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Gas flaring and environmental issues in the Niger Delta, 1956-2007

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Abstract
Gas flaring, which has assumed a worrisome dimension globally, is one of the environmental problems affecting the Niger Delta region of Nigeria. It has caused untold socio-economic, environmental and psychological effects on the people and their communities. Combating the problem has proved Herculean, especially owing to the lackadaisical attitudes of both the federal government of Nigeria and the various oil companies whose activities have constituted the menace of oil flaring. This work, therefore, assesses the origin, impact and various responses to the problem of gas flaring in the Niger Delta region from historical and chronological perspectives. The work also examines how gas flaring has contributed to the depletion of the Ozone layer as well as its greenhouse effect and maintains that adequate measures must be put in place to address the problem vis-à-vis other crude oil-related environmental degradation in the region. It suggests possible remedies to the problem placing emphasis on multifaceted approaches.

Keywords
Disasters — Exploitation — Environment — Oil — Nigeria

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Introduction

The question of environmental degradation such as pollution of the atmosphere in relation to climate change and global warming, and its negative impact on people's livelihoods and survival of mankind has started to take the centre stage of current global discussions. The consequences of climate change and global warming are due to the increasing emission of greenhouse gasses, the chief of which is carbon dioxide (CO_2), into the atmosphere. This emission is through human-induced activities such as deforestation and, chiefly, gas flaring, which is now threatening the ozone (O_3) layer that protects the earth from the massive heat of the sun. Thus, environmental security is now attracting critical global concern. The Niger Delta region is today one of the world's region from where the highest emission of CO_2 into the atmosphere through gas flaring is carried out. This development is with devastating implications on environmental security[1-2].

The situation the Niger Delta region finds itself today started since 1956, when crude oil was discovered in Oloibiri, Bayelsa State. Thereafter, crude oil exploitation in commercial quantity took off, such that by 17 February 1958, the first shipment of 3,000 barrels of crude oil was lifted for export. By May 2006, Nigeria earned more than US $3 billion a month from oil, which accounted for some 95% of her export earnings and 40% of her gross domestic product (G.D.P.). Available evidence also suggests that by April 2007, Nigeria had had a cumulative oil production of 25,288,426,000 barrels. From this development, Nigeria ranks from 8th position in 2004 to 6th highest oil exporter in the world. She produces about 2,248,400 barrels per day. From the oil revenues, especially between 1999 and 2007, Nigeria hit a foreign reserve of US $50 billion[3].

However, before oil was discovered and became a major source of prosperity for Nigeria, the environment in the Niger Delta region was rich in biodiversity. It had varied species of wildlife and aquatic and marine life in its extensive lowland tropical and fresh forests. A 1995 World Bank report on the region shows that the full significance of the region's biodiversity remains unknown because new ecological zones and species of plants continue to be uncovered. For instance, a plant just growing wild has recently been discovered by Lever Brothers Plc. The plant, Alabankia, is said to produce vegetable oil found to be "better than any vegetable oil that has ever been produced"[4].

Unfortunately, following the exploratory and drilling ac-

tivities of oil companies, oil pipelines crisscross the region. The activities of the oil companies aimed at meeting the energy needs of a global economy organized to maximize private profits left this region economically altered and devastated. This is evident in the decades of incessant oil spillages, which have destroyed the people's sources of life. However, result of the increasing energy demands that have more frightening and dangerous impact on the environment is gas flaring[5].

The overall aim of this study is, therefore, to reach a better understanding of the impact of oil production, with particular reference to gas flaring, on the sustainable livelihood of the oil communities of the region.

