

CRUDE OIL EXTRACTION AND CONFLICT IN THE NIGER DELTA REGION, NIGERIA: IMPLICATIONS FOR SUSTAINABLE AGRICULTURAL PRODUCTION

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ABSTRACT

This study examined crude oil extraction and conflict on agricultural production in the Niger Delta Region. Systematic random sampling method was used to select 104 respondents. Frequency distribution, percentage, mean and Likert scale rating technique and ordinary least square (OLS) were used in analyzing the data. The result showed that the mean age of the respondents was 52 years; majority (66.3%) respondents were without formal education with mean household size of about 11. The result further shows that 79.8% of the respondents had farm sizes less than a hectare and earn average farm income of ₦48, 177.89 per annum. The study found out that off-farming income, compensation, cost of planting materials and value of oil companies assistance were positive and significant at 1% and 10% levels. The coefficient of farm size, soil degradation, conflict and oil spill were negative and significant at 1% and 5% levels.

Keywords: Oil extraction, oil spillage, conflict, production, small-scale farmers, Niger Delta.

INTRODUCTION

The impact of oil extraction on the environment and human wellbeing became a major sustainable development issue over the last decade. Apart from distorting delicate ecosystem – forests, wildlife and fisheries; the extractive industry is closely associated with communal conflict across sub-Saharan Africa. Extensive oil extraction has over the decades impacted disastrously on the socio-physical environment of the Niger Delta oil bearing communities, massively threatening the subsistent peasant economy and the environment and hence the entire livelihood of the people (Eteng, 1997). Oil spillage and pollution are some of the negative by-product of the petroleum industry and its effect on socioeconomic life of the farmers is a source of major concern. Oil extraction has an impact on the environment through frequent spills, pipe explosions, pollution, sabotage, gas flaring and effluent emission.

Oil production and consumption has probably brought out both the best and worst of modern civilization in Nigeria. It has contributed enormously to the country's economic growth and, on the other hand, has left profound adverse impact on the natural environment and has generated a number of other socio-economic concerns including human rights issues

Table 1.

S/N	Date	Episode	State	Quantity in Barrels
1	July, 1979	Forcados Terminal oil spillage	Bendel	570,000
2	Jan. 1980	Funiwa Well Blow-out	Rivers	400,000
3	May, 1980	Oyakama Oil Spillage	Rivers	10,000
4	Nov. 1982	Warri-Kaduna Pipeline Rupture at Abudu-Edo	Edo	18,000
5	August 1983	Oshika oil spill	Rivers	10,000
6	Jan. 1998	Idoho oil spil	Akwa Ibom	40,000
7	Jan. 1998	Jones Creek oil spill	Delta	21,548
8	Oct. 1998	Jesse oil spill	Delta	10,000
9	May. 2000	Etiama oil spill	Bayelsa	11,000
10	Dec. 2003	Agbada oil spill	Rivers	Unknown
11	August 2004	Ewan oil spill	Ondo	Unknown
12	August 2005	Ughelli oil spill	Delta	10,000

