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A Critical Appraisal of Oil and Gas Multinationals' Role in Promoting Environmental Degradation and Pollution in The Niger Delta Region

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Abstract: Oil and gas extraction globally is an indication of economic growth and development in the area where such economic activities are carried out. Unfortunately, its anticipated benefits have become a curse to the host communities' environment and their socio-economic wellbeing due to unethical exploitation practices leading to environmental degradation and pollution in the region. Its effects in the area have manifested in ecological devastation and economic underdevelopment particularly without alternatives for livelihoods and human survival. Most of the communities where these natural endowments are exploited have become so impoverished, barren and unproductive that they are abandoned and the people alienated. Tables 1 & 2 revealed, the extent of oil and gas infrastructure and operating activities which impoverished the people and degraded their environment causing abject poverty, mass unemployment and constant neglect of infrastructural development in the region from where Nigerian wealth (oil & gas) derives; can only breed social unrest/instability and economic underdevelopment; capable of disintegrating the country. The paper thus recommends that for the Niger Delta Region to become economically prosperous, socially stable without insecurity threats, ecologically regenerative and politically peaceful; its people need sustainable development as the accruing benefits from their natural endowments' democratic governance.

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1. Introduction

The concept "Environment" connotes the complex state and process of physical, chemical and biotic factors such as land/soil, climate, water bodies and other living things that act upon an organism and ultimately determine its form and survival [1][2]. In other words, environment describes the totality of surroundings within which man, animals and plants live symbiotically in productive harmony as a functional system. According to Arokoyu and Umeuduju, the environment represents the concrete setting on which man

creates the basis for his life and activities on planet earth. The implication of these explanations is that one component of the environment affects others in its formation process [3][4].

In essence, the environment can be natural or physical which encompasses the earth's surface forming factors like climate, landforms, soils, vegetation and human or social environment including the effects of man-made phenomena e.g towns and cities, industrial areas, social and political organizations [5]. Consequently, as man interacts with nature and environment in an attempt to explore and exploit its natural resources for shelter, food and clothing, including his other socio-economic needs; certain inevitable negative or positive consequences on humans resulted from this man-environment relationship [6]. Some of the negative implications of man's actions in the natural environment today constitutes environmental issues or challenges seen to be increasingly threatening human life and survival on the earth's surface. In this paper, they are referred to as environmental degradation and environmental pollution.

Nevertheless, these negative effects ravaging man and his environment are not only caused by human activities alone but rather, it also occurred naturally [7]. These include volcanic eruptions, sandstorms, natural forest fire outbreaks and other natural environmental hazards [8]. These events particularly sandstorms and natural forest fire outbreaks have caused a large amount of substances e.g ash, dust and other impurities when inhaled by human beings are not only harmful to life but also rendered the environment unhealthy for man's habitation and survival [9]. Even though these natural occurrences contribute to environmental degradation and pollution; those from human activities are more severe and harmful with grave devastating effects on man and the environment. Acknowledging this claim, Arokoyu and Umeuduji reported thus;

Technological improvement increases man's ability to change the environment rapidly to suit his needs, wants and aspirations. This has increased man's ability to directly caused environmental change and to generate large amount of waste being introduced into the environment. Today, there are such environmental challenges like the depletion of the Ozone layer, acid rain, biodiversity depletion, the disappearing forests, desertification, black soots from oil and gas exploitation, climate change and global warming, pollution etc which combine to affects livelihood sustainability in the environment [10].

Prior to the 19th century, there has been a burgeoning awareness and global concern for environmental issues since the World's Earth Summits on Environment and Development were held. For instance, the 1972 Stockholm (Sweden) 1992 Rio de Janeiro (Brazil), 2002 (South Africa) among others. These earth summits did not only mark a turning point in the global perception of the importance of environment in the development process of nations and communities but also spelt out strategies for solving environmental challenges in the context of sustainable development. [11]. According to World Bank in Adeyemo (2008), the goals of these earth summits state thus;

To come to an understanding of development that would support socio-economic development and prevent the continued deterioration; and to lay the foundation for a global partnership between the developing and the more industrialized countries based mutual needs and common interests that would ensure a healthy future for the plant [12].

