

# Crude Oil Theft in the Niger Delta: The Oil Companies and Host Communities Conundrum

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**Abstract:** - This study investigated crude oil theft in the Niger Delta, the oil companies and host communities' dilemma using the Bayelsa state swamp area operated by Nigerian Agip Oil Company (NAOC) as a case study. The roles and functions of the oil companies and their host communities towards crude oil theft in the Niger Delta was examined to determine the rate of crude oil theft during the resurgence of pockets of militancy, after the declaration of amnesty by the Nigerian government and the period of full implementation of the amnesty programme in the Niger Delta. Secondary data from the National Oil Spill Detection and Response Agency (NOSDRA) and NAOC Swamp area operation in Bayelsa State was used to determine the rate of crude oil theft during these periods in the Niger Delta. The total number of incidences of crude oil spill each year starting from 2010 to 2014 were calculated using statistical tools in determining the average spills per month, and the percentage of spills each year. Chi-square statistical technique was used to complete and analyse the research hypotheses. The results indicate that oil spills through equipment failure, operational errors and corrosion were generally few. Surprisingly, those caused by crude oil theft (sabotage) during the resurgence of pockets of militancy was low when compared with post militancy or amnesty implementation period. The study further reveals that from the later part of 2011 to 2014, the number of spills became constantly high, indicating that amnesty only bridged the gap between the security agencies and other government bodies fighting against oil theft and militants, to join forces in the cause of crude oil theft. Also, the study shows that between 2010 to 2014, sabotage accounted for 1,379 spills out of a total of 1,640 spills. Crude oil theft through sabotage as at 2010 was 5.2%; it rose to 37.4% in 2014 suggesting that five years after the full amnesty implementation, the problem of crude oil theft remained unsolved in the Niger Delta. The study, therefore, recommends among others, an improved developmental plan of the Niger Delta by government and the International Oil Companies (OICs), involvement of the host communities in the management and security of oil installations in their catchment areas, real-time monitoring of the security men and the criminals, using satellite systems, CCTV and other digital instruments and expansion of corporate social responsibility (CSR) by the oil companies.

**Keywords:** Crude oil, Host communities, Multinational oil companies, Niger Delta, Nigeria, Sabotage, Spills, Theft

## I. INTRODUCTION

Crude oil theft appears to be on the rise again. Oil theft and illegal bunkering have greatly increased and piracy seems to be an important aspect of it. More than 300,000 barrels of oil are stolen from Nigerian pipelines daily (Akpan 2013;

Olusola, 2013; Odemwingie and Nda-Isaiah, 2013; Okere, 2013; Boris, 2016). Crude oil theft involves all activities of illegal bunkering, pipeline vandalism, siphoning of crude oil, smuggling of crude oil, unauthorized lifting of crude oil, processing of crude oil and processed petroleum product. The business of oil theft and illegal refining in the Niger Delta region has become so brazen and networked, involving communities, government officials, oil workers and security agencies, that it is difficult to properly classify the sabotage as a crime. A new report by (stakeholders democracy network) indicates that the oil is being stolen at an industrial scale, (Boris, 2016)

A moderate estimate suggests 150,000 barrels of crude oil are stolen every day internationally. But at least one in every four barrels of crude oil stolen every day ends up in the Niger Delta region where it is refined at illegal refineries by locals who claim proceeds supplements non-existent government welfare package and help support their families and, in the process, destroying the environment and threatening legal oil refining. The report claims the illegal refining industry is worth several billion USD annually and the Nigerian's politicians and security officials are among those profiting. The Niger Delta is one of the largest wetlands in the world. It covers an area of about 70 thousand square kilometres and is noted for its sandy coasted ridges, barriers saline mangroves, freshwater permanent and seasonal swamp spills forests as well as a low land rain forest. The whole area is traversed and crisis-crossed by a large number of rivers, rivulets, streams, canals and creeks. The coastal line is buffeted throughout the year by tides of the Atlantic Ocean while the mainland is subjected to regimes of floods by the various rivers, particularly, River Niger. The Niger Delta consists of nine states which makes up the southern geopolitical zone of Nigeria (NDDC, 2004; Wali *et al.*, 2019).

Crude oil theft always results in huge economic loss, human casualties, and environmental pollution in the world. In China, oil companies lost about more than three billion Yuan every year. Daqing oil field lost one billion Yuan annually just because of crude oil theft, and Royal Dutch Shell lost seven billion dollars only in Nigeria each year. Individuals transfer oil extracted illegally from oil facilities into barges or containers which convey the oil to tankers (Okon, 2014). With the rapid development of the petroleum industry, the length of oil and gas pipelines in China has broken through 10 million

kilometres. The oil pipeline is so long that it is impossible to monitor and supervise the real situation timely, although, the companies have taken kinds of measures and techniques to detect the illegal taps. Then, the oil thieves named oil mice who know oil companies' operations of detecting technology well began to rob crude oil by pumping from oil tanks or drilling a hole into oil pipeline (Jinfeng Sun et al., 2016).

Host communities are communities where oil is extracted from and houses the facilities for exploration and extraction of crude oil. The host communities are hospitable people within the Niger Delta geographical region of Nigeria, that has taken oil companies into their place and supported them to succeed in the oil exploration and production activities, but the activities of these oil companies have affected their environment badly, which damaged their source of livelihood, thereby impoverished them and exposing them to all manner of environmental and health hazards. The communities are not been put into the equation of oil activities, despite polluting their atmosphere, degrading their soil and poisoning their waters, which are sources of their sustenance in life. The United Nation Development Programme (UNDP, 2006) described the region as suffering from administrative neglect, crumbling social infrastructure and severe high unemployment, social deprivation, abject poverty, filth and squalor and endemic conflict. According to Amnesty International Report, pollution and environmental damage caused by the oil industry have resulted in violations of the rights to wealth and healthy environment (including the right to food and water) and the right to gain a living through work for hundreds of thousands of people, (UNDP, 2006).