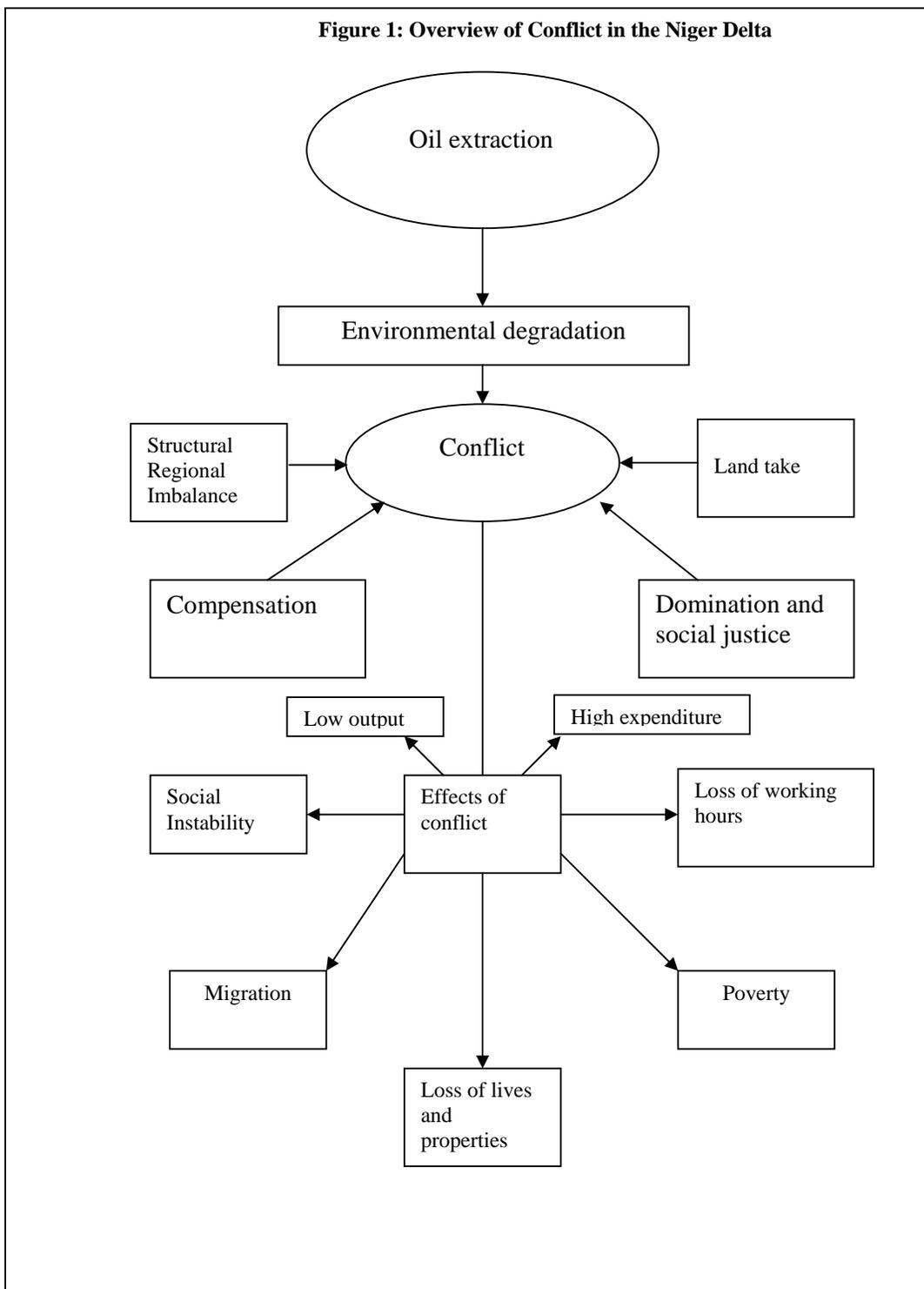
Source: UNDP, 2006

Conflict is a struggle between individuals over values or claims to status, power and scarce resources in which the aims of the conflicting parties is to assert their values or claims over those of others (Goodhand and Hulme, 1999). Conflict is embedded in society and cannot be separated from political and social processes. Once conflict emerges it transforms itself and all around it, the State, community, livelihoods, national and local economy as well as social relation (Collier, 2000).

Conflict in oil producing areas between the communities and the oil companies is not merely a side issue that can be ignored by developmentalists. It needs to be better understood, accounted for and tackled if development goals are to be achieved. To date however, there has been no empirical research, which examines the nature of the relationship between oil extraction and conflict in the study area. The extraction of oil carries with it a lot of risks and uncertainties that have both ecological and social dimensions. Some of these risks such as oil spillage and gas flaring know no boundary and hold great uncertainties for sustainable development for inhabitants as well as the environments where the extraction takes place.

