking the red blood cells (haemoglobin) and prevented them from taking in the oxygen required to survive (Omofunmwan, 2008; Micheal 2003) .

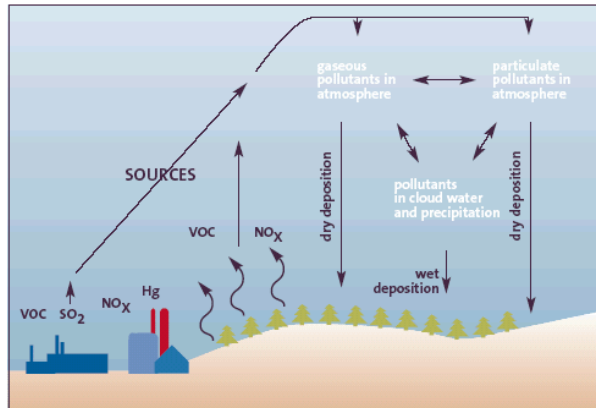


Figure 1: Formation of Acid Rain

Source: Climate Justice 7. Gas Flaring poisons communities

The above picture illustrates the cyclical process behind acid rain, that below the cycle of Nitrogen. It is a colourless, odourless and non-toxic gas that exists naturally in the atmosphere and contains about 78% of the air any human needs for survival.

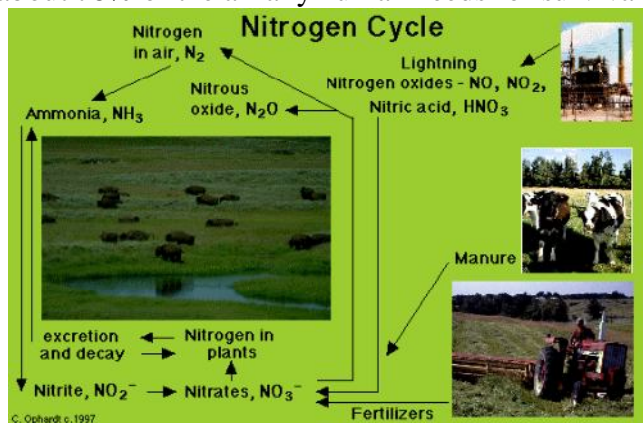


Figure 2: Nitrogen circle

Source: <http://www.elmhurst.edu/~chm/on/course/chm/10/ontimes/nitrogencycle.htm/>

The pollution in the first oil producing community of Oloibiri and others such as Imiringi, Otuasega, and Anyama of Ogbia Ijaw area has been a consistent health hazards to many local people, listed by Ashton as including terminal diseases and birth defects (Ashton, 2001; Eweje, 2006). Accusations levied against *Shell-BP* and *Chevron Nigeria* by the Ijaw included disease and illness, hearing loss, and severe child delivery as a result of gas flaring and oil spills (Interview with Aghalino, Obeche Edward, 2010/2011). On several occasions, acidic precipitation was felt in the oil producing areas, through the production of sour gas that produced sulphur-oxide in the air (Aghalino, 2009).

Oral evidence has revealed that during the flaring of gas the Ijaw people in that area did not need electricity to see in the dark, confirmed by Aghalino (2009) who wrote that the “oil industry has banished darkness from the oil bearing enclaves of the Niger Delta”. The oil companies took steps to reducing the constant flaring of gas in their area of operations, and *Shell (Interview with Anonymous Shells Staff 2010)* claimed that some of their plants and equipment had been relocated far from the affected villages as a measure to prevent future light pollution. Nevertheless, for five decades the Ijaw communities of Batan, Odidi, Oloibiri, Nembe and Aleibiri were denied bright sunlight during the day and darkness at night. An informant attributes this to lack of compliance with the Gas-reinjection Act of 1979 that mandated

permission to flare or reserve it for economic use. Gas flaring (NDDC, 2001) continued to light up the sky at night in many village communities in the Delta and Ijaw area.

The World Health Organization (WHO) (2002) claimed that flaring of gas contributed on a global scale to about 2.5 million deaths each year, representing 4-5% of the 50-60 million global deaths that occur in a year. The World Bank (2002) reported that gas flaring in the Delta contributed more to greenhouse gases than all other oil producing countries in sub-Saharan Africa. Energy lost through gas flaring was equal to over half of the power generation used in most African thermal power stations.