All these issues are the time bomb that had exploded in the form of crude oil theft, illegal bunkering, pipeline vandalism, conflicts, cultism, militancy etc to ensure sustenance to live, man must survive first before any good sense of reasoning. The Niger Delta region of Nigeria is situated in the Southern part of Nigeria and is bordered to the south by the Atlantic Ocean and the east by Cameroun. The region occupies a surface area of about 112,110 square kilometres. It represents approximately 12% of Nigeria's total surface area and going by the 2006 population census, its population is put at over 28 million thousand inhabitants. The pattern of settlement in the region is largely determined by the availability of dry land and the nature of the terrain, low relief and very poor drainage are the primary factors responsible for the low number of large settlements in the region. The oil communities in the Niger Delta are those communities which play host to the multinational oil companies. They are different from other parts of Nigeria. The crisis-cross of creeks means that they depend on water for their survival. And oil companies that seek a better life for the people of this region must consider its host communities lives on a wetland where farming and fishing are the major sources of livelihood (Alabi and Ntukekpo, 2012).

Estimates of the quantity of crude oil stolen in Nigeria vary widely, according to the year. Without disclosing how it

arrived at its estimate, the maritime industry advocacy initiative started in May 2011 that Nigeria was losing 600,000 BPD to crude oil theft. The minister of finance, in July 2013 put the estimate at 400,000 BPD. SPDC claims it loses about 60,000 BPD through theft and vandalism on its pipelines (SPDC, 2015). On February 7th 2015, the Nigeria National Petroleum Corporation (NNPC) raised alarm over the recent increase in attack on crude oil and gas pipelines, saying that it adversely affected the national economy; that about 60,000 BPD of crude oil is lost by the act of crude oil theft and pipeline vandalism (NNPC, 2015). There are also concerns that if the oil theft and vandalism are not stemmed, Nigeria will increasingly find it difficult to meet its financial obligations and fund projects in the coming year's budgets. Already the fall in federally collectable revenue, the slowdown of accretion of foreign reserves and funds saved in the Excess Crude Account (ECA) has been traced to oil theft in the Niger Delta (Nwachukwu, 2008).

According to International Energy Agency (2014), crude oil theft is fast becoming an intractable problem in Nigeria; that about 7 billion US dollars annually is being lost to oil theft. The report further informed that theft and sabotage often lead to pipeline damage, causing oil firms to cut output. The Agency estimated that the value of 180 barrels of crude oil was lost daily in the country. About 5 billion US dollars was spent in the last year on pipeline repairs and many occasions, oil companies in the country shut down production for weeks due to pipeline damaged by oil thieves. Years back SPDC revealed that sabotage and crude oil theft was the cause of 11,806 barrels spilt from SPDC facilities in 118 incidents. About 80% of the siphoned crude oil is shipped to refineries overseas by syndicates that are connected to high-level politicians, military and business establishment in Nigeria. According to the National Oil Spill Detection and Response Agency (NOSDRA), some 2,000 sites requires treatment. From all angle looked at, crude oil theft has led to huge losses to the national economy and the Niger Delta in particular, since all the entities, authorities and bodies that are involved in oil exploration and production are among those stealing crude oil. It will be difficult to estimate the actual quantity that is exported to international refineries, the local make-shift refineries and the one wasted to the environment, the economic effect of crude oil theft cannot be estimated in totality, as the cause to environmental damage, damage to human health and lives, the animal, fish, underground water, and many others.

Several other pieces of literature have exposed the issue of crude oil theft in the Niger Delta. For instance, Alabi and Ntukekpo (2012) investigated the oil companies and corporate social responsibility in Nigeria; An empirical assessment of Chevron's Community Development Projects in Niger Delta, to see the claims of the oil companies concerning the acclaimed corporate social responsibility efforts, are the communities satisfied with CSR efforts of the oil companies relevant to the needs of the communities, with view to reduce

crude oil theft. Ite et al (2013) reviewed petroleum exploration and production: past and present environmental issues in the Nigeria Niger Delta while Amanze-Nwachukwu and Alike, (2013) maintained that the effective collaboration between oil companies and their communities remains the surest way to address the long-running problem. Obenade et al (2014) on the other hand investigated the socio-economic implications of oil theft and artisanal refining in the Niger Delta Region of Nigeria while Effiong and Etowa (2012) investigated the degree of effects of oil spillage and gas flaring cost on the life expectancy rate of the Niger Delta people of Nigeria.

Having critically examined previous studies on issue of crude oil theft in Niger Delta, and the persistence of the problem in the region and the society in general and its effects to the nation economy and the livelihood of the people, therefore, the need for this research is important and expedient as it x-rays all the known issues pointed out by the previous researchers and went further to approach the problem through the backside, using information of incidents of spill point that are confirmed sabotage to understand the trend of crude oil theft operations and pipeline vandalism, within swamp area of Bayelsa State in Niger Delta, where the activity of crude oil theft was at its peak in 2014. This study, therefore, examined crude oil theft in the Niger Delta, the oil companies and host communities' conundrum.

## II. MATERIALS AND METHODS

Descriptive and action research was employed in this study. Secondary data from the National Oil Spill Detection and Response Agency (NOSDRA) and NAOC Swamp area operation in Bayelsa State was used to observe the trend at which the activities of oil theft and pipeline vandalism was done, with a plan to stop them. Considering the nature of the study involved, close attention was placed on how those data were collected and the instruments employed. The processes and instruments used were considered adequate and convenient under investigation. For this study, the longitudinal design of quasi-experimental research was adopted. The target area of interest to the study is Bayelsa State. Preliminary information gathered indicates that Bayelsa State is one of the states with a high incident number of recorded crude oil theft and pipeline vandalism in the Niger Delta. The data information covers the number of spill points that occurred over time from 2010-2014. Other secondary data were obtained from newspapers, Journals, conferences, textbooks and other material relevant to this study. Research hypotheses were also developed based on the problems identified. The two research hypotheses are:

H<sub>1</sub>: There is a statistically significant difference between the months of the years and the number of spills caused by crude oil theft in the study area.

