Sapientia Global Journal of Arts, Humanities and Development Studies (SGOJAHDS), Vol.5 No.2 June, 2022; p.g. 7 – 18; ISSN: 2695-2319 (Print); ISSN: 2695-2327 (Online)

THE POLITICAL ECONOMY OF ARTISANAL REFINING IN THE NIGER DELTA

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Abstract

In the Niger Delta, artisanal refining of petroleum products has become both a scourge and godsend for the oil-producing communities. The purpose of this research is to investigate the socioeconomic implications of artisanal refining in Rivers State. The study investigated what motivated the establishment of artisanal refining and its socioeconomic implications on development in Rivers State using the Relative Deprivation Theory. The rise in the price of accessible refined petroleum products for domestic use in Nigeria has resulted in the creation of indigenous petroleum refining technologies in some portions of the Niger Delta region. Not only is the bunkering of these petroleum products illegal, but it also has serious health consequences. The air is contaminated, and people are dying in silence. The consequences of artisanal refineries on the environment, public health, and socioeconomic development of communities in the Niger Delta Region were therefore explored in this study. The target demographic consists of illicit bunkering/artisanal refining sites as well as households that live inside the artisanal refinery sites. According to the study, Nigerian Artisanal Petroleum Refineries are sources of air pollution since they have an influence on the host environment. Artisanal refining has increased the number of school dropouts, cult rivalry, and arms proliferation in the State, among other things, and recommends that raising awareness about the effects of artisanal refining on the ecosystem, among other things, would result in meaningful development in the State.

Keywords: Oil theft, Environmental pollution, Artisanal refineries, Air pollutants, Crude oil.

Introduction

Artisanal refining by transforming crude oil through distillation into various products over a specific range of boiling points to produce kerosene, fuel, and diesel. For some years now in the Niger Delta, this has become a popular means of making money and has also contributed severelly to environmental pollution in recent times.

Crude oil was first discovered in Nigeria in large quantity in 1956 and 1958 respectively in Olibiri and Umuechem. Agriculture was the the major means of livelihood of the people of Rivers State before the the discovery of crude oil. From all indication, this discovery of oil in 1956 became a blessing and at the same time a curse to the people of this South-south region due to the environmental degradation that came with oil exploration. It is sort of a curse because several legislations, especially the 1969 Petroleum Act barred the oil-bearing

communities from been in control of oil resources, and vested the control of such into the Federal Government.

The exploration of oil and gas in the region necessitate the location of foreign and local oil and gas companies to the region, therefore providing accommodation to transportation fleets, drilling equipment, and technological devices, that help the extraction of crude oil from land or sea within the Niger Delta region (Soremi, 2020).

The activities of these oil companies in the region and the unconcerned attitudes towards the oil-beraing communities made The United Nations Development Programme (2012) to report that; "The greatest problem identified in the Niger Delta is poverty. In spite of the vast earnings from the region's oil and gas deposits, the region remains the second poorest region in the country where about 70% of the people are living below poverty line, and the poverty level in the region is well above the African standard. Both the federal government and oil companies operating in the region have failed to take necessary action to check the rampant environmental degradation in the region. There are over two million youths that are unemployed, seem to have lost hope, faith, and dignity in life due idleness. It is out of not knowing what to do to eke out life that pushed many youths into illegal refining, and cultism. There is urgent need for the health and wellbeing of these people, and the region to saved from further environmental deterioration".

It is against this backdrop of severe environmental degradation, pollution, youth unemployment, extreme poverty that the artisanal refinineriesrared their ugly heads. It is against this backdrop of severe environmental degradation, pollution, youth unemployment, and extreme poverty that the artisanal refineriesreared their ugly heads. The 2012 UK Niger Delta Group reports that participants at a recent conference on artisanal refining and oil theft in London agreed that this increase in artisanal refining and oil theft had increased over the last ten years. Over the past few years, the Niger Delta region has become the home to these illegal oil refining business, which has metamorphosed into a mini-economic sector. This illegal oil refining despite all these has not solved the problem of poverty and environmental degradation, but it has engendered an ongoing ecological disaster; livelihood and revenue loss; and insecurity associated with oil sabotage.

