GAS FLARING AND CLIMATE CHANGE: IMPACT ON NIGER DELTA COMMUNITIES

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Abstract
Axiomatically, gas flaring has been a recurrent problem in the Niger Delta, with devastating effects on the environment. Many rural and urban communities are exposed all year round to the black soot (black rain), air pollution, the corrosion of zinc and other environmental hazards that result from gas flaring. Furthermore, the low lying communities of Bonny, Ogoniland and some other Niger Delta communities are particularly vulnerable to flooding, displacement and other disasters that may result from climate change. Nigeria is ranked 7th on the list of countries involved in gas flaring around the world. About half of this gas is flared by Shell Petroleum Development Company. This paper examines the impact and implications of gas flaring in Nigeria's Niger Delta region, and considers how the environmental and health risks associated with the oil and gas industry can best be addressed. Following the UNDP Niger Delta Human Development Report and other recent accounts, this study highlights the adverse health and environmental impact of gas flaring and other activities associated with the extraction of oil and gas in the Niger Delta.
Keywords: Gas Flaring, Climate Chnage, Africa, Niger Delta, Nieria

Introduction

There is no doubt that gas flaring is negatively impacting on the climate – leading to the much talked about climate change. Bonny Island, Ogoniland, Portharcourt, etc are urban cites surrounded by the Atlantic Ocean. Gas flaring is visible within and around the above mentioned communities all year round with the oil companies and the Nigerian government doing nothing pragmatic at reducing or stopping this dangerous phenomenon. The danger resulting from this is that besides the health implications of gas flaring, these communities are at the risk flooding. When oil was first discovered in Oloibiri in 1956 and in Ogoniland a few years later, the local people naturally looked forward to the social and economic benefits that this natural resource endowment would confer. Paradoxically, the blessings expected from the oil industry have, in many respects, turned out to be a curse. The time to act is now on the part of both the

federal government of Nigeria and the oil companies operating in the Niger delta. Practical and pragmatic steps must be taken aimed at reducing the health risk of gas flaring as well as averting the impending flooding that is seriously looming.

The implication of flooding of these communities will be disastrous and unmanageable especially in Bonny Island which harbours the multinational company's terminals. Apart from the dangers to the people and the communities, the colossal loss will be detrimental to the Nigerian government that depends heavily on oil and gas as her main foreign exchange earners. Climate change is top on any chains of global agenda. Little wonder this book as well as the international community has taken this phenomenon very serious. The book chapter identified that in spite of official posturing, the Nigerian government and the multinational corporations operating in the Niger Delta pay only lip service to the environmental and health risks associated with gas flaring or have done little but inconsequential towards managing the risk associated with this phenomenon. Gas flared in Nigeria is released as methane which is contributing to the depletion of the ozone layer resulting in climate change.

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Climate Change

The most general definition of climate change is a change in the statistical properties (principally its mean and spread) (Solomon; Qin; Mannin; Chen;

Marquis; Averyt,; Tignor; Miller, 2007) of the climate system when considered over long periods of time, regardless of cause. The term "climate change" is often used to refer specifically to anthropogenic climate change (also known as global warming). Anthropogenic climate change is caused by human activity, as opposed to changes in climate that may have resulted as part of Earth's natural processes. In this sense, especially in the context of environmental policy, the term climate change has become synonymous with anthropogenic global warming. Within scientific journals, global warming refers to surface temperature increases while climate change includes global warming and everything else that increasing greenhouse gas levels affect (Hulme, 2016).

The United Nations Framework Convention on Climate Change (March 1994) states:

> Climate change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

Niger Delta at a Glance

The Niger Delta comprises 70,000 km² (27,000 sq mi) of wetlands formed primarily by sediment deposition. It is a home to 31 million people and 40 different ethnic groups. They are among the inhabitants of the political Niger Delta, speaking about 250 different dialects. This floodplain makes up 7.5% of Nigeria's total land mass. It is the largest wetland and maintains the third-largest drainage area in Africa. The Delta's environment can be broken down into four ecological zones: coastal barrier islands, mangrove swamp forests, freshwater swamps, and lowland rainforests.