The first set of research hypotheses were tested for the 2010 – 2014 period.

H<sub>2</sub>: There is a statistically significant difference between the years investigated and the total number of spills that occurred.

Chi-Square analytical technique was utilized to test the research hypotheses with the data collected to see if the result of the analysis is statistically significant or not statistically significant. Bar chart and pie chart were used to analyse and determine the month with highest oil theft annually.

## III. STUDY AREA

The study area is Bayelsa state. It is geographically located within latitude 04015' North, 05023' South and longitude 05022' west and 06045' east (Fig.1). It shares boundaries with Delta State in the North, Rivers State in the East and the Atlantic Ocean on the West and South. Bayelsa State was created on the 1st of October 1996 out of the old Rivers State, with its capital in Yenagoa. From historical perspectives, the name Bayelsa is an acronym of the three Local Government Area (LGA)- Brass, Yenagoa and Sagbama in the then Rivers State, which comprised the entire area now constituting Bayelsa State. The then Brass LGA is what makes up the present Nembe, Brass and Ogbia Local Government Areas, the Yenagoa LGA consist of the present Yenagoa, Kolokuma/Opokuma and Southern Ijaw LGAs. Sagbama LGA is what makes up the present Sagbama and Ekeremor LGAs. The tradition in the old Rivers State which is still the norm in Bayelsa State now is the use of acronyms for the local government area. People referring to Brass Local Government Area as BALGA for short; Yenagoa was simply YELGA while Sagbama was SALGA. Bayelsa state nicknamed "Glory of all land" has a population of 1,998,349 (NPC, 2006). The languages spoken are Izon, Nembe, Epie, Atissa, Ogbia and English.

Bayelsa State has one of the largest crude oil and natural gas deposits in Nigeria, as a result, petroleum production is extensive in the state. Fishing is the major occupation of Bayelsa people because of the abundant creeks, lagoons, rivers and swamps within which commercial fishing is practised. Over 200 species of fish can be found in the waters within and around the state. Bayelsa lies on the heaviest rainfall area in Nigeria with heavy rain forest and a short dry season (from November to March). However, the rainfall varies in quantity from one area to another. The state experiences an equatorial type of climate in the south, the most part and tropical rain towards the northern parts. Rain occurs generally every month of the year with a heavy downpour. The state experiences high rainfall but this decreases from South to North. The average temperature ranges between 220-380 degrees centigrade and a mean relative humidity of 80-90%. The heavy rainfall regime in these areas naturally results in severe flooding and the major portion of the land lies underwater for better parts of the year and section become dry after the cessation of the raining season (Wali *et al.*, 2019).

The vegetation of Bayelsa State like any other state in the Niger Delta is composed of four ecological zones. These

include a coastal barrier, island forests, mangrove forest, freshwater swamp. These different vegetation types are associated with various soil units in the area and they constitute parts of the complex Niger Delta ecosystem. Parts of the freshwater swamp forest in the state constitute the home of several threatened and even endangered plant and animal species. The major soil types in the state are young, shallow and poor drained soils. There are variations in the soils of Bayelsa State. Some soil types occupy extensive areas whereas others are of limited extent. However, based on physiographic differences several soil units could be identified in the state. The soil of the high-lying levees is sandy loam, loamy sandy and silt loamy soil as well sandy. The soil of the low-lying levees is the moderately fine texture, red silt or clay loamy soils. The meander belt soils which differ only slightly from the soil of the levels. The silted river belt soils are peat for clay water bogged soils formed mainly in the beds of dead creeks and stream. The Basin soils are silty clay loam or sandy loam which are inundated by water for most of the year. The transition zone soils are silt and sandy soil which are known to be under the daily influence of tidal floods and freshwaters. There are pockets of potash deficiency, especially in the sandy soils. The texture of the majority of the soil range from medium to fine grains.

Generally, Bayelsa state is a lowland state characterized by tidal flats and coastal beaches, beach ridges barriers and flood, plains, the features such as cloths and lagoons are the donning by Nant relief features of the state. The topography of the area is essentially flat, slopping very gently seawards. The area is low lying, usually does not exceed 20m above the sea-level and is drained and crisscrossed by the network of distributaries. The area constitutes an extensive plain exposed to periodical inundation by flooding when rivers and creeks overflow their banks. A prominent feature of the rivers and creeks is the occurrence of natural levees on both banks, behind which occurs vast areas of back swamps and lagoons/lakes where the surface flow is negligible. Although various types of morphological units and depositional environments have been recognized in the area (coastal flats, ancients/modern sea, river and lagoons beaches, sand bars, flood plains, seasonally flooded depression swamps, ancient creeks and river channels. The area can be sub-divided into five major geomorphological units namely: active/abandoned coastal beaches, saltwater, mangrove swamps, freshwater swamps, back swamps deltaic plain alluvium and meander belt, dry deltaic plain with abandoned freshwater swamps (Sombreiro-Warri deltaic plain), dry flat land and plain (Youdeoiwe and Nwankwoala, 2012).