Therefore, the world as a global village today, recognizes the importance of environmental sustainability to the development of countries with specific reference to the increasing and complex human activities in space, their harmful effects on man and his environment and the urgent need to enhance environmental quality, human welfare and social justice [13]. In a nutshell, the goals of these earth summits vis-à-vis their current sub-themes collectively formed the basis for sustainable development and presently that of the UNEP'S Report which recommend environmental restoration through gradual and systematic clean-up exercises to stop further degradation and pollution in the region.

The reality of oil and gas resources exploration and exploitation activities over the years in the Niger Delta lies with the oil and gas multinationals' legacy of accumulated environmental devastations and crisis of extant forms of livelihood which have threatened to exterminate their host communities due to lack of defined multinationals' community relation programmes in the region. Through the press, one hears about some billions and trillions of naira devoted to development projects while we have lack of provision or inadequate development of basic welfare facilities and services to the people's plight and agony. Presently, the crusade against environmental degradation and pollution has been extended to include the totality of humanity through the instrumentality of global treaties, protocols and conferences to enhance environmental sanity, human welfare and social justice [14].

In the Niger Delta Region, particularly the multinationals' host communities, environmental devastations consequent on intensive and mindless exploitation of oil and gas resources over the years; has attained genocidal proportions such that the natural resource base/ecosystem crucial to sustaining indigenous livelihoods are not only near extinction but destroyed completely [15][16]. Consequently, peasants have lost the fertility potentials of their land and water resources thereby making the people to wallow in abject poverty due to the effects of environmental degradation and pollution from the activities of oil and gas multinational companies in the region. Again, it has directly or indirectly endangered the people's environment and health with a much reduced lifespan through air and water pollution [17]. More Sadly too, the economy has not witnessed industrial diversification despite the fact that this ecological zone is the location of oil and gas sector of the economy and the hub of commerce and industry [18]. Rather, oil and gas development has deprived them of their means of livelihood (land & water resources), degraded the natural environment and compounded their miseries.

From the foregoing analysis of environmental despotism, caused by oil and gas multinationals two major effects where environmental challenges found to be significantly very pronounced in the region are ecological devastation and economic underdevelopment [19]. The effects are not only disastrous but have also triggered up series of conflicts, crisis and social/political unrests/instability in the area. These ranged from corruption in high places, poor access to justice, rampant human right violation/abuses, economic sabotage, non or inadequate compensation to pollution victims and increasing insecurity of life and properties to vulnerability of most of the populations who become confronted with heightened frustration and alienation from all levels of government and other authority structures. In this process, lands and water bodies are so impoverished, barren and unproductive that they are abandoned and the people migrated for survival [20]. For these reasons, the people become increasingly distrustful of oil and gas multinationals and even government agencies purportedly created to bring development in the region. Acknowledging this assertion, Nwanna-Nzewunwa opines thus;

Ecological and Social injustices are daily perpetrated against the Niger Delta Region. The latter we can pinpoint as the *raison d'être* of environmental challenges and associated crisis in the Niger Delta. The crisis is predicated on the fact that the people are increasingly aware that natural reserve, which previously was thought to be inexhaustible, has its limits. The oil and gas wealth is fast disappearing and the people have next to nothing to show for it except the brutal consequences of environmental degradation and pollution [21].

2. Materials and Methods

The methodology employed in this study is based on qualitative and analytical research design critically evaluating the impact of oil and gas multinationals on environmental degradation and pollution of oil and gas producing communities in the