Historically and cartographically, the Niger Delta consists of present-day Bayelsa, Delta, and Rivers States. In 2000, however, Obasanjo's regime included Abia, Akwa-Ibom, Cross River State, Edo, Imo and Ondo States in the region. The Niger Delta and the South South geopolitical zone (which contains six of the states in Niger Delta) are two different entities. The Niger Delta separates the Bight of Benin from the Bight of Bonny within the larger Gulf of Guinea. The Niger Delta is the Delta of the Niger River sitting directly on the Gulf of Guinea on the Atlantic Ocean in Nigeria (Hogan, 2013). It is typically considered to be

located within nine coastal southern Nigerian states, which include: all six states from the South South geopolitical zone, one state (Ondo) from South West geopolitical zone and two states (Abia and Imo) from South East geopolitical zone. Of all the states that the region covers, only Cross River is not an oil-producing state following the handover of Bakassi Peninsula to Cameroon.

The Niger Delta is a very densely populated region sometimes called the Oil Rivers because it was once a major producer of palm oil. One will recall through a sense of history the role of the middle man King Jaja of Opobo during this period. The area was the British Oil Rivers Protectorate from 1885 until 1893, when it was expanded and became the Niger Coast Protectorate. The delta is a petroleum-rich region and has been the center of international controversy over pollution.

Overview Of Oil Exploration In Nigeria

The voyage into the history of oil exploration in Nigeria is traceable to 1907 when Nigerian Bitumen Corporation embarked on the first exploratory work in Nigeria, howbeit, at the beginning of the First World War the firm was forced to live. Following her exit, license was then granted to D'Arcy Exploration Company and Whitehall Petroleum. Although both companies effort did not yield the desired result as they could not discover oil in commercial quantity and returned their license in 1923. (Frynas, 1999).

A new license covering 357,000 sq. miles was given to a new consortium called Shell D'arcy Petroleum Development Company of Nigeria, the new firm was a consortium of Shell and British Petroleum (then known as Anglo-Iranian), the company was incorporated in 1936 but began exploratory work in 1937. The consortium was granted license to explore oil all over the territory of Nigeria but in 1951 and between 1955 and 1957, the acreage allotted to the company in the original license was reduced. Drilling activities started in 1951 and the first test well was drilled in Ikeduru - Owerri area. Oil was discovered in non-commercial quantities at Akata, near Eket in 1953. (Frynas, 1999). Prior to the Akata find, the company had spent around $6m pounds in exploratory activities in the country. Shell-BP in the pursuit for commercially available petroleum found oil in Oloibiri in the present Bayelsa state, Nigeria in 1956.

Other important oil wells discovered during the period were Afam Ndoki and Bomu in Ogoni territory. Production of crude oil began in 1957. In Feb 17th 1958

the first 18000 tons of crude was exported to Europe through Bonny River by a tanker called Hemifusus, and in 1960, a total of 847,000 tonnes of crude oil was exported. Towards the end of the 1950s, Non-British firms were granted license to explore oil; Mobil in 1955, Tenneco in 1960, Gulf Oil and later Chevron in 1961, Agip in 1962, and Elf in 1962. It is imperative to note that by July 1971 Nigeria has succeeded in becoming the 11th member of the Organization Petroleum Exporting Company (OPEC) originally formed in 1960 by 5 Arab oil countries, and in 1979 Nigeria first reached the then considered peak of oil production by producing an average of 2.4 million barrel per day.

Dangers Associated With Gas Flaring

Apart from black soot with its health challenges, the gas flared on daily basis has its attendant health and environmental consequences. Below are some of the pictorial display and complaints from host Niger Delta communities

Picture showing a gas flaring from the ground in one of the remote Niger Delta community.

The above picture shows the method adopted by oil companies to get rid of waste gas released through drilling by oil industries. This flow station is located less than 100 meters (109 yards) from a residential area in a small village near Ekpetiama Yenagoa in the Niger Delta region. The burner close to this area has resulted in respiratory problems for the residents of the area.

The residents recount their ordeal "Suddenly everything smells like gas." The air pollution that takes place in this area is unbearable. Flame as tall as 10-storey building burns day and night in most villages in Nigeria's Niger Delta irrespective of the season. But the heat from this fire is neither soft nor warm; it's fierce and prickly not just to the human body but also to the ecosystem.

The constant noise sends bush animals fleeing, and people have to shout for them to be heard over the roaring flames. Fields of crops, once green, have turned yellow or stopped growing entirely and palm trees close by have stopped producing. The gas flaring caused a rise in soil temperature and thereby declining crop yields. The village no longer enjoys the respite of cool or darkness of night.