Additionally, the Nigerian government tried to limit the flaring of associated gas through the passing of the Associated Gas Re-injection Decree of 1979 that required all oil companies to build gas plant or storage facilities within five years in their area of operation. The oil companies were also permitted to flare gas that could not be used with the express permission of the Department of Petroleum Resources (DPR) as amended in the 1985 Associated Gas Re-injection Act Amendment Decree 7 in a particular field on the payment of a fee set by the petroleum minister. The fine was 2 kobo (0.0009US\$ equivalence) per 1000 Standard Cubic Feet (SCF) of gas flared. This increases to 50 kobo (0.03US\$ equivalence) in 1992 and further to #10.00 naira (0.46US\$ equivalence) in 1998. To Frynas (2000) and Korvenoja, (1993), these were largely unsuccessful and gas flaring continued unabated, which in turn meant that gas flaring continued in Oloibiri and other oil producing communities in direct violation of Nigeria's environmental laws. According to Aghalino (2009) and Ikporuko (1986), the oil companies opted to flare gas rather than utilise it because it was the cheaper option. One can therefore argue that the refusal to capture the unused gas for industrial purposes, and the laxity of both the federal government and the oil companies in implementing the oil regulations were the main reasons oil producing communities in the Delta had been subjected to decades of unnecessary and wasteful gas flaring. When oil production began in the Oloibiri town of the Ijawland in 1958, there was lack of infrastructure to conserve or use gas, which was not considered valuable to the economic development programme of the government until the 1970s. About 20 million barrels of oil were produced from all wells at Oloibiri between 1958 and 1979, when they ran dry and were abandoned by *Shell-BP* (*Vanguard* 2011).

Scientific surveys of the vegetation, particularly palm trees, found that no plant could survive within 100m of the flare in Ijaw oil-producing community. Some plants were found to flower at 120m, while others survived at 150m from the flare site. Lawanson (1971), submit that the light from the flare was not enough to provide photosynthesis, and has prevented the flowering of short day plants in that vicinity. As discussed above, damage to the soil, climate and vegetation of the Ijaws environment by gas flaring affected livelihoods and brought health hazards to the ordinary people.

THE ENVIRONMENTAL IMPACT OF OIL SPILLAGE

Oil spills have been a common phenomenon in Nigerian oil producing states after the discovery of crude oil in Oloibiri, particularly between 1976 and the 1990s, during which time a total of 4,647 spills leaked about 2,369,470 barrels of oil into the Niger Delta, (Nwilo & Badejo, 2005). The Department of Petroleum Resources (DPR) reported different figures of spills between 1976 and 1996, about 4,835 barrels of oil per year were spilled into the Delta environment (NNPC 2003; NAI, 26/29603). 7,350 barrels spilled per year through the operations of *Shell-BP* into the Ijaw and Delta oil fields between 1989 and 1994.

Table 2: Summary of oil spills in the Niger Delta, Nigeria 1979-1998

Years	Incidence of spills	States	Amount
July 1979	Forcados Terminal oil spillage	Rivers	570,000
Jan 1980	Funiwa No 5, well blowout	Rivers	400,000
May 1980	Oyakama oil spillage	Rivers	10,000
Nov 1982	System 2c Warri Kaduna pipeline rupture at Abudu	Edo	18,000
Aug 1983	Oskika oil spills	Rivers	10,000
Jan 1998	Idoho oil spills	Akwa Ibom	40,000
Jan 1998	Jones Creek oil spills	Delta	21,548
Oct 1998	Jesse Creek Creek oil spills	Delta	10,000

Source: *Guardian* Newspaper Report 1999, Nov 5, p.40.

Table 2 above shows the situation of the oil-producing states in the Delta as a result of oil spills by blowout. In the case of the Forcados, Funiwa, Oyakama, Oskika oil spills between 1979 and 1983, their environment was contaminated and became unproductive as a result of oil blows out through ruptured pipelines. Idoho, Jones Creek and Jesse Creek were degraded as they had to bear an ever-worsening environmental condition impinging on their survival (Amnesty, 2009; HRW, 1999).

Table 3: Number of spills reported in the Eastern Niger Delta, Nigeria 1987-96

Year	No of Spills	%of total spilled
1987	105	6.4
1988	102	6.3
1989	113	6.9
1990	125	7.7
1991	126	7.7
1992	157	9.6
1993	166	10.2
1994	203	12.3
1995	263	16.3
1996	269	16.5
Total	1629	100.0

Source: NNPC Inspectorate Division; OMPADEC River State Petroleum Department and Community Development Committee (CDC).

Table 3 above shows the number of spills recorded in the entire Ijaw oil producing communities of the Eastern Delta, and the increasing level of the spills from the 1980s to 1996, which meant that a spills control and management system was not being enforced by the government, particularly by the oil companies.

Table 4: Oil spill data in Nigeria between 1976 and 1995

Year	Number of spills	Quantity spilled (barrels)	Quantity recovered	Net volume lost to the environment (barrels)
1976	128	26,157.00	7,135.00	19,021.50
1977	104	32,879.25	1,703.01	31,176.75
1978	151	489,294.75	391,445.00	97,849.75
1979	157	694,117.13	63,481.20	630,635.93
1980	241	600,511.02	42,11.03	558,094.19
1981	238	42,722.50	5,470.20	37,252.30
1982	257	44,2841.00	2,171.10	41,7669.60
1983	17.1	48,351.30	6,355.90	41,995.40
1984	51	40,209.00	1,644.81	38,564.20
1985	187	11,876.00	1,719.30	10,157.30
1986	155	12,905.00	552.00	12,358.00
1987	129	31,866.00	6,109.00	25,757.00
1988	208	9,172.00	1,955.00	7,207.00
1989	255	5,956.00	2,153.00	3,803.00
1990	166	14,150.35	2,092.55	12,057.80
1991	258	108,367.01	2,785.90	105,912.05
1992	378	51,187.90	1,476.70	47,711.20
1993	453	8,105.32	2,937.93	6632.11
1994	195	135,123.71	2,335.93	32,787.78

1995	417	63,677.17	3,110.02	60,568.15
Total	4489	2329566.4	547876.58	36899450

Sources: Department of Petroleum Resources

Table 4 above shows the increasing volume of spills in the Niger Delta oil fields. The Funiwa Blowout of the 1980 (owned by *Texaco Oil Company*) was associated with lack of adequate environmental legislation to control and enforce spills management in the country at the time.

