

Petroleum Industry in Nigeria: Environmental Issues, National Environmental Legislation and Implementation of International Environmental Law

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Abstract Advances in the development of petroleum resources has contributed enormously to the global energy demand and economic development over the past decades, however, it has left profound negative impacts on the natural environment and adverse human health effects in most oil-producing host communities around the world. Apart from the loss of petroleum-derived revenue to corruption and ineffective government's petroleum development policies, the Niger Delta region has experienced a wide range of environmental pollution, degradation, human health risks and socio-economic problems associated with petroleum exploration, development and production. Over the years, several environmental laws have been institutionalized to regulate the petroleum sector in Nigeria. The Nigerian government and other African countries have played tremendous roles in the emergence of international environmental law that regulate the establishment of environmental institutions and legislations as well as strategies for conservation and management of natural resources. However, the existing Nigeria statutory laws and regulations for environmental protection appear to be grossly inadequate and some of the multinational oil companies operating in the Niger Delta region have failed to adopt sustainable practices to prevent environmental pollution. Poor implementation of national and international environmental policies associated with petroleum exploitation and production in the Niger Delta region have resulted in huge environmental costs, degradation and issues of responsibilities from the oil companies. Therefore, this research paper examines some of the contributions of multinational oil companies operation towards environmental degradation and the role of Nigerian Government in the implementation of the petroleum-related environmental policies in the Niger Delta region.

Keywords: petroleum, multinational oil companies, environmental pollution, legislation, international environmental law, Niger Delta, Nigeria

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1. Introduction

Advances in the development of petroleum resources has contributed enormously to the global energy demand and economic development over the past decades, however, it has left profound negative impacts on the natural environment as well as adverse human health effects in most oil-producing host communities around the world. Over the past fifty-five years, the oil-producing host communities in the Nigeria's Niger Delta region has experienced a wide range of environmental pollution, degradation, human health risks and socio-economic problems as a result of activities associated with petroleum exploration, development and production [1,2,3]. In addition, the inability of the political elite to

effectively manage petroleum-derived revenue, loss of petroleum resource revenues to corruption and ineffective government's petroleum development policies has equally contributed to degradation of the Niger Delta environment over the years. According to Ite et al. [2], discharges of petroleum hydrocarbon and chemical-derived waste streams associated with petroleum exploration and production have caused environmental pollution, adverse environmental and/or human health effects, negative impacts on the terrestrial ecosystems, detrimental impacts on regional economy, socio-economic problems and degradation of oil-producing host communities in the Niger Delta region. Apart from other anthropogenic sources of petroleum pollutants, some of the major environmental consequences associated with petroleum exploration and production operations include: (i) atmospheric pollution associated with natural gas flaring

and venting [4,5] which may contribute to global climate change, (ii) pollution of marine ecosystem which often result in adverse impacts on wildlife and negative impact on tourism, fishing and other related businesses, and (iii) controlled water (surface and ground water) sources and soil pollution [6-9].

The inadvertent release of petroleum hydrocarbons into the environment, whether accidentally or through anthropogenic activities, is a major cause of environmental pollution that poses threats to human health, safety and often result in several socio-economic consequences in the impacted areas [2,10,11,12,13]. According to Ite and Semple [10], polycyclic aromatic hydrocarbons (PAHs) containing from two to five fused aromatic rings are of serious concern because they persist in nature due to their lipophilic character and electrochemical stability. PAHs are relatively recalcitrant in soils [3] and some PAHs have been identified as carcinogens, mutagens, or teratogens. Acute and chronic toxicity of PAHs demonstrates the potential deleterious effects and negative impacts of petroleum-derived chemical wastes on the temperate and tropical marine environment [13]. Evidence from the *Prestige* oil spill suggests that human population exposed to volatile organic compounds (VOCs), toxic air emissions and persistent organic pollutants associated with oil spillage may experience long term respiratory problems, chromosomal damage and various health problems [14,15]. Although oil spills in the Niger Delta region of Nigeria may be regional in scale, soils and sediments have become the ultimate sink for most petroleum contaminants around the world due anthropogenic activities as well as few contributions associated with natural sources.

Petroleum contamination of the environment is a global concern because of the toxicity of the hydrocarbons and refractory character of the aromatic components in the absence of oxygen [10]. Although PAHs are a widespread class of environmental chemical contaminants which make up about 5% by volume [16], aliphatic hydrocarbons that constitute the bulk of crude oil and aromatic hydrocarbons are significant petroleum contaminants in the Nigeria's Niger Delta region [3,17,18]. Consequently, the Niger Delta region is often characterized by widespread problem of petroleum hydrocarbon pollution and noncompliance with best practices to support sustainable development goals by the multinational oil companies and/or oil and gas service companies in Nigeria. For example, the Chevron North Apoi Gas Rig (located in Southern Ijaw in Bayelsa State) blowout occurred on 16th January 2012 and the explosion resulted in huge gas fire as well as accidental spillage which lasted for 46 days, causing severe damage to the environment. From the estimates, over 2,567,966 barrels of crude oil have been spilled in 5733 incidents in the Niger Delta from 1976–2000 and about 549,060 barrels were recovered while 1,820,411 barrels were lost to the environment [19]. Over the years, the Niger Delta has experienced a number of petroleum-related incidents or disasters which often influence the nature of the relationship between oil-producing host communities, multinational oil companies and the Nigerian government [2]. Petroleum-related matters fall strictly under the control of the Federal Government and it has been observed that both the Nigerian government and multinational oil companies

operating in the Niger Delta region have done too little to redress unsustainable practices and petroleum contamination of the environment [4,20,21,22].

The ineffective and/or unsustainable environmental management practices by the petroleum industries and the failure of Nigeria's environmental regulations have contributed to the environmental pollution with direct consequences on the ecosystem, human health, the regional populations' socio-cultural and socio-economic wellbeing. It is known that petroleum-related environmental pollution, adverse human health risks and socio-economic problems associated with activities of petroleum industries around the world depend on the geological and geographical setting of the oil-rich host communities, stages of exploration, development and production processing, demography and socio-economic activities of the regional population, cultural heritage, corporate governance systems and political economy. However, some of the multinational oil companies operating in the Niger Delta region have failed to adopt best practices for sustainable development [23,24,25,26], risks mitigation and compliance with environmental regulations [27,28]. For the past fifty-five years, successive governments have not been able to properly address and effectively manage the environmental pollution, socio-economic problems and devastating effects on wild life and its habitats associated with both onshore and offshore petroleum exploration and production operations in the Niger Delta region.

This research paper examines some of the contributions of multinational oil companies operations towards environmental degradation and the role of Nigerian government in the implementation of the petroleum-related environmental policies in the Niger Delta region. It will give an overview of environmental degradation resulting from unsustainable petroleum exploitation, most of Nigeria's environmental legislations relating to petroleum industry and its international obligations under various multilateral environmental agreements (MEAs). It will further highlight most of the petroleum-related environmental regulations and the possible direction for future legal development within the national and international context.

2. Petroleum Exploration and Production in Nigeria's Niger Delta

2.1. The Niger Delta Region of Nigeria

The Niger Delta Basin, which is a low-lying floodplain 0 – 100 m above mean sea level, occupies the Gulf of Guinea continental margin in equatorial West Africa [29,30], between latitudes 3° and 6° N and longitudes 5° and 8° E (Figure 1). The Niger Delta basin has a total area of about 75,000 km² and occupies the coastal and oceanward part of the Benue trough that makes up 7.5% of Nigeria's land mass. The Niger Delta region is home to some 31 million people and it represents the Nigeria's South-South geopolitical zone. Based on the official definition by the Federal Government of Nigeria, the Niger Delta region encompasses the following states: Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Ondo, Imo and Rivers and these states have a total of 185 local

government areas. The Niger Delta is composed of various major environments viz Onshore and offshore, Onshore 'fossil' delta complex, Upper and lower floodplains, Mangrove swamps, Barrier Islands, River mouth, Delta front platform, Pro delta slope, Open shelf and Continental slope. The Niger Delta sedimentary basin, which is the largest mangrove forests in Africa with diverse natural ecosystems, represents one of the most prolific deltaic hydrocarbon provinces in the world with proven vast amount of oil and gas reserves. The Niger Delta basin is one of the world's largest wetland and it is composed of four main ecological zones viz coastal barrier islands, mangroves, freshwater swamp forests, and lowland rainforests. In general, the ecological zones in the

oil-rich Niger Delta region can be broadly group into tropical rainforest in the northern part of the Delta and mangrove forest in the warm coastlines of Nigeria [31]. According to Haack et al. [30], three petroleum systems are present in the Niger Delta and delta frame viz: Lower Cretaceous (lacustrine), Upper Cretaceous–lower Paleocene (marine), and Tertiary (deltaic). It is widely known that the Tertiary deltaic hydrocarbon provinces account for about 5% of the world's petroleum resource reserves and about 2.5% of the basin areas around the world. According to Osuji and Onojake [32], the Niger Delta region cuts across over 800 oil producing communities with an extensive network of over 900 producing oil wells and several petroleum production-related facilities.