1. Materials and Methods

The historical methodology of data collection (which relies on existing sources) and analysis is adopted in this work. Hence, the materials for the research are derived from various primary sources such as newspaper materials as well as secondary materials such as books, journal articles and others which help to supplement the primary sources. The analysis and presentation combine the narrative, descriptive and analytical styles of writing. This has helped to capture the historical issues involved in gas flaring and its impact on the environment of the Niger Delta area of Nigeria

2. Results and Discussion

2.1 Gas Flaring

In the process of drilling crude oil, associated gases are tapped along with it from the oil reserves in the ground. To separate the crude oil from the gases that are regarded as wastes, they are flared. Flaring, therefore, is a means of safely dispensing of wasted gas through the use of combustion. With an elevated flame, the combustion is carried out through the top of a pipe or stack where the burners or igniters are located[6].

Gas flaring started simultaneously with oil extraction in Nigeria by Shell BP. At this time, the British government clearly acknowledged, although with its patronizing, conflict attitude and double standards, that gas flaring was unacceptable. Yet, it was allowed to continue without any real efforts to change the infrastructure and prevent the gas from being wasted. The other oil companies adopted this attitude by claming that the technologies needed to mitigate gas flaring was beyond their reach, hence the continuous flaring till date. Jonathan Chimaobi Ibeneche has argued that the flaring of gas started because there was no domestic or export market for gas. Naturally, therefore, gas was treated as a waste and, thus flared. Ehighelua [7] also remarked that because there was no adequate arrangement for re-injection of the gases back into the under-ground chamber from which they came, it was thought to be cheaper to burn the gases in order to eliminate them.

Nigeria is known to be world largest source of flared natural gases. By some estimates, she flares an equivalent of 40% of Africa's total gas consumption. Specifically, she flares nearly 80% of all associated natural gases from oil production, compared to 0.6% in the United States of America (USA); 4.3% in the United Kingdom; 8% in Canada; and 21% in Libya. Nigeria's flared gases are equivalent to France's total annual natural gas demand. In concrete terms, Nigeria flares between 2.5 and 2.8 billion cubic feet of gases yearly. This quantitatively translates to over US $2.5 billion revenue loss. Flaring of gas constitutes veritable hazards to human health, wildlife, aquatic and marine life[8] .

2.2 Effects of Gas Flaring on the People and Environment of the Niger Delta

Besides the serious economic implications of gas flaring as indicated above, this phenomenon also has tremendous environmental impact. It pollutes the air. The first United Nations Conference on the Human Environment held in Stockholm in 1972 saw pollution as the discharge of toxic substances and the release of heat in such quantities or concentration as to exceed the capacity of the environment to render them harmless. Gas flaring, Ehighelua added, produces a high temperature which amounts to a release of heat and the smoke emitted from the process can be toxic as regards pollution under the guidelines issued by the United Nations in Stockholm. From this definition, and following another United Nations Summit on Environment in Johannesburg in 2002, the protection of the earth's environment was seen primarily as an international security issue[9-10].

Since gas flaring involves an emission of hydrocarbons such as CO_2 into the atmosphere through the process of combustion, it gives rise to warming up of the world's atmosphere and environmental problems such as rise in sea level, soil erosion, heavy rainfall and flooding, corrosion of metal materials, among others. Exposure to these pollutants impacts negatively on known health. As the United States Environmental Protection Agency (USEPA) noted:

> Many scientific studies have linked breathing particulate matter to a series of significant health problems, including aggravated asthma, increase in respiratory symptoms like coughing difficulty or painful breathing, chronic bronchitis, decreased lung function and premature death[11].

With gas flaring in the Niger Delta region, some 45.8 billion kilowatts of heat is generated into the atmosphere daily from the towering flames. Another impact of gas is acid precipitation through rain. This precipitation occurs with the emissions of SO_2 and NO_2, which combine with other atmospheric compounds, namely Oxygen (O_2) and moisture or water (H_2O) to form tetraoxosulphate-6 acid (H_2S_4) and nitric acid respectively. This combination is what is called acid rain.

An empirical evidence of the health hazards to which the people are exposed to is *Neroufibroma.* This is a congenial disease, which has effect of making people's brain to grow outside their skulls. Many people in Eleme, Okirika, Umuechem and Orashi communities in Rivers State, for instance, are suffering from various congenital abnormalities. In addition, the rate of

child morbidity is high [12].