CAUSES OF OIL SPILLS

The major causes for the consistent oil spills in the Ijaw environment or elsewhere in the Niger Delta include blowout, pipeline corrosion, equipment failure and sabotage (Aaron, 1996). Other minor causes of oil spills also include accidental spills, overflow of tanks, valve failure, over pressure, sand cut through erosion, and engineering error (HRW, 1999). Bruce (2003) suggests that the obsolete leaking and rusting of oil pipelines had become a major cause for the Ijaw people, as in the case of the blowouts at Jesse Creek and Botem village in Ijaw and Ogoni land in the 1990s, with devastating effects on the courses that supplied them with drinking water (Jike, 2004; Saro-Wiwa, 1992). Blowout as a major factor responsible for spills occurs when there is too much pressure on the pipeline transporting oil to the terminal station, as in Bonny or Port Harcourt. Leaking and rusting pipelines led to the contamination of water and soil in the area. An offshore blowout of January 12, 1980 saw about 20,000 barrels of oil (8.4 million US gallon) spilled into the Atlantic, damaging about 340 hectares of the Delta mangrove (Nwilo, 2005). The Jesse Creek and Botem villages of Ijaw and Ogoni land witnessed the devastation of the environment, as the blowout entered the water courses that supplied them with drinking water.

Scientific tests conducted by the ERA (2008) to determine whether the waters at Botem village and Jesse Creek were contaminated as a result of the blowout showed that their environment was affected by hydrocarbon, heavy metals and sundry toxic substances. This has brought serious waterborne diseases and death to the people in the last 40 years of oil production, for example, field trip to the oil site in Oloibiri in 2010 showed that they have had no drinking water, and had relied on the polluted streams or rivers (Interview with Akpo). As a matter of fact no human being could be drinking such contaminated water and enjoy sound health. This cast more light on the implications of oil production on the Ijaw people and their environment after its discovery in 1956. Oil pollution became rampant, and brought more damages than the development to their communities toward the end of 1980s (Interview with Ekpe & Akpan 2011).

Another serious blowout occurred at the Funiwa-5 oil well on 12 January 1980, with about 40,000 barrels spilled into the Niger Delta swamp. This station was owned by the *Texaco Overseas Petroleum Company* of Nigeria on a joint venture with NNPC and *Chevron Nigeria* (Aghalino & Eyinla 2009). Efforts to control it partly failed as a result of the absence of viable environmental laws at the time to enforce the company’s prompt response. This blowout eventually caught fire, despite efforts by the *Red Adair Corporation* contracted by *Texaco* to combat the spills. Scientific tests conducted on the blowout sites to determine impact on vegetation and drinking water of other villages affected, such as Sangama, Kuluma 1, Kuluma 2, and Otuo Island, showed defoliation of the mangrove rhizophora seedlings and death of crabs and molluscs (oysters-crassostrea gasar), (Aghalino & Eyinla 2009). A total acreage of 836 of the mangrove was killed in those affected areas by the Funiwa blowout.

Corrosion or rupture of pipelines has accounted for about 21% of oil spills in the Niger Delta area. According to the report of the Niger Delta Environmental Survey (NDES, 1997), spills caused by corrosion occurred as a result of the old age of the pipeline and lack of regular inspection or maintenance stipulated in the Oil Pipeline Act 1963. The oil companies were required to replace the pipelines after 15 years but most found in the oil producing Ijaw

communities were over 50 years old. In March 1997 a *Shell-BP* pipeline installed after 1973 ruptured in Aleibiri in the Ekeremor Local Government Area (LGA) of Bayelsa States, occupied by the Ijaw people. This spilled oil into the community forest, environment and wetland and was the result of non-compliance with Section 3 of the Oil in Navigable Waters Decrees of 1968, which prohibited any discharge of oil into any sea or wetland within the country. The company blamed this incident on sabotage and refused to clean up in accordance with the Oil Spills Contingency Plans of 1996 (Shell, 2004). Pressure from the communities after a year of spillage forced *Shell-BP* to contract for clean-up using a scoop-dump and burn method. The sites (ERA, 2008) caught fire and consumed about 15 hectares of forest in March 1998.

Despite the above, *Shell BP* and *Chevron Nigeria* admitted that the major causes of oil spills in their operating villages both in Ijaw and elsewhere in the Niger Delta had been the corrosion of pipelines, resulting from the pipelines being old and exposed above ground (Amnesty, 2009; Nerry & Akpofure, 2001). Shell asserted that before the establishment of the environmental legislation in the 1990s it had been difficult to persuade the government under the joint venture of the need to upgrade the deteriorating infrastructure of oil installations dating back to the early 1970s (Moldoveanu, 1999). This reaffirmed the evidence given by the Ijaw people that vandalism or sabotage of pipelines by militant youth was a minor factor causing spills compared to the lack of maintenance of the pipeline over more than 40 years.