Thus, it has provoked sharp reactions from communities where such extraction is carried out, leading to severe and protracted conflicts between the communities in oil producing areas and the oil companies over, compensations, land ownership and questions relating to domination and social justice (Aiyede, 2002; Graf, 1988, Obi, 1997 and Lewis, 1997). These conflicts have resulted in social instability, loss of working hours by farmers, loss of lives and properties, and poor living conditions. This scenario does not guarantee improved or sustainable agricultural production.

Figure 1: Overview of Conflict in the Niger Delta



Bunker (1985), argues that when natural resources are extracted from one regional ecosystem to be transformed and consumed in another the resource exporting region loses values that occur in its physical environment. The losses

eventually decelerate the extractive region's economy; while the resource consuming communities gain values and their economic accelerate. Currently, several host communities are up in arms against these oil companies' actions such as oil spillages, gas flaring and other externalities of oil extraction pose to their livelihood and survival (Iyayi, 2000 and Osaghare, 1995), Table 2

Table 2: Escalating Violence in the Niger Delta, 2003-2006

1	2003: At Irri, Isoko South local council, a traditional ruler was alleged to have sold the rights of the community to Agip Oil. This sparked off violence. At the end of the imbroglio, no fewer that palace of the traditional ruler who took to his heels in the heat of the crisis.
2	22 March 2003: Youths struck at the TotalFinaElf tank farm in Oponani Village and killed five soldiers and destroyed property worth billions of naira.
3	April 2004: Five persons including two Americans were killed by militant youths. They were among nine people traveling in a boat along Benin River, West of Warri, when they came under what was described as unprovoked attack. The two American expatriates were the staff of ChevronTexaco.
4	18 November 2004: Ijaw youths from Odioma community in Brass Council in Bayelsa State, protesting an alleged violation of a Memorandum of Understanding (MOU) by Shell Petroleum Development Company (SPDC), shut down and occupied its 8,000-barrel a day flow station.
5	28 November 2004: Ijaw youths clashed with soldiers at Beneseide flow station, near Ojobo in Bayelsa State over breach of MOU.
6	23 December 2004: The youths in Ogbe-Osewa and OgbeIlo quarters in Asaba clashed over a land dispute. Over 100 houses were ransacked, with property running into millions of naira destroyed.
7	21 December 2005: Explosion rocked Shell pipeline in Niger Delta.
8	22 December 2005: Fire raged in Shell installations causing 13 deaths.
9	31 December 2005: Explosion rocked Shell pipeline in Niger Delta.
10	18 January 2006: Soldiers, Bayelsa militants engaged in gun duel.
11	18 January 2006: Shell cut oil output by 115 BPD (<i>ThisDay</i> , 18 January 2006).
12	29 January 2006: Oil workers threatened to pull out of Niger Delta.

Source: Adapted from the UNDP Report, 2006

SUSTAINABLE AGRICULTURAL DEVELOPMENT

The word “sustainability” is defined by Wikipedia, the free encyclopedia as a systematic concept, relating to the continuity of economic, social, institutional and environmental aspects of human society, as well as non- human environment. It is intended to be a means of configuring civilization and human activity so that society, its members and its economies are able to meet their needs and express their greatest potential in the present, while preserving biodiversity and natural ecosystems and planning and acting for the ability to maintain these ideals in a very long term” (<http://en.wikipedia.org/wiki>).

