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The Impacts of Oil and Gas Pollution on Female Gender in Ilaje, Niger Delta Region of Ondo State Nigeria

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ABSTRACT Sustainable development in this millennium entails among other things ,gender equity in access to socio-economic and environmental resources. This paper continues the gender debate by evaluating the impacts of oil and gas mining on women in Ilaje region of Ondo state Nigeria. Taking a sample of five oil producing villages of Obierewoye, Ikorigbo, Obenla Awoye and Tsekelewu, 150 questionnaires were administered proportionately based on the populations of the villages on female household heads or senior wives to household heads in the settlements, on basis of systematic random sampling. Data collected were subjected to appropriate statistical analyses and the study confirmed extensive oil and gas pollution in this region particularly in Tsekelewu and Opoekaba in spite of governments' rhetoric on eliminating pollution by the year 2007. This phenomenon has had considerably high negative impacts on women, who have had to combine their traditional roles as domestic workers and mothers along with their new roles as fishermen, farmers and breadwinners thereby bridging the gap created following noticeable occupational migration of men to the oil companies to work as welders, fitters and machinists. To alleviate these problems and lessen the strains, the paper recommends increased monetisation rather than flaring of hydrocarbons and that government's policy intervention in mitigating such impacts should be targeted at women as the most vulnerable group in areas of major environmental problems.

INTRODUCTION

That for over forty years, the Nigerian Oil and Gas mining Industry has contributed significantly to environmental degradation in the Niger Delta Region is no longer news (Odu 1985; Alapodia 1986; Nigeria Oil and Gas Review 2002). Durotoye (2000) while summarizing the negative effects of the oil industry on the environment observes that the country's tremendous potentials for growth and sustainable development through crude oil production is yet to be fulfilled due to many constraints posed by the industry on the environment.

The Nigerian Oil Industry is organized in such a way that there is glaring inequity in women participation .Studies have shown that men account for about 90% of the total workforce in Shell Petroleum Development Company Limited, a company that produces over 80% of Nigeria crude oil production (Shell Bulletin 2004). However, empirical observation reveals that women bear greater burden of environmental problems, which result from oil production, from their roles as mothers, wives, domestic workers, farmers, fishermen and breadwinners. This study is therefore designed to widen the gender studies by investigating the relationship between environmental degradation and feminine welfare in Ilaje of Ondo State.

The paper examines the impact of the so-called cultural division of labour on the plight of women, in a region noted for high incidence of pollution and poverty. The paper extends the gender debate in the context of environmental degradation by examining the impact of oil and gas pollution on the welfare of women, using standard of living indicators such as access to clean water, improvement in income through socio economic activities like fishing and agriculture etc. Such are analyzed with a view to articulating solutions for sustainable social and environmental planning.

METHODOLOGY

The study concentrates on five oil mining villages of Obierewoye, Ikorigbo, Obenla, Awoye and Tselelewu. These villages have a fairly uniform population. 150 questionnaires were made and administered to female household heads or senior wives on basis of systematic random sampling technique. Allowances of two houses were given before another sample was chosen. In the whole, Ilaje region, Tsekelewu and Opoekaba constitute the most important oil mining villages. Together they account for over 70% of output by Chevron, the only oil company operating in the zone. The intensity of pollution is highest here. 70% of the questionnaires were

therefore administered here in Opoekaba and 45 questionnaires in Tsekelewu and 60 in Opoekaba since Tsekelewu produces more oil than Opoekaba. 15 questionnaires were administered to each of the other three villages of Awoye, Obenla and Ikorigbo. Descriptive statistics using simple tables were utilised to analyse and present the data.

Review of Literature

Oil Sustainable Development and Status of the Nigerian Women

The history of the Nigerian oil industry started from Oloibiri, now Bayelsa State in 1959. Several studies have shown that Nigeria derives more than 90% of its foreign exchange from these vital resources (oil and gas). Together these resources have served as a veritable source of employment of skilled and unskilled labour ,especially in the region, known as the Niger Delta of which Ilaje the study area is part.

It is however regrettable that the mining of oil and gas in the country has fallen short of global standards, (Aluko 2002), and so cannot promote the ideals of environmental sustainability. This is evident form the serious pollutions that result from mostly gas flaring in the oil fields. Sustainable development has been defined as economic and social development that meets the needs of the current generation without endangering the ability of the future generation to meet theirs. Clayton (2001) observes that a commitment to meet the needs of present and future generations has various implications. Meeting the needs of the present means satisfying economic needs, socio-cultural, environmental and health needs. There is also the growing consensus that sustainable development means achieving a quality of life that can be maintained for many generations.