Niger Delta region. The following research is based largely on secondary data sources, which include an extensive literature review along with government reports, policy papers and institutional records relevant to national environmental management policy, oil and gas development, and the socio-economic status of the region. Notably, the manuscript makes use of reports released by international organizations, national agencies and prior empirical studies, that offers a glimpse into the abundance of oil exploration activity, coverage of oil infrastructures and their respective environmental impacts. Across the years, data were systematically collected through documentary review and aimed at supporting the evidence for ranging indicators, from ecological impairment and pollution indicators, to socio-economic factors such as the level of poverty and unemployment, and interruption of livelihood. Statistical data (e.g oil wells, pipelines, gas plants, production outputs) were also reviewed in tabular formats to situate the strength of industrial activity and business-as-usual development in terms of space. Analytical methods: Content analysis and interpretive evaluation help to identify patterns, relationships, and causal linkages between multinational operations and environmental outcomes. Secondly, it is grounded in the theory of pockets of poverty as well as environmental sustainability, as the study requires a conceptual framework to understand the differential impact of environmental degradation on vulnerable groups. This methodology combines several methods into an integrated already theory driven approach results in a comprehensive assessment of environmental and socio-economic dimensions of oil and gas exploitation for sustained evidence-based conclusions and policy-oriented recommendations in the interest of sustainable development in the Niger Delta.

3. Results and Discussion

Conceptual and Theoretical Framework

The Concepts of Environmental Degradation and Pollution

Environmental degradation describes the gradual and systematic wearing away of the soil (land or environment) through the processes of weathering, erosion, transportation and deposition such that the soil nutrients become severally eroded, impoverished, barrened and unproductive [22].

According to Narayanan, Environmental degradation is the gradual break down or wearing away of the physical, chemical and biological components of the natural environment either by natural processes (such as heat or rise in surface temperature, ice, wind or running water) or anthropogenic processes involving man's inept land-use activities like lumbering and deforestation, land or forest clearing for cultivation, over-cropping, over-grazing, ecosystem disturbances and habit distortion through sand dredging, coastline or shoreline construction works. Others include continuous cultivation on a piece of land, crude oil spill or continuous sewage discharge, solid wastes and effluents into water bodies or on land, use of agro-chemicals, mineral mining activities and excavations.

Environmental pollution means the introduction, release or addition of any physical, biological, radiological or chemical substance into any of the component parts of the environment (e.g. air, water, land or soil) at a rate faster than the rate at which the environment can naturally accommodate through the processes of absorption, dispersion or decomposition (breaking down) and which threatens the life and survival of man, animals and plants or any biotic system of the environment. In other words, it is any undesirable change in the biogeochemical processes of the earth which may pose potential danger on the health and survival of humans and other living organism. [23]. Miller in Obafemi defines pollution as any addition to life support system such as air, water, soil or food that threatens the health, survival or activities of humans or other living organism. Sometimes, environmental pollution simply refers to the release of toxic substances into the environment in quantities that are harmful to man, animals and plants or any other

living organism [24]. These substances been released are called pollutants which include waste products of industries, refuse including human waste or sewage discharged into water bodies etc. While, articulating the effects of environmental pollution, Oyegun and Arokoyu said;

The inability of man to handle waste generally brings about pollution. This is particularly worrisome because more often than not, waste are unseen. The air may be fresh and pure to the eyes and yet, be radioactive. Food and water may appear wholesome and yet be full of chemical poisons. Of a truth, pollution is often an invisible killer because man-kind is daily dying of cancer, stroke and respiratory ailments, monuments and buildings are being progressively defaced; animals and plants are being decimated, rivers are being depleted of fish while forests are dying. Improper industrial waste management strategies and pollution have grown to such catastrophic proportions that some measures have to be taken and quickly too. In global tragedy is to be avoided [25].

At the home front in most rural communities in the region; the list of environmental challenges frequently occurring include indiscriminate deforestation, soil and beach erosion, water, land and air pollution from oil and gas industry, destruction of coastal ecosystems, industrial effluents, chemicals in the environment, pollution from municipal and hazardous wastes, dumping of toxic wastes inter-alia e.g. the Koko Seaport in Bendel State (now Delta State) from Italy in 1988 [26].

