

Oil Spillage and Pollution in Nigeria: Organizational Management and Institutional Framework

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Abstract

Since the discovery of oil in Nigeria in the Niger Delta in the 1950s and its commercialization in 1958, oil exploration and exploitation has been on going in Nigeria. The region has huge oil and gas reserves, and ranks the sixth world's largest exporter of crude oil and ranked as the third world's largest producer of palm oil after Malaysia and Indonesia. Oil from the Niger Delta region accounts for more than 90% of Nigeria's exports and about 80% of the government's revenue, from as far back as December 1981. In these present times the overall contribution of the oil sector to the national economy grew from 84% in 2000 and 95% in 2002 to about 96.7% in 2003. As of 2006, there were eleven (11) oil companies operating one hundred and fifty- nine (159) oil fields and one thousand four hundred and eighty-one (1,481) wells in the Niger Delta in Nigeria (The Guardian 2006). Human activities and those of oil exploration and exploitation raise a number of issues such as depletion of biodiversity, coastal and riverbank erosion, flooding, oil spillage, gas flaring, noise pollution, sewage and wastewater pollution, land degradation and soil fertility loss and deforestation, which are all major environmental issues. The Nigerian government has a lot of laws and legislations with the sole purpose of safeguarding the environment with regards to oil pollution. The legislations are numerous and needs to be reviewed, some of these legislations are found scattered in Acts that are not pertaining to the environment, with no evident method of application, enforcement, monitoring or ensuring compliance of these legislations. This paper seeks to highlight some of the existing laws applicable to oil pollution in Nigeria, discussing the current legislations and system suggesting areas where improvement is essential.

Keywords: Niger Delta, Government, Laws, Exploration, Exploitation

1. Introduction

The British discovered oil in the Niger Delta in the late 1950s and crude oil was discovered in commercial quantity by the Shell British Petroleum, which is now called Royal Dutch Shell at Oloibiri. A village in the Niger Delta and in 1958 commercial production began with a production of about 6,000 barrels a day (Uyigue and Ogbeibu, 2007; Nwilo and Badejo 2005). The region has huge oil and gas reserves, and ranks the sixth world's largest exporter of crude oil and ranked as the third world's largest producer of palm oil after Malaysia and Indonesia (Omofonmwa and Odia, 2009). Oil from the Niger Delta region accounts for more than 90% of Nigeria's exports and about 80% of the government's revenue, from as far back as December 1981. In these present times the overall contribution of the oil sector to the national economy grew from 84% in 2000 and 95% in 2002 to about 96.7% in 2003 (Twumasi, et al., 2009). As of 2006, there are eleven (11) oil companies operating one hundred and fifty- nine (159) oil fields and one thousand four hundred and eighty-one (1,481) wells in the Niger Delta in Nigeria (The Guardian 2006). Figure 1 shows the Niger Delta Distribution of Onshore and Offshore Oilfields.

Human activities and those of oil exploration and exploitation raise a number of issues such as depletion of biodiversity, coastal and riverbank erosion, flooding, oil spillage, gas flaring, noise pollution, sewage and wastewater pollution, land degradation and soil fertility loss and deforestation, which are all major environmental issues. The Niger Delta region has emerged as one of the most ecologically sensitive regions in Nigeria. 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. Since the discovery of oil in the region, oil has dominated the country's economy. The Niger Delta is highly susceptible to adverse environmental changes, occasioned by climate changes because it is located in the coastal region. Conclusive reports have stated that due to oil exploration and exploitation activities, the area has become an ecological wasteland.

2. Materials and Methods

This involved obtaining data from past and present studies, government and non- government bodies and existing literature (Twumasi and Merem, 2006; Uyigue and Agho, 2007; Uyigue and Ogbeibu, 2007). The study

relied on secondary data, data was obtained from The Nigerian National Petroleum Cooperation, World Bank Reports, National Bureau of Statistics, United Nations Environmental Protection Programme, Amnesty International, International Monetary Fund, Published and UnPublished materials, Books, Newspapers, Conference and Seminar Papers, Journals and the internet. The data obtained was analyzed using descriptive method to obtain logical deductions and sequential presentation of facts from the data obtained to give a clear picture of the problem. Also in terms of gathering the legislative material in relation to environmental pollution proved difficult obtain sufficient.