Shell Nigeria had in 1995 claimed that about 50 percent of its spills occurred as result of pipelines which crisscrossed the farmland in their area of operation, especially from Oloibiri to Port Harcourt (SPDC Bulletin, 2003). The company alone agreed that it had spilled about 106,000 barrels in Jones Creek between 1997 and 1998. Statistics reveals that *Shell, Chevron Nigeria, Mobil Producing (Nigeria), Agip Oil, Elf Petroleum Nigeria* were the worst offenders of the oil and gas laws which occurs and polluted the Niger Delta (Ojakorotu & Lysias, 2010). Shell however argued that the villages in most Delta areas, particularly in Ijaw land, had grown up around the pipelines and so to a large extent contributed to such environmental problems in the area (Moldoveanu, 1999). We can argue that this has led to the bitter disagreement between the oil companies and the local people over which of them should be held responsible for the environmental damage in the Ijaw oil-producing community.

Sabotage is another major source of oil spills in the Niger Delta oil-producing communities. This occurred as a result of the refusal of the federal government and the oil companies to compensate for the environmental damaged brought on the people in the oilfields. A Shell's staff who claimed anonymous asserts that most oil spilled in Botem, Jones Creek and Jesse Creek and Nembe were linked with saboteurs of oil installations by local protesters. *Shell-BP* argued that 77 out of the 111 spills in the Ijaw and Delta oil fields occurred as a result of sabotage, and no oil company is permitted to pay compensation for damages caused by saboteurs. The local protesters were alleged to make spills look as if they were caused by technical failures, for example, by creating holes in the oil pipelines (Moldoveanu, 1999; Shell, 2004). Estimates of sabotage of oil pipelines by the local people before 1990s accounted for about 18% of the pollution in the Delta, but as of 1996 it had risen to 60%. Meanwhile, (SPDC Report, 1996) spills due to corrosion had declined, as many oil companies had started the replacement of their older oil pipelines. The company's claim is questionable, because oil spills linked to old pipelines has continued unabated in the Niger Delta.

The contamination of the freshwater swamp used for drinking in the Luwai area of eastern Delta (Ogoni) was tested and analysed in USA in 1997 to determine the extent of damage through scientific means. The result shows that the water had 18ppm (part per million) of hydrocarbon,

about 360 times the level permitted in drinkable water by the EU (Nwilo & Badejo, 2005). A World Bank (2008) report shows that the vast majority of the Delta people, close to between 76-80% in rural areas and 50-56% in urban areas, lacked access to safe drinking water. This was responsible for water-related diseases of up to 80% reported in the oil village communities in the Niger Delta (NDDC, 2005).

The case of accidental spills occurred in Oyakama in 1981. The construction of a road by the *Guffanti Company* between Kaiama and Ahoada Ijaw communities accidentally drilled a hole in the Nigerian *Agip* oil company's 16 inch pipeline (Akujuru, 1996). About 120,000 barrels of oil was reported to have spilled and spread across to other village communities of the Ijaws, such as, Okpodu freshwater and Orashi River. Scientific evidence reveals the un-fertility of the farmland in those areas a year after of the spilled incidence. One can argue that the claim made by the Niger Delta people over environmental pollution were indeed true.

The *Mobil* Quo Iboe oil spill of 12 January 1998 was linked with accidental spills. It occurred at the *Mobil Producing Nigeria* Idoho platform and its Quo Iboe onshore station in the south-east of the Delta state. The spillage based on the Human Right report (1999), spread into Fishtown, Koloama, Penington beach in Ijaw communities, up to 200 kilometres away. The communities reacted by submitting about 14,000 applications for compensation payment worth over US\$100 million, despite the company's prompt response to combat the spills. A scientific report of the Quo Iboe oil spill incident shows that the water tested negative, as the Idoho River was not affected. The river water was collected with the reading between 0.82 and 83.15 parts per million (PPM), below the prescribed limit of the DPR standard for oil inland waters. This report was viewed differently by the local people who bore the brunt of the spills. *Shell-BP* claimed in its *Fact Book* (1993) that, depending on the environment, oil pollution has a negative impact on water quality, vegetations and fauna of such an environment.

As discussed, the Oloibiri oil-producing community had farmed, lived and depended on farm produce such as vegetables, food crops and legumes (Steve, 2003; Ashton 1995, NAI 256/1957), but the operation of oil companies has brought changes to their environment by 1978 when the oil wells dried up. Many of the affected Olobiri and Ijaw people according to Campbell (2001), believed that pollution by oil had eroded the soil nutrients which brought sharp reduction in agricultural productivity. Ekpo commented on this when he said that: "As a result of the oil pollution our youths and women are unable to engage in farming, and fishing which are the main occupations in this area. So they have nothing to look forward to." Aghalino and Raji added that the pollution of oil led to degradation of the environment, created gullies and debris as well as impacted the mangroves, destroying the flora and fauna of the Oloibiri and Ijaw areas.