The main problem today with this illegal business is the involvement of all sorts of people in the activities. Nowadays, the security operatives like the Police, soldiers, traditional rulers, LGA Chairmen as well as politicians are all involved in these illegal activities. It will be very difficult to stop but can be reduced. These illegal activities have adverse effects on the environment, human beings, and the socio-economic development of the States in the Niger Delta.

Artisanal Refining in the Niger Delta

Artisanal refining is the process where stolen crude oil is refined illegally by local people using local resources and crude skills (drawing on the indigenous technology used to distill locally made gin – ogogoro or kai-kai). The basic materials these need include rudimentary illegal stills, which often are metal pipes and drums welded together. The crude oil is boiled and the fumes from it are collected, cooled, and condensed in tanks to be used locally for lighting,

energy, or transport. This basic refining technique was first used during the Civil War by Biafrans, and modernized by members of militant camps between 2005 and 2009, providing fuel and cash to support the Niger Delta insurgency. The militants after the 2009 amnesty deal by President Yar 'Adua were brokered, the militants went home to their villages with their knowledge of refining with them and continued their illegal refining. The inability to stop these illegal refining at the early stage and the huge commercial rewards available, the trade grew and became more entrenched in the communities in the region. These artisanal refining scattered all over the region produce about forty to sixty drums of diesel a day. There are different sites with varying sizes and different levels of investment. Small-scale ones attract people with low levels of capital to invest as well as women, whilst larger-scale sites involve entrepreneurs who own relatively large production sites.

Artisanal refining damages the environment greatly, and people's farmland and water bodies are also affected. In the refining process, there is a significant quantity of waste being dumped in rivers and streams or on land – two drums of crude oil translate into one drum of the product once refined. Open fires were used to heat up the distilleries and fed by crude oil that is tipped into pits in the ground. As a large quantity of the oil burns away, some seeps into the ground during the process of refining. The resulting oil spills from broken pipes and wastes from tens of thousands of makeshift refineries combine to produce enormous environmental pollution on land and in the creeks. A large number of accidents, fires, and explosions occur, apart from the high risk of self-harm from illegal refining (UNEP, 2011).

Theoretical Framework

The relative deprivation theory is the theoretical construct used in this study. Relative deprivation is a multidisciplinary theory used in investigating a social relation in a given environment. The theory was attributed to Samuel A. Stouffer (1900–1960) based on his observation during World War II. This relative deprivation theory was also entitled The American Soldier (1949). Relative deprivation has it that someone feels deprived of something to which she/he is entitled and others are the core beneficiaries. Pettigrew (2015:12) posited that "relative deprivation is a social psychological concept par excellence." Pettigrew further postulates that it is "a subjective state that shapes emotions, cognition, and behaviour. It also links the individual with the interpersonal and inter-group levels of analysis" (Pettigrew, 2015:12).

This theory of relative deprivation has been proven useful in various ways, especially in situations of frustration and discontent in an environment where people feel that they have been unjustly treated, and abused by state powers, and there are lawlessness and impunity in analyzing conflict inherent in such a system. The people of the region believed they have been deprived, and denied the benefits of petrodollar revenue by the federal government and the multinational oil and gas companies operating in the State. The inhabitants of the region feel bemoaned and deprived of these benefits from the crude oil extracted from their communities and region, hence, the resultant consequence is the arbitrary setting up of illegal refining of the crude oil which has adversely impacted the socioeconomic development of the region.

What we are witnessing today is the effects of the reaction of these youths to these deprivations. These reactions include the emergence of youths' overlords, cultism, arms

proliferation, an increase in school dropouts, loss of moral values, among others, while the economic implication includes oil sabotage, facilitating oil theft, illegal refining, which sometimes might lead to an oil spill, loss of revenue from the federal government, among others.

Factors responsible for Artisanal Refining in the Niger Delta

The emergence of illegal refining in the Niger Delta has been discussed by several schools of thought. Different factors necessitated this thriving business of oil theft and illegal refining in the Niger Delta region. Brock (2012) posited that what is going on in the region came about because of many years of neglect, marginalization, and underdevelopment of the region by the Federal Government and the Multinational Oil Companies (MNCs) operating in the Niger Delta, as well as rings of organized criminal groups, called —oil bunkerers in our local parlance, has evolved in the creeks and along our territorial waters, who specializes in stealing, illegal refining and transporting of Nigeria's crude oil to the international black market. Some of the identified underlying causes of this scourge include poverty, corruption, unemployment, ineffective law enforcement and poor governance, inordinate ambition to amass wealth, poor policing /protection of oil pipelines, inadequate community participation in the management of resources in their communities, pollution of the environment, dearth of economic activities in communities, increasing criminality and insecurity of the coastline, flourishing of the oil black market in Nigeria and high foreign demand of Nigeria crude oil (Okere, 2013; Okoli&Orinya, 2013; Igbuku, 2014).