The Theory of Poverty and Environmental Sustainability

This study adopted the theory of poverty and environmental sustainability propounded by the United Nations Millennium Development Goals [27]. The theory emphasized that the environment is fundamentally important to people living in poverty, not only because their existence to a large extent relies on subsistence endeavours (e.g. farming, fishing, hunting and other craftsmanships) which depends on natural resources; but also because they perceived their well-being as tied to their environment in terms of livelihood, health, vulnerability and the ability to control their lives. Again, that poorer people are more vulnerable to changes in their environment in part because social, political and economic exclusion means they almost have no or fewer choices about where they live. The net consequences of such changes are that they must bear the brunt of natural hazards, biodiversity loss and the depletion of forests, pollution (e.g. air, water and soil) as well as the negative effects of industrial activities. Thus, the theory suggests a balance between environment and economic development as supported by Salau in Adeyemo when he said;

Protection of the environment is also seen as essential part of development. Without adequate environment protection, development is undermined and without development to make available resources needed for investment, environmental protection will fail. Thus, economic growth depends to a great extent on the maintenance of environmental quality and environmental quality in turn depends to some extent on the maintenance of the well-being of the people [28].

The application of this theory emerged within the background of the realization that concerted global efforts are required if the protection of the environment (seen here as man's home) against environmental devastation is holistically undertaken. It thus becomes clear to the industrialized World that much of the industrial activities, practices and operations of oil and gas multinational companies were harmful to the common future of humanity particularly the developing countries where these natural endowments existed and unethically exploited. Thus, the global community has today realized the need for environmental sustainability to the development of nations [29][30][31]. This is captured in the Sustainable Development Goal which stated thus; ensure environmental sustainability, seeks to reduce environmental degradation and pollution arising from natural and man-induced causes particularly those from inefficient use of the natural

resources and to improve environmental management through private sector participation and the application of environmentally friendly technologies.

Presently, the feeling among the people is that they must benefit maximally from oil and gas wealth which Nigeria derives from the region. This sentiment is so strong because the infrastructural facilities and services which abound in other sections of the country have been provided with the same oil and gas wealth while they are grossly deficient in the Niger Delta. Consequently, Oyegun and Akpoghomeh stated that it is pertinent to observe that out of the fourteen oil producing countries in Africa (e.g. Algeria, Angola, Cameroon, Chad, Congo, Egypt, Equatorial Guinea, Gabon, Libya, Mauritania, Nigeria, South Africa, Sudan and Tunisia), Nigeria's Niger Delta is the only region where there is endemic social instability, massive and increasing environmental degradation and pollution effects leading to chronic poverty, mass-unemployment and decay in Societal Values. However, some environmental restoration strategies through the clean-up exercise by Hydrocarbon Remediation Project (HYPREP) are ongoing in Ogoni part of the region. This study observes some political interferences in the implementation of environmental restoration which UNEP's Report recommended as way forward for the region [32].

Oil and Gas Industrial Development in the Niger Delta Region

The discovery of oil in commercially exploitable quantities at Olobiri (Bayelsa State), in 1957, Ogoniland (Rivers State) in 1958 and Okan (Cross River State) in 1965 (SPDC, 2003); has transformed the industrial landscape of the region to become the mainstay of the Nigerian economy. This recent development has attracted other multinational companies to the Niger Delta. Again, the creation of Rivers State in 1967 and later, the federal government directive to all operating oil companies to relocate their headquarters to Port Harcourt and Warri in 1985 further enhanced expansion and rapid development in the region with new oil and gas installations, modern infrastructural facilities and services whose presence has promoted industrial agglomeration and economic viability in the area.

Beside oil and gas, the region is also blessed with abundant human and material resources. The Niger Delta is also endowed with a large number of working age population, potentially cultivable expanse of land and fishery resources. Infact, its potentials in the area of primary agricultural production covers a variety of cash and food crops e.g. palm oil and palm kernels, rubber and cocoa, cassava, plantain and cocoyam with its enormous scope for padi rice production. Other economically significant resources include timber, solid minerals such as granite, barites, marble, clay, limestone, sand and gravels, tourism etc. other minerals yet to be fully exploited are Kaoline, limestone, marble, phosphate, silica, tar-sands (Bitumen). While studying the resources of the Niger Delta, Oyegun (2007) affirms that this extensive coastal belt offers a lot of potentials for residential, industrial, agricultural, recreational and commercial land-use development.