The idea of sustainable agricultural development on the other hand grew from numerous environmental movements over the years and was defined in 1987 by the World commission on Environment and Development as “Development that meets the needs of the present without compromising the ability of the future generation to meet their own needs” (Brundtland, 1987). In addition, Sustainable development comprises types of economic and social development which protect and enhance the natural environment and social equity. The term “sustainable agricultural development” was adopted by Agenda 21 programme of United Nations, the 1992 RIO earth Summit. In this summit a recommendation that all countries should produce national sustainable agricultural strategies was made. All these point to the fact that sustainable agricultural development implies, improving the quality of human life while living within the carrying capacity of supporting ecosystems. What the term sustainable agricultural development actually means and what it implies for oil exploitation in the Niger Delta, Nigeria is meeting the needs of the present without compromising the ability of the future generations to meet their own needs. “Meeting needs of the present” involves the provision of the basic necessities for survival including livelihoods. The issue of oil spillage which by far constitutes the greater threat to the Niger Delta environment has made access to these productive resources difficult and in fact, eroded their livelihoods. The spills involving the bursting of oil pipelines destroy homes, farmland and pollutes water that people drink and endangers aquatic life. Despite the economically strategic nature of the Niger Delta, the area is reputed to have one of the highest incidences of environmental disasters in the World (Okwe, 2006). A study United Nation Development Programme (UNDP) report on the Niger Delta describes the region as “suffering from administrative neglect, crumbling social infrastructures and services, high unemployment, social deprivation, abject poverty, filth and squalor and endemic conflict” (UNDP, 2006).

The objective of this study is to examine the effect of oil extraction and conflict on agricultural production in oil producing area.

RESEARCH METHODOLOGY

The study area

The study was carried out in Delta and Bayelsa State of Nigeria. They are one of the States in the Niger Delta region of Nigeria. These areas were selected for the study due to the fact that they are home to several oil producing communities and also a principal source of on-shore and off-shore production as well as persistent conflicts in these areas. The traditional occupation of the people is fishing and farming.

Fig 2: map of study area



Sampling Procedure and Data Collection

The selection of respondents for the study was multi-stage which involve purposive sampling as well as random sampling methods. Two (2) local government areas were purposively selected from each of the two (2) States (Delta and Bayelsa States) giving a total of four (4) local government areas. Structured questionnaire was the instrument used for data collection. The distribution is shown in Table 3.

Table 3: Distribution of respondents,

State	LGA	Communities	No. of respondents
Delta	1. Burutu	1. Ojobo	13
		2. Ogulagha	13
	2. Isoko South	1. Irri	13
		2. Olomoro	13
Bayelsa	1. Southern Ijaw	1. Oporoama	13
		2. Otuan	13
	2. Ekeremor	1. Azagbene	13
		2. Agge	13
			104

Data Analytical Techniques

Descriptive statistical techniques such as means, frequency distribution and percentages, likert scale rating technique and ordinary least square (OLS) of multiple regression analysis were used to realize the objectives of the study.

Model Specification

Multiple Regression Model

Multiple regression models were used to estimate the implications of conflict on agricultural production in the study area. The data generated was fitted into three functional forms namely linear, semi-log and double-log function. The best fitted among the functional forms was chosen as the lead equation. The decision for choosing the lead equation was guided by the statistical criteria such as the R^2 value, the significance of the coefficients as well as the a priori expectation. The chosen lead equation was interpreted and conclusions were drawn from it. The implicit form of the regression model is specified as follows:

$$Y = f (X_1, X_2, X_3, X_4, X_5, \dots, X_n) + \mu \quad (1)$$

Where Y = farm output (₦)

X_1 = farm size (ha)

X_2 = soil degradation (very serious =3, serious =2, mild =1, none =0)

X_3 = off- farming income (₦)

X_4 = compensation (dummy, benefited=1, 0 otherwise)

X_5 = cost of planting materials (₦)

X_6 = value of oil companies assistance (₦)

X_7 = labour cost (₦ / man day)

X_8 = occurrence of conflict (dummy, conflict =1, no conflict = 0)

X_9 = farming experience (years)

X_{10} = oil spill (dummy, oil spillage =1, no oil spillage = 0)

μ = stochastic disturbance term

Likert Scale Rating Technique

To ascertain the level of conflict caused by oil extraction companies as well as their influence in host communities. Each respondent was required to indicate his/her opinion by checking any of the four options namely; strongly agree = 4; Agree = 3; strongly disagree = 2; Disagree = 1.