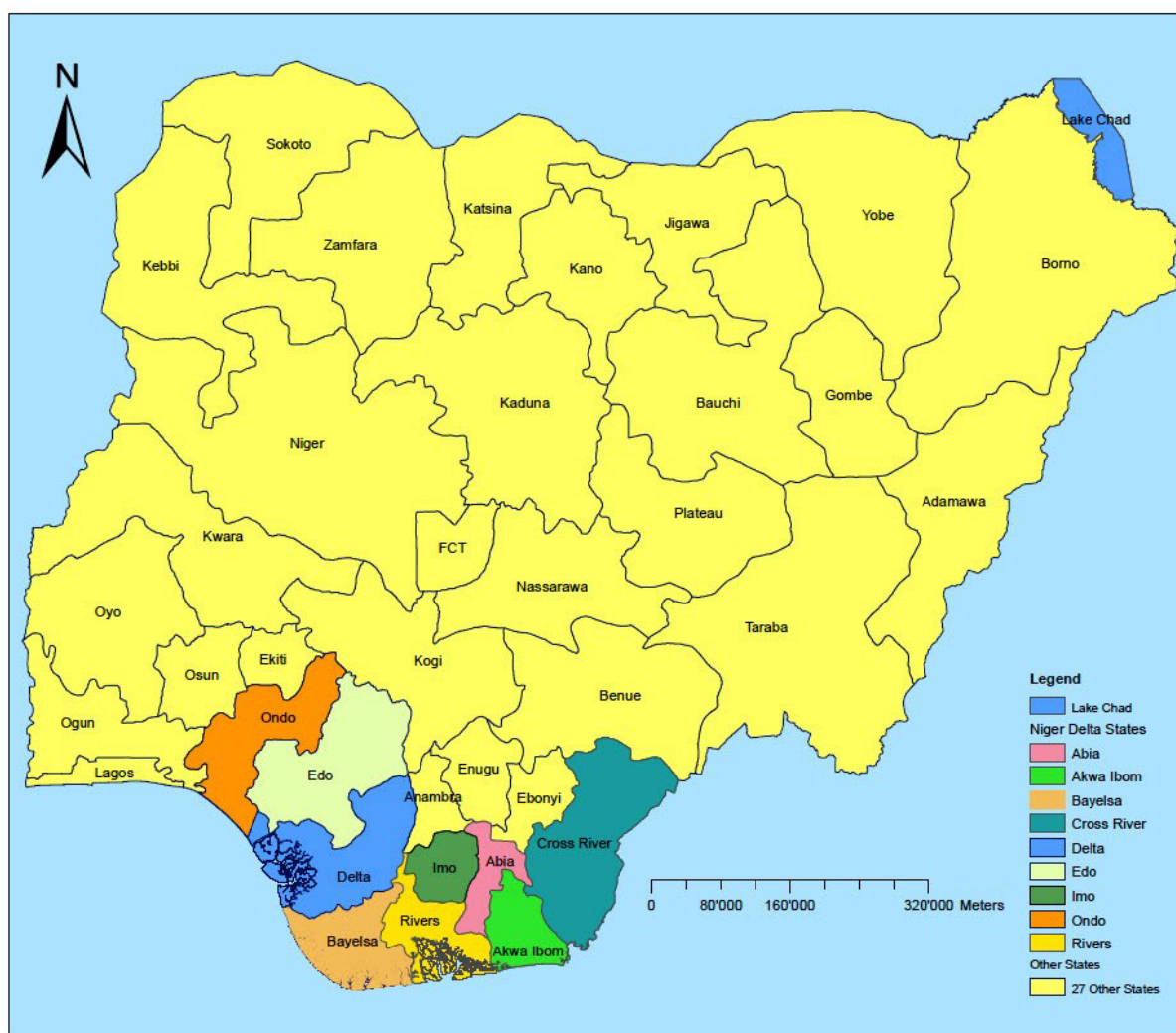


Figure 1. Map of Nigeria showing the Oil Producing States in Niger Delta Region (Source: Ite et al. [2])

2.2. A Brief History of Petroleum Exploration and Production in the Niger Delta

Historically the Nigeria's petroleum resources exploration dates back to 1908 and the pilot prospecting activities of the Nigerian Bitumen Corporation (NBC) in the South-Western Nigeria ended abruptly following the outbreak of World War I in 1914 [2]. In the early 1900s, Nigeria was still a British colony and Britain often operate a policy of exclusive exploration rights for British Companies. However, the British Colonial Government allowed the NBC exploration rights in Nigeria due to lack of a competent British Oil Company to undertake exploratory

operations and subsequently, these led to the merger between Royal Dutch Shell and William Knox's D'Arcy in 1936. The British colonial government subsequently showed support and/or commitment towards the joint venture between Royal Dutch Shell and William Knox's D'Arcy (Shell D'Arcy) with approval of a loan of £25,000 for NBC [33,34]. In 1936, Shell D'Arcy (a consortium of Royal Dutch Shell and Iranian Oil Company owned by William Knox's D'Arcy [later British Petroleum]) was granted a sole concessionary right to explore petroleum hydrocarbons over the whole country and prospecting later began in 1938 [2]. Although the World War II (1939-1945) did disrupt the initial petroleum exploration

activities of Shell D'Arcy (later Shell–British Petroleum), exploration operations in the Niger Delta region resumed in 1946 and crude oil reserves were discovered in commercial quantities in 1956 near Oloibiri community in Ogbia Local Government Area located in Bayelsa State [30,35,36]. In February 1958, Shell D'Arcy (now Shell–British Petroleum) with an average production of 6000 barrels of oil per day (BOPD) began exporting crude oil produced from Oloibiri and Afam oil fields at Port Harcourt [2,35,36]. The revenue from export of petroleum resources began to play a vital role in shaping the Nigerian economy [2] and the Nigeria's economic development began to be dependent on the fluctuation in the international oil price. Due to the contributions of crude oil export towards economic development, the sole concession rights over the whole country earlier granted to Shell–British Petroleum was reviewed in 1959 and exclusive exploration rights were extended to other multinational oil companies to encourage accelerated exploration [35,37,38,39].

Prior to the Federation of Nigeria being granted full independence on 1 October 1960, non–British Oil Company such as Mobil Exploration Nigeria (later incorporated as Mobil Producing Nigeria on 16 June 1969) was granted oil exploration license in 1955. The increased dominance of the Nigerian economy by petroleum sector following independence prompted the Federal government to review the sole concession policy and exclusive exploration right was issued to several other multinational oil companies [2]. Despite the adverse impact of the Nigerian Civil War (1967–1970), petroleum resource revenues were the main driver for infrastructural development in the country that subsequently led to the creation of Department of Petroleum Resources (DPR) Inspectorate in 1970. In order for the country to secure an efficient, economic and regular supply of petroleum resources to consumers, Nigeria joined the Organization of the Petroleum Exporting Countries (OPEC) in 1971. Over the years, technological advances in oil exploration activities have resulted in the discovery of more oil and gas reserves in the Niger Delta region, and increased production rates have made Nigeria to be ranked among the major oil producing country around the world. Over the past fifty five years, most of these multinational oil companies have recorded considerable successes in petroleum exploration, production and development in more than 360 onshore oil fields and 240 offshore oil fields located within the Nigeria's Niger Delta region. Currently, there are over 18 multinational oil companies which involved in oil and gas exploration and production in the Niger Delta region [40]. Although petroleum exploration and production have contributed toward the nation's economic development over the past fifty–five years [2], several petroleum–related problems such as environmental pollution, degradation, human health risks, socio–cultural and socio–economic problems have been documented in the Niger Delta region [2,34,41,42].