The above shows that the discovery of oil in the region has been a blessing and a curse of the suffering the people of the region are going through. The Federal government and the Multinationals are busy making millions of dollars while the goose that lay the golden eggs are wallowing in poverty and deprivation. This is the major reason the youths felt frustrated and began to go into artisanal refining of this product. The exploitation of crude oil has produced a lot of things along – corruption of all sorts which now includes, Politicians, military personnel, police, Traditional rulers as well as CDC chairmen. The environment has been degraded, and there is no quality air. These kpo-fireactivities degrade farms, and water bodies, and cause climate change, and also human health issues. The people of the region are suffering from black soot, and nobody is doing anything about it. People are dying silently without knowing it.

Oil theft and illegal refining did not start today in the Niger Delta, rather it started around the late 1970s to early 1980s, during the military regime. It was carried out under the command of top military personnel who used it to enrich themselves and forcefully maintain political stability (Katsouris&Sayne, 2013). However, the illegal activities took a new turn during the youth militancy agitation for resource control (Ikelegbe, 2005; Katsouris& Sayne, 2013). Initially, the agitation by the region's youths was primarily political with youths demanding an increase in the derivation fund (a specific percentage of oil rents accrued to the federal government), but when the government was unable to meet all their demands, many of these youths took up arms against the government and engaged in criminal activities such as kidnapping, destruction of oil facilities, oil theft and sea piracy (Ikelegbe, 2005; Katsouris& Sayne, 2013).

Some people believed that it was ethnic marginalization and neglect that were the major factors that are responsible for the spread and expansion of artisanal refining in the Niger Delta Region. Political exclusion/inequity was identified as a contributory factor.

Oil theft, which is also referred to as oil bunkering (Watts, 2007) occurs in three different modes in the Niger Delta (Katsouris&Sayne, 2013). The first mode involves locally confined activities in which oil is siphoned from pipelines that had been punctured or cut with a hacksaw, and the oil collected is then refined crudely and sold within the community (Asuni, 2009). In the second mode, oil thieves attach plastic hoses to wellheads or manifold points to divert the oil directly into barges, ships, or canoes (Ikelegbe, 2005) after which the oil is transported through the 'Niger Delta's dense network of creeks, swamps and estuaries' (Katsouris and Sayne, 2013:3) and offloaded into tankers often anchored at the mouths of coastal rivers. When these tankers have been filled, the oil is transferred into other large tankers or mother ships on the high seas (Ikelegbe, 2005). The third mode which has also been termed the 'white-collar branch of oil theft' (Katsouris and Sayne, 2013:4) involves lifting excess crude oil by extraction license holders and falsification of bills of lading records to cover up the actual quantity of oil being shipped out of the country.

Incidentally, the host communities see illegal refining as expedient and justifiable, given the absence of gainful employment in the cities, towns, and rural communities of the region. The perpetrators of these illegal businesses boast that the security operatives cannot stop them and that their products are as good as the imported or produced in the main refineries. Some of those interviewed on this said that the illegally refined petroleum products like fuel, kerosene, and diesel support local demand and contribute to the sustenance of the Nigerian economy such that if they stop operation over a period of time, there would be an energy crisis in Nigeria as some of their products are also bought and distributed nationwide by tanker drivers and registered marketers (Resource Justice, 2017).

Effects of Artisanal Refining on the Environment

Despite the fact that the Niger Delta region is rich in oil and gas deposits; it also has very rich, fertile, and diverse wetland vegetation. Wetlands are ecosystems naturally endowed with distinct and special characteristics. They are an important environmental resource of the world with high biota. They are classified into marshes, swamps, and bogs depending on the vegetation type, salinity of water, and soil type. Prominent among them is the mangrove swamp vegetation wetland. The Niger Delta mangrove vegetation is the largest in Africa and the sixth-largest in the world (Chindah, Braide, Amakiri, &Onokurhefe, 2007), with up to 0.8 million ha of mangrove stands in this area constituting about 35% of all West African mangroves(FAO., 1981).