These values of four responses were added to obtain 10, which was further divided by 4 to obtain 2.5 which were regarded as the mean. Variables with mean scores of less than 2.5 was regarded as not having any effect on agriculture, while variables with mean scores equal or above 2.5 was regarded as having great effect on agricultural production.

RESULTS AND DISCUSSION

Socio-economic Characteristics:

Table 4 shows the age distribution of respondents in the study area. Results showed that the age of respondents ranges between 27 and 71 years. The mean age was 52 years while the modal age group was 45 – 53 years age bracket. By implication therefore, one could infer from this result that the farmers in the study area are ageing. The result shows that 65.4% and 34.6% of the respondents were male and female respectively. The result also show that majority of farmers

(66.3%) in the study area are without formal education, while 16.3%, 14.4% and 2.9% had primary, secondary and tertiary education respectively. This could have negative impact on the adoption of new techniques of production. A relatively large household size was found in the study, with a mean size of 11 persons per household. About 35 percent of the households have a family size that ranged between 13 – 20 persons, thus supporting the preponderance of large family sizes among the poor in rural areas of Nigeria. The intensity of agricultural production has been found to have a direct relation to household size. Most farmers in the study area are small scale farmers as 79.8% reported farm size of less than a hectare while only 20.2% had between 1.1 and 2.2 hectares of land. The level of income realized from farming activities by respondents reveals that farm income is very low. This is not unexpected given the size of land holdings observed in the area. Annual farm income ranged between ₦19000 – ₦82, 000, though about 70.2% of the farmers earned income of between ₦19000 – ₦50, 000 from farming operations. The average farm income was ₦48, 177.89 per annum.

Table 4: Socio-economic characteristics of farmers

Parameter	Frequency	Percentage (%)
Age		
27 – 35	3	2.9
36 – 44	12	11.5
45 – 53	56	53.8
54 – 62	23	22.1
63 – 71	10	9.6
Total	104	100.0
Sex		
Female	36	34.6
Male	68	65.4
Total	104	100.0
Educational level		
No formal education	69	66.3
Primary education	17	16.3
Secondary education	15	14.4
Tertiary education	3	2.9
Total	104	100.0
Household size		
5 – 8	15	14.4
9 – 12	53	51.0
13 – 16	27	26.0
17 – 20	9	9.0
Total	104	100.0
Farm Size		
0.5 – 0.7	25	24.0
0.8 – 1.0	58	55.8
1.1 – 1.3	10	9.6
1.4 – 1.6	5	4.8
1.7 – 1.9	4	3.8
2.0 – 2.2	2	1.9
Total	104	100.0
Income level (₦)		
19000 – 34000	45	43.3
35000 – 50,000	28	26.9
51,000 – 66,000	22	21.2
67,000 – 82,000	9	8.7
Total	104	100.0

Source: Field Survey Data, 2011

Regression result

The regression result shows that value of output of the farmers was best estimated using the double log function, which explained 91.6% of the total variation in the values of output of the farmers. However, the double log functional form was chosen as the lead equation based on econometric and statistical reasons such as the number of regression coefficients that are significant, the value of R- square and the significant level of the F-ratio. From a-priori expectation, coefficients of off-farming income, compensation, cost of planting materials and value of oil companies' assistance were positive and significant at 1% and 10% levels. This implies that as their quantities used increased, the revenue accruing to the farmers would increase. Coefficients of farm size, soil degradation, occurrence of conflict and oil spill were negative and significant at 1% and 5%. The inverse relationship between output and farm size is not unexpected. This could presumably be due to oil extraction activities leading to land take causing reduction of farm sizes and the remaining portions by oil spillages resulting to poor soil fertility. This often caused conflict affecting the revenue that would accrue to the farmers. The non-significance of value of variable inputs, farming experience and labour cost may be attributed to the level of use. Farm size and soil degradation have important roles to play in farming activities. It confirms earlier work by Gbigbi (2011) that the larger the farm size the greater the output.