3. Oil Production in Nigeria

Nigeria has been a member of Organization of Petroleum Exporting Countries (OPEC) since 1971. It has the largest natural gas reserve in Africa, has the second largest oil reserve in Africa and is the African continents primary oil producer. As of the 1980s oil revenue provided 90% of Nigeria foreign exchange earnings and 85% of the government revenue (Odeyemi and Ogunseitan 1985), with estimated reserves extending beyond 20-30 years (NNPC, 1984). Shell D'Arcy the pioneer oil company in Nigeria, which started commercial production in 1958 with a production rate of 5100 barrels per day and a peak production of 2.44 million barrels per day over the next few years. After the civil war 1967-1970 the Nigerian National Oil Cooperation (NNOC) was established (Amu, 1997), and in 1971 Nigeria joined OPEC as the eleventh member. In 1977 the Nigerian government created the Nigerian National Petroleum Cooperation (NNPC) by merging the Ministry of Petroleum Resources and NNOC, whose function was to regulate the Nigerian oil industry (Tolulope, 2004; www.dprnigeria.com). In 1988 the Nigerian government divided the NNPC into twelve subsidiary companies to enhance better management of the oil industry. The oil industry consist of mostly European and U.S owned companies that are operating in joint venture with the government owned NNPC, which has ownership of 55-60% interest in the venture (Abdul, 2009). Companies involved are: Shell Petroleum, Mobile, Chevron, Elf, Agip and Texaco with other international and national oil companies. Table 1 below shows the major Transnational Oil Companies in the Niger Delta.

According to NNPC (1984) through OPEC, production rates dropped to 1.5 million barrels per day from the activities of 10 international companies working 122 fields, containing over 970 oil wells. Figure 2 below shows Niger Delta, Nigeria Major Cities & Operational Zones. Nigeria has four oil refineries with an estimated total refining capacity of 445,000 barrels per day (Onuoha, 2008; Anifowose, 2008). The first and oldest being the Port Harcourt refinery, commissioned in 1965. It had an initial capacity of 35,000 barrels per day, which was later expanded to 60,000 barrels per day of light crude oil. The Port Harcourt refinery has a second refinery with a capacity of 150,000 barrels per day (Odeyemi and Ogunseitan 1985; Ukoli 2005). Anifowose (2008) and Onuoha (2008) cited in their studies that the region has about 606 oil fields with 355 situated onshore; 251 situated offshore with 5,284 drilled oil wells and 7,000km of oil and gas pipelines.

The Warri refinery commissioned in 1978 with an initial capacity of 100,000 barrels per day of light crude oil, the refinery was later expanded in 1986 to a capacity of 125,000 barrels per day (Odeyemi and Ogunseitan 1985). The Kaduna refinery being the largest refinery is inland built. Operations began in 1980 with an initial capacity of 100,000 barrels per day, which was later upgraded in 1986 to a capacity of 110,000 barrels per day (Odeyemi and Ogunseitan 1985). The Kaduna refinery is the largest refinery, fed with crude oil through a 600km pipeline from the Niger Delta oil fields (NNPC, 1984). Previously the majority shares of the refineries were held by Shell and British Petroleum, with the Federal and Defunct Eastern Region Government having majority shares (Ukoli, 2005). The four refineries came under the ownership and management of the NNPC in 1986. Numerous Niger Delta region oil wells also have taps to large quantities of natural gas, with reserves estimated at 1422 billion cubic meters (Odeyemi and Ogunseitan, 1985). Extensive gas flaring has been continuous in the Niger Delta region since 1970 (NNPC 1984).