Gas flaring also impacts negatively on the ecosystem. It has rendered hunting, fishing and farming unproductive. A graphic illustration of this development shows that in Uzere, a previously fishing and farming communities in Delta State, the indigenes have abandoned these traditional occupations. In addition, the high extinction rate of wildlife and, aquatic and marine life due to gas flaring means that these fauna can no longer serve as an economic resource. Speaking on the above situation, Anayochukwu Agbo remarked:

> The Niger Delta is an intriguing paradox. In the green belt that produces about 90 percent of the country's national income, thrives an amazing litany of existential discords. Between oil, profit and politics lies hunger, greed, abuse, deprivation, death as well as human and environmental consequences[13].

The result had been increasing tension with aggressive militancy, kidnapping and hijacking in the region.[14]

2.2.1 Gas Flaring, Depletion of the Ozone Layer and Climate Change

The world is today facing a global environmental crisis arising from heat released into the atmosphere. Environmentalists believe that the "crisis is so serious and that if humanity does not significantly cut overall greenhouse gas emissions, it would seriously lead to the collapse of civilization, even in the life time of today's children." The root cause of climate change is the increased concentration of greenhouse gases including CO_2 and methane (CH_4) into the atmosphere through gas flaring and burning of other fossil fuels such as coal as sources of energy, and deforestation[15]. These activities, together with industrial processes as evident in this emission of chlorofluorocarbons (CFCS), a chemical group that gasifies at low temperature and releasing chlorine atoms, are dangerous to the environment. Chlorofluorocarbons are gases used in air-conditions and refrigerators. The gases released from these productive activities into the atmosphere attack and deplete the Ozone (O_3) layer-that layer of the atmosphere that helps to shield the earth planet from the intensity of the sun's energy, warming the earth enough to support life.

This rise in temperature, which is now between 0.3 and 0.6 degrees Celsius, higher than it was in 1880, and projected to increase to 3.6 degree by 2100 if not checked, and consequent upon the depletion of the ozone layer, has given rise to a global concern over a phenomenon known as climate change. The consequences of the depletion of the O3 due to thermal expansion are obvious: loss of mass from glaciers and ice caps and rise in sea level as well as warming the waters of rivers, lakes and oceans, resulting in over-flooding of towns, villages and cities. One good example of this development was the Tsunami flood disaster that occurred in South East Asia on 28 December, 2004. The consequences were a rude shock to the world. For instance, in Indonesia, over 130,000 lives were lost; over 37,000 people were missing; and close to 500,000 people were rendered homeless. In Sri Lanka, 31,000 people died, and 100,000 homes damaged together with the destruction of crops and fishing boats. In addition, 400,000 people lost their jobs[16].

Global Efforts at Mitigating Climate Change

It was in realization of the implications of these phenomena that the world community has attempted to cooperate through concerted efforts to reach agreements and back them with ratified treaties to protect and sustain global interests. For instance, there were the Inter-governmental Panel on Climate Change (IPCC) First Assessment Report at its meeting in Suudsvall, Sweden, in 1990, that global temperature could increase by 0.3 degree Celsius (0.3^{O}C) if CO_2 emission were not abated; and the 1992 Earth Summit held in Rio de Janeiro in Brazil, where IPCC report was ratified and required the need to reduce greenhouse gas emission to the level of 7% in 1990 by the year 2000, among others.

All these efforts point to the fundamental fact that the world is under the severe threat of extinction arising from climate change. As has been credibly asserted, given the growing evidence of threats to environmental protection that are now required, these responses are understandable. As indicated above, there is ample evidence to mobilize for collective action, because there are strong reasons to believe that:

> natural resources are running out, world population continues to grow at rates that threaten to leave less and less for humans to eat, forests are vanishing and fresh stocks are disappearing, and the planet's air and water are becoming ever more polluted, as global warming exacerbates all of these alarming trends[17].