2.3. Petroleum–related Problems Associated with Exploration and Production in the Niger Delta Region

Every stage of petroleum exploration operations, development and production, decommissioning and

rehabilitation, transportation and distribution often result in a considerable environmental impacts, human health risks and in most cases cause interference with socio–cultural systems as well as socio–economic problems within the oil–producing host communities. The Nigeria's Niger Delta region is essentially covered by the Oil Prospecting Licence (OPL), Oil Exploration Licence (OEL) and Oil Mining Lease (OML) that grant oil exploration and production companies' unrestricted access to operate in both onshore and offshore locations with the region. Consequently, there are several environmental impacts associated with petroleum prospecting, exploration and production in the Niger Delta region. For example, disturbance of forest and ground surface as result of geological and seismic surveys, site clearing for construction of roads, tank farms, brine pits and pipelines, exploratory drilling, development drilling and production wells, construction of processing and production facilities [2,9,43]. Over the past fifty five years, a total of about 1,182 exploration wells have been drilled to date in the delta basin, and about 400 oil and gas fields of varying sizes have been documented [44]. Apart from environmental damage associated with noncompliance with sustainable development policies and Multilateral Environmental Agreements (MEAs), there are several cumulative impacts associated with petroleum exploration and production operations in both onshore and offshore fields within the Niger Delta region.

Some of the petroleum exploration and production related activities have caused environmental pollution and pose potential risks to the atmosphere, soils, sediments, surface and groundwater, marine environment and terrestrial ecosystems in the oil–producing host communities in the Niger Delta [2,10]. The major sources of environmental pollution in the Niger Delta region include oil spillage, pipeline explosion, gas flaring and venting, improper disposal of large volumes of petroleum–derived hazardous waste streams, such as drilling mud, oily and toxic sludge [5], equipment failure/oil spills associated with ageing facilities, sabotage of petroleum facilities (including illegal oil bunkering and artisanal refining), oil well blowout, oil blast discharges and other operational discharges [1,2,32,40,41,45]. Recently, some of the environmental problems, human health risks and safety issues as well as socio–economic problems associated with upstream and downstream petroleum operations have been extensively reviewed by Ite et al. [2] and Anejionu et al. [41]. Although export of petroleum resources have enormously contributed to Nigeria's economy over the past fifty five years, the past and present petroleum exploration and production have affected human right to a healthy environment [46] due to harmful/detrimental consequences associated with petroleum–related environmental pollution and degradation in the oil–producing host communities within the Niger Delta region [2]. Therefore, it could be argued that poor management of the petroleum resources, ineffective government's petroleum development policies and unsustainable operational practices by the multinational oil companies has led to socio–economic, socio–political, militancy and complex interaction problems involving the people, economic development and the environment in the Niger Delta region.

3. Legislative and Institutional Framework for Environmental Regulation of Petroleum Industry in Nigeria

A general survey of national and international laws/legal framework reveals that there were few provisions governing best practices for sustainable development of petroleum resources in Nigeria's Niger Delta. The legislative and institutional framework regulating Nigeria petroleum industry run the gamut of laws applicable in the federation and these include the Constitution of the Federal Republic of Nigeria, all the international and regional treaties in force in the country, all the laws made by the government of the federating states, the local governments, as well as the common laws and case laws.

3.1. The Nigerian Constitution

The Constitution of the Federal Republic of Nigeria (CFRN) contains the fundamental principles that comprehensively describe the organizational framework of the state (supreme law), the limitations on the exercise of state authority and it also defines the relationship among different kinds of laws that have binding force on the authorities and persons throughout the country. Over the past decades, Nigeria has had nine constitutions viz the Clifford Constitution of 1922, the Richards Constitution of 1946, the Macpherson Constitution of 1951, the Lyttelton Constitution of 1954, the Independence Constitution of 1960, the Republican Constitution of 1963, the 1979 Constitution, the 1989 Constitution, and the extant 1999 Constitution. The Nigerian environmental objectives is enshrined in Chapter 2 of the 1999 operative Constitution of the Federal Republic of Nigeria and section 20 implicates the 'right' to a healthy environment. Pursuant to Section 20 of Chapter 2 of the 1999 Constitution of the Federal Republic of Nigeria, the State has obligation to protect and improve the environment and safeguard the water, air and land, forest and wildlife of Nigeria [47]. However, this afore-stated provision has one serious defect with regards to the very broad wording of the section and the relevant provision falls under Chapter 2 of the 1999 Nigerian Constitution, which is non-justiciable and as such, the provision lacks judicial enforcement in Nigeria. According to Fagbohun [48], the provision under the Nigerian environmental objectives attempts to justify a possible agreement between two extreme positions formulated by a system that is not ready to initiate any serious environmental change the thrust of which may affect its economic direction and long-term development goals. Although Section 20 of Chapter 2 of the 1999 Nigerian Constitution has resulted in a legal mirage, the Federal Government of Nigeria has promulgated various laws and regulations to protect the Nigerian environment. In accordance with Section 4(5) of the 1999 Nigerian Constitution, the State components are permitted to enact laws under the concurrent and residual legislative lists, subject to Federal Government Law made by the National Assembly [47]. The 1999 Constitution of the Federal Republic of Nigeria lacked a specific provision on the environmental protection and Nigeria operates a dualist system wherein other regional or international environmental laws cannot be enforced

unless incorporated into through domestic legislation or ratification by the National Assembly [48]. In line with Agenda 21 of the United Nations [49], Nigeria in its National Policy on the Environment has identified establishment, strengthened legal, institutional and regulatory framework as part of its holistic strategy for implementation of sustainable development.

3.2. Environmental Regulation of Petroleum Exploration and Production in Nigeria

There are several approaches, statutory and legal instruments directed at protecting the environment and ensuring environmental objectives within the petroleum industry at the national level. However, early legislations were not environmental-oriented and the Federal Government of Nigeria did not have any legislations or legal instruments, either general or specific, on the petroleum sector for much of the first half of the century. According to Ogbodo [50], the Federal Government of Nigeria responded to most environmental problems on an ad hoc basis following the discovery of toxic waste dumped in Koko, at remote part of southern Nigeria, in June 1988. The Nigerian government reacted to the sustained media attention and public outcry to handle the situation and subsequently, many approaches have been developed for the protection and management of the environmental impacts and human health risks associated with oil and natural gas exploration and production operations in the Niger Delta. Over the past years, the Federal Government of Nigeria has promulgated laws and regulations so that petroleum resources exploration and production, on both onshore and offshore oilfields, could be controlled by systems of legislations which aim at minimizing the associated environmental impacts and human health risks. According to Ite et al. [2], some of the most important and essential petroleum-related environmental laws and principal regulations governing the oil and gas sector in Nigeria include the following:

- Mineral Oils (Safety) Regulations, 1963;
- Oil Pipelines Act 1956 (amended in 1965);
- Oil in Navigable Waters Acts, 1968;
- Petroleum (Drilling and Production) Regulations, 1969;
- Petroleum Decree (Acts), 1969;
- Petroleum (Drilling & Production Amendment) Regulations, 1973;
- Petroleum Refining Regulation, 1974;
- Associated Gas Re-injection Act, 1979;
- The Federal Environmental Protection Agency (FEPA) Act, 1988;
- The National Policy on the Environment, 1989 (revised in 1999);
- National Environmental Protection (Effluent Limitations) Regulations, 1991;
- Environmental Protection (Pollution Abatement in Industries Generating Wastes) Regulations, 1991;
- Environmental Impact Assessment (EIA) Act, 1992, and
- Department of Petroleum Resources (DPR) Environmental Guidelines and Standard for the Petroleum Industry in Nigeria (EGASPIN), 2002.

The provisions of these legal instruments has given the relevant government authorities and/or government agencies obligations to provide subsidiary instruments in order to ensure that the relevant environmental objectives become operational and binding in the course of petroleum exploration and production in the Nigeria's Niger Delta region. Currently, the Environmental Impact Assessment (EIA) is a framework that provides prior assessment of potential impact of development activity on the environment and the Section 2 of the 1992 EIA Act obliged the public or private sector of the economy to not undertake or embark on authorized projects or activities without prior consideration of the effect of such projects on the environment. The emergence of EIA Decree was a fundamental legal development in terms of enhancing environmental protection efforts and the goal of sustainable development is embedded in the EIA Act. Although the EIA procedures have some jurisdictional flaws, its full implementation is aimed at improving the physical, biological and socio-economic conditions for all citizens living in Niger delta region of Nigeria. Therefore, these environmental and petroleum-related legal instruments and/or policies give specific authority and/or relevant governmental agencies power needed to ensure protection of the environment with regards to sustainable petroleum exploration and production in the Niger Delta region. The Department of Petroleum Resources (DPR) administers oil and gas laws in Nigeria as well as legislative instruments that are meant to ensure that oil and gas companies carry out petroleum resources exploration and production in line with best practices for sustainable development. Although most of the statutory laws and regulations provide the legal framework for petroleum exploration and exploitation, only some of them give guidelines on issues of environmental pollution. However, numerous environmental agencies in Nigeria have regulations that affect the exploration, development and production processes in the oil and gas industry. Despite the putative environmental policy framework, successive Nigerian governments have fail to effectively implement either the National Policy on Environment (NPE) that ensures sustainable development or any of the related environmental policies and/or legislative instruments aimed at reducing negative impacts of energy production and use on the environment.