In 2001, Nigeria proven oil reserve was approximately 30 million barrels (Ukoli, 2005). As of January 2009 the Oil and Gas Journal (OGJ) estimates that Nigeria has 36.2 billion barrels of oil reserve with present oil exploration and production concentrated in the Niger Delta basin and continental shelf (Ukoli, 2005). Activities mainly in the onshore dry or swamp lands of the Niger Delta basin and deep offshore locations of the Dahomey Basin (Ukoli, 2005). Small fields characterize Nigeria crude oil production which produces 500-5,000 barrels per day, 65% of the oil produced being light sweet crude which is a very high quality crude with an API –gravity of 35°C and above. Shell produces over 50% of Nigeria crude from over 100 fields and Shell has an oil reserve of over 11 billion barrels per day followed by mobile and chevron combined. Mobile operates offshore from Eket in Akwa Ibom state and chevron also operates offshore with an operational base at Escravos in Delta State. The World Bank estimated that the oil sector accounts for 95% of Nigeria export earnings and 85% of the governments revenues as of 2009. Currently in 2010 the International Monetary Fund (IMF) estimates that the oil sector accounts for over 95% of Nigeria export earnings and about 65% of the government's revenue.

According to OGI Nigeria has an estimated 36.2 billion barrels of proven oil reserves as of January 2010. The majority of the reserves located along the Niger Delta River, offshore Bright of Benin, Gulf of Guinea and the Bright of Bonny. The current exploration activities focused in deep and ultra-deep offshore and some activities in the Chad Basin located northwest of Nigeria. In 2008 Nigeria's crude oil production averaged 1.94 million bbl/d making it the largest oil producer in Africa, with current production slightly over 2.2 million bbl/d as of 2009 (Country Analysis Brief 2009). In 2008 EIA estimates that Nigeria's production could have reached 2.7 million bbl/d. Recent offshore developments combined with the restart of some shut-in onshore production have boosted crude oil production to an average 2.03 million bbl/d as of 2010 (Country Analysis Brief 2009, 2010). Nigeria exported most of its 2.17 million bbl/d of oil produced in 2008, approximately 1.9 million bbl/d was exported (Country Analysis Brief 2009, 2010). In 2009 Nigeria still exported approximately 1.9 million bbl/d of its than 2.2 million bbl/d total production (Country Analysis Brief 2009, 2010). Nigeria has six export terminals; Forcados and Bonny operated by Shell, Escravos and Pennington operated by Chevron, Qua Iboe operated by ExxonMobil and Brass operated by Agape. The major foreign producers in Nigeria are Chevron, ExxonMobil, Total, Eniagip, Addax Petroleum, ConocoPhillips, Petrobras and Statoilhydro. Nigeria is the 5th largest foreign supplier to the United States and also supplies Europe, Brazil, India and South Africa.

In terms of natural gas, as of January 2009 the Oil and Gas Journal estimates Nigeria's proven natural gas reserve at 184 trillion cubic feet. Presently the OGI as of January 2010 estimates the proven gas reserve to be 185 trillion cubic feet. Nigeria is the eighth largest natural reserve holder worldwide and the largest in Africa (Country Analysis Brief 2010). In 2007 Nigeria produced 1,204 billion cubic feet (Bcf) of natural gas of which the state consumes 456 Bcf and exported 749 Bcf. In 2008 Nigeria produced about 1,400 Bcf of natural gas making it the 23rd gross producer in the world (Country Analysis Brief 2010). According to the National Oceanic and Atmospheric Administration (NOAA) Nigeria flares most of its natural gas, in 2007 Nigeria flared 593 Bcf of natural gas and 532 Bcf of natural gas in 2008 due to lack of infrastructure to produce and market (Country Analysis Brief 2010).

4. Institutional Framework

The Nigerian constitution provides that mineral oil and natural gas within the Federal Republic of Nigeria belong to the federal government, thereby any company engaging in oil exploration, production, drilling, storage and refining must obtain license from the Federal Ministry of Petroleum Resources. The Ministry of Petroleum Resources is in charge of the supervision of all oil companies and their activities (Abdul, 2009). Therefore the federal government must issue oil license to companies local or foreign before they can carry out oil exploration activities in the country.