The black soot that plagues the city of Port Harcourt has been linked to artisanal refining of stolen crude oil. (Photo by Orji Sunday).

The anthropogenic activities has devastated a large proportion of the wetland vegetation of the Niger Delta over the years. It is estimated that crude oil theft (commonly called illegal bunkering) accounts for between 200,000 and 300,000 barrels of crude oil daily lost in Nigeria; with a significant proportion of the stolen oil going into artisanal refining in make-shift facilities into low-quality petroleum products (Naanen, 2012). The inefficiency of the process is so much that it is most likely that as much as 80% of the heavy end of the crude oil cannot be refined and is just discharged into the environment (Attah, 2012). It is during the process of stealing the crude oil from pipelines and illegally refining it that great environmental and economic devastation is done to the environment. It is this activity of these local refiners that devastated the communities' environment that their traditional means of livelihood such as farming and fishing. This illegal refining also poses serious health risks (SDN, 2012). The UNEP (2011) reported several incidents of artisanal refining activity in Ogoni land that cause fire accidents, and the destruction of the ecosystem.

There are issues of corruption connected with these artisanal refining, which means the country's laws and regulatory policies are not really enforced. This is because traditional rulers, CDC chairmen, Politicians, and security operators are involved in these illegal businesses, and who will then bale the cat. Penalties, are mild or ignored when they are invoked, because the actors behind the soot pollution, says Ebiaribor, are typically powerful enough to avoid sanctions. Activists claim to have received death threats or blackmail, which has forced many of them to silence their efforts. "In a place where there is a huge risk for doing the right thing, people are so terrified to hold the government accountable in this kind of situation," says Sunday Enum, a resident of Port Harcourt.

Criminality in the Artisanal Activities in the Niger Delta

Oil theft in Nigeria has reached an all time high, with approximately 100,000 – 150,000 barrels of crude oil stolen every day by the perpetrators of these illegal businesses. The vast majority of this oil is sold internationally and involves complicated insider industry networks, as recently noted in Chatham House's report,"Nigeria's Criminal Crude". However, 25% of

these products stay in the region for refining and consumption. SDN's report describes in detail the economics of artisanal refining which is already having a dramatic impact on communities and stability in the region.

Over the past four years, 'local refining' has grown swiftly providing communities with employment opportunities and filling the supply gap of refined fuel in the South-south region. The industry fills an economic vacuum where local communities suffer the impacts of oil extraction but sees none of the economic benefits. The failure of the federal government to provide basic public services and security in the Niger Delta has resulted in a significant breakdown of the social contract. The communities view artisanal refining as doing what they can to survive in the absence of mainstream livelihoods in the face of extraordinary corruption by the political elites.The scale this illegal refining is now becomes too difficult and risky to stop because of the stiff resistance or an unpredictable backlash. From research it was noticed that a local industry worth about $28m (per month or $336m per far exceeds the revenues coming to affected communities via local governmnets and makes refining by far the highest value local employer.



Illegal refining site

"When you talk about the proper way of refining crude oil at the refinery where it goes through the different stages of production, they get different products like Premium Motor Spirit (PMS), gas, diesel, and many more. But when you come to our Kpo-fire level, we also take the crude oil from one stage to another but there is a limit to how far we can go in the process. However, the kerosene and PMS that we get, when placed side by side with the one gotten from the conventional refinery, it could be difficult for the ordinary man to identify the difference"(https://tribuneonlineng.com/niger-delta-inside-world-of-crude-oil-theft-artisanal-refiners-2/).

One of the men who have been in this Kpo-fire business admitted that what they are doing is criminal, but insisted that 'man must wak' since the federal government and the Multinational companies do not want to empower them in spite of all the money they are making from the proceed from these products. It will be very difficult to stop now because of the people involved. Police, military personnel, Local government chairmen, and politicians are all involved in these illegal businesses.

Sharing one of his near-death experiences at his kpo-fire camp, Kientei said "I remember that one of my boys working for me was with me in the camp. Towards the cool of the day, as I was about to leave the camp, I told him to put out the fire when he was tired. "When I got back to the village, I had not even had my bath when I received a call that my camp had been burnt down. I was told that my boy got burnt as well but luckily, he survived and continued working until I finally left the business. But it was a dangerous business because lots of young men die in the process."