The above explains the impact of perennial oil spills on the Ijaw people and the environment, particularly the mangrove and the swamp water resources in Oloibiri (Amnesty, 2009; Kia, 2009). Pollution of water had killed the fisheries and other life in the water and rendered the fishermen unproductive. Francis (2010) contended that the chemical pollution in the water not only destroyed the fisheries, but had decimated the coastlines vegetations. The activities of *Shell* and *Chevron* in the oil-producing areas of the Ijaws had precipitated the destruction of the local ecological balance and bio-diversity. Emordi, Osaghae and Nwaokocha (2008) contend and propose that before the crude oil discovery in the Delta, its eco-system had harboured a high concentration of bio-diversity, which supported a variety of crops, medicinal plants and freshwater fish.

Tell Magazine (1993) presented a vivid picture of the devastated impact of oil pollution on the Niger Delta bio-diversity:

What [the Niger Delta people] used to call upon for their livelihood and well-being has been wrecked for eternity by the coming of oil and its exploitation by the Nigerian state. They cannot fish because marine life has been flushed out, they cannot hunt because the game fled a long time ago, thank to the oil hunters, and their land no longer yields good harvest.

Bio-diversity in any human environment or habitation, according to Ashton (1998) and Awunudiogba (2003), is beneficial for the air, water purification, social conservation, and reduction of the harmful natural effects in such an environment. This implies that the absence of these factors in Ijaw land has led to rapid climate change and a worsening environmental damage. The people had lost their plants and marine organisms as a result of oil pollution over 50 years (NAE, 26/566/28/1966).

A typical example of oil spills into Ijaw community was the case of Oloibiri. Evidence found that oil spills into Oloibiri’s environment occurred after the abandoned oil well 14, shut after 1978 released oil in 2004. Oral evidence shows that the well had been leaking from the source for many years without response from *Shell-BP* (Obeche, 2010). About 20,000 barrels were spilled in the incident. The SPDC responded promptly for a clean-up at the time. A report from a recent scientific investigation by UNEP into abandoned oil-producing communities of Ogoni and Ijaws have shown that *Shell-BP* and *Chevron*, among other oil operators, had contaminated the soil and bio-diversity of those oilfields (Guardian, 2005). Arguably, the clean-up contingency plan of most oil corporations in Nigeria were outdated, because oil has continued to seep-out in those sites after many years.

Table 5: Types of oil spills and number reported in Eastern Niger Delta, Nigeria 1987- 1996

Year	Total spills reported	Equipment failure	Human Error	Sabotage
1987	105	28	12	65
1988	102	19	28	55
1989	113	34	39	40
1990	125	46	15	64
1991	126	39	20	67
1992	157	41	53	63
1993	166	38	32	96
1994	203	49	27	127
1995	263	37	39	187
1996	269	31	29	209
Total	1629	362	294	973

Source: NNPC 1997.

Table 5 above illustrates that the number of spills caused by sabotage rose maximally over the years compared with those caused by equipment failures and human errors.

On a general note, we argue that the causes of oil spills must be attributed to both the local people as well as the oil companies. *Shell* claimed that most communities indulged in sabotage to prevent the company from stopping oil spills with the aim of earning more compensation or to create more clean-up work for their people (Shell, 2004). However, the problem of perpetuation should be linked with the federal government, because they had shown unflinching supports for oil operators through military attacks that inspired youth restiveness and militancy in the Niger Delta.

Furthermore, certain institutions like the Greenpeace, has accused some major oil corporations for environmental pollution in Niger Delta. For example, *Shell-BP* responded to the assertion made by the *Greenpeace* organization that the Niger Delta was an ecological disaster, linked directly to its operation in the 1990s (Jaspid, David & Olof, 1995). *Shell* based its argument on the World Bank report on the environmental and development threat in the Niger Delta in 1995, suggest that the issue of oil spills and gas flaring was found well below many other factors that

affected the environment. Flaring of gas, according to this report, was a wasteful emission of greenhouse gases, but no notable acidification of rainwater was found near flaring sites. This implies that oil pollution in the Ijaw community was only a moderate priority when compared with the full scale of environmental problems found across the entire Niger Delta (World Bank, 1995). Fagbami (1988) and Duru (1981) contend that damage linked to oil spills and gas was from consumptive rather than productive or industrial sources, as with most pollutants in the Niger Delta and Nigeria at large. For instance, they contended that the pollution in Tsekelewu oil field near Port Harcourt, which affected the plants, could not be linked to the effects of oil on the flora and fauna in this area. Clearly, oil and gas pollution were not the only factors responsible for environmental degradation in Ijaw land, and the entire Niger Delta region.

Table 6: Exhibit 10 World Bank Report Ranking of Environmental Issues in Nigeria

Category	High Priority	Moderate Priority	Lower Priority
Land Resource	Agricultural land degradation, flooding(moderate high)	Coastal erosion, Riverbank erosion	Sea level rise
Renewal 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: Jaspid Singh, David Moffat and Olof Linden. Defining and Environmental Development Strategy for the Niger Delta, May 24th 1995, World Bank; West Central Africa Department, Industrial & Energy operations Division, vol.I. p.viv.