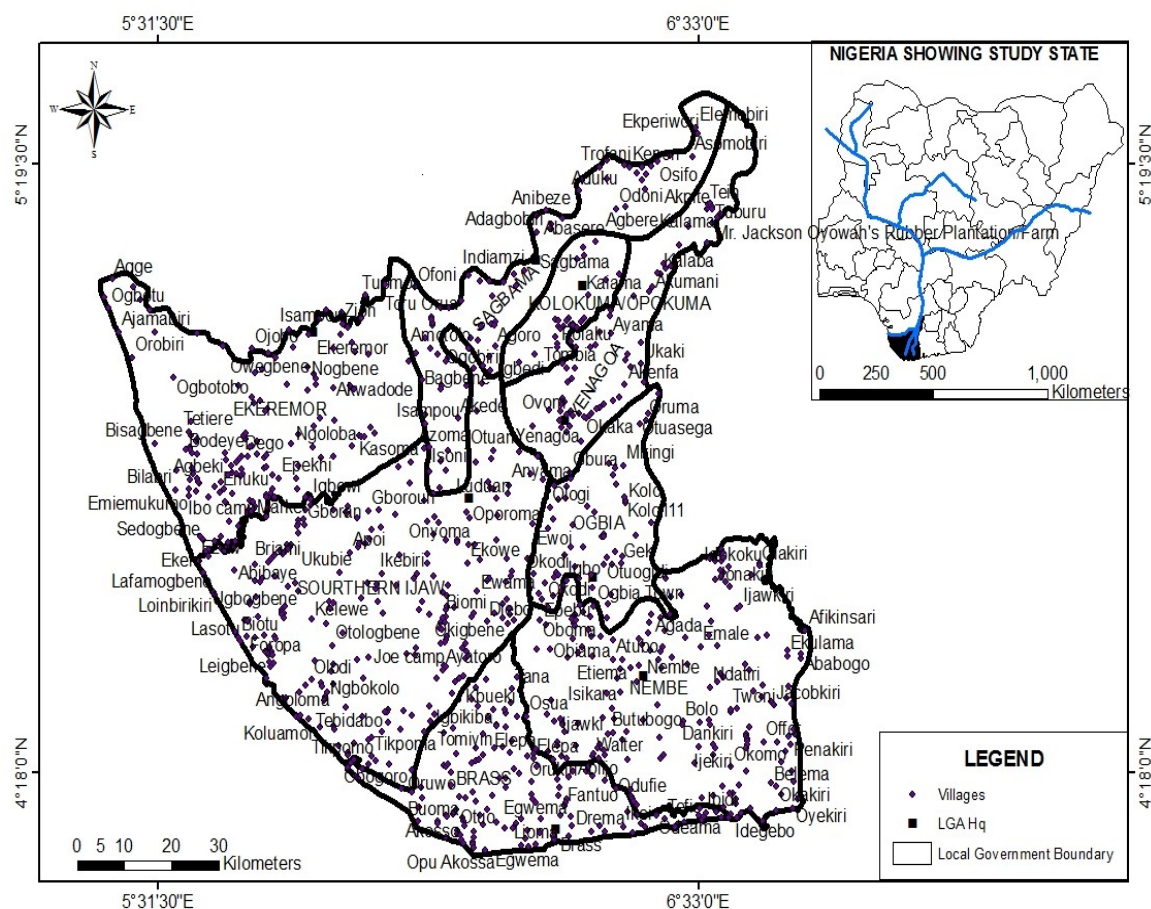


Figure 1: Bayelsa State

IV. RESULTS / DISCUSSION

Information from the data collected is carefully presented and analysed in this section. The data are presented and analysed with careful attention to reflect the research questions. The data collected from NOSDRA, National Oil Spill monitor

covers, the oil spill incidence within Bayelsa State under the operation of NAOC from 2010 to 2014 were analysed in this section using tables and charts. This period was carefully selected to cover the time of resurgence of pockets of militancy in Niger Delta and the period of implementation of the amnesty programme to the militants in the Niger Delta.

Table 1: Years Under Review and the Number of Spills Officially Declared by (NOSDRA).

2010	2011	2012	2013	2014
86	170	232	539	613

The number under each year in Table 1 shows the number of spill points per year. The information was adequately and carefully sorted out among the information contained in the oil spill monitor. Among this number of oil spill incidence are different causes of the oil spill as follows;

- a) Sabotage
- b) Equipment failure
- c) Operational error
- d) Corrosion
- e) Not Determined

Table 2: Number of Spills From 2010-2014 and the Cause of the Spills.

Years Under Review	Total Number of Spills Annually	Sabotage Spills	Equipment Failure	Operational Errors	Corrosion	Not Determined
2010	86	59	7	2	5	13
2011	170	134	14	2	4	16
2012	232	198	15	2	0	17
2013	539	417	7	1	2	112
2014	613	571	10	2	5	25
Total	1,640	1,379	53	9	16	183

Source: NOSDRA, Port Harcourt Zonal Office

The information in table 2 shows various causes of the spill and the frequency of its occurrence each year, which will call for action to reduce them to the barest minimum. The information shows an upward increase in the number of spills,

particularly sabotage spills (crude oil theft) while other causes of spills remained almost constant each year. The result indicates loss to the National economy and increases in the pollution of the Niger Delta environment.