The Socio-Economic and Environmental Impacts of Artisanal Refining

The activities of artisanal refining negatively impact the environment with the emission of carbon dioxide, methane, which turns hydro carbon into the atmosphere resulting in greenhouse gas emission that destroys the ozone layer and shields the earth from direct sunray.

The Nigerian Government and the oil firms that own the assets lose revenues from oil theft and illegal bunkering from which oil is stolen, pipeline vandalism, river, and land pollution, environmental degradation, increased criminality, and insecurity in the Niger Delta region. The following are the major impacts of oil theft using the following sub-heads: Socio-Economic Losses to the Nigerian State; and threat to Nigeria's economy (Duru, 2013; Okere, 2013). The oil theft has resulted in a lack of proper maintenance of oil terminals, and a declaration of force majeure, the money shared by the three tiers of government in Nigeria in 2013 was erratic. Nigeria lost about N191 billion ($1.23 billion) due to a drop in crude oil production. In the first quarter of 2013 alone, arising from incessant crude oil theft and vandalism along the major pipelines within the Niger Delta, the Nigerian National Petroleum Corporation (NNPC) disclosed (Mernyi, 2014).

There is significant health risks associated with Illegal oil refining. The illegal oil refining, from handling and heating of this crude oil, pollutes the air we are breathing. The camps itself produces a toxic feel and the health impacts on those working there are unknown. The people living in the communities where these illegal businesses are going on are constantly exposed to inhalation of poisonous gases, causing coughing and breathing problems (UNEP, 2011).
Several villages have been displaced from their farmlands to make space for ground support for pipelines throughout decades of crude oil exploration and extraction activity. Shell reported 1,010 spills in the Niger Delta in 2011, totaling 110, 535 barrels of crude oil discharged into the environment, while Agip claimed 820 spills in 2014, totaling 26,286 barrels spilled into the environment (Lawal, 2020).

"Kpo-fire is a big source of climate change in the Niger Delta since, as we all know, there are no refineries in our area." Despite the fact that gas is being flared, the amount of carbon released into the atmosphere, in addition to the kpo-fire, is extremely significant. They flare the gas instead of converting it for home use, which made circumstances worse when the kpo-fire arrived" (https://tribuneonlineng.com/niger-delta-inside-world-of-crude-oil-theft-artisanal-refiners-2/).

Artisanal Refining Impacts on Health

Members of the society are exposed to a variety of health risks as a result of illegal refiners' activity. Port Harcourt and its environs have been affected by the current issue of black soot. Black soot is a small particle that can penetrate deep into the lungs and has been associated with a variety of catastrophic health impacts in children, including premature death, heart attacks, and strokes, as well as acute bronchitis, and worsened asthma.

PM 2.5 –particulate matter with a diameter of 2.5 micrometers or less – is the popular name for a type of particle pollution known as soot. These tiny particles are even smaller than dust and mold, measuring around 1/30 of the width of a human hair. It is made up of a range of contaminants such as chemicals, acids, metals, soils, and dust that are suspended in the air after they are released. Soto can exist in three states: solid, liquid, and gaseous ("aerosols"). When kpo-fire was in force, the actions were so awful that the water from our rivers could not be used for anything since the entire water had been poisoned, "Mr. Eriye remarked in Igbomotoru. I recalled that when you washed your clothes and hung them to dry, they would have black stains by the time you returned.

Many people developed respiratory tract infections as a result." (https://tribuneonlineng.com/niger-delta-inside-world-of-crude-oil-theft-artisanal-refiners-2/).

Soot generates an inflammatory response in the lungs and numerous symptoms in systemic poisoning. Lung epithelial cells release inflammatory mediators (chemokines and cytokines) in response to soot or CB exposure, which enhance the immunological response. The question now is; Is black dust hazardous to one's health? Yes. Coughing can be caused by inhaling carbon black particles, which irritate the lungs. The eyes, nose, and throat can all be irritated by carbon black.