In 1963, the government started creating the legal framework (principle and subsidiary legislations) for the control and mitigation of pollution from the petroleum industry which include:

- a. Mineral Oil Safety Regulation 1963
- b. Oil in Navigable Waters Regulation 1968
- c. Oil in Navigable Waters Act No 34 of 1968
- d. Petroleum Regulations 1967
- e. Petroleum Decree 1969
- f. Petroleum (Drilling and Production) Regulation 1969
- g. Petroleum (Drilling and Production) Regulation 1973
- h. Petroleum Refining Regulation 1974
- i. Federal Environmental Protection Agency Act - 30th December 1988
- j. Mineral Oils (Safety) Regulations 1997
(Source: www.dprnigeria.com)

Amendments:-

- a) Petroleum (Drilling and Production) (Amendment) Regulations 1990
- b) Petroleum (Amendment) Decree 1996
- c) Petroleum (Amendment) Decree No.23, 1998
- d) Petroleum (Drilling and Production) (Amendment) Regulation 1996
(Source: www.dprnigeria.com)

Apart from these, there are relevant National and International Agreements in place such as:

- a. Endangered Species Decree Cap 108 LFN 1990.
- b. Federal Environmental protection Agency Act Cap 131 LFN 1990.
- c. Harmful Waste Cap 165 LFN 1990.

- d. International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971
- e. Convention on the Prevention of Marine pollution Damage, 1972
- f. African Convention on the Conservation of Nature and Natural Resources, 1968
- g. International Convention on the Establishment of an International Fund for the Compensation for Oil Pollution Damage, 1971
- h. Oil Pollution Act (OPC) 1990
- i. Environmental Guidelines and Standards for the Petroleum Industry in Nigeria issued by the Ministry of Petroleum Resources 1991
- j. National Environmental Protection Management of Solid and Hazardous Waste Regulation 1991 (FEPA)
- k. Establishment of the Federal Environmental Protection Agency (FEPA) Decree No 58 of 1988 and Amended in Decree No 59 of 1992 National Policy of the Environment 1999 (FEPA Revised Edition)
 - i. The Elevation of FEPA to a Ministry in 1999
(Source: Ukoli, 2005)

4.1 Oil Pollution Act 1990

The Oil Pollution Act 1990 provides guidance for the government and industries on the prevention, mitigation, cleanup and liability. It also creates a comprehensive scheme ensuring sufficient financial resources are made available for oil spill cleanup and compensation. It ensures the federal system is adequately prepared to manage impacts and mandates the industries to implement prevention measures (Ukoli, 2005). In 1988 the Federal Environmental Protection Agency Act gave the Federal Environmental Protection Agency (FEPA) established under the Act, the authority of issuing standards for water, air, land quality and oil companies (Abdul, 2009). The Nigerian Environmental Protection and Department of Petroleum Resources (DPR); which acting under the Petroleum Act makes regulations on the Environmental Guidelines and Standards for the Petroleum sector in Nigeria. Under the Petroleum (Drilling and Production) Regulation oil companies that are granted license are responsible for all actions of company and independent contractor carryout work on behalf of the oil company. It is mandatory for oil companies to take precautionary steps to prevent oil pollution and when it does occur to take steps in controlling and stopping the pollution. The environmental impact assessment act 1992 also requires oil companies to produces an Environmental Impact Assessment for proposes project or activity that is likely to alter the environment (Abdul, 2009). The EIA implementation is under the supervision of the Federal Environmental Protection Agency.

4.2 National Oil Spill Detection and Response Agency (NOSDRA)

NOSDRA was established in 2004 which was initiated by the Ministry of Environment to administer the National Oil Spill Contingency Plan (NOSCP) in compliance with the International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC90) of which Nigeria is a signatory. The NOSCP consist of three tier of implementation:

Tier One

Operational type spills, less than or equal to 7 metric tonnes (50 barrels), that may occur at or near a company's own facility, as a consequence of its own activities. An individual company would typically, and under OPRC, provide resources to respond to this size of spill (www.nosdra.org).

Tier Two

A larger spill, greater than 7 metric tonnes (50 barrels) but less than 700 metric tonnes (5000 barrels), in the vicinity of a company's facility where resources from another company, industry and possible government response Agencies in the area can be called in, on a mutual aid basis. The company will participate in local co-operatives such as the Clean Nigeria Associates (CNA) where each member pools its Tier 1 resources and has access to any equipment which have been jointly procured for the co-operative (www.nosdra.org).

Tier Three

The large spill, greater than 700 metric tonnes (5000 barrels), where substantial further resources will be required and support from a National (Tier 3) or International Co-operative Stockpile, like the Oil Spill Response Limited (OSRL), may be necessary. Such operation is subject to government control and direction. It is important to recognize that a spill which receives a Tier 3 response may be close to, or remote from company facilities (www.nosdra.org).