Statistics show that in the oil-rich Niger Delta of Nigeria, about 2 million people live within 4 kilometers (2.5 miles) of a gas flare point. The picture above show the flames produced when oil is being extracted. With the oil comes gas - considered by the oil industry to be a dangerous waste product to be burned off in a process called gas flaring.

Suffice to note that the fears of the people of Niger Delta are legitimate because constant exposure to air pollutants released by gas flaring have been linked to cancer and lung damage, as well as neurological and reproductive problems. Although the oil industry brings jobs, residents in the Niger Delta suffer many negative consequences from gas flaring which is neither comparable nor commensurate with the type of jobs provided by these firms

Prior to gas flaring rainwater was a major source of drinking water for most families who have no access to pipe born water but all of that is in the past now due black soot rain which is not only dangerous to health, skin but also corrodes the zinc roof. On a visit to Port Harcourt I washed my ash colour vehicle at night hoping to travel in it the next morning, I woke up to see tiny black soot all over it the next morning. Invariably, since air occupies space, people must whether at sleep or waking on the streets of the Niger Delta stand the risk of inhaling soot in a bid to taking in oxygen.

According to the NNPC report in 1983, long before popular agitations and unrest erupted:

> We witnessed the slow poisoning of the waters of this country and the destruction of vegetation and agricultural land by oil spills which occur during petroleum operations. But since the inception of the oil industry in Nigeria, more than twenty-five years ago, there has been no concerned and effective effort on the part of the government, let alone the oil operators, to control environmental problems associated with the industry. (Greenpeace)

Gas Flaring On The Rise In Nigeria

Nigeria has been exporting oil for more than 60 years, and the sector accounts for more than half of the government's foreign exchange earnings. The Niger Delta is among the world's most oil-rich regions. Since the start of crude oil exploration and exploitation in the area in the 1930s and 1950s, thousands of oil spills have fouled the Delta, and helped fuel conflicts in the region such that led to the killing of the 8 Ogoni men including the famous Ken Saro Wiwa in 1995. The people of Niger Delta cannot forget this incident in a hurry including the genocide in Odii town which was turned into a ghost village under Olusegun Obasanjo's administration.

Suffice to observe that gas flaring was officially banned in 1984, but the federal government of Nigeria rather than harness gas flaring into gas wealth, has repeatedly failed to fulfil her promises to end the practice.

In an event to help Nigeria fulfil this promise to end gas flaring, a London-based non-profit organization On Our Radar tested whether the government's most recent vow to put an end to gas flaring by 2020 were realistic. It commissioned geospatial data expert Rory Hodgson to analyze and measure hotspots from gas flares using infrared data. Unfortunately, Hodgson observed that the satellite data appears to show a marked increase in radiant heat emitted by gas flares in Nigeria starting late 2017.

The National Oceanic and Atmospheric Administration (NOAA) satellite that collected the data began recording infrared readings in 2012. In 2018, it yielded the highest readings for gas flaring in Nigeria. Imperatively, the data reveal that

2018 have more gas flares burning more intensely than has been seen for the past five years. The indication is that Nigeria goes against the global trend by substantially flaring more gas in recent decades (World Bank, 2018). It's estimated that gas worth about a billion US dollars is burned every year in the Niger Delta.

Negligence And Its Consequences In The Niger Delta

According to Okeke (2019) the reduction in the weight of derivation from 45% to 20% in 1975 was expedient and indeed justifiable. In his view, if 20% were sustained, the Niger Delta states would have long become the most prosperous states in the country, with the best developed infrastructure. They would not have been crying of underdevelopment and marginalization today. The injustice and utter neglect witnessed in the Niger Delta has a long history Okeke refers to it as an oppression which started during the Shagari era, when the weight of derivation was grossly reduced to 5% and ultimately under the Babangida era, to 1%.