Figure 2: Bar Chart Showing Oil Theft Through Sabotage in the Study Area

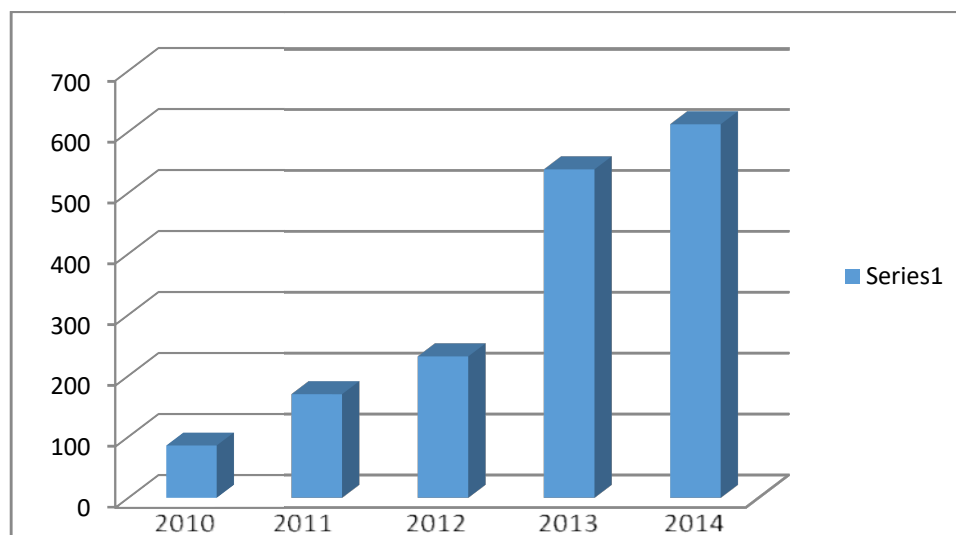


Figure 2 indicates the rate of increase in crude oil theft through sabotage from 2010 to 2014. The result shows that in 2010, there was 5.2% of total crude oil spills within the period under review, 10.4% of total crude oil spills in 2011 and

14.1% of total crude oil spills in 2012. The result further reveals that the total crude oil spills in 2013 were 32.9% while in 2014, total crude oil spills were 37.4%.

Table 3: Total Number of Crude Oil Spills (Sabotage) Point Monthly (2010 – 2014)

Year	Jan	Feb	Mar.	April	May	June	July	Aug.	Sept	Oct.	Nov.	Dec
2010	1	0	1	5	1	1	0	6	11	8	14	11
2011	7	6	17	2	7	14	13	9	14	3	20	22
2012	10	9	15	15	24	17	15	16	14	22	24	15
2013	16	15	18	10	37	23	29	36	42	58	59	65
2014	79	57	41	73	79	34	31	45	39	31	29	33

Source: NOSDRA, 2014

Table 3 shows the variation in the number of spills due to sabotage (crude oil theft) from 2010 to 2014. This period covers both the period of resurgence of pockets of militancy and Amnesty implementation period. During the period of 2010 when there was a resurgence of pockets of militancy due to non-inclusion of some militant groups into the amnesty programme of the federal government, the number of crude oil spills was surprisingly low except September to December months when the youths are looking for money to enjoy the festive period. After 2011 elections, when amnesty implementation was ongoing, the number of sabotage spills increased, indicating that bringing together, the forces of militants and the military increased the crude oil theft. Since the presence of the Joint Task Force (JTF) are still present in

the region and the rate of crude oil theft is still on the increase, it means they are part of the menace.

The tidal level of the swamp is a very major factor in determining the period within which the sabotage (crude oil theft) which is mainly from pipeline take place since most of the area is within the swamp. The period from 2010 to the first quarter of 2011 have low sabotage but from the second quarter of 2011 till 2014, the oil theft has been in continuous increase.

*A. Testing of First Set of Hypotheses*

H<sub>0</sub>: There is no statistically significant difference between the months of the years and the number of spills caused by crude oil theft in the study area for 2010

Table 4: Data of Spill Incidences in 2010 Using Chi-Square

2010	O	E	O-E	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
January	1	4.9	-3.9	15.21	3.104
February	0	4.9	-4.9	24.01	4.9
March	1	4.9	-3.9	15.21	3.104
April	5	4.9	0.1	0.01	0.020
May	1	4.9	-3.9	15.21	3.104
June	1	4.9	-3.9	15.21	3.104
July	0	4.9	-4.9	24.01	4.9
August	6	4.9	1.1	1.21	0.247
September	11	4.9	6.1	37.21	7.594
October	8	4.9	3.1	9.61	1.961
November	14	4.9	9.1	82.81	16.9
December	11	4.9	6.1	37.21	7.594
Total					56.532

$59/12 = 4.9$

$\sum(O-E) = 56.532$

E

X<sup>2</sup> Calculated = 56.532

Df = n-1 = 12-1 = 11

X<sup>2</sup> Critical = 19.7

Since the  $X^2$  calculated value is higher than the  $X^2$  critical value, we accept the alternative hypothesis which states that there is a statistically significant difference between the months of the years and the number of spills caused by crude oil theft in the study area. for 2010.

$H_0$ : There is no statistically significant difference between the months of the years and the number of spills caused by crude oil theft in the study area for 2011.

Table 5: Data of Spill Incidences in 2011 Using Chi-Square

2011	O	E	O-E	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> / <sub>E</sub>
January	7	11.2	-4.2	17.64	1.575
February	6	11.2	-5.2	27.04	2.414
March	17	11.2	5.8	33.64	3.004
April	2	11.2	-9.2	84.64	7.557
May	7	11.2	-4.2	17.64	1.575
June	14	11.2	2.8	7.84	0.7
July	13	11.2	1.8	3.24	0.289
August	9	11.2	2.2	4.84	0.432
September	14	11.2	2.8	7.84	0.7
October	3	11.2	-8.2	67.24	6.004
November	20	11.2	8.8	77.44	6.914
December	22	11.2	10.8	116.64	10.414
Total					41.575

$134/12 = 11.2$

$X^2$  Calculated = 41.575

$X^2$  Critical = 19.7

Since the  $X^2$  calculated value is higher than the  $X^2$  critical value, it also holds that there is a statistically significant

difference between the months of the years and the number of spills caused by crude oil theft in the study area for 2011.

$H_0$ : There is no statistically significant difference between the months of the years and the number of spills caused by crude oil theft in the study area for 2012.