The NOSDRA seeks to create zero tolerance for oil spill incidences in Nigeria, restoration and preservation of the environment by ensuring good practices in oil exploration, storage and production, with the aim of achieving sustainable development. The objectives of the Agency are co-ordinate and implement the National Oil Spill

Contingency Plan for Nigeria as follows:

- (a) Establish a viable national operational organization that ensures a safe, timely, effective and appropriate response to major or disastrous oil pollution.
- (b) Identify high-risk areas as well as priority areas for protection and clean up;
- (c) Establish the mechanism to monitor and assist or where expedient direct the response, including the capability to mobilize the necessary resources to save lives, protect threatened environment, and clean up to the best practical extent of the impacted site;
- (d) Maximize the effective use of the available facilities and resources of corporate bodies, their international connections and oil spill cooperatives i.e. Clean Nigeria Associates (CNA) in implementing appropriate spill response;
- (e) Ensure funding and appropriate and sufficient pre-positioned pollution combating equipment and materials, as well as functional communication network system required for effective response to major oil pollution;
- (f) Ensure a programme of activation, training and drill exercises to ensure readiness to oil pollution preparedness and the management of operational personnel;
- (g) Co-operate and provide advisory services, technical support and equipment for purposes of responding to major oil pollution incident in the West African sub-region upon request by any neighbouring country, particularly where a part of the Nigerian territory may be threatened;
- (h) Provide support for research and development (R&D) in the local development of methods, materials and equipment for oil spill detection and response;
- (i) Co-operate with the International Maritime Organization and other national, regional and international organizations in the promotion and exchange of results of research and development programme relating to the enhancement of the state-of-the art technology in oil pollution preparedness and response, including technologies, techniques for surveillance, containment, recovery, disposal and clean-up to the best practical extent;
- (j) Establish agreements with neighbouring countries regarding the rapid movement of equipment, personnel and supplies into and out of the countries for emergency oil spill response activities;
- (k) Determine and ensure pre-positioning of vital oil spill combat equipment at most strategic areas for rapid response;
- (l) Establish procedures by which the Nigerian Customs Service and the Nigerian Immigration Services shall ensure rapid importation of extra support response equipment and personnel;
- (m) Develop and implement an appropriate audit system for the entire plan;
- (n) Carry out such other activities as are necessary or expedient for the full discharge of its functions and the execution of the Plan.

(Source: www.nosdra.org)

Mandates of the NOSDRA

The Agency shall:

- (a) Ensure the co-ordination and implementation of the Plan within Nigeria including within 200 nautical miles from the baseline for which the breadth of the territorial waters of Nigeria is measured;
- (b) Undertake surveillance, reporting, alerting and other response activities as they relate to oil spillages;
- (c) Encourage regional cooperation among member States of West African sub-region and in the Gulf of Guinea for combating oil spillage and pollution in our contiguous waters;
- (d) Strengthen the national capacity and regional action to prevent, control, combat and mitigate marine pollution;
- (e) Promote technical cooperation between Nigeria and member States of the West African sub-region;
- (f) facilitate:
 - (i) The arrival and utilization in and departure from Nigeria of ships, air craft's and other modes of transport engaged in responding to oil pollution incidents or transporting personnel, cargo, materials and equipment required to deal with such an incident; and
 - (ii) The expeditious movement into, through and out of Nigeria of personnel, cargoes, materials and equipment.

(g) The National Control and Response Centre shall for the purpose of a Tier 3 oil spill response, undertake such functions as specified under Section 20 of the Act;

(h) The Director-General shall have the power to co-opt all the Government Ministries and Agencies mentioned under the 2nd schedule of the Act in the management in the event of a Tier 3 or a major Tier 2 oil spill.

(Source: www.nosdra.org)

4.3 Niger Delta Development Commission (NDDC)

NDDC was established in 2000 with the mission of facilitating the rapid, even and sustainable development of the Niger Delta into a region that is economically prosperous, socially stable, ecologically regenerative and politically peaceful (www.nddc.gov.ng).