According to the Niger Delta Development Commission (NDDC, 2006), there is a lot of hydrocarbon infrastructure in Nigeria with over 7000km of pipelines in the Niger Delta, linking over 289 flow stations across the region. Industrial oil production increased from just 5000 barrels per day (b/d) in 1957 to 17,000 b/d in 1960, 45,000 b/d in 1966 and by 2005, daily production of crude oil has reached 2.2 billion b/d. This led to great industrial development with oil and gas resources by way of extensive transport and communication, port expansion and development in Lagos, Abuja, Calabar, Port Harcourt, Warri, Onne and Sapele, development of Hydro-power plants located in Jebba and Shiroro and thermal plants in Lagos and Niger Delta areas.

The Niger Delta Region which covers approximately 70,000km², represents about 12% of Nigeria's total surface area with over 31 million inhabitants or 22.3% of Nigerian population with the oil and gas industry occupying 5% of the region which posed great environmental threats of degrading and polluting the area for the following reasons. The Niger Delta is a gas region associated with crude oil (see Tables 1 & 2 below).

Table 1. List of Oil & Gas Projects in the Niger Delta Region of Nigeria

N o.	Projects	Operating Company
1	Obiafu/Obrikom Gas Plant	NAOC
2	Nigeria Liquefied Natural Gas Plant (NLNG)	NLNG
3	Obite Gas Plant	EPNL
4	Oso NGL Plant	EXXONMOBIL
5	Bonny River Terminal	EXXONMOBIL
6	Eleme Petrochemical Plant Limited (EPCL)	EPCL
7	Warri Petrochemical Plant Ltd (KPCL)	WRPCL
8	Kaduna Petrochemical Plant Ltd (KPCL)	KPCL
9	Soku Gas Plant	SPDC
10	Obigbo North Gas Plant	SPDC
11	Imo River Gas Node	SPDC
12	Agbada Gas Node	SPDC
13	Cawthorne Channel AGG Plant	SPDC
14	Cawthorne Channel Cryogenic Gas Plant (CCGP)	GRL
15	Eastern Gas Gathering Systems (EGGS) Phase I	SPDC
16	Soku Gas De-bottle necking	SPDC
17	Agogep (Phase II)	EPNL
18	Agip IPP (Kwale/Okpali)	NAOC
19	Odili AGG	SPDC
20	Bonny NAG Plant Expansion (BNAG)	SPDC
21	NLNG Train 4 & 5	NNPC/NAOC/ELF
22	Offshore Gas Project (EGP) 3A Onshore	SPDC
23	Escravos Gas Project (EGP) 3A Onshore	CNL
24	Alero Creek / Dibi Development	CNL
25	Escravos Gas To Liquid (EGTL) Project	CNL

Source: Adapted from Chukwueke (2006)

From table 1 above, we observed that apart from No. 8 (Kaduna Petrochemical Plant Ltd) which constitutes only 4% of oil and gas infrastructural projects in the country, the rest 96% are located in the Niger Delta. The same thing is applicable to oil and gas production activities in the region (see Table 2 below).

Table 2. Oil & Gas Infrastructure and Production Related Activities

% Contribution of Crude oil export to national earnings	Over 80%
Average daily crude oil production	2m b/d
Number of oil wells drilled in the Niger Delta Region	5,284
Number of flow-stations for crude oil processing	257
Length of oil and gas pipelines traversing the region	Over 7000km
Number of export terminals	10
Land area within which the network of pipelines are located	31,000km ²
Number of communities hosting oil and gas facilities	Over 1,500
Gas flares-out target date	Dec. 2007
Number of Petroleum Training Institutes in the region	2
Number of free export/industrial zones in the region	2
Number of gas plants in the region	24
Number of marginal oil fields farmed out to local companies	30

Source: Niger Delta Regional Development Master Plan (2006)