Good as these ideals are, it is a fact that environmental degradation is antithetical to development (Jiriko 1998; Ake 1993). Gas flaring remained a common occurrence in the oil producing areas of Ondo State. The World Bank report (1998) claimed that 76% of the Nigerian gas is flared into the environment. While this problem has increased in recent past, it has created serious problems to the quality of life, health, farming, income and social equilibrium in the study area in particular and the Niger Delta in general. How this has affected the female folk is the subject of this paper.

Status of Women

There is no shortage of literature on gender studies worldwide. While scholars like Halima (1990), Palmer (1991), Akor (1988) and Dimon (1975) conducted their studies on gender Economics, Olawoye (2001), on access of the female gender to means of production, others such as Callway (1987), Davidson (1988) and Horenstein (1989) examined the gender question, in relation to food security and feminine welfare. Very few if any exist on environmental degradation, and women. However, all these studies have always painted a grim picture of the female folk. For example, in his studies, Singh et al. (1992) opined that Nigerian women marry young, spend 74% of their reproductive life in marriage, about 70% of adult female population being illiterate compared to the adult male illiteracy of 46%. Moreover, according to Snyder (1990) women grow 80% of food and carry out over 95% of the local food processing activities. O`Neil (1991) also reported high poverty level among Nigerian women because of their low economic base as reflected in their low per capita income. He believes that the high poverty level among the women follows from the hostile economic social and cultural environment in which the society has placed them. This high poverty level has been further compounded by the adverse economic and environmental conditions in which they operate (Aidoo 1988). For example, as stated earlier, women constitute majority of the farmers in Nigeria so the scarcity of good soil and water implies increase in the workload of women who have to look out for new sources of good water, while continuing to do the traditional work, both within and outside domestic spheres. Oil and Gas mining in the study area may therefore have presented new challenges to women. Though it is true that the oil industry has promoted some petty buying and selling among women, the questions is how adequate is this so-called positive impact, especially when considered along environmental damage which ultimately affects the capacity of these women at self empowerment.

Empirical observation by the author has revealed that women have not benefited much from oil mining in this area, four decades after

the discovery of this vital resource. It has not even fulfilled women's cultural and material needs equitably, talk less of their social and environmental needs since the resultant environmental degradation has overwhelming negative consequences. For example, while the resettlement of the households whose homes were located in oil fields by operating oil companies and the compensation that may follow may pose new opportunities to men, such may however give more psychological problems to women who may be emotionally attached to their homes. How this valuable resource has contributed to worsening female poverty is discussed subsequently.

STUDY AREA

There are many communities that make up the study area. These villages together constitute the Ugbo Kingdom in Ilaje Ese Odo , local government area of Ondo State. Out of the 16 villages, eight of them have oil extraction activities going on either onshore or offshore, while the remaining eight don't have oil extraction presently. The eight oil-mining villages are Oberewoye, Ikorigho, Obenia, Awoye, Tsekelewu Malutehin, Odo Fado and Opoekaba. Out of these eight villages, five most prominent oil producing villages have been selected These are Obierewoye, Ikorigbo, Opoekaba, Awoye and Tsekelewu.

Generally, the study area has ratified landscape with some pockets of Islands at Ugbo, Ugbonla and Ugbo-Aiku, the south is swampy and the coastline being entirely swampy from Erun-Ona through Tsekelewu. More than 90% of the study area is covered by water. This is in form of rivers, creeks, canals, lagoons and rivulets. Because of the closeness of the area into the Atlantic Ocean, the water bodies are often salty, courtesy of the creeks that link the ocean to the inland water bodies. The soil is extremely high in sulphate content and tends to maintain a balance due to the effect of seasonal flooding

The contiguity of the study area to the coast makes it to experience the domination of the southwesterly winds. The land and sea breeze brings continuous cooling effect to the coastline and further into northern part of the study area. The natural resources present in the area include petroleum (Offshore and Onshore at Imoluwa, Awoye, Ikorigho, Opoekaba, Tsekelewu) palm kernel at Kiribo, fish and Raphia among others.