The NDDC mandates are as follows:

- a. Formulation of policies and guidelines for the development of the Niger Delta area.
- b. Conception, planning and implementation, in accordance with set rules and regulations, of projects and programs for sustainable development of the Niger Delta area in the field of transportation including roads, jetties and waterways, health, employment, industrialization, agriculture and fisheries, housing and urban development, water supply, electricity and telecommunications.
- c. Surveying the Niger Delta in order to ascertain measures necessary to promote its physical and socio-economic development.
- d. Preparing master plans and schemes designed to promote the physical development of the Niger Delta region and the estimation of the member states of the Commission.
- e. Implementation of all the measures approved for the development of the Niger Delta region by the Federal Government and the states of the Commission.
- f. Identify factors inhibiting the development of the Niger Delta region and assisting the member states in the formulation and implementation of policies to ensure sound and efficient management of the resources of the Niger Delta region.
- g. Assessing and reporting on any project being funded or carried out in the region by oil and gas companies and any other company, including non-governmental organizations, as well as ensuring that funds released for such projects are properly utilized.
- h. Tackling ecological and environmental problems that arise from the exploration of oil mineral in the Niger Delta region and advising the Federal Government and the member states on the prevention and control of oil spillages, gas flaring and environmental pollution.
- i. Liaising with the various oil mineral and gas prospecting and producing companies on all matters of pollution, prevention and control.
- j. Executing such other works and performing such other functions, which in the option of the Commission are required for the sustainable development of the Niger Delta region and its people.

(Source: www.nddc.gov.ng)

5. Discussion

In term of the institutional framework, Nigerian legislation has provisions that are quite sufficient, designed to safe guard the environment and the resources the environment provides. Which are applicable to the negative impacts of the petroleum development, but lacks the application and enforcement of these legislations and monitoring for compliance based on these legislations. The legislations are also numerous and need to be reviewed and revised, some of the legislations are found and scattered in Acts that are not pertaining the environmental. The legislations also need to be placed under a specific Act and be made available to the public because finding legal documents stating these specific legislations in quite difficult. Another issue is that other government bodies have jurisdiction over some sectors of petroleum development in terms of management or issues that might arise. Government agencies concerned with petroleum development have to be restructured, reviewed and have to come under one body; the legal, management, environment and administrative, in order to have efficiency in whatever issues that may arise. When you have different bodies involved scattered under different Ministries and Parastatals, when issues arise there will be a lot of problem in terms of knowing who has jurisdiction or responsibilities over one issue or another.

Monitoring seems to be lacking, the location of the oil companies; the terrain, the accessibility, revenue, man power availability for the monitoring agency, qualified personnel isn't available. This restricts the ability and efficiency of monitoring by the government. Updating the legislations, revising the legislation, license and

putting new conditions to the oil companies and reviewing the fines will go a long way in ensuring compliance, even though the government cannot systematically or frequently monitor these sites. The formation of NOSDRA and NDDC; government agencies which are accessible to the public, which facilitates the report of oil spill incidences by the public. This has improved oil spill management, detection, prevention and the efforts of these agencies are really visible and quite commendable. The government need to ensure that the sufficient revenue, man power, expertise are provided to aid these agencies. The government should be commended in that now they are tackling the problem with the UNEP with collaborations with UN (United Nation), which are taking steps towards finding a permanent solution or remediation for Ogoniland. The SPDC has to be commended also for the sponsorship of this activity and their readiness finally in taking steps into the remediation of Ogoniland.

6. Conclusion

In general, the assessment of other researchers into this issue acknowledges that the oil industry has undoubtedly brought economic benefit to the Nigerian state but has left environmental pollution problems with visible physical destruction. The prevention of environmental degradation is a task that must be pursued vigorously. Amu (1997) said that the identification of problems, design and applying appropriate sanctions is a major issue that needs to be resolved and has to start with change in the present judicial system and attitude towards the litigation of environmental issues as well as a reform in environmental policies.

Environmentalists and people generally give blame to the oil companies but the Federal Government provides the laws, legislations and license, which the oil companies must adhere to. The Federal Government has to take steps, which they have started with NOSDRA, NDDC, UNEP, UN SPDC and NGOs. Improvement have begun in terms of achieving sustainable development in the Niger Delta, the government should continue to allocate more revenue into the Niger Delta for steps toward finding a permanent and lasting solution.