Table 5: Effect of socio-economic variables on output in oil producing areas

Variable	Double-log	Semi-log	Linear
Farm size (X ₁)	-0.680 (-2.793) ^{xx}	-0.012 (-1.193)	0.159 (0.738)
Soil degradation (X ₂)	-0.504 (-2.734) ^{xxx}	-0.001 (-0.013)	-8.988 (-0.839)
Off-farming income (X ₃)	0.021 (8.600) ^{xxx}	0.569 (6.569) ^{xx}	0.013 (5.584) ^{xxx}
Compensation (X ₄)	0.557 (3.359) ^{xxx}	0.309 (2.126) ^x	6.222 (1.760)
Cost of planting materials (X ₅)	0.435 (4.791) ^{xxx}	0.139 (2.234) ^{xx}	128.413 (1.948) ^x
Value of oil companies assistance (X ₆)	0.118 (1.991) ^x	-70.732 (-0.821)	66.940 (1.190)
Labour cost (X ₇)	0.883 (5.327)	-0.004 (-0.071)	-20.416 (1.556)
Occurrence of conflict (X ₈)	-0.495 (-6.193) ^{xxx}	-0.238 (-2.977)	-312.364 (-3.541) ^{xxx}
Farming experience (X ₉)	0.072 (3.767)	13.065 (0.309)	9.583 (0.411)
Oil spill (X ₁₀)	-0.040 (-2.791) ^{xxx}	44.656 (0.967)	-11.845 (-0.863)
Constant	4.5442 (16.694) ^{xxx}	2.717 (1.896) ^x	-169.151 (-2.691) ^{xxx}
R-square	0.916	0.928	0.902
F-ratio	12.87 ^{xxx}	13.63 ^{xxx}	11.41 ^{xxx}

Values in parentheses are t-values. x = significant at 10%; xx = significant at 5% and xxx = significant at 1%. **Source: Field Survey Data, 2011.**

Perception of Conflict on Agricultural Production

In examining the perception of the farmers on the effect of conflict on agricultural production, mean score and standard deviation were determined. Data in Table 6 shows that all the items had their mean values ranged from 3.21 to 3.76. This showed that the means were above the cut-off point of 2.50, indicating that all the items adversely affected agricultural production.

Table 6: Response on the effect of conflict on agricultural production

S/N	Items	Mean (\bar{X})	SD	Decision
1	Loss of labour a product of conflict	3.57	0.72	SA
2	Through conflict farm income is reduced	3.51	0.58	SA
3	Conflict causes reduction in the yield/productivity of crops and fish caught	3.76	0.63	SA
4	Increase in the price of food is link to conflict	3.54	0.72	A
5	size of farm land and high cost of purchase link to conflict	3.47	0.65	SA
6	Conflict stimulated migration	3.21	0.56	A
7	Conflict and poverty are closely linked	3.60	0.55	SA
8	Loss of properties caused by conflict	3.70	0.61	SA
9	Conflict responsible for loss of working hours in the farm	3.52	0.59	SA
10	Social instability link to conflict	3.48	0.64	A
11	Inadequate compensation stirred conflict	3.58	0.67	SA
12	Lack of access to human and material resources caused by conflict	3.42	0.56	A
13	Through conflict livelihoods assets are loss	3.50	0.68	SA
14	Conflict disrupted social network for financial support	3.49	0.55	A
15	Loss of savings related to conflict	3.46	0.42	A

