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Sustainable Agricultural Production in Degraded Oil Producing and Conflict Prone Communities of Niger Delta, Nigeria

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Abstract: The rich alluvial soil of the delta coupled with copious web of fish and salt water bodies provide the necessary incentives for the people of Niger Delta of Nigeria, who are predominantly farmers and fishers. The ecological devastation occasioned by oil exploration has rendered farming and fishing which are the main occupations of the rural people of this region, useless. The paper seeks to highlight the extent of the environmental degradation in the Niger Delta region, determine the efforts of the Oil Companies in remediating the degraded farmlands, and make recommendations for a sustainable agricultural development in the Niger Delta. It identifies three (3) states, and 31 environments which are severely polluted with oil, noted the effects of oil production on agricultural production and attempt to describe some of the remediation activities carried out by some of the oil companies in this region and concludes that, to achieve sustainable agricultural production, continuous remediation of the degraded environment, Special agricultural intervention by the three tiers of government, youth education, encouragement and motivation and supply of subsidized inputs to the real farmers were necessary.

Keywords: Sustainability, Agriculture, Nigeria Niger Delta.

Introduction

The Niger Delta is an area in south south and south eastern part of Nigeria, comprising of wet and dry lands which covers about 70, 000sq kilometers. The region which consists of a number of distinct ecological zones, costal ridge barriers, mangrove swamps, fresh water swamps, forests, and low land rain forest is dominated by rural communities that depend solely on the natural environment for subsistence living. According to UNDP Report (2006), more than 70% of the people depend on natural environment for their livelihood. The region is home to more than 10 million people (NPC, 2006)

The Niger Delta includes the States of Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and Rivers. The Niger Delta region is richly endowed with natural resources with oil and gas accounting for over 85% of the National Gross Domestic Product (GDP), over 95% of the National budget and over 80% of the national wealth (Dokubo 2004). Paradoxically, the region remains the poorest, due largely to the ecologically unfriendly exploitation of oil and State's policies that expropriate the indigenous peoples of Niger Delta of their rights to these natural resources. It is believed that since the advent of oil exploration some decades ago, the region has become the breadwinner of the nation, accounting for over 90% of the nation's export earnings since 1975.

The ecological devastation occasioned by oil exploration has rendered farming and fishing which are the main occupations of the rural people of this region, useless. Pollution and continuous flaring of gas from oil prospecting and production have created health hazards and rendered fishing and farming activities almost impossible. Also, occasional large oil spills kill fish; destroy agricultural crops; pollute the waters which seriously affect families and communities. According to the Department of Petroleum Resources, between 1976 – 2001, a total of 6817 oil spillage which accounted

for a loss of 3 million barrels of oil with more than 70% of it not recovered (Wariboko 2009).

According to the UNEP report (2011), Bassey (2013) several years of oil exploration and exploitation by Multinational Corporations, and the hazards of spillage and gas flaring which accompany it, have degraded the environment of the region and left the communities desolate. Not only have farming and fishing the major occupation of these mostly Riverine minorities been decimated, their territories have continuously lacked basic infrastructure and amenities – electricity, road, schools, hospitals, portable water, etc.

The objectives of this paper therefore is to highlight the extent of the environmental degradation, determine the efforts of the Oil Companies in remediating the degraded farmlands, and make recommendations for a sustainable agricultural development in the Niger Delta.

Oil Production in the Niger Delta

Nigeria is the largest oil producer in Africa, holds the largest natural gas reserves on the continent, and is among the world's top five exporters of liquefied natural gas (LNG). Although Nigeria is the leading oil producer in Africa, production suffers from supply disruptions, which have resulted in unplanned outages as high as 500,000 barrels per day (NNPC, 2013)

According to the *Oil & Gas Journal* (OGJ), Nigeria has an estimated 37 billion barrels of proved crude oil reserves as of January 2015—the second-largest amount in Africa after Libya. In 2014, Nigeria produced 2.4 million bbl/d of petroleum and other liquids, of which 2.0 million bbl/d was crude oil and the remainder was condensate, natural gas plant liquids, and refinery processing gains. Nigeria's 2014 production was slightly higher than in 2013 because of fewer supply disruptions but still lower than previous years.

In 2014, Nigeria exported 2.05 million bbl/d of crude oil and condensate, according to an analysis of data from Lloyd's List Intelligence (APEX tanker data). The United States traditionally had been the largest importer of Nigerian oil until the last few years. The United States changed from being the largest importer of Nigerian oil in 2012 to the 10th largest in 2014. India is now the largest importer of Nigeria's oil, purchasing about 370,000 bbl/d or 18% of Nigeria's total crude exports in 2014. Europe continued to be the largest-regional importer of Nigerian oil, importing slightly more than 900,000 bbl/d or 45% of the exports in 2014.