When humans are exposed to high quantities of carbon black for an extended period of time, the particles can become lodged deep in their lungs. Another question is; "Is soot carcinogenic? The answer is yes. This is because "soot is a result of the incomplete combustion of organic materials, such as wood, fuel oil, plastics, and domestic garbage," according to the National Cancer Institute of America.

Arsenic, cadmium, and chromium are among the carcinogens found in the fine black or brown powder that makes up the soot. "Soot is a black tarry powder or flak-like substance consisting largely of amorphous carbon, produced by the incomplete combustion of organic matter,"



Blessing Ibunge writes about the dangers of soot to residents of Port Harcourt and other parts of Rivers State, who have suffered years of serious health problems as a result of gas flaring from multinational oil companies operating in the area, illegal crude oil refining activities, and the illegal burning of seized products by government security agencies.

"Pneumoconiosis is a result of continuous carbon exposure." It is a catch-all phrase for bronchitis produced by breathing in non-organic dust. When things are exposed to grit for an extended period of time, they begin to line the divider of these air spaces (alveoli), hindering the normal strength for vaporous exchange. "Pneumoconiosis form cases prone to different respiring afflictions like pneumonia, asthma, and so on," he explained, as copied by Akutu, Geraldine (2018, May 27, The Guardian Newapaper).

The following are the most significant health hazards produced by soot and carbon black: The primary danger is cancer, which is caused by the formation of DNA adducts, DNA strand breaking, or gene mutation. The second kind of respiratory toxicity is caused by a faulty immune response, which involves eosinophil and mast cell activation. Cardiovascular toxicity, which includes coronary heart disease, is the third field of research. Aside from these consequences, soot affects the organs of the body by unknown processes. Because of its massive size, soot has a tremendous influence on population health. Because particulate matter is so minute, it may readily enter your alveoli and bloodstream, causing injury in a variety of ways.

Particle pollution is also correlated to acid rain. The same compounds from soot that react in the air to form haze—sulfur dioxides and nitrogen oxides—can mix with atmospheric moisture to acidify precipitation. Carried by the wind or in the water, this acidified pollution degrades water quality by making lakes and rivers more acidic, depleting the nutrients in the soil and damaging sensitive farm crops, and changing the nutrient balance in river basins, along coastlines, and in forests (Weidman & Marshall, 2012).

Conclusion

The impact of illegal refineries on the Niger Delta atmosphere has nurtured questions of excellent concern in the minds of the occupants in the region. The people of the domain have

endured comtaminated air, adultrated surroundings, disgraced forests, biodiversity deficit, and extreme meteorological hotnesses. The study discovered that artisanal refining increased the number of school dropouts, cult rivalry, and arms proliferation in the State, among other things, and recommends that raising awareness about the effects of artisanal refining on the ecosystem, among other things, would result in meaningful development in the State. The illicit business has hampered the development of a modern economy; enhances conflict and insurgency in the Niger Delta and with the current international dimension undermines regional security efforts in the Gulf of Guinea; and creates instability in the oil market that reacts to incidents in the Niger Delta especially Force Majeure events often declared by multinational oil firms (IIPELP, 2011).

Recommendations

In order to halt the persistent incidental depravity of the Niger Delta, the following deliberate mediation measures to compensate the people of the region are hereby recommended;

(i) Youth empowerment through vocation training
(ii) Environmental education for the people in the Niger Delta
(iii) Cleaning the degraded areas using international standard
(iv) Afforestation and reforestation of degraded sites in the region.
(v) Free education for all the youths and children in the domain.

All tiers of Government must embark on high-impact projects capable of changing the lives and livelihoods of populace in the urban and rural areas who bear the hardship and consequences of these illegal activities rather than the rhetorical exercise and unnecessary politicking that has pervaded the entire political landscape. The government also needs to raise the awareness of the people on the inherent dangers in oil theft and artisanal refining to the environment and the economy.

References

Asimiea, A. and Godwin Omokhua (2013). Environmental Impact of Illegal Refineries on the Vegetation of the Niger Delta, Nigeria.

Asuni, J. B. (2009). Blood Oil in the Niger Delta, United States Institute of Peace, Washington DC, USA.