SA = Strongly Agree, A= Agree, SD = Strongly Disagree, D = Disagree

Source: Field Survey Data, 2011

CONCLUSION

Based on the findings of the study, it can be concluded that majority of the respondents were ageing. Also, the level of illiteracy was very high among the respondents as about 66.3% of total respondents had no formal education while 16.3%, 14.4% and 2.9% had primary, secondary and tertiary education respectively. Respondents are majorly small scale farmers with a mean farm size of 0.91 hectares. All the factors relative to productivity of farmers; off-farming income, compensation, cost of planting materials, value of oil companies assistance, farm size, soil degradation, conflict and oil spill call for policies aimed at increasing productivity. All the items mean values ranged from 3.21 and 3.76. The mean were above the cut off point of 2.50 indicating that all the items considered adversely affected agricultural production. Farmers therefore should be encouraged to improve on their productivity through provision of micro-credit facilities and loan since the compensation paid is not commensurate in value with the damage done to the farmers. The government should require all mineral extracting firms to adopt state- of – the art technology that would eliminate damage to the

environment and the farmers. It is also recommended that Government and non-governmental organizations (NGOs) should sponsor researches in this direction to bridge the knowledge gap on oil extraction and conflicts as it affect agricultural production. The implications are that oil exploitation activities have serious impact on the environment and are closely associated with environmental conflict. In the Niger Delta area where rural livelihoods largely derives from natural resources, careful management of environmental impact of oil extraction is crucial for ameliorating the livelihoods vulnerabilities of the farmers as well as resolving the raging conflict. All these point to the fact that sustainable agricultural development implies, improving the quality of human life while living within the carrying capacity of supporting ecosystems. What the term sustainable agricultural development actually means and what it implies for oil exploitation in the Niger Delta, Nigeria is meeting the needs of the present without compromising the ability of the future generations to meet their own needs. "Meeting needs of the present" involves the provision of the basic necessities for survival including livelihoods. The issue of oil spillage which by far constitutes the greater threat to the Niger Delta environment has made access to these productive resources difficult and in fact, eroded their livelihoods. The spills involving the bursting of oil pipelines destroy homes, farmland and pollutes water that people drink and endangers aquatic life.

However, a resolution of this conflict situation will have to take some categorical imperatives into consideration. In the first place, it is essential to note that the oil exploitation activities in Niger Delta area has been historically injurious in the sense that the apathetic attitude of oil companies has been a causal factor in the outbreak, continuance and consolidation of this trend of conflict. The government and multinational oil companies have failed to respond favourably to the conflict because of its illicit standing. A rightful government will never watch while its domain is exposed to increasing danger and state of lingering instability. To this end, therefore, it suffices one to contend most strongly that the resolution of conflict in the Niger Delta region will have to address all aspects of social, political and economic life with respect to this region. It is important to stress that a policy that promotes the safeguarding and reparation of human rights abuse should be set in place in order to redress some of the injustices that have been perpetrated in the region. In other words, there should be full guarantee of citizenship rights and status. Citizenship status is ensconced on three essential propositions: individual human rights, political participation and socio-economic welfare. The entrenchment of this basic constituent of citizenship will go a long way in resolving the dynamics of conflict already in place in this region.

Furthermore, Galtung (1996) has defined peace as the condition in space for non-violent development. In line with this, the government should ensure that an appreciable level of development takes place in the Niger Delta region. This has the special quality of promoting the welfare of the farmers thereby drawing a sense of belonging from them. Social and economic amenities as well as compensations should be adequately provided for.

Apart from the above, there should be respect for international laws on the environment. One of the very absurd ironies of the operation of multinational companies in the Niger Delta is the lack of respect for international laws. For instance, there are international environmental laws that states that no state has the right to use or to permit the use of its territory in such a manner as to cause injury by fairness in or to the territory of another or to the properties or persons therein, when the case is of serious consequence and the jury is established by clear and convincing evidence. Furthermore, principles 21 and 22 of the 1972 Stockholm Declaration states that States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their

own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or areas beyond the limits of national jurisdiction. States shall co-operate to develop further the international law regarding liability and compensation for victims of pollution and other environmental damages caused by activities within the jurisdiction or control of such states to areas beyond jurisdiction or control of such states to areas beyond their jurisdiction.

Multinational oil companies operating in the Niger Delta, with Shell being the leading producer and extractor of oil should operate according to the laws regulating the environment. It is not a misnomer to state that the same Shell operates according to laws in the extraction of resources in Europe while neglecting to go by laws in most West African countries.

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