Oil Spillage in Oil Producing Areas

The discovery of oil in the area and subsequent oil production activities has over the years resulted to an untold diverse environmental hazards and general misnomer in the culture, economics and way of the people. Such hazards include; oil spillage, gas flaring, gas leakage, erosion, as well as water and air pollution, with attendant health problems.

For instance, between 1976 and 1996, a total of 4,647 oil spill incidents were recorded in Nigeria; which resulted in the spill of approximately 2,369,470.04 barrels of oil into the environment, and between 1997 and 2001, a total of 2,097 oil spill cases were also recorded; causing severe damage to agricultural resources and the coastal environment (Ekpebu and Ukpong 2013).

Data on Table 1 show the various oil polluted sites in the Niger Delta.

Table 1: Some severely oil polluted sites in Niger Delta

Location	Environment	Impacted area (ha)	Nature of incidence
Bayelsa State	Biseni	Fresh water swamp	20 oil spillage incidence
	Atama/Nembe	Forest	20 oil spillage incidence & fire outbreak
	Etelebu	Forest	30 oil spillage incidence
	Peremabiri	Forest	30 spillage incidence
	Adebawa	Forest	10 oil spill incidence
	Diebu	Forest	20 oil spill incidence
	Tebidaba	Fresh water swamp	30 spillage incidence

	Nembe Creek	Forest mangrove	10 spillage incidence
	Azuzuama	Mangrove forest	50 oil spillage incidence
Total	9 sites in Bayelsa State		
Delta State			
	Ouekebe	Barrie forest Island	50 oil spillage incidence
	Salt water intrusion jones creek	Mangrove forest	35 oil spillage & burning
	Ugbeji	Mangrove	2 spillage incidence
	Frefinary waste Ughelli	Fresh water Swamp forest	10 oil spillage – well head leak
	Jesse	Fresh water	8 product leak/Burning
	Ajato	Mangrove	Oil spillage incidence
	Ajala	Fresh water swamp forest	Oil spillage incidence
	Uzere	Fresh water swamp forest	Oil spillage incidence
	Afieser	Fresh water swamp forest	Oil spillage incidence
	Kwale	Fresh water swamp forest	Oil spillage incidence
	Olomoro	Fresh water swamp forest	Oil spillage incidence
	Ughelli	Fresh water swamp forest	Oil spillage incidence
	Akakpare	Fresh water swamp forest	Oil spillage incidence
	Ughuvwughe	Fresh water swamp forest	Oil spillage incidence
	Ekerejegbe	Fresh water swamp forest	Oil spillage incidence
	Uzoro	Fresh water swamp forest	Oil spillage incidence
	Odimodi	Mangrove forest	Oil spillage incidence
	Ogulagha	Mangrove forest	Oil spillage incidence
	Otorogu	Mangrove forest	Oil spillage incidence
	Macraba	Mangrove forest	Oil spillage incidence
Total	20 sites oil spillage incidence		
Rivers State			
	Rumuokwurusi	Fresh Water swamp	20 oil spillage incidence
	Rukpoku	Fresh Water swamp	10 oil spillage incidence

Source: FME, NEF, WWF UK, CEEP – IUCN 2006 Niger Delta Resource Damage Assessment and Restoration Project.

Agricultural potential of Niger Delta

The rich alluvial soil of the delta coupled with copious web of fish and salt water bodies provide the necessary incentives for the people who are predominantly farmers and fishers. UNDP (2006) report shows that 60% of the population depends on the natural, living and non-living resources of the environment for livelihood. Ojanuga et, al (2003) observed that the coastal swamps of Niger Delta are grossly underutilized for agricultural purposes both in terms of the fraction of available land under cultivation and effectiveness of cropping and sustenance management. The fresh water swamps characterized by periodic flooding supported the growth of Raphia Palms. They further listed some food crops among which were maize, yam, rice, cassava, sugar cane, pineapples and plantain as major crops which farmers cultivate in the Niger Delta Region. The presence of natural pool of water in some parts of the swamp all year round provides the basis for integrated fish farming and bee keeping. The soil chemical properties show that the soil is acidic. The PH range from 4.6 to 5.3 and this is suitable for oil palm, coconut, plantain, pineapples and sugar cane production. Since these crops strive in acidic soil. The soil is fragile being subjected to extended leaching from frequently heavy rainfall and annual flooding cycle; high prevailing temperatures coupled with rapidly decompose otherwise exposed soil organic matter. It is also subjected to very poor drainage and aeration which make it amenable and responsive to appropriate fertilizer application regimes and effective soil management techniques. This shows that the region has the potential for the cultivation of both food crops and perennial tree crops. (Imogie et al., 2008).