OBSERVATIONS AND DISCUSSION

Changing Roles of Women in Ilaje

The family has been defined as the union of the father, mother and the children. However, in the African context, a family extends more than that. It also includes the extended family members living with them. All of these members had their roles. The father was the breadwinner; the mother was in charge of domestic affairs, the male children helped the father in the farms or in his trade, while the females helped their mother in her domestic duties. However, there is increasing responsibility of the mother as breadwinners in Africa, especially in areas where wars, famine and other natural disasters have put a limit to the capacity of men to perform their traditional roles.

Among the Ilajes of Ondo State, traditional sexual division of labour found expression. Men did the fishing and tilting of the land for farming, while women washed, smoked, processed and sold the produce. However, this study found out that more women are now involved in fishing and agriculture that was an area that used to be dominated by men. Table 1 shows the occupational distribution of women in the study area obtained from the field.

Table 1: Occupational distribution of women

S. No.	*Occupation*	*No. of respondents*	*Percentage*
1.	Fishing only	21	14.0
2.	Fishing and smoking	75	50.0
3.	Fishing, smoking and trading	24	16.0
4.	Fishing and agriculture	18	12.0
5.	Agriculture only	12	8.0
	Total	150	100.0

Source: Fieldwork 2008

The reason for this occupational migration of inhabitants is not far fetched. Men are increasingly abandoning this role to women due to availability of new jobs in the oil facilities. Out of 150 women sampled, 28 or 18% reported some changes in spouses' occupation within the past five years. Out of the 28, 19 or 68% reported that their husbands are either directly employed or are contractual staffs of or are depended on the oil companies for their livelihood somehow. The implication of this occupational migration by men is that women now combine their traditional roles of cooking, fetching water and fish smoking to their new

roles as breadwinners, thereby increasing the burden they have to cope with. In the study area, women are becoming major farmers, fishermen and traders, the positions held exclusively by men before the new opportunities in the oil industries

Synopsis of Environmental Impact of Oil Activities in Ilaje

The discussion on environmental implication of oil and gas pollution on the environment will be conducted under two broad headlines- These are on soil and water quality in the study area. It is in the context of this that the gender implication could be better understood.

The impact of oil activities can be determined through damage to soil properties. The reconnaissance and field surveys carried out on the communities where oil is exploited showed evidence of barreness of the hitherto fertile parcels of land used for farming. Indeed this phenomenon has led to occupational migration from farming in two of such communities - Awoye and Molutehin, where 73 respondents reported migration from farming to fish smoking and trading over the past 10 years. Prior to the emergency of commercial oil production in the 5 sampled communities around 1980, the clay-loamy soil was fertile for agricultural purposes, especially the cultivation of cocoyam, yam, maize, cassava etc. The study showed that 92% of the respondents in the communities with oil wells claimed that the soil of their communities have been polluted in one-way or the other. This finds scientific explanation. Halogenated substances contain hydrogen compounds with one or more of the Halide elements such as chlorine, bromine and iodine. Many of these substances are very toxic to life, floral and fauna, and they may pose immediate threat to human health. These substances are present in hydrocarbons

One of the most obvious negative implications of oil mining is the damage to water resources (Gbadegesin and Adewumi 1997). This is particularly important since water constitute the most important environmental resource in Ilaje. Water is used for domestic purpose, transportation, fishing and to lesser extent, for agricultural purpose in these communities. Their whole life and existence depends on water. It is on the basis of this that the damage posed to this resource by oil pollution can be understood. 91 respondents or 61% of respondents in the study area reported changing taste 105 or 70% colour and 87 or 58% reported changing odour of the fresh water used for drinking purpose. This can be appreciated when it was discovered that 101 or 67.3% reported exclusive dependence on surface water for domestic use. No wonder therefore, that women interviewed noted decreasing yield of fish for basket per day over the last ten years of oil mining.

Oil Pollution and Domestic Water Supply

Some years back before the coming into operation of Chevron's oil mining activities in 1997, good water supply used to be abundant. Women did not have to travel over long distances to get good water for their families. However, due to this activity, many surface water bodies became polluted, some directly from oil and gas flaring, others from the hydrocarbon leakage from tankers. Respondents were asked to rank the major problems being faced by them, 65% reported pollution of water bodies as the greatest problem being faced by women in Ilaje (see Table 2). The drilling activities in some areas like Tsekelewu made surface water muddy and almost useless for domestic use. The implication is that women now traveled over long distances to get drinking water for their families. Reason for traveling to get drinking water was investigated. 70 respondents 46.6% reported polluted surface water from hydrocarbons, while 38 respondents or 25% observed that surface water was now getting coloured and dirty, which is still a result of the activity as shown in table 3.