It took the Ogoni to bring this issue to global attention. Under the Babangida regime, the federal government attempted to pacify the region through the introduction of twin policies of appeasement. It abolished the onshore-offshore dichotomy and established the Oil Minerals Areas Development Commission (OMPADEC) and allocated 3% of revenue from oil allocated to it (Okeke, 2019)

After General Sani Abacha became Head of State, and as a means of gaining legitimacy for his government, he convened what he called a Constitutional Conference. At that conference delegates from the southern states campaigned strongly for state ownership of mineral resources. It was decided that delegates from each state would cast one vote. A North v South conflict was imminent. The North would have won as it had two more states than the South. But, as the media hinted at the time, the federal government brought pressure to bear on delegates from Lagos, Oyo and Osun states to vote with the Northern states. However, to conciliate the oil producing states, potentially the main beneficiaries of state ownership of resources, the Northern delegates conceded to a significant increase in the weight of derivation, from 1% to 13%. The Abacha regime adopted it and included it in its (unpublished) 1995 Constitution. The proposal was subsequently adopted by Abdusalami Abubakar regime, and became Section 162 (2) of the 1999 Constitution: "[The] principle of derivation shall be

constantly reflected in any [revenue] formula as being not less than thirteen percent of the revenue accruing to the Federation Account directly from any natural resource"(Okeke, 2019).

Oil Revenue Sharing Formula					
Year	**Federal**	**State***	**Local**	**Special Projects**	**Derivation Formula****
1958	40%	60%	0%	0%	50%
1968	80%	20%	0%	0%	10%
1977	75%	22%	3%	0%	10%
1982	55%	32.5%	10%	2.5%	10%
1989	50%	24%	15%	11%	10%
1995	48.5%	24%	20%	7.5%	13%
2001	48.5%	24%	20%	7.5%	13%

World Bank Report, 2001

Citizens of Niger Delta believe that they have not been able to see the economic benefits of oil companies in their environment. Moreover, Nigerian government officials have remained majority shareholders in the profits created by the production of Nigerian oil to detriment of their host communities, and this has led to the unrest and pipeline vandalism often witnessed in the area. The above table provided by the World Bank justifies this assumption. Below is also a display of one of such groups and their activities. Until the Nigerian government shows sincere commitment to addressing the plights of the people of the Niger Delta, I doubt there would be an end in sight of wanton destructions of this nature. Oil exploration and production within the area are destroying not just the aquatic life but also constituting environmental degradation and air pollution without commensurate socioeconomic benefits. This has led to the people's insistence on oil companies' compensation. But unfortunately, the internal forces collaborator attitudes with the oil companies and the federal government have made it relatively impossible for violent not to occur.

Beside the fears and complains, there is also the "fear of the unknown" I called it so because no one can predict for sure when these inevitable will occur. I have mentioned it in passing somewhere in the introduction that the Niger Delta communities are at the risk of over flooding as a result of climate change and that no doubt will be catastrophic to communities close to the Atlantic Ocean. Considering the level of explorative and exploitative activities in the Niger Delta coupled with sustained increase in the magnitude of gas flaring, the people and the environment of the Delta may be submerged one of these days. It will not

only be disastrous to the people and their environment but also to the Nigerian economy that is heavily dependent on oil and gas. Bonny in Rivers State is an Island and a host community to most oil firms such as Shell, ExxonMobil, Elf, Agip, NLNG, etc and serves as a route through which crude oil and natural gas are exported to various parts of the world, imagine what will happen if this island is taunted by a natural disaster resulting from climate change. The time to think and act rationally is now. Politicization and paying of lips service to this issue just as the government have done in the past holds the fate of a mutual assured destruction for all.

Soon after the Niger Delta Avengers, one of the deadliest rebel groups in the region, announced that it was resuming hostilities in the area, other militant groups under the umbrella of a coalition of militants also followed suit.

Community leaders in the oil-rich Niger Delta urged the militants to shelve their planed attacks on pipelines and allow for peace talks with the government. The administration reiterated that it was willing to negotiate. Unfortunately, the negotiation like the previous ones could not produce any tangible result.

The coalition of rebel groups blames the resumption of hostilities on the federal Government's neglect of the region which is consistent with her previous dispositions in the demands of the Niger Delta. The continuous attack by

militant groups on oil installations and shutting down of offices of oil companies have always proved disastrous to the economy. The people of the Niger Delta as well as the militants also view with dismay and see the newly adopted military strategy otherwise called "Python Dance (now Atilogwu) and Crocodile Smile" as direct attack on the region. A strategic targeted at silencing the people's legitimate agitations following years of neglect and marginalization is unnecessary and provocative.

