

ZERO GAS FLARING IN NIGER DELTA AREA OF NIGERIA: A WAY TO ENVIRONMENTAL SUSTAINABILITY

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ABSTRACT

Oil drilling had led to gas flaring which is the burning of natural gas that is associated with crude oil when it is pumped up from the ground. This is the preferred means of disposing waste gas associated with oil exploitation in the Niger Delta area of Nigeria by many multinational oil companies that operate in the fields. This industrial activity runs on a very fragile ecosystem in the Niger delta area and had led to severe environmental degradation. The Niger delta is Africa's largest delta and the third world largest. It is one of the largest wetlands in the world, consisting of coastal island, mangrove swamp, freshwater and rainforest zones. Secondary data, oral interviews and direct and first-hand observation were used as sources of information.

Although there are sound legal frameworks for oil and gas operations in Nigeria, double standards and shifting commitment on the part of both the operating Oil Corporations and the government has voided its implementation. It was recommended that oil companies should be compelled to stop flaring and put the gas into other domestic and industrial uses. In addition, residential areas in Niger Delta should be situated at a minimum of 5 km away from the flaring point.

Keywords: oil drilling, gas flaring, Niger Delta, environmental degradation, legal framework

INTRODUCTION

The development of technology has led to the exploration of man's environment in a bid to increasing his standard of living. This exploration includes oil drilling which in turn leads to gas flaring. Gas flaring is the burning of natural gas that is associated with crude oil when it is pumped up from the ground (Dung *et al*, 2008). Furthermore, flaring combustion is typically incomplete, releasing substantial amounts of soot and carbon monoxide, which contribute to air pollution problems (World Bank, 2004). In petroleum-producing areas where

insufficient investment was made in infrastructure to utilize natural gas, flaring is employed to dispose of this associated gas. This is the preferred means of disposing waste gas associated with oil exploitation in the Niger Delta area of Nigeria by the many multinational oil companies that operate in the fields because it is the cheapest way to separate the identified product, crude oil, from the associated natural gas (Jike, 2004). Gas flaring not only wastes a potentially valuable source of energy (natural gas), it also adds significant carbon emissions to the atmosphere.

This is despite the enormous economic benefits that would accrue to the country from harnessing this energy resource or other alternative means of disposal such as re-injection of waste gas into the ground for potential future harvesting. The economic loss is estimated at \$2.5 billion dollars annually (World Bank, 2004). Nigeria tops the list of ten countries responsible for 74% of gas flaring emissions in the world. According to World Bank (2004), Nigeria flares 16% of the associated gas, the highest amount in any country in the world. Gas flares emit large volume of carbon dioxide, methane, oxides of nitrogen and sulphur to the environment together with carcinogenic substance such as dioxin. There are one hundred flare sites in the Niger Delta area most of which had been burning for over four decades (Jike, 2004).

Research findings showed that the impact of the spill on the community has been devastating, as the oil has poisoned their water supply and fishing ponds, and is steadily killing the raffia palms that are the community's economic mainstay. Dunget al (2008) reported that cassava yields are higher at locations further away from the flare point while the amount of starch and ascorbic acid in cassava decreased when the plant is grown closer to the gas flare.

Niger Delta area is described as one of the most fragile ecosystem in the world. It is Africa's largest delta and the world's third largest mangrove forest. It is one of the wetlands in the world. The Niger Delta area is the most important ecological zone in Nigeria. It is a rich biological diversity and the ecosystem supports numerous species of ecological importance. It has the highest productivity of any known ecosystem. The area has four distinct ecological zones;

coastal island zone, mangrove swamp zone, freshwater zone and rainforest zone (Okeaguet al, 2006). The ecology of the area is influenced by the tides of the Atlantic Ocean and flood regions of the River Niger. The area which lies at the coastline of Nigeria has very low elevation with the possibility of inundation in the event of sea level rise due to climate change.