Table 2: Major problems associated with oil exploitation by respondents

Problem	*Number of respondents*	*Percentage*
Pollution of water bodies	98	65.0
Poor commerce	12	8.0
Poor health facilities	10	6.6
Low fish catch	30	20.0

Source: Field report 2008

Table 4 shows that 78 respondents or 62% have to travel for more than 1kilometer to obtain drinking water (that is Borehole provided by Chevron/NNPC joint venture at Opoekeba and

Table 3: Reason for traveling to get drinking water

Town/Reasons	*Polluted Surrounding water*	*Water coloured and dirty*	*Bush water is good for drinking*	*Others are doing so*	*Don't know*
Opoekaba	22	12	5	3	3
Ikorigho	8	4	2	1	-
Obenla	5	4	3	-	3
Awoye	6	4	2	2	1
Tsekelewu	29	14	12	3	2
Total	70	38	24	9	9
Percentage	46.6	25.4	16.0	6.0	6.0

Source: Field report 2008

Tsekelewu). 12% travel on average of 2.5km, 8.5% travel on average of 1.3kilometer, 20% travel for an average of 1.8kilometer, 11% for an average of 2.3kilometer and 37% for less than 500 meters to get drinking water.

From the table, it is clear that more women travel from their communities to fetch drinking water from the borehole provided by NNPC/ Chevron joint venture because the surface rivers have been polluted. Communities like Opoekaba and Tsekelewu travel very short distances because the boreholes are located in their communities.

The suffering imposed by this situation in term of drinking water can best be imagined in the distance traveled by Canoe or Boat and money spent in the process. For example, 94.8% of the women use either boat or Canoe to travel to get drinking water.

Given the fact that outboard engine consumes more fuel than land vehicles, it is estimated that a trip of about 21.5kilometer will cost N800 fuel to and fro from the borehole sites per month (see Table 5).

The implication of the foregoing analysis is that surface river sources of drinking water is polluted and rendered unfit for consumption. We can thus conclude that while Nigeria benefits from oil exploitation, in terms of foreign exchange, oil mining and its attendant impacts has worsened the plight of women who now have to travel farther and spend more of their meager incomes to get drinking water thus increasing feminine poverty in Ilaje regions.

Table 5: Estimated cost of travel by women to get drinking water per month

Amount (Naira)	*Respondents*	*Percentage*
Below 500	21	14.0
500-1000	34	22.6
1500-2000	53	35.3
2000-2500	12	8.0
2500-3000	30	20.0
Total	150	100.0

Source: Fieldwork 2008

Oil, Farming and Women

Scholars, such as Zitiko (1978) and Nwankwo and Ifeadi (1988) have long recognized the negative impacts of oil pollution on agriculture in the Niger Delta Area of Nigeria of which the study area is classified. According to these scholars, various materials that are released into the environment in the course of oil production operations directly or indirectly affect the communities. These materials sink into the ground and kill living micro plants and animals, which are useful in germination of seed. Such contaminants include elements such as oxide of nitrogen, carbon and sulphur. Others include oil and grease, phenol cyanide sulphide and muds such as Beryite and Bentonite. All these have

Table 4: Distance traveled to get drinking water in communities with oil wells

Town/Distance	*Less than 500*	*500m-1km*	*1.1km 1.5km*	*1.6km-2km*	*2.1km 2.5km*	*Above 2.5k.m*	*Toral*
Obenla			2	7	6		
Ikorigho		5	3	6		1	
Opoekaba	34	8	3	7	5	3	
Awoye	-	-	-	3	3	9	
Tsekelewu	22	3	5	7	3	5	
Total	56	16	13	30	17	18	
Percentage	37.0	10.6	8.6	20.0	11.0	12.0	

Source: Field report 2008

led to progressive reduction of agricultural yield in the area. This comes against the backdrop of the fact that more women are now embracing agriculture following decreasing fish yield per basket.

Oil extraction and pollution have adversely affected farming activities and figures in table 6 indicate that 95.7% of women claimed that their farm lands have been affected in one way or the other by hydrocarbons pollution while only 4.3 percent claimed no damage at all. Breaking the figure down, 60% claim reduced crop yields, 30.4% claim destruction of plants, 3.5% believe that the tubers of crops gets rotten and 1.7% reported other types of damage.