This incredibly well-endowed ecosystem, which contains one of the highest concentrations of biodiversity on the planet, in addition to supporting the abundant flora and fauna, arable terrain that can sustain a wide variety of crops, economic trees, and more species of freshwater fish than any ecosystem in West Africa have been neglected for too long and the impacts are visible all over the Niger Delta.

The effects of oil exploration in the fragile Niger Delta communities and environment have been enormous. The indigenous people of these communities have seen little if any improvement in their standard of living while suffering serious, acute and life threatening damages to their lives and natural environment.

Though Nigeria is a major oil exporter, years of maladministration, corruption and nepotism have contributed to the inefficiency witnessed in the oil industry in Nigeria. Nigeria rank 7th among the top gas flaring nations of the world yet it imports most of its gasoline when the gas being flared on daily basis can produce enough energy for the country.

Fishing without fish

The Nigerian village of Bodo (Ogniland) used to subsist on fishing. But following oil leaks from Shell pipelines in the Niger Delta in 2008 and 2009, the nets have remained empty. People who want to make a living from fishing are forced to go out on the open sea. That means longer working hours and higher costs. The so called "Clean up Ogniland" project has witnessed no serious action but much rhetoric.

Oil streaks everywhere

The United Nations Environment Program (UNEP) released a report in 2011 about the oil leaks in Bodo and other parts of Ogoniland - recommending that the government and oil companies provide one billion dollars for the clean-up. So far though, the oil streaks that shimmer on the water still haven't been addressed.

Black Gold is King

Since the beginning of oil production in 1958, Nigeria has risen up to become the world's eighth biggest oil exporter. That makes the country extremely dependent on 'black gold,' which accounts for 90 percent of export profits. That's why people have tolerated pipelines like this one in the Rivers State.

Recommended Reduction Strategies

Gas flaring in Nigeria's oil industry poses a major health risk to the urban and rural communities of the Niger Delta. Protests against government neglect and the recklessness of the oil and gas companies are rife, especially in the rapidly growing city of Port Harcourt and other Niger Delta communities. In the light of the above:

1. The federal government in conjunction with the oil companies should build world class and well equipped medical facilities that will provide medical treatments for the people of Niger Delta. Suffice to state that none of the cancer treatment facilities are located in the Niger Delta. The only functional Ibadan machine often brakes down living the people at the mercies of either travelling abroad for treatments or die as they may not be able to afford the trip.
2. Efforts geared at reducing gas flaring which can even be harnessed for energy generation has become urgently necessary and expedient. This can

be done by building more gas plants for the collection of much gas flared into the air.

3. There is the need for Nigeria to converge a team of experts who may have to borrow ideas from other oil and gas producing nations whose gas flaring levels have been drastically reduced.
4. There is a need for the relevant agencies to scale up environmental and biological monitoring of air pollutants. The implication of a possible relationship between gas-flaring and hypertension, cancer, respiratory challenges, etc brings to the fore the need for interventions to regulate gas-flaring activities.

Conclusion

This chapter has examines the attendant consequences of climate change on the environment by isolating the degree to which gas flaring is a contributing factor.

When Shell-BP discovered the oil in commercial quantity at Oloibiri in the Niger Delta, there were high hopes of a better Nigeria and a much more better Niger Delta - wishing that the maximum utilization of this newfound oil opportunity will pay greater dividends that the abandoned agriculture which was originally the mainstay of the national economy will forever be forgotten. Unfortunately, all of these hopes were dashed following the attendant health and environment challenges the oil exploration has brought upon the Niger Delta people. According to a report extracted from **an online source, it is** estimated that $770 million (€678 million) was a lost income for 2016 alone, based on a 2016 gas price of $2.49 per gallon (**www.dw.com).** There is no gainsaying drawing from the above fact that flaring of gas is tantamount to burning money.

In a country where about 35 percent of the population does not have access to electricity, this waste can be transformed into wealth for the economy as well as for the general good of the populace living in the Niger Delta. Gas flare can be converted to light. If there is light, no doubt, there would be micro and macro development.

Gas flaring is a significant contributor to global warming resulting in climate change. The United States Environmental Protection Agency's greenhouse gas calculator estimates emissions from flaring in Nigeria in 2016 were equivalent to more than 3.5 million passenger vehicles driven for one year (**www.dw.com).**

The time to take action is now even though the 2020 deadline to end gas flaring in Nigeria is almost a mirage,

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