Agricultural Production in a Degraded Environment

Agriculture has been a major part of the culture and sustaining force of the rural people in oil producing areas of Nigeria. However, since the discovery of crude oil in commercial quantity the Niger Delta as a whole have been suffering the negative environmental consequences of oil production activities. This has resulted in the

existing scourge of hardship and rural underdevelopment (UNEP Report (2011),Ekpebu and Ukpong, 2013).

With continuous discovery of more oil wells the states experience deviations in its natural environment following the resultant effects of pollution due to spillage that occur during exploitation activities. Oil spillage has become a great menace to the environment and pose a great threat to economic development as it results to land degradation, air and water pollution; with most crops often destroyed, great land areas left infertile and air water polluted; killing fishes and other sea food (Ekpebu and Ukpong, 2013).

ERA (2013), confirmed that aquatic lives have been destroyed with the pollution of traditional fishing grounds, exacerbating hunger and poverty in fishing communities. According to Etekpe, (2005) people groan under harsh environmental and economic conditions. Hence, the general tendency for them to become restive when personal safety or comfort is threatened.

ERA (2013), also found out that farmers in the oil rich region have lost their lands and are consequently forced to emigrate to other communities in search of better livelihood, exerting additional pressures on natural resources in such areas. The blame for the wanton and continuous destruction of the ecosystem by oil producing companies has been on the lack of political will by the Federal Government to enact and enforce stringent environmental laws to regulate the environmental consequences of crude oil exploration and exploitation in the Niger Delta. The oil companies, therefore, owes the region the commitment to develop agriculture to enhance food security, employment, and as well develop infrastructures for better living conditions for the people to eradicate conflicts and build peace in the region.

Effects of oil production on agricultural production

Ekpebu and Ukpong (2013) noted the following among the numerous hazards traceable to oil production; which post great challenges to agriculture and rural development in the state;

i. Oil spillage pollutes both land, air and water resources; causing tremendous havoc on crops, humans and aquatic lives. It contaminates drinking water and loss of aquatic lives and also causes health hazards on the people when consumed.

ii. Gas flaring poses great threat to productive vegetation, soils and forest resources. It also pollutes and heats-up the environment resulting to unfavourable temperature condition for surrounding plants and animals.

iii. Gas leakage is also hazardous to aquatic lives and farmers' health within the region. It is also risky to the environment as exposure to fire source can cause heavy explosion and fire; which can destroy farmlands and human settlements.

iv. Reduction in agricultural lands, forest and water resources; the region faces continuous reduction in agricultural lands as more oil wells are discovered; and oil companies continue to create more pipelines measuring up to an average of 10-15 metres wide, along thousands of kilometres across the region. This large portion of land is excluded from use for agricultural purposes under the pipeline Act, which sets it aside as pipeline right-of-way. The construction of pipeline also causes land scarification, serious deforestation, thereby exposing the soil to erosion, causing insecurity for wildlife and extinction.

Social and Economic Problems of Oil Production in the Niger Delta

The activities of the oil industry has often resulted in many social, environmental and economic problems such as environmental pollution, occupational dislocation,

rural-urban drift, unemployment , poor human health and ant-social activities (Ugbomeh 2008 and Omajemite, 2008).

Oil pollution causes damage to human health, agricultural land and fish ponds. It can also result into long-standing ecological malfunctioning and poor environmental well being. For instance, pollution of rivers through oil spillage could result in massive extermination of fishes and thereby threatening the social and economic life of the communities whose livelihood depends on the contaminated water. This state of affairs has been the regular experience of much riverine oil producing, fishing dependent communities in the Niger Delta (Olujimi, Adewumi and Odunwole, 2011). Also arable farm lands have been lost to oil pollution as a sizable farm land in the Niger Delta region have been rendered barren due to oil spillage and leakages (Omajemite, 2008).

Furthermore, when oil spillage occurs, it has to be cleaned up using some designated chemicals. While the use of the chemicals is legal, a reckless use of them destroys the environment, renders the soil infertile for agricultural purposes, and damages crops and marine life. The adverse effect of exploration on soil, crops and marine hinders agricultural practice in this area thereby subjecting the farmers to hunger and poor standard of living (Ugbomeh, 2008). Among the most conspicuous aspects of life in contemporary Ogoni land are poverty, malnutrition and disease. It is said that Ogoni villages have no clean water, little electricity, abysmal health care and no jobs for displaced farmers and fisher persons and to make matters worse, face the affects of unrestrained environmental molestation by the multinational companies everyday (UNEP, 2011).