Table 6 above reveals that the environmental problems found in the Niger Delta were many. Oil and gas pollution were contributory factors with attendant effects on land degradation. This however did not detract from claims that oil and gas constituted environmental problems in the oil-producing community of the Ijaws.

CONCLUSION

This paper has clearly shown the consequences of oil production on the Ijaw people and their environment over time. It showed that the exploration and production of oil within Niger Delta environment has brought changes to their eco-system. It can thus be argue that gas flaring occurred in the Ijaw land as a result of the burning of waste gases by combustion, because flaring has affected their vegetation, soil and climate, while oil pollution had contaminated the rivers, creeks and mangroves on which their livelihood relied on. Based largely on scientific reports in this paper, it is clear that flaring of gas has caused untold environmental devastation and health hazards both on humans and animals, as a result of the emission of gases such as nitrogen, sulphur oxides and carbon-monoxide, with an impact on vegetation, soil and climate. The claim over incidence of acid rain that causes acidification of drinking water and increase heavy metals and corrosion of roofing sheets in most oilfields in the Niger Delta can therefore be sustained.

The study has discussed the complexities of spills from oil. It noted that oil spills occurred as a result of lack of proper maintenance of the oil flow lines or pipelines, sabotage, accidental and equipment failures by the oil companies. Claims have been made that the saboteurs among the militant youth were responsible for many oil spills in the Ijaw area. We can argue that the saboteurs had been forced out of their traditional jobs, having fished, farmed and survived off the natural environment until oil polluted and degraded their means of livelihood.

Scientific evidence presented on oil spillage shows that most of the rivers and waters in the Niger Delta were polluted as a result of blowout, sabotage or accidental spills. Drinking water tested in Funiwa and Iboe blowout reveals that it contained benzene and other pollutants. The soil was contaminated about five meters deep, and most oil spill sites in the Ijaw community that companies claimed to have cleaned up remain highly contaminated. This paper also reveals that

oil pollution was not the only cause of environmental degradation in Ijaw land and the entire Niger Delta. Other factors were sewage, vehicle emissions, solid wastes, toxic and hazardous substances. It argues that *Shell-BP* and *Chevron Nigeria* and other oil operators in the Ijaw and Niger Delta should not be held completely to blame for all environmental problems, though oil and gas pollution still constitutes the basis for their agitation.

REFERENCES

- Aghalino, S.O. (2002). 'Petroleum Exploitation and the Agitation for Compensation by Oil Producing Communities in Nigeria', *Geo-Studies Forum*, pp. 11-20.
- Aghalino, S.O. (2009). *Crude oil Business in the Western Niger Delta*, Enugu: Rhyce Kerex Publishers. pp. 30-5.
- Aghalino, S.O. (2009). 'Gas Flaring, Environmental Pollution and Abatement Measures in Nigeria, 1969-2001', *Journal of Sustainable Development in Africa*, 11 (4), pp. 219-238.
- Aghalino, S. O and Eyinla, B. (2009). 'Oil Exploration and the Marine Pollution: Evidence from the Niger Delta Nigeria', *Journal of Human Ecology*, 28, (3), p. 178.
- Augustine, O. I and Sanford, W.W. (1976), 'The effects of waste Gas Flare on the surface vegetations in South- Eastern Nigeria', *Journal of Applied Ecology*, 13, p.173.
- Aaron, S. (1996). 'Dying for oil', *World Watch*, May/June, p. 120.
- Ashton, J. N. (1998). *The Human Eco-system in the Niger Delta*, Benin City: ERA, pp. 40-50.
- Akujuru, V. (1992). The Professional Duty of Valuer in oil pollution compensation valuation. *Paper presented at the NIESU 22nd Annual Conference* (Port Harcourt), p.394.
- Amnesty International, Nigeria. (2009). *Petroleum, Pollution and Poverty in the Niger Delta*, London: *Amnesty Int Publications*, pp.65-79.
- Awunudiogba, G. (2003). 'Adaptive Strategies of Small Fishermen to Environmental Degradation Induced by Oil Pollution in the Niger Delta,' Michael & Apollo eds. *Human Impact on Environment and Sustainable Development*, England: Ashgate Publishing, pp.54-57.
- Brouwer, R. (1971). 'Nutritive Influences on the distribution of dry matter in the plant,' *Netherland Journal of Agric Science*, 10, pp.361-76.
- Bruce, E. J. (2003). 'Nigeria: The Ogoni: Oil, Blood, and the Death of a Homeland,' *An Encyclopedia of Indigenous People and Environmental Issues*, pp.1-11.
- Campbell, G. (2010). 'No Amount of Crying Extinguishes a Single Flare in the Niger Delta', *Journal of Urhobo Historical Society*, 12 (2), pp. 34-35.
- Duru, R. C. (1981). 'Environmental Consequences of West African Modernization', *Journal of African Studies*, 8(2), p. 69.
- Eweje, G. (2006). 'Environmental Cost and Responsibilities Resulting from Oil Exploration in Developing Countries: The Case of the Niger Delta of Nigeria', *Journal of Business Ethics*, 69 (1), pp. 27-56.
- Environmental complex issue for *Shell Nigeria*. (2009). [http// www.resource.online.nl](http://www.resource.online.nl). Pp. 3-29.
- Environmental Right Action, Friends of the Earth*. (2008). The Shell Report: 'Continue Abuses in Nigeria 10 years after Ken-Saro-Wiwa. Benin City, Nigeria.
- Emoyan, O.O, Akpogorie, I.A, Akporhonor, E. E. (2008). 'The Oil and Gas Industry and the Niger Delta: Implication for the Environment', *Journal of Applied Science Environmental Management*, 12(3), pp.30- 31.
- Emordi, E.C. Osaghae, B. E, Nwaokocha, O. M. (2008). Niger Delta Crisis and the State's Response Up to 2007. Being a Paper Presented at the 1st Annual Conference of the Society of Peace Studies and Practice, Institute for Peace and Conflict Resolution, The Presidency, pp.15-18.
- Francis, N. (2010). The Politics of Oil Exploitation: Rationalising the Co-existence of Oil Wealth and Extreme Poverty in the Niger Delta Region of Nigeria. Ojakorotu, V and Lysias, D. G. eds. *Checkmating the Resurgence of Oil Violence in the Niger Delta of Nigeria*, Johannesburg, pp. 25-35.