3.3. Institutional Framework for Enforcement

The main environmental legislations relevant to the Nigerian petroleum industry are the Federal Environmental Protection Agency (FEPA) Act 1988 (as amended by Act No.59 of 1992), the various guidelines and regulations made pursuant to the FEPA Act, the EIA Decree, the Oil in Navigable Waters Act, and the Harmful Wastes (Special Criminal Provisions) Act. Although the FEPA Act is a framework legislation which provides for a comprehensive system of environmental protection and management in Nigeria, it also includes provisions on establishment of a regulatory agency charged with coordination of environmental liability and enforcement powers. The establishment of FEPA in 1988 (now the Federal Ministry of the Environment [FME]) significantly changed the legal status quo of environmental regulation in the Nigerian petroleum industry [51]. Penalties and enforcement mechanisms were imposed,

and multinational oil companies could be held liable for the costs of clean-up and/or restoration, and compensation to parties injured by their illegal practices. Although the FEPA is the apex authority, there are various agencies charged with the responsibility of monitoring and enforcing different environmental laws in Nigeria [52]. For example, the Federal Ministry of Water Resources is charged with the monitoring and enforcement of water pollution while the Department of Petroleum Resources (DPR) is specifically charged with the monitoring and enforcement of the petroleum laws and regulations. However, the FEPA (now FME) has overall responsibility for the management of the environment in Nigeria whilst the DPR has the sectorial regulatory and/or supervisory role over FEPA in the Nigerian petroleum industry.

The most recent and important addition to Nigeria's environmental regime is the establishment of National Environmental Standards and Regulations Enforcement Agency (NESREA) Act, which came into force on July 31 2007. The NESREA is the second environmental law enforcement agency that is responsible for enforcing all national environmental laws and/or regulations as well as enforcing compliance with provisions of international environmental laws and multilateral environmental agreements (MEAs) to which Nigeria is a signatory. The NESREA is the Nigeria's lead environmental protection agency and the NESREA Act repealed the defunct FEPA that was formerly charged with the protection and development of the environment [53]. In accordance with the NESREA Act, all regulations, authorizations and directions made pursuant to the FEPA Act which were in force at the commencement of the NESREA Act shall continue to be in force. Although the NESREA is charged with the responsibility to enforce all environmental laws, guidelines, policies, standards and regulations in Nigeria, NESREA's functions do not however include enforcement of environmental standards, regulations, policies and guidelines in the Nigerian oil and gas sector [54]. Therefore, in order to achieve environmental protection and development in Nigeria, NESREA is obliged to enforce compliance with the provisions of all international agreements, protocols, conventions and treaties on the environment to which Nigeria is a signatory. Although the NESREA Act is a framework legislation for the overall management of the environment at the national level [55], there are other framework and legislations that contain detailed regulations that complement the Act.

3.4. Observations in Environmental Regulations of Petroleum Industry in Nigeria

The existing statutory laws and regulations for environmental protection applicable to the Nigerian petroleum industry appear to be grossly inadequate and ineffective in the sustainable management of environment in the oil-rich host communities in the Niger Delta [4,12,20,27,46]. According to Ekpu [20], the Nigerian environmental law does not significantly set any specific standards for the multinational oil companies to meet in order to protect and preserve the soils, groundwater, marine and terrestrial environment in the Niger Delta region. In addition, the statutes and regulations are formulated in such general and imprecise terms that they make compliance and enforcement nearly impossible. Eaton [46] has extensively discussed the five major

statutory defects which seriously prevent effective environmental regulation and non-legal explanations for Nigeria's failure to effectively regulate the activities of multinational oil companies. The Nigerian environmental regulations are often affected by the limitations of technology, the need to support industry and the influence of public opinion [56]. In the Nigeria's Niger Delta, the participation of communities in the environmental decision-making process is a relatively new process and often ineffective with little or no sustainable development goals [57]. However, some of the multinational oil companies operating in the Niger Delta region have failed to adopt best practices for sustainable exploration and production of petroleum resources due to increased costs of complying with environmental regulations. Although a comprehensive system of environmental regulations is now in place, environmental pollution associated with unsustainable petroleum exploration and production operations has continued to persist under these laws for several years. Therefore, it could be argued that unsustainable petroleum exploration and production, poor environmental protection and management practices, and poor corporate environmental responsibility have resulted in harmful environmental consequences and environmental pollution/degradation as well as human health risks in the Niger Delta region for several decades.

4. International Environmental Law: Implementation, Constraints and Strategies for Effective Implementation in Nigeria

Although a general survey of international laws and legislations that cover environmental objectives reveals that there were few provisions governing the environmental aspects of petroleum industry a few decades ago, several international agreements imposing environmental obligations on oil-producing nations have been reached over the years. Most of these multilateral environmental agreements (MEAs) have increasingly become important in international environmental management and often form the basis for more effective national or regional regulations governing the activities of petroleum industry around the world.

4.1. International Environmental Treaties

Nigeria is a party to the 1954 International Convention for the Prevention of Pollution of the Sea (amended in 1962); 1969 International Convention on Civil Liability for Oil Pollution Damage (CLC) [58], the 1971 Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (FUND) [59] and the 1972 International Convention on the Prevention of Marine Pollution by the Dumping of Wastes and Other Matters (London Convention) [60,61]. It is imperative to know that Nigeria is a signatory to and has ratified various international environmental treaties such as the 1982 United Nations Convention of the Law of the Sea (UNCLOS) [62,63], 1985 Vienna Convention on the Protection of the Ozone Layer [64], 1987 Montreal Protocol on Substances that deplete the Ozone Layer [65], 1973 Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) [66], 1989 Basel Convention on the Control of Transboundary Movements

of Hazardous Wastes and their Disposal [67], 1992 Convention on Biological Diversity [68], 1992 Convention on Climate Change [69], 1997 Kyoto Protocol [70], 1998 Rotterdam Convention and International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC) [60] as well as several other international treaties.

These international agreements regulate different aspects of damages associated with petroleum hydrocarbon pollution by prohibiting certain conduct, imposing liability, setting up compensation schemes, pollution control and establishing reporting and response systems. Some of these conventions require implementation by the contracting state by enacting domestic legislation or establishing national systems, e.g. the International Convention for the Prevention of Pollution of the Sea by Oil 1954 (as amended in 1962), was implemented in Nigeria by the enactment of the Oil in Navigable Waters Act, 1968. Furthermore, the International Convention on Oil Pollution Preparedness, Response and Co-operation requires party states to prepare a National Oil Spill Contingency Plan. In accordance with the provisions of the Oil Spill Contingency Plan, National Oil Spill Detection and Response Agency (NOSDRA) was established by the National Assembly of the Federal Republic of Nigeria Act of 2006. Overall, Nigeria has put in place the basic institutional and legal structures that should aid a coordinated national environmental protection and management. However, the International Treaties are subject to several limitations and the cardinal issue of the implementation of international environmental treaties will be later discussed generally in the strategic context of the Nigerian perspective.

4.2. International Environmental Treaties Relating to Petroleum Pollution of Environment in Nigeria

The legal framework for environmental regulation of the petroleum sector is a combination of both national legislations and international laws, with the former being the dominant component of the system. As such, there are several national statutory laws/regulations and international environmental laws which regulate petroleum pollution of the environment in the Niger Delta region of Nigeria. Although there are several reported cases of environmental pollution associated with the operations of multinational oil companies in the Niger Delta, there have been few known cases of enforcement of the statutes and regulations against the culprits in Nigeria. There seems to be little prospect for any change in this attitude and there is a need to reconsider some of the domestic and international legislations relating to the operations of petroleum industry in Nigeria.

4.2.1. International Convention on Civil Liability for Oil Pollution Damage (CLC) (1969) and Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (FUND) (1971)

The Niger Delta region of Nigeria, which is home to a wealth of biodiversity as well as a variety of eco-systems rich in natural resources, suffers from a number of environmental challenges associated with unsustainable exploration and production of petroleum hydrocarbons. Petroleum hydrocarbon pollution of marine environment is one of the most damaging environmental liabilities over

the years [71] and two categories of claims (associated with crude oil spill) which might arise are as follows:

- a) Clean-up costs payable to Government or other authorities which have incurred such costs for preventing or minimizing pollution damage, and
- b) Economic loss or claims made by private bodies and individuals who might have suffered damage due to crude oil spill or associated economic damages.