7. Recommendations

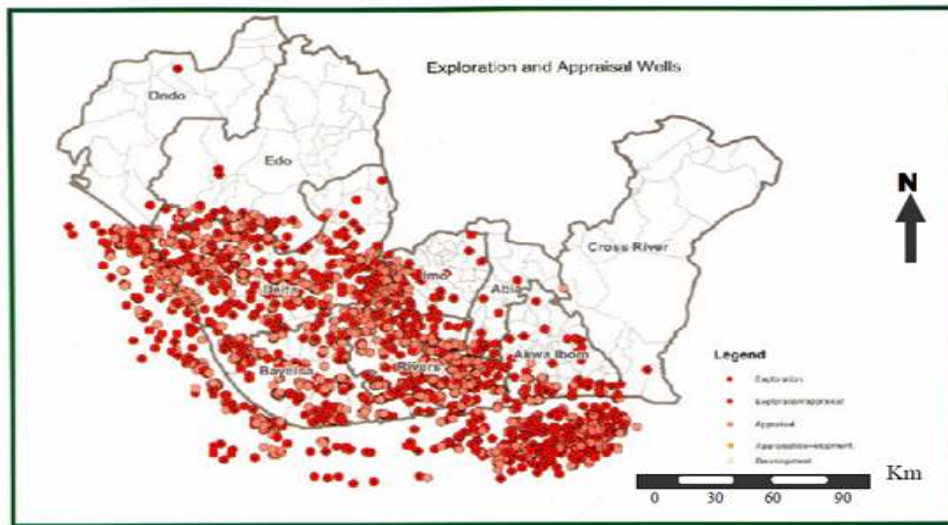
1. Provision for individual, agencies and communities to sue based on environmental rights, such right should not be limited to only the state.
2. Re-evaluation and encompassing of existing regulations with regards to the oil industry and the environment. These laws should be placed under a specific and comprehensive environmental law that meets international standards with details of proper application of the statutes.
3. There is a need for a restructure and creation of a completely independent sector that ensures government directives and legislations pertaining oil development activities are followed. Since the NNPC cannot perform without bias cause its own plants and installations are some of the oil pollution sources.
4. Reform in the present judicial attitude towards litigation in relation to the environment.
5. Long term monitoring and surveillance
6. Designing a regional environmental information system
7. Strict implementation of government policies
8. Public awareness and education

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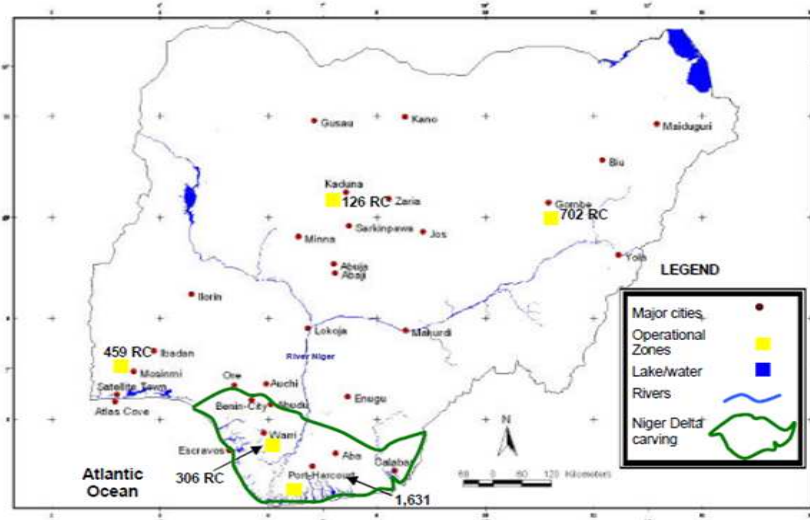
Source: NDRDMP, 2006

Figure 1: Niger Delta Showing the Distribution of Onshore and Offshore Oilfields

Table 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%

Extract from Uyigüe and Agho 2007



Source: after Anifowose (2006) NB: RC – Reported Cases of pipeline

Figure 2: Nigeria Showing Niger Delta, Major Cities & Operational Zones

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