- Federal Environmental Protection Agency (FEPA). (1991). National Policy on the Environment. *The Presidency*, Abuja Nigeria, p. 43.
- Frynas, J. G. (2000). *Oil in Nigeria: Conflict and Litigation between oil companies and village communities*, Harmburg: Lit Verlag, p. 27.
- Frynas, J. G. (2001). 'Corporate and State Responses to Anti-Oil Protest in the Niger Delta', *African Affairs*, 100 (27-54), pp. 24-40.
- Fagbami, A. A, Udo, E. J, Odu, C. T. I, (1988), 'Vegetation and Damage in an Oil Field in the Niger Delta of Nigeria,' *Journal of Tropical Ecology*, 4 (1), pp. 61-64.
- Gao, Z, *Environmental Regulation of Oil and Gas*, London: Kluwer Law International, p. 553
- Guardian Newspaper*. (2005). Niger Delta Oil Spills Clean Up will take 30 years say UN. Thursday 4 August.
- Human Right Watch*. (1999). The Price of Oil, Corporate Responsibility and Human Rights Violation in Nigeria's Oil Producing Communities. New York, p.114.
- Ikporukpo, C. O. (1986). 'Sabotage and the Problem of Oil Spills Management in Nigeria', *Ambio*, 15 (5), pp. 306-310.
- Ikelegbe, A. (2005). 'The Economic of Conflict in the Oil Rich Niger Delta Region of Nigeria' *Journal of Third World Studies*, 43(2), 2005, pp. 24-50.
- Interview with Shell BP/Chevron staff (anonymous), Warri, 6 Nov 2010
- Interview with Collins, Shell Research office, Warri, 6/12/2010;
- Interview with Aghalino, Ilorin, 22/01/2011,
- Interview with Akpan, K, Oloibiri, 22 November, 2011,
- Interview with Obeche, P, Warri, 19/12/2010,
- Interview conducted with Obe, F, Oloibiri, 7 December, 2010
- Interview with Ekpe, Oloibiri, 22 November, 2011
- Interview with Edward, Oloibiri, 6/12/ 2010
- Interview with Ogunkoya, Shell Office, Warri, 6/12/2010,
- Interview with Shell production marketing manager, (Anonymous), Warri, 21/11/2011
- Interview with Akpo, Warri, 6/12/2010
- Jike, V. T. (2004), 'Environmental Degradation, Social Disequilibrium, and the Dilemma of Sustainable Development in the Niger Delta of Nigeria', *Journal of Black Studies*, 34(5), pp. 686-701.
- Jas dip, S, David, M, Olof, L. (1995), 'Defining an Environmental Development Strategy for the Niger Delta: The World Bank,' *West Central Africa Department, Industry and Energy Operation Division*, Vol. 1, p.xi.
- Jain, R. H, et al., 'Environmental Impact Analysis: A new Dimension in Decision Making', New York, Van Nosternd, 1977, p.23;
- Joseph, F. D, 'Criminal Enforcement of Environmental Laws', *Annals of the American Academy of Political and Social Science*, 525, 1993, pp.134-140.
- Kia, M. (2009), The Struggles for the Survival of 12 million People in the Niger Delta. Environmental experts from UK, US and Nigeria affirmed that the Delta is the most polluted area in the World. <http://nigerdeltasolidarity.wordpress.com>.
- Korvenoja, T. (1993), 'Environmental Problems and Politics of Power, Review on the African Elite', *Nordic Journal of African Studies*, 2(1), pp.140-153.
- Leslie, B. (2005), 'Nigerian Communities Demand End to Gas Flaring', *Frontiers of Ecology and the Environment*, 3(6), p. 299.
- Lawanson, O. (1971), 'Effects of prior heat stress on photo-chlorophyll and chlorophyll formation in seedlings', *Colocynthis citrillus*, 69, pp. 461-3.
- Moldoveanu, M. (1999). RoyalDutch/Shell in Nigeria (A), *Harvard Business School Publication No,N9-399-12*, Cambridge, Harvard Business School, pp. 7-9.
- National Archive Enugu, NAE War Prof, 384/2004, Record on Mineral resources.
- National Archive Ibadan, NAI War Prof, 256/54/13/1950/57, Native Authority (Timber revenue collection rules) Western Ijaw N.A.