Under International Environmental Law, liability and compensation for pollution damage caused by oil spills from laden tankers is governed by two international conventions: (i) the 1969 International Convention on Civil Liability for Oil Pollution Damage and (ii) the 1971 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage [58,59]. Therefore, the Civil Liability Convention forms the basic structure on which the regimes of liability and compensation for oil pollution damage from ships are based [72]. In addition, it also established a system of strict liability for tanker owners and introduced compulsory liability insurance [73]. The Fund Convention has created a system of supplementary compensation administered by an inter-governmental organization and the International Oil Pollution Compensation Fund (IOPC Fund) which has 56 member states at August 1993 [74]. The IOPC Fund pays compensations to victims of oil pollution in member states when the compensations from the ship-owners and their insurer are insufficient. Over the years, the IOPC Fund has been involved in 149 incidents of varying sizes around the world and has paid over US\$92 million to victims. Only three of these incidents have been taken to court, whereas in all other cases claims have been settled out of court [71]. The IOPC Fund has developed a policy on the admissibility of claims covering clean-up costs, measures to prevent pollution occurrence, damage to property and economic loss suffered by fishermen, hotel-owners and others who depend directly for their livelihood on marine-related activities. Despite its search for a universal oil spill liability and compensation regime, the maritime community continues to face the dichotomy between the United States (US) approach and that adopted by the rest of the world [75].

The 1969 Civil Liability Convention and the 1971 Fund Convention have a two-tier structure composed of a liability scheme and a fund scheme. The significant differences between the two regimes can be found in the liability limit of a responsible party and this highlights the reasons why the US took a unilateral approach towards these regimes [75]. An International Maritime Organization (IMO) diplomatic conference held in November 1992 adopted two protocols to amend the 1969 Civil Liability Convention and the 1971 Fund Convention. Although these protocols provide higher levels of compensation, Nigeria has not yet acceded to both protocols and it is hoped that in view of the obvious advantages offered, the federal government of Nigeria will consider accession to the 1992 Protocols. In Nigeria, it is doubtful if victims of oil pollution have had any meaningful benefit from the 1969 Civil Liability Convention and the 1971 Fund Convention. According to Ekpu [20], the 1969 Civil Liability Convention and the 1971 Fund Convention apply solely to discharges from ships and has not really been of critical concern in Nigeria, even though it does constitute a real problem in the country's coastline. In addition, there has

not been any statutory law or domestic legislation promulgated to make the provisions of the conventions enforceable in Nigeria [76]. Although international conventions take the lead in the legal regime underpinning prevention and compensation of marine oil pollution damage [71], national legal systems differ considerably on how their monitoring and enforcement responsibilities are interpreted and applied within the country.

4.2.2. United Nations Convention of the Law of the Sea (UNCLOS) (1982)

The 1982 United Nations Convention on the Law of the Sea (UNCLOS) offers a legal framework for the sustainable development of the oceans and their natural resources. Nigeria became the 29th member state to ratify the UNCLOS on 14 August 1986 and as a signatory to the UNCLOS, Nigeria is enjoined to adopt laws and regulations to prevent, reduce and control pollution of the marine environment [63]. The Niger Delta is an oil-rich coastal region with diverse ecosystems and Nigeria is a major oil producing and exporting country, therefore, marine pollution may be a transboundary and may not be limited to national territorial waters alone but may extend to the high seas used by other States. Under the UNCLOS, Nigeria is obliged to prevent, reduce and control marine pollution resulting from the land-based sources and sea-bed (namely, exploration and exploitation of sea-bed resources) activities within its national jurisdiction including activities in the Area, pollution by dumping of wastes, pollution from its flagged vessels (shipping) and pollution from or through the atmosphere. Although the Nigerian petroleum industry has provided immense financial contribution towards for the nation's economy, the Niger Delta region of Nigeria has suffered from environmental pollution and socio-economic problems associated with both onshore and offshore petroleum exploration and production over the past fifty-five years. The Federal Republic of Nigeria has been a party to the UNCLOS for many years, however, the legislative initiative was as a result of various factors such as Limits of the Continental Shelf and the Delimitation of Maritime Boundaries as well as adoption of Joint Development Zones with neighboring States.

The application of paragraph 2 of Articles 74 [77]¹ and Article 83² of UNCLOS have been used by the

1 Article 74(2) of UNCLOS States that:

'If no agreement can be reached within a reasonable period of time, the States concerned shall resort to the procedures provided for in Part XV.'

See: M. Nordquist et al, United Nations Convention on the Law of the Sea 1982, Volume VII: A Commentary

2 Article 83 of UNCLOS States that:

1. The delimitation of the continental shelf between States with opposite or adjacent coasts shall be effected by agreement on the basis of international law, as referred to in Article 38 of the Statute of the International Court of Justice, in order to achieve an equitable solution.
2. If no agreement can be reached within a reasonable period of time, the States concerned shall resort to the procedures provided for in Part XV.
3. Pending agreement as provided for in paragraph 1, the States concerned, in a spirit of understanding and cooperation, shall make every effort to enter into provisional arrangements of a practical nature and, during this transitional period, not to jeopardize or hamper the reaching of the final agreement. Such arrangements shall be without prejudice to the final delimitation.
4. Where there is an agreement in force between the States concerned, questions relating to the delimitation of the continental shelf shall be determined in accordance with the provisions of that agreement.

International Court of Justice (ICJ) to settle the ‘case concerning the Land and Maritime Boundary between Cameroon and Nigeria (Cameroon v Nigeria: Equatorial Guinea intervening)’ [78]. In this case, Cameroon and Nigeria referred to the United Nations Convention on the Law of the Sea, to which they are both Parties. Cameroon and Nigeria had conducted negotiations focused on their entire maritime boundary, which had proved unsuccessful and the Court had to perform the entire delimitation requested by Cameroon. From the ICJ Judgment, the Court decided that sovereignty over the Bakassi Peninsula lies with Cameroon and that the boundary is delimited by the Anglo-German agreement of 11 March 1913 [79]. The establishment of the outer limits of the continental shelf beyond 200 nautical miles under Article 76 of the UNCLOS (which deals on the definition of the continental shelf) is a complex process that requires a coastal state to dedicate significant resources [80]. Egede [81] has examined the laws governing the Nigerian territorial waters vis-à-vis the UNCLOS provisions on the territorial sea and has further pinpointed how far these laws are in compliance with the relevant provisions of the UNCLOS. Although Nigeria has adapted the US Oil and Gas legislations without significant amendments, there are various problems associated with petroleum production in the Nigeria’s Niger Delta region and the enforcement of the relevant laws and/or legislations in Nigeria [82]. The Nigerian government has faced a series of problems in the marine environment through the discharge of petroleum-derived wastes, toxic and harmful substances or oil/chemical wastes associated with oil exploration and exploitation. In addition, there are various problems associated with the transportation, unloading of crude and refined oil cargoes and the marine environments have been exposed to accidental discharges associated with tankers’ collisions. Over the years, there have been calls to amend the UNCLOS due to some ambiguous provisions [83] and there is a need to address various legal flaws in the existing national legislations and regulations relating to petroleum hydrocarbon pollution of the marine environment in the Nigeria’s Niger Delta.

4.2.3. International Convention on Oil Pollution Preparedness, Response and Co-operation (1990)

The International Maritime Organization (IMO) as a result of two major and disastrous spills [84,85] decided to convene an international convention on oil pollution preparedness and response which would provide the framework for international cooperation for combating major oil pollution incidents or threats of marine pollution. The conference which was convened in London adopted the Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC) on 30 November 1990. Parties to the OPRC Convention are required to establish measures for dealing with pollution incidents, either nationally or in co-operation with other countries. According to Article 6 of the OPRC Convention [60]:

‘Each party shall establish a national system for responding promptly and effectively to oil pollution incidents. This system shall include as a minimum:

- the competent national authority or authorities with responsibility for oil pollution preparedness and response;

- a national contingency plan for preparedness and response which includes the organizational relationship of the various bodies involved, whether public; or
- private, taking into account guidelines developed by the Organization.’