Table 6: Data of Spill Incidences in 2012 Using Chi-Square

2012	O	E	O-E	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> / <sub>E</sub>
January	10	16.3	-6.3	39.69	2.435
February	9	16.3	-7.3	53.29	3.269
March	15	16.3	-1.3	1.69	0.104
April	15	16.3	-1.3	1.69	0.104
May	24	16.3	7.7	59.29	3.637
June	17	16.3	0.7	0.49	0.030
July	15	16.3	-1.3	1.69	0.104
August	16	16.3	-0.3	0.09	0.005
September	14	16.3	-2.3	5.29	0.325
October	22	16.3	5.7	32.49	1.993
November	24	16.3	7.7	59.29	2.637
December	15	16.3	1.3	1.69	0.104
Total					14.747

$196/12 = 16.3$

$X^2$  Calculated = 14.747

$X^2$  Critical = 19.7

Since the  $X^2$  critical is higher than the  $X^2$  calculated, the null hypothesis is accepted which states that there is no statistically significant difference between the months of the years and the

number of spills caused by crude oil theft in the study area for 2012.

$H_0$ : There is no statistically significant difference between the months of the years and the number of spills caused by crude oil theft in the study area for 2013.

Table 7: Data of Spill Incidences in 2013 Using Chi-Square

2013	O	E	O-E	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
January	16	34	-18	324	9.529
February	15	34	-19	361	10.618
March	18	34	-16	256	7.529
April	10	34	-24	576	16.941
May	37	34	3	9	0.265
June	23	34	-11	121	3.559
July	29	34	-5	25	0.735
August	36	34	2	4	0.118
September	42	34	8	64	1.882
October	58	34	24	576	16.941
November	59	34	25	625	18.382
December	65	34	31	961	28.265
Total					114.764

$408/12 = 34$

$X^2$  Calculated = 114.764

$X^2$  Critical = 19.7

Since the  $X^2$  calculated is greater than  $X^2$  critical, it holds that there is a statistically significant difference between the

months of the years and the number of spills caused by crude oil theft in the study area for 2013.

$H_0$ : There is no statistically significant difference between the months of the years and the number of spills caused by crude oil theft in the study area for 2014.

Table 8: Data of Spill Incidences in 2014 Using Chi-Square

2014	O	E	O-E	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
January	79	47.6	31.4	985.96	20.713
February	57	47.6	9.4	88.36	1.866
March	41	47.6	-6.6	43.56	0.915
April	73	47.6	25.4	645.16	13.554
May	79	47.6	31.4	985.96	20.713
June	34	47.6	-13.6	184.96	3.886
July	31	47.6	-16.6	275.56	5.789
August	45	47.6	-2.6	6.76	0.142
September	39	47.6	-8.6	73.96	1.554
October	31	47.6	-16.6	275.56	5.789
November	29	47.6	-18.6	345.96	7.268
December	33	47.6	-14.6	213.16	4.478
Total					86.657

$571/12 = 47.6$

$X^2$  calculated = 86.657



$X^2$  critical = 19.7

Since the  $X^2$  calculated is higher than the  $X^2$  critical, the conclusion, therefore, is that there is a statistically significant difference between the months of the years and the number of spills caused by crude oil theft in the study area for 2014.

### B. Testing of Hypothesis Two

$H_0$ : There is no statistically significant difference between the years investigated and the total number of spills that occurred

Table 9: Chi-Square Computation for Hypothesis Two

Year	O	E	O-E	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
2010	86	328	-242	58,564	178.55
2011	170	328	-158	24,964	76.11
2012	232	328	-96	9,216	28.10
2013	539	328	211	44,521	135.73
2014	613	328	285	81,225	247.64
Total					666.13

Expected =  $1,640/5 = 328$

Df =  $n-1 = 5-n = 4$

$X^2$  calculated = 666.13

$X^2$  critical = 9.49

Since the  $X^2$  calculated is higher than the  $X^2$  critical at the prevailing degree of freedom (df), it then means that the alternate hypothesis is upheld. The conclusion, therefore, is that there is a statistically significant difference between the years investigated and the total number of spills that occurred.

## V. DISCUSSION OF FINDINGS

Crude oil theft in the Niger Delta region of Nigeria is a critical economic problem to the nation, oil companies and host communities that has defiled different measures applied by government which includes criminalization and deployment of security to reduce the rate and amount of crude oil that is being stolen from the nation's main source of revenue. All this problem could not have arisen if the government and the international oil companies had included the host communities into their planning to be part of the system. However, the problem is still surmountable if the security of purpose will be followed.

The data of crude oil spills in the study area was carefully selected to investigate the rate of crude oil theft during the resurgence of pockets of militancy period and the full amnesty implementation period; to understand the year with the high rate of crude oil spills with view to mitigating and reducing crude oil theft in the Niger delta.

Findings from the study revealed an upward increase in the number of spills, particularly sabotage spills (crude oil theft) while other causes of spills remained almost constant each year. This result indicates loss to the National economy and increases in the pollution of the Niger Delta environment. The study of Ebiri (2014) is very clear on incessant crude oil theft through sabotage in the Niger delta.

Results of the study show variations in the number of spills due to sabotage (crude oil theft) from 2010 to 2014. During the period of 2010 when there was a resurgence of pockets of militancy after the declaration of amnesty on June 25, 2009, by President Yaradua, the number of crude oil spills was surprisingly low except September to December months when the youths are looking for money for the festive period. This result is consistent with the studies of Oluwaniyi (2013), Osah and Amakihe (2014).

The average number of spills per month increased even with the full implementation of the amnesty programme, instead of decreasing. For instance, in 2010, the average spill per month was 5, in 2011, the average spill per month was 11, in 2012, the average spill per month was 16, in 2013, the average spill per month stood at 34 and in 2014, the average spill per month was 48.