In the Niger Delta communities, women are not expected to be part of the decision making group since they are not members of the Council of Chiefs. Thus, in case of oil spillage compensations are not paid to women but to the land owners, thus, having negative consequences on their economic base. Omoridion (2004) said "oil companies provide the male population with alternative employment in the oil

industries, and/or pay the men "standby" referring to payment of stipend for no job done. He also said the depletion of economic livelihood in the Niger Delta Region, due to the consequences of petroleum explorations and refinery, results in high school dropout among teenage girls, early child marriages and trafficking girls in terms of prostitution and as domestics to other urban cities. This long term implication continues to lower the female status and economic autonomy and makes females highly vulnerable to STD and HIV/AIDS.

Remediation of degraded farmlands

The Oil Companies have been largely responsible for the degradation of the farmlands and rivers. The Companies have also been making efforts to remediate the polluted environment. In 2010 there was a significant improvement in clean-up and remediation performance. At the beginning of 2010, there were 144 sites still to be cleaned up. By the end of 2010 only 41 sites were outstanding (Shell, 2014). After clean-up, the majority of sites were found to require remediation based on recommendations from inspections carried out with government regulators. A total of 282 sites were remediated in 2010, of which 270 were certified. The remediation of the five remaining pre-2005 spill sites was hampered by community issues and a security concerns. Remediation contracts have been awarded at all sites, and work has begun. Of the 27,580 barrels of oil spilled in 2010, 18,763 barrels (68%) were recovered. In some areas, the clean-up effort was frustrated by frequent new spills on the same site caused by repeated oil theft and illegal refiners

Where the investigation shows that the spill was within SPDC's control to prevent, SPDC negotiates compensation with the affected landowners. In 2010, SPDC paid more than $1.7 million in compensation. Nigerian law does not require payment of compensation in cases of sabotage.

Cleaning and remediation of spills

According to Shell (2014), no matter what the cause, it is committed to stopping and containing all spills, recovering and cleaning up as much oil as possible and restoring sites in compliance with regulations as quickly as possible. In the initial clean-up Shell removes the free oil and affected vegetation. Thereafter, it carries out full environmental remediation. The techniques for restoring land sites impacted by oil spills have been researched and can be demonstrated to be effective for the soil and climate conditions in the equatorial heat of the Niger Delta. For heavy spills, this may involve the addition of nutrients that stimulate the natural microbes in the soil. These feed on the remaining oil and break it down to carbon dioxide and water. Once clean-up and remediation are complete, the work is inspected, approved and certified by the government regulators. In 2010, 270 sites were certified. In the last five years, since 2006, Shell has been dealing with an average of 169 oil spills per year, slightly fewer than the 175 average for the 2005 to 2009 period.

Sustainable Agricultural Production

According to WCED (1987) "Sustainable Development seeks to meet the needs and the aspirations of the present without compromising the needs of the future. It is the process in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional changes are all in harmony and enhance both current and future potentials to meet human needs and aspiration". To achieve this for agricultural development in the Niger Delta, the followings need to be done;

A. **Continuous remediation of the degraded environment**

Although the oil companies have been carrying out remediation activities on the degraded lands, they are yet to do enough. According to the UNEP report (2011), it will take about 25-30 years before the Ogoni land can be properly remediated.

Also, the report stated that 10 out the 15 investigated sites which Shell Petroleum Developing Company records show as having completed remediation, still have pollution exceeding the SPDC remediation disclosure value.

The Federal Government's regulatory agencies should ensure that remediating companies comply to international best practices

B. **Special agricultural intervention by the Government**

The Federal Government has recently enunciated a robust agricultural transformation agenda. It is necessary for the State Government in the Niger Delta to specifically develop programmes that will encourage agricultural production. many farmers who have been displace from farming due to pollution and other economic considerations should be encouraged to come back to agriculture. This can only succeed when agriculture is made to be profitable. Enough incentives should be included in such programmes.

This recommendation becomes urgent in view of the fact that the region is food insecure. They need to produce enough food for the people.

C. **Youths in agriculture**

The problem with agriculture generally in Nigeria is that the majority of the farmers are very old and resource poor. There is the need to encourage the youths who are vibrant and educated to go into agriculture. Unfortunately, the youths have not been interested in agriculture. They have also been lured into the lucrative oil industry where they work mostly as casual labour. A specialized, well funded programme by the State Governments will bring the youths into agricultural production.

D. **Subsidized inputs for farmers**

The Agricultural Transformation Agenda of the Federal Government ensures that farmers now get direct input subsidies from input agencies. This is through

the Growth Enhancement Scheme. The State Government should ensure that this scheme is very functional in their states and that the youths who are into agriculture are well integrated into the scheme.

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