The United States (US) was the first state to ratify the OPRC Convention and the convention went into force on 13 May 1995, having been ratified by at least 15 countries, including Nigeria. The Convention on OPRC protects the marine environment from oil spills and provides for planning, reporting procedures, technology sharing, and cooperation. In compliance with this international obligation, the Nigerian government has established a national system for responding promptly and efficiently to oil pollution incidents, otherwise known as the Oil Spill Contingency Plan for Nigeria (‘the National Plan’) [86].

Oil spills often trigger the application of various interrelated national, regional, and international laws and regulations that provide for civil liability and compensations. For example, the 1976 Convention for the Protection of the Mediterranean Sea against Pollution (the Barcelona Convention) applies the precautionary and polluter pays principles (Article 4(3)) and requires the use of best available techniques and best environmental practices (Article 4(4)) to minimize oil pollution incidents [87]. The ‘Polluter Pays Principle’ (PPP) is an accepted principle in international environmental law that publicly support that the polluter should bear the cost of pollution control, prevention measures and compensation for damage to the environment. The object of PPP is to channel the costs of prevention and reparation of environmental damage to the legal or juristic person who is in the best position to prevent such damage and thus ‘internalize’ the costs of pollution damage [88]. For example, the United Nations Environmental Assessment Report on Ogoniland recommended that Shell should set up an Environmental Restoration Fund to support clean-up and restoration in the Niger Delta [89]. The ‘Polluter Pays Principle’, which has been enshrined in Nigerian domestic legislation by Section 21 of the 1988 FEPA Act, should be considered a vital component of a National Contingency Plan to support a system for the maintenance of accurate records on clean-up operations, damage to property and economic losses resulting from an incident.

4.2.4. Convention on Biological Diversity (1992)

In June 1992, representatives from most of the world’s nations and several hundred non-governmental organizations (NGOs) gathered in Rio de Janeiro for the United Nations Conference on Environment and Development (UNCED) or the Earth Summit. The results of the UNCED included the Rio Declaration enunciating 27 principles of environment and development, Agenda 21 (formally adopted by most participating nations, establishes a comprehensive plan for global development) [49], and a Statement of principles for the Sustainable Management of Forests, which were all adopted by consensus by the conference. The 1992 Rio Declaration is rooted in two overriding principles of Equity and Resource Transfers, and Sustainable Development (Conservation and Sustainable Use). These two principles are bound together by a third principle known as ‘Common But Differentiated Responsibility’ (CBDR). The institutional

innovation resulting from the conference included an agreement on the operating rules for the Global Environmental Facility (GEF) [90], United Nations Convention on Biological Diversity [68], and the establishment of the United Nations Commission on Sustainable Development (CSD) [91] on the basis of Agenda 21 recommendation. In a further development, the United Nations Framework Convention on Climate Change (UNFCCC) and United Nations Convention on Biological Diversity (CBD) were opened for signatures at 1992 UNCED. In accordance with Article 10 of CBD, Parties must also incorporate a consideration of sustainable development into their national decision-making, protect traditional cultural uses of biological resources and encourage cooperation between the public and private sectors. The Article 14 of CBD draws the attention of State Parties to the need for assessing possible environmental impact of its programme and policies that may have significant adverse effect on biodiversity [92]. Provision for the protection and improvement of Nigeria's environment and safeguarding of its water, air and land, forest and wildlife is enshrined in the 1999 Nigerian Constitution. In pursuant to Section 20 of the Chapter 2 of 1999 Nigerian Constitution and the need for legal protection, Nigeria participated in the UNCED at Rio, signed the Convention on Biological Diversity in 1992 and ratified it in 1994. Therefore, Nigeria has been committed to the objectives of CBD and accords high priority to a successful implementation of all Articles of the Convention as a responsible member of the global community and in pursuit of sustainable development.

The operations of the Nigerian petroleum industry have interfered with biological diversity in terms of impact on land, vegetation and forests, and downstream operations have resulted in various environmental problems. In addition, the convention provides for state parties to identify and monitor the effects of such processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biodiversity; and establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity. The legal regimes on the conservation of biodiversity at the global level have developed over the years and Nigeria has integrated these regimes into its national laws in a bid to ensure the conservation of biodiversity within the country [93]. In practice, environmental pollution associated with petroleum prospecting, exploration and production in the Niger Delta area of Nigeria has impacted negatively on the terrestrial environment and biodiversity of the ecosystem within oil-producing host communities [2,31]. The main problems arise from discharges due to accidental oil spillages, sabotage and illegal bunkering (including artisanal refining), gas flaring and venting, and discharges of petroleum-derived chemical wastes associated with production processes. Over the years, adverse effects of petroleum pollution on the flora and fauna of freshwater ecosystems in the Niger Delta region have been reported [1,2,31,45]. The challenges surrounding climate change have made the conservation of biodiversity more complex and successful biodiversity conservation therefore requires the participation of a variety of stakeholders. Although the Nigerian government has established statute laws and legislations for protection of

the environment from oil exploration, these statutory laws are not effective in terms of implementation, enforcement and monitoring by the agencies responsible. In order to reduce the adverse and negative impacts of petroleum exploration and production in the Niger Delta, the multinational oil companies operating in this region must adopt best practices for sustainable development of petroleum resources and in addition, various international environmental treaties and/or policies relevant to oil and gas industry must be fully implemented. Some of these multilateral environmental agreements (MEAs) include conventions such as the 1974 Offshore Pollution Liability Agreement (OPOL); the 1977 Convention on Civil Liability of Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources, 1982 UNCLOS, and the 1985 Vienna Convention on the Protection of the Ozone layer and its Protocols.

4.2.5. United Nations Framework Convention on Climate Change (1992)

Climate change and global warming were the subject of the United Nations Conference on Environment and Development in Rio de Janeiro in 1992 [94] and the Conference adopted the United Nations Framework Convention on Climate Change (UNFCCC) on 9 May 1992 [69]. The UNFCCC, which came into force on March 1994 and ratified by Nigeria in August 1994, sets the international legal framework for combating greenhouse gases (GHG) issues and calls for the cooperation by all countries. The main objective of the UNFCCC as stated in Article 2 [95] aimed at:

'Stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level has to be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner'.

Under the UNFCCC, the countries inscribed in Annex I are designated as most responsible for the world's emission of GHG (United Nations Framework Convention on Climate 2006). The UNFCCC classified the Parties into Annex I and Annex II countries, relative to the level of their industrialization and emission reduction responsibilities and commitments [96].³ However, Nigeria belongs to the group of non-Annex I Parties and Nigeria must report in more general terms on their actions to address climate change and adapt to its effects. The international climate regime relies on the following principles commonly recognized in international environmental law (Article 3 of the UNFCCC):

³ United Nations Environment Programme (UNEP) state that,

'The Annex I Parties are the industrialized countries who have historically contributed the most to climate change. They include both the relatively wealthy countries that were members of the Organization for Economic Co-operation and Development (OECD) in 1992, and countries with "economies in transition" (known as EITs), that is, the Russian Federation and several other Central and Eastern European countries.

See: Understanding Climate Change: A Beginner's Guide to the UN Framework Convention and its Kyoto Protocol (UNEP Climate Change Secretariat, 1999).

- The principle of equity in the commitment of parties to protect the climate;
- The recognition of developing countries' special needs and circumstances 'especially those that are particularly vulnerable to the adverse effects of climate change';
- The precautionary principle according to which action should be taken to 'anticipate, prevent or minimise the causes of climate change and mitigate its adverse effects';
- The promotion of sustainable development and growth.

In accordance with Article 4 of the UNFCCC, contracting Parties (countries) shall act in accordance with their Common But Differentiated Responsibilities (CBDR) and their social and economic conditions in order to implement the international climate regimes [95]. In order to limit climate change, Parties involved will have to take a range of domestic actions that affect investment, technology and infrastructural developments, and behaviour patterns, in ways that limit GHG emissions [97]. In practice, the Nigerian government has the responsibility to perform its obligations under the convention including phasing out gas flaring within the level of its capabilities in terms of finance, manpower and technology, and its ability to access the Global Environment Facility (GEF) that was established in 1991 by the World Bank and the United Nations Development Programme (UNDP) to assist certain developing country projects aimed at the protection of the global environment and promotion of sustainable development [98,99].⁴ In general, the UNFCCC as an international climate regime is based on international cooperation as one of the major principles for its implementation.