Table 6: Effects of oil exploitation on farm

Effect	*Number of respondents*	*Percentage*
Greatly reduced yield	87	58
Averagely reduced yield	37	24.7
No yield at all	19.5	13.0
No effect	6.5	4.3
Total	150	100.0

Source: Field Work 2008

The effects of oil exploitation on farmlands vary among the sampled villages. The women farmers in the villages of Tsekelewu and Opoekaba reported high incidences of pollution on their farmlands. The percentage varies from 62% in Opoekaba, 53% in Tsekelewu to 22% in Obenla. The implication of greatly reduced farm yields among women farmers over the years is reduced income and more poverty in face of increasing responsibilities of women as breadwinners to their families.

Women Fishing and Poverty

Fishing is no doubt the major economic activity in Ilaje region of Ondo State and women are involved in fishing trade from catching to smoking to trading in fish. However, there has been an observed reduction in yield over the past ten years of oil mining.

Hydrocarbons affect the natural habitat of fishes. Moreover, pollution results in the inability to breed and out migration of fishes (Adeniyi 1978). Women interviewed reported an average of 65.3% reduction in yield per basket as shown in the table 7.

This is particularly important since about 90% of women interviewed were in the fishing industry. The implication of this is reduced standard of living since more harvest translates to more money and vice versa. More over, more and more women now have to travel to catch fishes since aquatic animals now out migrate to new habitats free of hydrocarbons, thereby imposing more strain on women as shown in the table 8.

Table 7: Estimated fish yield per basket.

Towns	*Number of respondents*	*Estimated yield before oil pollution/basket per day (1995)*	*Estimated yield after oil pollution/basket per day (2006)*	*Percentage reduction*
Opoekaba	45	1-1.5	0.5	40
Ikorigho	15	1-2	1	66
Obenla	15	1-3	2.5	None
Awoye	15	2.5	1.8	72
Opoekaba	45	1-1.5	0.5	40
Ikorigho	15	1-2	1	66
Obenla	15	1-3	2.5	None
Awoye	15	2.5	1.8	72
Tsekelewu	60	1.2	1	83

Source: Field survey 2008

Table 8: Estimated distance to fishing ground

Town	*No. of respondents*	*Estimated distance to fishing ground by 1995*	*Estimated distance of fishing ground in 2006*
Opoekaba	45	0.5km to 3.7km	5-20km
Ikorigho	15	0.8km to 8km	6-15km
Obenla	15	2-3km	3-10km
Awoye	15	0.5-1km	Over 5km
Tsekelewu	60	2-5km	10-15km

Source: Fieldwork 2008

Table 8 shows clearly an increase of over 300% in travel distance to good fishing grounds over the past 10 years. Oil mining activity is a major contributor to this. This activity has depleted fish and other aquatic animal habitats pushing it further into non-oil producing fresh water swamps. This has further imposed strain on women bearing in mind that more women are now exclusively fishermen (14%), fishermen and fish smokers (64%), fishermen, fish smokers and traders (80%).

CONCLUSION

This study has tried to evaluate the negative impacts of environmental degradation occasioned by oil mining on women. Using such indices as women as breadwinners, women as fishermen and farmers and women as providers of domestic services to their families. The study has again revealed the pathetic situation of women as the most vulnerable group. The study found out that environmental degradation may have had more negative impacts on women than men due to their traditional and changing roles among the Ilajes. Thus, while men may find in the oil industry new opportunities, it may have increased strain on women in terms of access to water, access to new fish grounds, depleted and degraded farmlands and so on.

RECOMMENDATION

This work is centered on assessing the negative impacts of Oil and Gas Mining on women of Ilaje Area of Ondo State in Nigeria, a major region noted for high incidence of pollution which results from misuse of these valuable environmental and non- renewable resources. By taking a sample of the oil producing villages, the study established extensive damage to soil and water resources especially in Tsekelewu and Opoekaba which affects not only economic activities of agriculture and fishing, but also domestic water supply, commerce and environmental sustainability.

This has continued unabated over the years in spite of Government's rhetorics on ending this wasteful attitude. It was also established that this phenomenon has affected women who have had to combine their domestic roles as mother to their new roles as bread winners for their families. The study finds out that women are increasingly involved in traditionally men's roles as farmers and fishermen. This they do with considerable difficulty, since oil and gas pollution has affected agricultural yield, reduced fish caught from 1- 1.5 standard basket per day before oil production to less than 1 standard basket per day after oil rig was installed in Opoekaba, increased distance traveled to get good drinking water to more than 1 kilometer and increased poverty generally in the area.