Looking at the spills caused by crude oil theft and vandalism from 2020 - 2014, findings of the study shows that during the period of 2010 when there was resurgence of pockets of militancy due to non-inclusion of some militant groups into the amnesty programme of the federal government, the number of crude oil spills was surprisingly low except September to December months when the youths are looking for money to enjoy the festive period. This illegal business contributed to the depleting of the nation's main source of revenue and degradation of the Niger delta environment (Gaskia, 2013; Ameh, 2013).

The figures further reveal that from the later part of 2011 to 2014 the number of spills became constantly high, indicating that Amnesty only bridged the gap between the security agencies and other governmental bodies fighting against oil theft and militants, to join forces in the cause of crude oil theft. Apart from the JTF damaging some trucks, vessels and local refineries sites when a new head takes over, no other landmark achievement has been made known. The increase in

the average number of spills per month more volume of crude wastage which reduces the revenue income, due to interruption on the pipeline, damage to the pipeline spill to the environment which amounts to a waste of resource and income revenue. The cost of repair of the damaged pipeline is a loss of revenue to the National Revenue. The time lost in production due to shut-in production also amounts to a loss of income to the nation. This trend is indeed worrisome considering the full implementation of the amnesty programme and the multibillion naira contracts for security and surveillance awarded ex-militant warlords (Gaskia, 2013).

Further evidence from the study reveals an increasing trend in crude oil theft in the Niger Delta region. In 2010, there were 59 sabotage spill points, in 2011, there were 134 sabotage spill points, in 2012, there were 198 sabotage spill points, in 2013, there were 417 sabotage spill points and in 2014, the sabotage spill points stood at 571. The huge presence of the military in the region could not stem the tide leading to the and the proliferation of arms and cult groups fighting for supremacy to survive since all known sources of livelihood have been damaged by the oil spill. Causes of crude oil spills like equipment failure, operational error and corrosion are relatively low annually while sabotage is very high indicating complicity on the parts of the multinational oil companies, security operatives, NNPC staff and the host communities (Igbuku, 2014, Ogbeifun, 2014, Osaneku, 2013; Izuora, Alohan and Echenim, 2014).

The increase in the number of spill points also amounts to more volume of spills of crude oil to the environment, which damages the rivers and kills aquatic animals that the host communities depend on for livelihood, and degrade the farmland which makes living deficient in the Niger delta region. The increase in spill points also amounts to high economic losses to the national income which has often led to a declaration of force majeure which prevents the oil companies from meeting their contractual agreement. The crude oil theft in the Niger delta has at one time or the other forced major oil companies like ExxonMobil, Royal Dutch Shell, Eni of Italy, Chevron of the US and Total of France, to shut down their wells. Shell Petroleum Development Corporation (SPDC) for instance, has consistently declared force majeure on its operations, from 2009, 2010, 2011, 2012, 2013 and 2014. This was due to the activities of oil thieves who had damaged its pipelines thus disrupting production (El-Salmy, 2014; Izuora, Alohan and Echenim, 2014).

#### VI. RECOMMENDATIONS

The following measures if put in place, will help to mitigate the menace of crude oil theft in the Niger Delta region. These measures fall into both violence and non-violence approach:

1. The educated elites in the host communities should be made to be part of the management system of the oil companies operating in their communities. Inclusion of the host communities who feel excluded

from the policies of the IOCs and government amnesty should be explored

2. The oil companies should step up their corporate Social Responsibility (CSR) to meet up with the needs of their host communities. Scenarios, where oil companies will have electricity which is powered by the resource from the host communities, while the communities are in darkness, is unacceptable.
3. The government should map out all those areas within the Niger Delta, where the activities of crude oil theft are being carried out and strategically position security men. There should be real-time monitoring of the security men and the criminals, using satellite systems, CCTV and other digital instruments to monitor the menace.
4. Youth employment should be vigorously pursued since they are the ones involved in crude oil theft.
5. The government should set up special court to prosecute the offenders of oil theft speedily to set deterrents for others. Investigations should be properly and deeply done to reveal all those involve, before punishing the real culprits.
6. All stakeholders in the communities should be incorporated in the security system of the communities and companies operating in their domain.
7. The communities and the oil companies should be made to respect all signed global memorandum of understanding.
8. The amnesty programme of the federal government should be fully implemented to accommodate all warring and marginalized groups in the Niger delta.

#### VII. CONCLUSION

Crude oil theft in Niger Delta has become very complex and internationally networked, involving international corrupt and local businessmen and women, security agencies, government officials, highly placed individuals, some host communities' members and some staff of the oil companies that had so established in the business of oil theft. It was believed that the declaration of amnesty on June 25, 2009, will adequately solve the problem of crude oil theft in the Niger Delta. But five years after the implementation of the programme, the issue of crude oil theft in the Niger delta seems to have increased more than the militancy period. This calls to question the effectiveness of the amnesty programme. Hence, this study attempted to examine crude oil theft in the Niger Delta, the oil companies and host communities' conundrum. The study concludes that the increase in crude oil theft within the period under review is because the perpetrators of this illegal bunkering/sabotage have not been prosecuted and jailed to serve as a deterrent for others who are joining in the illicit trade daily. Interestingly, the Nigerian government is yet to muster the political and military will to end crude oil theft in the Niger delta.