4.2.6. The Kyoto Protocol (1997)

The First Conference of the Parties to the UNFCCC (COP1), in 1995 in Berlin, agreed to a negotiating mandate for developing a protocol to the Convention. The negotiations on an international agreement were linked to the existing treaty that helped to define the obligations of the Parties and provide mandatory targets on GHG emissions for the world's leading country economies. At the third Conference of the Parties in 1997, the Kyoto Protocol was adopted, opened for signature on 16 March 1998 [70,100] and the Protocol entered into force on 16 February 2005 [101]. Article 2 of the Kyoto Protocol contains the basic principles that Annex I parties to follow in order to meet their quantified emission limitation and reduction commitments in compliance with Article 3 of the UNFCCC (United Nations Framework Convention on Climate 2006): promotion of sustainable development, cooperation among parties in the implementation of policies and measures for the purposes of Article 4(2) and minimization of the adverse effects of climate change. According to Article 3 of the Kyoto Protocol, the Parties included in Annex I of the UNFCCC shall, individually or

jointly, ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of the GHGs listed in Annex A do not exceed their assigned amounts, inscribed in Annex B, with a view to reducing their overall emissions of GHGs by at least 5 % below 1990 levels in the first commitment period 2008 to 2012 (United Nations Framework Convention on Climate Change 1998). In practice, the GHG emission reductions are calculated in relation to a base year, which for the majority of Annex I parties is 1990 [102]. The Climate Change Convention, which only calls on state parties to achieve stabilization of GHG concentration in the atmosphere, without quantifying emissions targets, is similar to the soft law [103], but the Kyoto Protocol is a legally binding instrument to reduce GHG emission concentrations in the atmosphere in the commitment period for developed countries and therefore, it is a hard law. Although the Kyoto Protocol establishes targets and legal commitments, the technical guidelines and methodologies are to be finalised through negotiations by the state parties [104].

The Kyoto Protocol, which builds upon the same infrastructure designed by the UNFCCC, generally reinforced the basic idea of the UNFCCC, such as the need for a quantifiable limitation and reduction targets for GHG emissions within a defined commitment period. In practice, the Annex I countries are expected to perform the bulk of their emissions reduction obligation through the domestic policies of the Annex I Parties. In addition to policy measures adopted and national strategies, the Kyoto Protocol creates three [105] market-based vehicles (flexible mechanisms) for the attainment of the UNFCCC's objective. These mechanisms are: (i) the Clean Development Mechanism (CDM), (ii) Joint Implementation (JI), and (iii) Emissions Trading (ET). Although the developing countries were not required by the Kyoto Protocol to undertake specific commitments, they were to be assisted by developed countries to also participate in the emissions reduction efforts through the CDM [106,107]. The Nigerian government, which ratified the Kyoto Protocol in October 2004, could initiate a project to phase-out gas flaring and attract sponsorship from UNFCCC Annex I countries [99]. In practice, Nigeria as developing country could cooperate with the Annex I countries under the CDM to earn carbon credits for effective regulation and control of gas flaring. Any interested Annex I country will then provide the technology needed to control the flaring and harness the natural gas resources [108]. Nigeria has been collaborating with the United Nations Industrial Development Organization (UNIDO) and CDM Secretariat to assess some projects including the West African Gas Project (WAGP) to qualify for CDM. However, it has been argued that since gas flaring is illegal in Nigeria, projects aimed at flaring reduction and gas gathering may not qualify for CDM due to the fact that the consequential reductions would not be additional to what the case would have been in business as a usual scenario [108]. In practice, the CDM is administered by the Executive Board of the Clean Development Mechanism, which has already adopted rules of procedure, made policy decisions, and accepted and acted on applications for CDM methodology approval. Therefore, successful emissions reduction in this CDM project could be quantified and converted into emissions reduction credit in favour of the sponsoring

⁴ GEF is a "Multi-billion-dollar" financial agency established in 1991 by the World Bank and the United Nations Development Programme (UNDP) to fund certain developing country projects that have global environment benefits in areas of climate change, biodiversity conservation, protection of the ozone layer and international waters.

See: Climate Change Secretariat, 'A Guide to the Climate Change Convention Process' (2002) Preliminary 2nd edition. Bonn

Annex I country. Under the Marrakesh Accords, approved projects would generate transferable certified emission reductions (CERs) for use by sponsoring Annex I country and CER credits would be counted towards meeting its Kyoto targets. Therefore, both sponsoring Annex I country and Nigeria must act in accordance with Article 12.7 of the Kyoto Protocol⁵ to implement the project activities with mutual benefits.

The Kyoto Protocol and UNFCCC share the same institutional structure, principles and ultimate objectives, such as the reduction of global level of GHG emissions and the distinction between developed and developing countries. The Seventh Conference of Parties (COP 7) to the UNFCCC (in November 2001) adopted the Bonn Agreement into a legal text, 'Marrakesh Accords' [109], which contains technical and legal details in the implementation of the Kyoto Protocol to make the treaty enforceable and hence binding on all the state parties. The Marrakesh Accords explains the framework for the implementation of the Kyoto Protocol and provides guidelines for establishing the National Adaptation Programmes for Action. The Marrakesh Accords determines the scope and mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol. In accordance with Annex I of the Accords, Parties shall take appropriate domestic actions 'with a view to reducing emissions in a manner conducive to narrowing per capita differences between developed and developing country parties while working towards achievement of the ultimate objective of the Convention'. The Accords does not impose a numerical cap for reducing emissions [104], however, it provides for the use of mechanisms which are supplementary to domestic action by state parties. Therefore, the Marrakesh Accords provides for the prompt start of the Clean Development Mechanism (CDM), identifies the eligibility criteria that have to be achieved by Parties to participate in the flexible mechanisms, and it also includes the rules for the implementation of the flexible mechanisms [109].

4.3. Constraints of Implementation of International Environmental Treaties

The Nigerian government has an excellent record of being a signatory to almost all the environmental protection treaties and a good record of either acceding to or ratifying many of them. However, Nigeria has had a very poor record of compliance with the customary international treaty obligation requiring member states to 'take appropriate legal (legislative) measures at the national level' to implement the policies and objectives of the international treaties. In accordance with Section 12 (1) of the 1999 Constitution of the Federal Republic of Nigeria, 'No treaty between the Federation and any other country shall have the force of law except to the extent that such treaty has been enacted into law by the National Assembly'. Under the supremacy of laws principle under Section 1 (1) and (3) of the 1999 Nigerian Constitution,

constitutional provisions shall supersede any contradiction occasioned by a treaty with the provisions of the Nigerian Constitution. Furthermore, the constitutional provision under Section 12 of the 1999 Nigerian Constitution conditions the applicability of any treaty in the country to the ratification of the National Assembly and further imposes another legal hurdle to enforcement of any treaty. It is worthy to note that without compliance with Section 12 (1) of the 1999 Nigerian Constitution, the advantages and benefits accruing from these international treaties relating to the environment cannot be fully realized at the national or individual level through the national legal process [110]. Therefore, it is important to show that the constitutional provision simply means that international treaties will not have the force of law in the Nigerian national courts, but subject to the proviso that the issue in question has not attained the status of customary international law forming part of our Nigerian customary laws which the courts are bound to give judicial recognition. Most of the international treaties regulating toxic waste management are applicable in Nigeria by virtue of the consent and ratification of such treaties by the National Assembly and such treaties include, but are not limited to, the Basel Convention on the Control of Transboundary Movement of Hazardous Matter and their Disposal; the Bamako Convention on the Trans-shipment of Waste in Africa; the Vienna Convention on the Protection of the Ozone Layer; Stockholm Convention on Persistent Organic Pollutants, and the Montreal Protocol on Substances that deplete the Ozone Layer.

Despite some of the important benefits associated with these international environmental laws, there are several barriers and/or constraints inhibiting Nigeria and other African countries' ability to effectively implement these 'International Environmental Treaties'. According to Jones [111], various problems associated with poor implementation of International Environmental Treaties are a reflection of the political, cultural and economic realities in each country and there are several issues transcending national boundaries. Some of the barriers and/or constraints to implementation of these International Environmental Treaties are as follows:

- i. Lack of effective political will and poor moral obligations/implementation of national strategies
- ii. Poor 'Common But Differentiated Responsibilities' and poor public participation in government policy making
- iii. Lack of coordination and/or synthesis in implementation and structures for inter-ministerial consultation and cooperation
- iv. Poor prioritization of the environmental issues and lack of advance development of effective environmental law and policies prior to negotiations
- v. Poor integration of environmental management system into existing national legislations and policies
- vi. Poor economic growth, limited financial resources and inadequate technological expertise
- vii. Lack of specialists in environmental law and limited inter-disciplinary professionals with local scientific and/or traditional knowledge
- viii. Excess bureaucracy in government, high level of corruption and poor environmental governance

⁵ Article 12(7) of the Kyoto Protocol states:

The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first session, elaborate modalities and procedures with the objective of ensuring transparency, efficiency and accountability through independent auditing and verification of project activities.