- National Archive Enugu NAE, War Prof, CSO 26, 56628/1966, Intelligence report on petroleum resources and pollution in the Niger Delta.
- National Archive Ibadan, NAI, *Government Gazette* 26/29603, 89-90.
- Niger Delta Development Commission (NDDC), *Report* 2001.
- Nerry, E, Akpofure, E. (2000), Environmental Impact Assessment in Nigeria: Regulatory Background and Procedural Framework in UNEP. *EIA Training Resource Manual*, p63; NNPC Bulletin, 2003.
- Niger Delta Environmental Survey (NDES) (1997), Environmental and Socio-Economic Characteristics.
- Nwilo, P. C, Badejo, O. T. (2005), 'Oil Spills Problem and Management in the Niger Delta International Oil Spills,' *Conference Monitoring*, p.2.
- Obi, C. (2000), 'Globalised Images of Environmental Security in Africa,' *Review of African Political Economy*, 27 (83), pp. 47-62.
- Ockuko, T. O. (2011). *Gas Flaring, and Power Plant in Nigeria: Socio-Economic and Environmental Impact on the people of Niger Delta*. Being an Unpublished M.A Thesis in Environmental Management, Norway, p. 23.
- Ogri, O. R. (2001), 'A Review of the Nigerian Petroleum Industry and the Associated Environmental Problems,' *The Environmentalists*, 21(1), p. 15.
- Ojajorotu, V, Lysias, D. G. (2010), 'Understanding the Context of Oil Violation in the Niger Delta,' *Checkmating the Resurgence of Oil Violence in the Niger Delta of Nigeria*, Johannesburg, pp. 6-11.
- Okogun, B. (2004). *Current Efforts to Enhance Natural Gas Utilization and Reduce Gas Flaring in Nigeria*. <http://www.zite.org/orgnic/files/ggra/giers>. (Retrieved January 10, 2011).
- Omoweh, D. A. (1995), 'Shell, Environmental Pollution, Culture and Health in Nigeria: The Sad Plight of Ughelli Oil Communities,' *African Spectrum*, 30 (2), p.115.
- Oil Pipeline Act 1963 Section 11 and 20.
- Sanford, W.W. (1974), 'Effects of Gas Flare on Vegetation in the Rivers State of Nigeria,' *The African Studies*, 1, pp. 33-8.
- Saro-Wiwa, K. (1992), *Genocide in Nigeria: The Ogoni Tragedy*. Port Harcourt, Nigeria: Saro and International Publisher, p.34.
- Steve, A. (2003), *Inequities in Nigeria Politics: The Niger Delta Resource Control, underdevelopment and Youth Restiveness*, Yenogoa, Treasure Books, pp.39-43.
- Shell Petroleum Development Company (SPDC). (2003). People and the environment. *Annual Report*. SPDC, Environmental Management Complex Issue for *Shell Nigeria*, (2009). <http://www.resourceonline.nl>, p. 29.
- Shell Petroleum Development Company of Nigeria Limited (Operators of the NNPC/Shell/Agip Joint Venture). Challenges of Gas Flares-Out in Nigeria.
- Shell Petroleum Development, (SPDC). (2001), People and Environment: *Annual Report*, pp.18-40.
- Shell in Nigeria, (2004), Oil and Gas Reserves Crisis and Political Risks, Shares concerned for investors and producers: *A Briefing for Shell Stakeholders*. Jointly Published by the Christian Aid, Friends of the Earth Platform and Stakeholder Democracy Network. p.6.
- Shell Petroleum Development Company (SPDC). (1993), *Fact Book*, Lagos, Shell.
- Tell Magazine. (1993). Lagos, 1993, p. 24.
- Public Record Office, PRO, File 371/1671170, The British Trade Commissioner in Lagos to the Economic Relations Department of the Foreign Office in London on 'Development of oil reservoir in West Africa', 9 August, 1963.
- Vanguard Newspaper. (2011). November 25 2011.
- World Bank. (2009). World Bank GGFR Partners Unlock Values of Wasted Gas, *World Bank*, 14.
- World Bank. (2002). *Memorandum of the President of the IDA and the IFC to the executive directors on an interim strategy update for the Federal Republic of Nigeria*, New York.
- World Bank Document. (2008). Republic of Nigeria, Niger Delta Social and Economic Conflict Analysis. Sustainable Development Department African Region, pp. 12-14.

WHO (World Health Organization). (2002). The Health Effects of Industry Air Pollution Exposure in Developing Countries. *Published by WHO*, Geneva, Switzerland.