Table 2 above reveals that the average daily production 1,183 of oil fields have been discovered with 145 oil concessions operational and 143 are open. Thus, licensed oil and gas multinationals in the region increased from one (SPDC) in 1964 to eleven in 2005 (Engel, 2005, Duru, 1999). This development in the oil giant of Africa but also the 6th largest oil producer among the oil petroleum exporting countries (OPEC) and the 7th on the global scene. Similarly, as a gas region, the increase in gas reserves to 187.5 Tcf in 2005 placed Nigeria in the 10th position globally (Chukwueke, 2006). The quality of Nigerian crude oil and gas is adjudged to be one of the best in the world. The Nigerian crude oil is associated with gas and its quality is very high, thus making the product to be of high demand nationwide. Hence, with these developments taking place in the oil and gas sector of the economy, Chukwueke (2006) states that “there is also the indication that gas could overtake oil in economic potential to the nation due to World economic growth, changing energy markets, significant environmental advantages of gas over oil and coal, and more importantly, advances in technology”. He further contended that Nigeria would realize from gas twice what she presently realized from crude oil industry. Based on this analysis, Adeyemo (2008) reported that it is naïve to say that the Niger Delta Region is poor with respect to the fast deteriorating environmental denudation effects on the ecosystems. However, he maintained that in terms of economic resources, the region is abundantly blessed but in terms of economic well-being, the region is very poor. He concluded that her economic poverty in the midst of oil and gas wealth is exogenously imposed and endogenously marginalized.

The point stressed above holds that each of the oil and gas production related activities listed in table 2 above has severely deprived the people of their means of livelihood and has directly or indirectly endangered the people’s health and environment through air and water pollution. For instance, the 5,284 oil wells, 257 flow stations, over 7,000km pipelines traversing the region and 30 marginal oil fields have negatively impacted the people of the Niger Delta Region despite the abundant natural endowments. These activities have reduced farmland and water resources and their net productivity particularly in the absence of alternative welfare programs. Imagine a situation in which government grants a license to a company to operate from Abuja, without providing the framework for making available some of the oil and gas revenues for the socio-economic development of the host communities is nothing but administrative insensitivity which never protected the interests of the people in any way.

4. Conclusion

The focus of this paper is on man and his environment, specifically his interactions with nature and the inefficient use of available resource endowments at his disposal to achieving productive harmony. This study discovered that oil and gas extraction activities have grave effects on the host communities’ environment and their socio-economic well-being in the Niger Delta landscape. The real areas of interest which necessitated environmental clean-up and restoration in the traumatized communities in the region are ecological devastation and economic underdevelopment. The study thus agrees with Oyegun (2007) who opines that sustainable economic development is both a pre-requisite and function of sustainable environmental quality; and that failure to address the issues of poverty, unemployment and the continued neglect of infrastructural development in the region been the custodian of the nation’s wealth will not only remain economically underdeveloped but be chaotic and disintegrated along the geo-political zones based on resource control advocacy. It is the opinion of the authors of this work that for the region to become economically prosperous, socially stable devoid of insecurity threats, ecologically regenerative and politically peaceful as envisaged; its people need sustainable livelihoods as the only way forward.

Recommendations

1. The concept of environmental restoration should be made a cardinal national environmental point agenda with oil and gas multinationals as major polluters to bear the total cost.
2. Establish, strengthen and empower more legal institutional structures backed by law in the country.
3. Incorporate and implement the principles of environmental impact assessment and periodic assessment of oil and gas multinational activities in Nigeria.
4. Adequate compensation to pollution victims by government and multinational oil and gas companies in Nigeria.
5. Provision of adequate welfare facilities and services in all the oil and gas host communities including payment of monthly salaries to the inhabitants in the area to caution health effects.
6. Government should stop granting operational license to companies without defined framework for incorporating the interest of the host communities.
7. Diversification of the economy from oil and gas to mechanized agriculture.
8. Provide quality education and embark on massive enlightenment campaigns by stakeholders, government agencies, cooperate organizations, local authorities and youth bodies on the consequences of illegal mining, vandalization of oil and gas facilities etc. on community basis.
9. Empower the people through technical aids, scholarships, stiff acquisitions etc.
10. Training and retraining of environmental officials as well as re-enforcement of the national monthly sanitation exercise with staff penalties for defaulters.
11. The developed countries should assist in the development agenda of Nigeria particularly the Niger Delta Region and to stop using this ecological zone as dumping ground for toxic wastes and obsolete technologies.

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