- ix. Fragmented national institutional structures and lack of regional body to oversee implementation of existing legislations
- x. Poor representation of developing countries during multilateral negotiations and development
- xi. Weak enforcement of existing national and international environmental legislations
- xii. Lack of responsibility for environmental damage (corporate and social responsibility)

Although the National Assembly has generally given its legislative approvals to some of the international treaties [20], the pre-1988 FEPA regulatory regime in Nigeria is plagued with so many shortcomings and wide discretion usually given to the implementing agencies. Despite the existence of various international environmental treaties/conventions and national legislation which often provides for environmental protection and management, there are several limitations inhibiting effective implementation and regulatory approach in Nigeria.

4.4. Strategies for Effective International Environmental Management and Governance

The provisions of the international environmental law often guide the methods of implementation and in most cases, laws and regulations need to be designed for purposes of effective implementation [111]. According to Sand [112,113], the best strategies so far for effective international environmental management and/or governance still appear to be specific innovative mechanisms for environmental standard setting and implementation often times embedded within the treaty itself. In practice, some of the most important of strategies for effective international environmental management and governance include the creative use of selective incentives, differential obligations, promotion of regionalization and innovations.

4.4.1. Selective Incentives

This strategy gives certain fringe benefits to persuade a party to participate in a programme or standard that it would otherwise find unacceptable. For example, the element of selective incentives in international regimes has been inscribed into the 1971 Convention on Wetlands (Ramsar Convention) [114], 1987 Montreal Protocol [115], 1992 Convention on Climate Change [69] and 1992 Convention on Biological Diversity (CBD) [69]. In particular, Nigeria is a signatory to the Ramsar Convention, has ratified the convention and presently has 11 sites designated as Wetlands of International Importance, with a surface area of 1,076,728 hectares [116]. Under the 'Selective Incentives', Nigeria received substantial international support (financial) from donor agencies such as the Birdlife International, the Royal Society for the Protection of Birds, the Ramsar Convention Secretariat and Wetlands International following implementation of the Ramsar Convention. Over the past decade, Nigeria has received selective incentives (rewards) for joining or complying with several multilateral environmental agreements (MEAs).

4.4.2. Differential Treatments

Differential treatment refers to the use of norms that provide different treatment to some states [117] and under differential obligations, each Party is treated differently

according to that country's special circumstances under the treaty. Considering the fact that real differences exist between states (economic, political and others), differential treatment in 'International Environmental Law' aims to promote participation of developing countries. Differential treatment norms are littered through international environmental agreements (IEAs) and these include the use of incentives in the international environmental agreements, such as different standards,⁶ longer compliance times,⁷ and increased financial⁸ and technical assistance.⁹ According to Rajamani [117], differential treatment is the most effective as well as the most controversial technique and there are certain boundaries, stemming from considerations of the ecological imperative and universal participation in the use of differential treatment in environmental treaties. Over the past decades, developing nations have demonstrated some level of success in their participation in international environmental governance upon commitments by developed nations to provide financial resources and technology transfer [118]. Therefore, it is important to note that without the participation of developing countries in IEAs and the support of the developed countries, sustainable development goals related to global environmental problems cannot be achieved.

4.4.3. Regionalization

Regionalization entails groupings of countries to accomplish regional agreements (custom-built asymmetrical regimes) and under regionalization, economic and other trade-offs can compensate for the asymmetries. Although regionalization seems to be a good strategy under asymmetrical standards, it may not be the answer for all transnational environmental problems. In particular, toxic wastes from the advanced countries were shipped into the then unprotected third world countries before the 1989 Basel Convention [67] and when compared, the regional 1991 Bamako Convention (under the auspices of the Organization of the African Unity) is not as effective as the Basel Convention [119].

4.4.4. Innovations in Implementations

The implementation of an international environmental agreement often involves collaboration between national administering agencies, for example, through training programs for environmental enforcement officials [120], sharing of information about criminal violations of oil pollution standards through the International Criminal Police Organization [121], mutual recognition of import and export permits under Convention on International

6 Preliminary provisions of the Convention to Combat Desertification, 1994; FCCC, 1992; Convention on Biological Diversity, 1992; the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 22 March 1989, 28 ILM 657 (1989); and the Montreal Protocol on Substances that Deplete the Ozone Layer. 16 September 1987, 26 ILM 1550 (1987).

7 Example, Article 3 of the 1997 Kyoto Protocol

8 Example, Article 13(2) of Stockholm Convention on Persistent Organic Pollutants, 22 May 2001, 40 ILM 532 (2001); Art. 20(2), Convention to Combat Desertification, 1994.; Art. 20, Convention on Biological Diversity, 1992; and Art. 4(3), FCCC, 1992.

9 Example, Art. 16 Convention on Biological Diversity, 1992; Art. 4, FCCC, 1992; Art. 18, Convention to Combat Desertification, 1994; Art. 27(2), International Tropical Timber Agreement, 10 January 1994, 33 ILM 1014 (1994); Article 4(2) of the Vienna Convention, 1985; Art. 10(3), Basel Convention, 1989; and, Art. 10A, Montreal Protocol, 1987.

Trade in Endangered Species of Fauna and Flora (CITES), or coordination by port states of ship inspections under the Paris Memorandum of Understanding on Port State Control. Sand [112] in *'Lessons learned in global environmental governance'* has clearly discussed some of the innovations in implementation of international environmental law and these include mutual recognition, model diffusion, alert diffusion, complaints and custodian action. For example, a variety of national regulatory mechanisms such as environmental permits, environmental impact statements and environmental labels are mutually recognized across borders; whilst environmental treaties provide for the reciprocal recognition licenses and permits by competent national authorities. Nigeria acceded to the 1973 CITES on July 1975 and as part of mutual recognition, Nigeria enacted Endangered Species (Control of International Trade and Traffic) Decree in 1985 [122]. Furthermore, the Environmental Impact Assessment (EIA) procedure, which was first introduced by the 1969 US National Environmental Policy Act, has been recognized in the international environmental law and prior to the promulgation of the 1992 Environmental Impact Assessment Decree, the procedure was already in practice in Nigerian petroleum industry. Over the past decades, the custodian procedure has become one of the most important means of enforcing European Economic Community (EEC) environmental standards [112]. In general, several institutions are needed to authorize or prohibit activities covered by the standards, and to impose sanctions against non-compliance once international standards have been set.

5. Conclusion

Petroleum exploration and production in the Niger Delta region and export of oil and gas resources by the petroleum sector have substantially improved the Nigerian economy over the past fifty-five years. However, petroleum hydrocarbon pollution of the environment and human health risks and/or socio-economic problems associated with petroleum exploration and production operations have been attributed to the ineffective government's petroleum development policies, unsustainable operational practices by the multinational oil companies and corrupt practices in the petroleum sector. This research paper has further revealed that there are some lapses in the Nigerian environmental laws that have been exploited by the multinational oil companies to their advantage without recourse to the oil-producing host communities as well as the environment. However, it is becoming increasingly apparent to multinational oil companies that pollution prevention pays while pollution does not and under pressure from stakeholder groups, oil companies now routinely incorporate environmental impact assessments into their corporate responsibility. Although severe petroleum pollution and degradation of the Niger Delta environment from oil industry activities have been attributed to the absence of justice for the victims, considerable progress has been made at the level of institutional developments, international cooperation accords, and public participation over the last twenty years. In past forty years, over 24 international environmental protection accords with global implications have been

promulgated under the auspices of the United Nations and other international organizations, together with many additional regional agreements. In order to achieve sustainable development of oil and gas resources in the Niger Delta, both the government and the multinational oil companies need to adopt environmental sound technologies and cleaner production processes as well as effective implementation of international legal framework to help mitigate the associated problems of environmental degradation and pollution. Adoption of effective sustainable reforms will encourage responsible petroleum exploration and production activities in ways that positively influence economic development of oil-producing host communities and also preserve human and environmental health in the near and long term. Although there are some challenges that affect effective implementation of international environmental laws in Nigeria, effective environmental legislations and implementation of international environmental principles are critical for sustainable development, good environmental governance, effective environmental management and protection in the Niger Delta region. Therefore, there is a need to implement effective environmental legislative and institutional frameworks to improve petroleum industry regulations in Nigeria. In addition, there is a dire need to review various national laws and the 1999 Constitution of the Federal Republic of Nigeria to provide for effective framework for regulation, sustainable environmental objectives and environmental enforcement.

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