## REFERENCES

- [1] Akpan, U. (2013) How oil theft, illegal refining will affect budget, economy in 2014. *The Vanguard*, December 18.
- [2] Alabi, O.F and Ntukekpo, S.S (2012) Oil companies and corporate social responsibility in Nigeria: An empirical assessment of Chevron's community development projects in the Niger delta. *British Journal of Arts and Social Sciences*, 4 (2), Pp.261-374.
- [3] Amanze- Nwachukwu, A. (2013) Crude theft threatens Nigeria's 2020 oil production. reserves targets. *ThisDay*, July 30, 2013
- [4] Ameh, J. (2013). Nigeria loses 400,000 barrels of oil daily. *The Punch*, July 17, 2013
- [5] Boris, H.O (2016) Oil theft and insecurity in post amnesty era in the Niger Delta region of Nigeria: implications on national security. *Journal of environmental research and management*, Vol. 7(1). Pp. 001-012.
- [6] Ebiri, K. (2014) Economic insurgency: Why oil theft, illegal bunkering persists. *The Guardian*, February 4.
- [7] Effiong, S.A and Etowa, U.E (2012) Oil spillage cost, gas flaring cost and life expectancy rate of the Niger delta people of Nigeria. *Advances in Management and Applied Economics*, Vol. 2 (2), Pp. 211-228
- [8] El-Salmy, A. (2014) Oil theft in Nigeria. *The American University in Cairo*. Retrieved from <http://www.aucegypt.edu/huss/pols/Khamasin/Pages/article.aspx?eid=12>
- [9] Gaskia, J. (2013) Crude oil theft, organized crime, The Niger Delta environment and the national economy. *Sahara Reporter*. August 19, 2013.
- [10] Igbuku, A. (2014) Crude oil theft and illegal refining in the Niger Delta. Paper presented by the Manager, Ogoni Restoration Project, Augustine Igbuku on behalf of the Managing Director, SPDC at the Delta State Oil and Gas Stakeholders' Conference, April 15, 2014. Available online at <http://reformeronline.com/crude-oil-theft-and-illegal-refining-in-the-niger-delta/>
- [11] Ite, A.E., Ibok, U.J., Ite, M.U and Petters, S (2013) Petroleum exploration and production: past and present environmental issues in the Nigeria's Niger Delta. *American Journal of Environmental Protection 1(4)* Pp.78-90.
- [12] International Energy Agency (2014): World energy outlook special report. Africa energy outlook: Focus on energy prospect in sub-Saharan Africa.
- [13] Izuora, C., Alohan, J. & Echenim, S. (2014) Divestment: Shell sells 4 oil fields in Nigeria. *Leadership Newspaper*, August 28. Retrieved from <http://leadership.ng/news/382276/divestment-shell-sells-4-oil-fields-nigeria>
- [14] Jinfeng, S., Zhiyue, Z and Xiaoli, S (2016) The intelligent crude oil anti-theft system based on IoT under different scenarios. 20th international conference on knowledge-based and intelligent information and engineering systems, KES2016, 5-7 September 2016, York, United Kingdom. *Procedia Computer Science 96 (2016) 1581 – 1588*
- [15] Niger Delta Development Commission (2004) Niger delta regional development master plan: Draft 3. Directorate of planning, NDDC, Port Harcourt.
- [16] NNPC (2015) Report of the special committee on the review of petroleum product supply and distribution, Nigerian National Petroleum Cooperation.
- [17] NPC (2006): National Population Commission. The population of Local Government Areas (LGAs) of Rivers State (2006).
- [18] Nwachukwu, J.N. (2008) The Niger delta imbroglio: An agitational terrorism or a Strategic confrontation. *Babcock Journal of Management and Social Sciences*, Vol. 6 (2).
- [19] Nwankwo, B. O. (2015) The politics of conflict over oil in the Niger Delta Region of Nigeria: A review of the corporate social responsibility strategies of the oil companies. *American Journal of Educational Research*, 3(4), Pp. 383 –392.
- [20] Obenade, M, and Amangbara, G. T. (2014) The social-economic implications of oil theft and artisanal refining in the Niger Delta region of Nigeria. *International Journal of Science and Research (IJSR) Volume 3, Issue 7*.
- [21] Odemwingie, E and Nda-Isaiah, J. (2013) Nigeria loses 400,000 barrels daily to crude oil theft - Senate. *Leadership*, November 14, 2013
- [22] Ogbeifun, B. (2014) Why Nigeria should not treat oil theft with kid gloves. *Vanguard in Sweet Crude*, Retrieved from <http://www.vanguardngr.com/2014/01/nigeria-treat-oil-theft-kid-gloves-ogbeifun/>
- [23] Okere, R. (2013) Curtailing oil theft, illegal bunkering via legislation. *The Guardian* August 21, 2013
- [24] Okon, G. B. (2014) The war against oil theft in the Niger Delta region and advocacy campaigns by the Nigerian press: A normative appraisal. *Studies in Media & Communication*, 2(1), Pp. 61-70.
- [25] Olusola, B. (2013) When will Nigeria stop the crude oil theft? *Business Day*, October 1, 2013.
- [26] Oluwaniyi, O. O (2013) Post-amnesty programme in the Niger Delta: Challenges and prospects; *Political Ecology*, <http://www.wikipedia.org/political-ecology/>
- [27] Osah, G. and Amakihe, B. (2014) War to-peace transition in the Niger Delta: Is amnesty Working? *IOSR Journal of Economics and Finance*, Volume 5, Issue 5, Pp. 01-07
- [28] Osaneku, M. (2013) Crude oil theft: Crime against the economy; *Nigerianoilgas*, Available online at: <http://www.nigerianoilgas.com/crude-oil-theft-crime-against-the-economy/>
- [29] SPDC (2015) Shell petroleum development company of Nigeria limited annual report. United nation development programme, UNDP (2006) Human development report. Beyond scarcity: Power, poverty and the global water crisis. UNDP, USA.
- [30] Wali, E., Nwankwoala, H.O., Ocheje, J.F and Chinedu, J.O. (2019a) Oil spill incidents and wetlands loss in Niger Delta: Implication for sustainable development goals. *International Journal of Environment and Pollution Research*. Vol.7, No.1, Pp.1-20
- [31] .Youdeowei, P.O and Nwankwoala, H.O (2011) Studies on sub-soil characteristic of sand deposits in some parts of Bayelsa State, Eastern Niger Delta, Nigeria. *Journal of Soil Science and Environmental Management*, Vol. 2 (2), Pp. 34-38