To alleviate this burden, it is recommended that the government must ensure the monetization of the gas being flared and impose stringent oil mining rules to ensure a better environment. Moreover, development planners should recognize women and children as the most vulnerable group in a challenging environment as we have here. Measures designed to alleviate their strains should be specifically incorporated in development projects so that they can be empowered equitably in meeting the millennium development goal of sustainable environment and gender equity by 2015.

REFERENCES

Adeniyi I 1978. Effects of Oil Pollution on Fishing in Focados, Delta state. *Journal of Food Production in Africa*, 12: 120-135.

Aidoo A 1988. Women and food security, the opportunity for Africa. *African Development Journal,* 2(3): 56-61.

Ake C 1993. The Underdevelopment of the Niger Delta. *Paper Presented at the Bi Annual Conference of Nigeran Institute of Policy and Startegic Studies, Kuru, Jos,* March 1 - 15 1990.

Akor R 1988. Rural Women and Agricultural Development in Nigeria: Case Studies of Kaduna and Bendel State APMEU. *Journal of Economics and Social Research,* 4: 22-38.

Alapodia J 1986. *Effects of Gas Flaring on the Micro Climate and Adjacent Vegetation in Isoko Area of Bendel State.* MURP Thesis, Unpublished, Ibadan: University of Ibadan,.

Callaway B 1987. *Muslim Hausa Women in Nigeria: Tradition and Change:* New York: Syracruse Press.

Clayton B 2003. Sustainable Development in the New Millennium. In Sustainable Development in Africa Conference held in Nairobi, Kenya, November 3 - 10, 2003.

Davison J 1988. *Agriculture, Women and Land: The African Experience Boulder.* London: Westview Press.

Dimon E 1975. *The Small Scale Rural Food Processing Industry in Northern.* Nigeria Palo Alto: Stanford University Food Research Institute, Volume 18 No.10. 28 -30.

Durotoye B 2000. *Geo-Environmental Constraints in the Development of the Niger Delta Area of Nigeria.* Lagos: Fredrich Ebert Foundation.

Gbadegeshin A, Adewumi E 1997. *The Impacts of Oil Exploitation and Production Activities on the*

Environment, Implication for Peasants. A Campaign for Defense of Human Rights CDHR Publication. Volume 1, No. 3.

Horenstein N 1989. *Women and Food Security in Kenya.* Washington DC.: World Bank. Nigeria Oil and Gas Review Volume 21, 2002, Abuja. 22-28

Jiriko G 1998. Aspects and Topical Issues in *Urban and Regional Planning Practices.* Volume 1. Kaduna:.Dalin Publishers. 1-5

Nwankwo C 2000. Environment Food and Agriculture Dynamics; Development Policy Implication for National Resources Exploration and Exploitation in the Niger Delta Wetlands In: Oshuntokun Olalekan (Ed.): *Environmental Problems of the Niger Delta. Lagos:* Fredrich Ebert Foundation, pp. 22-28.

O' Neil M 1991. Priorities for International Support for African Development: The Women's Agenda. *Development,* 1: 68-70.

Odu C 1985. *Degradation and Wealth of Crude Oil under Tropical Conditions.* The Petroleum Industry and the Nigerian Environment, Lagos: NNPC, pp. 143-153.

Olawoye A 2001. *Women and Farming in Africa.* Akure: Bentos Publishers. 82-85

Olawoye J 2000. Difficulties of Rural African Women to Secure assess to resources for Agricultural Production: Two case studies from Oyo State Nigeria. Ibadan: Bossman Publishers.

Palmer Jeremy 1991. *Gender and Population in the Adjustment of African Economics. Planning for Change*. Stockholm: World Commission on Population IR&D.

Shell Bulletin 2004. Published by shell Nigeria Publishing Department. Volume 12, No 15.

Singh B, Saddiqque I, Martins B.l 1992. Industrial Pollution in India, Punjab 1137 ANS. *West Bengal J,* 1(4): 519-525.

World Bank 1999. *State of the World Manufacturing and Competitiveness of Developing Countries.* 360 BD, USA. Washington DC: World Bank, pp. 102 - 104.

Zikito R 1978.Toxity and Environmental properties of chemicals used in a well drilling Operations. Publisher Environment Canada Brundswick EPA Conf., pp. 45-58.