2.3 Why Gas Flaring has continued in Nigeria unending

As we indicated previously, the international community, the governments of Nigeria and the oil companies are all aware of the impact of gas flaring on people's health and the environment. They are all in agreement that the phenomenon should stop. The unfortunate aspect of this development is that, in reality, efforts at stemming the tide have been very slow in implementation. Even though Nigeria has been involved in different fora where solutions were sought to end gas flaring as evident in her agreeing to sign the Kyoto Protocol, the federal government did not enforce them, thereby giving the oil companies the gut to do whatever they liked.

For instance, this ruinous phenomenon was supposed to stop in Nigeria in 1985, but in 1984, the oil companies influenced the then military government to amend the law. Then, a new law, the Associated Gas Re-injection Act of 1985, was put in place. This treacherous Act stipulated that the oil companies pay a meager fine of 50 kobo per 1000 cubic feet of gas flared. The figure was reviewed to N10. 00 in 1998, the year that was the warmest, due to climate change, in recorded history at an average temperature of 62 OF. It changed it to 2002, 2004 and later agreed to end it in January 2008. This token fine of N10.00 is not comparable to US $10.00 per cubic feet of gas paid as penalty in developed nations[18].

Government's continued shifting of grounds in favor of the oil companies is a reinforcement of the belief that it was only concerned with the revenue from the oil sector, regardless

of the plight of the oil communities. Again, the government had agreed to extend the deadline to December 2008. For the oil companies, first, they claimed that they did not have the necessary technologies with which to stop gas flaring as done in developed nations. Second, they claimed that they found it more economically expedient to flare the natural resources and pay the token fine than to re-inject it back into the oil wells, and since they did not see any economic incentive to collect the gas.

However, FEPA's inability to discharge its responsibility also stemmed from the confusion arising from over whose role it was to ensure that oil companies comply with the regulations to control gas flaring. This confusion was further heightened by government's lack of direction about what to do to ensure environmental safety in the region, which gave birth to several proposals and programs as evident in the establishment of Oil and Mineral Producing Area Development Commission (OMPADEC) and later the Niger Delta Development Commission (NDDC).

The Nigerian Liquefied Natural Gas (NLNG) was put in place to meet this objective. It was one of the series of gas utilization projects. However, as Ibeneche said, the challenges facing such project, making it difficult to achieve the target of 2008 deadline had been enormous. They included the findings of the Joint Venture Companies and government's majority partners focusing their funding on other pressing priorities. In addition, the US $400 million 1,033 km West African Gas Pipeline (WAGP) completely by Nigeria in 1999 to transport gas from the Niger Delta region through Benin, Togo and Ghana to be used in these countries is another effort[19] . This facility is expected to process 7.15 billion M^3 of LNG annually.

3. Conclusion

The people of the oil region seem to be condemned to live in perpetual misery because of the vast degradation of their communities through gas flaring, the occasional dumping of toxic wastes there as happened in Koko in June 1988 as well as the incessant oil spillages. These developments, among many others, exposed them to life of glaring poverty and disease all of which occasionally remind them of how burdensome oil has become to them. Now that the enormous problem there has been seen as a national affair by some concerned and enlightened observers, the three arms of government in Nigeria should wake up from their slumber and make commitment in terms of making adequate budget for assistance on environmental issues.

Furthermore, as Kofi Annan remarked, "climate change may make nonsense of all our forecasts, if we don't take serious preventive actions on global scale within the next few years." Thus, as Simon added, "We ignore climate change to our own peril"[20-21]. Overall, with determination, commitment and strong political will, Nigeria can begin to take necessary steps towards effectively tackling the challenges posed by the menace of gas flaring and climate change, particularly in the oil region. By so doing, the government will not only help in formulating policies that would help to preserve the flora and fauna with medicinal and food values in the oil region to avoid a set back in medical research and food production, but also save the people from extinction.

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