Attah, T., (2012). Oil theft and artisanal (illegal) refining in Nigeria-scale, impact and the need for a multi-dimensional response. Proceedings of the Gulf of Guinea Security Conference, December 6, 2012, Chatham House, London, UK –

Chindah, A.C., S.A. Braide, J. Amakiri and J. Onokurhefe (2007). Effect of crude oil on the development of mangrove (*Rhizophora mange* L.) seedlings from the Niger Delta, Nigeria. Rev. Cientifica UDO Agric., 7: 181-194.

Dolf, Zillmann (1979). Hostility and Aggression. Hillsdale, N. J.: Lawrence Erlbaum Associates. pp. 126–133.

Dollard, John; Miller, Neal E.; Doob, Leonard W.; Mowrer, Orval H.; Sears, Robert R. (1939). Frustration and Aggression*. New Haven, CT, US: Yale University Press* doi:10.1037/10022-000. OCLC 256003.

Duru, A. E. (2013). Addressing oil theft, illegal bunkering in Niger Delta. Daily Independent Retrieved November 29, 2013 from www.dailindependent.com/2013/11.

El-Deeb and H. I. Emara (2005). "Polycyclic aromatic hydrocarbons and aromatic plasticizer materials in the seawater of Alexandria coastal area. ," Egyptian J. of Aquat Res., vol. 31, pp. 15-24, 2005.

FAO., (1981). Tropical Forest Resources Assessment Project: Forest Resources of Tropical Asia. Food and Agriculture Organization of the United Nations, Rome, Italy, ISBN-13: 9789251011058, Pages: 475

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/

Ikelegbe, A. (2008). Popular and Criminal Violence as Instruments of Struggle: The Case of Youth Militia in the Niger Delta Region, NAIIPRIO Workshop on Violent Conflict in the Niger Delta, August 18-19, Oslo, Norway.

Katsouris, C. and Sayne, A. (2013). Nigeria's Criminal Crude: International Options to Combat the Export of Stolen Oil, Chatham House, London, UK.

Lawal**,** Ebiowei (2020). Niger Delta: Inside World Of Crude Oil Theft, Artisanal Refiners.

Naanen, B., (2012). Private gain, community loss: Economic and environmental arguments about illegal oil bunkering and artisanal refining in Nigeria. http://www.imhc.co.za/assets/pdf/Ben%20Naanen,%20Prof.pdf.

Martens, D. A. and J. T. Frankenberger (1995). "Enhanced degradation of polycyclicaromatic hydrocarbons in soil treated with an advanced oxidative process—fenton's reagent," Journal of Soil Contamination, vol. 4, pp. 175-190, 1995.

Mernyi, D. (2014). Crude Oil Theft, Pipeline Vandalism Cross Over to 2014. The Sun, January 1 Retrieved February 28, 2014 from http://sunnewsonline. com/new/specials/abuja-metro/crude -oil-theft-pipeline- vandalism-cross-2014/

Ogbuagu, D. H., C. G. Okoli, C. L. Gilbert, and S. Madu (2011). "Determination of the contamination of groundwater sources in Okrika mainland with polynuclear aromatic hydrocarbons (PAHs)," British Journal of Environment & Climate Change, vol. 1, pp. 90-102, 2011.

Okere, R. (2013). August 21, The Guardian). Curtailing Oil Theft, Illegal Bunkering via Legislation.

Pettigrew, T.F. (2015). Samuel Stouffer and Relative Deprivation. Social Psychology Quarterly. Vol. 78(1) 7–24. Retrieved on 2019/04/16 from: http://spq.sagepub.com

SDN., (2012). Communities not criminals: Illegal oil refining in the Niger delta: Trying to understand an informal economy. Stakeholder Democracy Network (SDN), Nigeria, pp:5-40.

Soremi, T. (2013). Oil Theft in the Niger Delta: Why Does it Occur, What are its Economic and Social Impacts and What may be Done to Reduce it? University of Sussex, Brighton.

Watts, M. (2007). Petro-Insurgency or Criminal Syndicate? Conflict and Violence in the Niger Delta, Review of African Political Economy 34(114): 637-660.

Weidman, Jackie and Susannah Marshall (2012). Soot Pollution 101. What You Need to Know and How You Can Help Prevent It. Center for American Progress. August 10, 2012.

UNEP, Environmental Assessment of Ogoniland, Nairobi. Kenya: United Nations Environment Programme, 2011.USA., ISBN: 978-92-807-3130-9, Pages: 262

(2018, May 27, The Guardian Newspaper).