The environment provides all the life support systems with air, water and land. The Nigerian environment today represents a grim litany of woes (Lawanson, 2006). The experience of the people of Niger Delta is a far cry of achieving environmental sustainability as a result of gas flaring and if not checked is capable of undermining environmental justice. The main goal of the Millennium Development Goals (MDGs) is to ensure environmental sustainability while the targets include to:

- i. Integrate the principles of sustainability development into country policies and programmes; reverse loss of environmental resources.
- ii. Reduce the biodiversity loss, achieving by 2010, a significant reduction in the rate of loss.
- iii. Reduce by half the proportion of people without sustainable access to safe drinking water and basic sanitation. (Lawanson, 2006).

These goals are far from being achieved due to the insincerity of the oil companies and government which is a major stakeholder in the actualization of the MDGs. Consequently, the tales of youth restiveness and communal clashes is prevalent in the area.

This paper therefore examines the impact of gas flaring in Niger Delta region of Nigeria. It discusses the legislative framework towards zero gas flaring, ways of eliminating gas flaring and their economic and ecological benefits to the country.

MATERIALS AND METHODS

This paper utilized evidence from primary and secondary data as sources of information. The secondary data were collected from libraries and internets. Oral interviews for the inhabitants of the area and also direct and first-hand observation of their environment were the instrument used to ascertain the impacts of gas flaring on the ecosystem, legislative frame work towards

zero gas flaring and elimination of gas flaring in Nigeria.

RESULTS

The above instruments yielded the following results on the impacts of gas flaring on the ecosystem.

Impact of gas flaring

Gas flaring is one of the most troublesome legacies of the oil industry in Nigeria and goes against all wise use practices and precautionary principles. Over one hundred such giant gas flares are still burning both onshore and offshore, actually changing the micro-climates of the areas affected (Munasinghe, 1999).



Figure 1: Pollution by burning off gas from the oil production in the Niger Delta. Photograph: Friedrich Stark/Alamy. (Source: Mark, M.; The Guardian, Thursday 31 May, 2012)

It was reported that each day the total energy wasted in Nigeria by this flaring equals all the daily power usage of the entire African Continent (World Bank, 2004). Gas flares contain heat, toxins and particulates

that adversely affect vegetations, humans, soil, water and livelihoods of the host communities. A recent major independent scientific assessment conducted by United Nations Environment Programme (UNEP)

also indicated that pollution from over 40 years of oil operations in the area had penetrated further and deeper than many may suppose. The report said that some areas which appear unaffected at the surface were in reality severely contaminated underground and actions to protect human health and reduce the risk to affected communities should occur without delay.

Man

People live literally next door to the roaring, ground-level flares that leap as high as a several-story building and belch black clouds of toxic smoke in the middle of, or next door to, their villages. Gas flaring harms local health through emissions that have been linked to respiratory diseases, cancers, asthma, chronic blood disorders, and premature death. These human health problems affect the people of the Niger Delta, where 30 million people live with little or no health care access (Sunmonu, 2013). These flares were noisy, and one could feel their awful heat and smell their associated gases from hundreds of meters away.

Plants and animals

Studies had documented environmental pollution from increasing concentration of heavy metals on aquatic systems, soil and cultivated crops in Niger Delta area (Osuji and Onojake, 2006, Hart, 2005). They had also warned that unchecked increase in the amounts of heavy metals discharged from oil exploitation and industrial sources would have adverse effects in the near future as threshold amounts are crossed. Gas flaring causes acid rain, which reduces soil fertility. Noise is another source of pollution that can scare wildlife around the area and impair hearing.

Environment

Flaring of associated gas from oil exploitation has several consequences on the environment. Oil producers engage in gas flaring in an uncontrolled manner, thus are contributing to the growing problem of climate change by releasing potent greenhouse gases into the atmosphere (Okeaguet *al*, 2006), which led to environmental degradation (Osuji&Onojake, 2006) and human health hazards. Gas flaring causes a dramatic increase in atmospheric temperature by heat (Ikelegbe, 1993). Gas flares pollute the air with dangerous CO₂ and methane gases, contributing fiercely to global warming trend, while resulting in destructive acid rains and serious contamination of air, water and land (Ishisone, 2004). Acid rain eats through villagers roofs that protect local residents from rain. Impoverished villagers have little means to replace their roofs more frequently (Yakubu, 2008).

Economic

Beside the health and environmental consequences of gas flaring, the nation also loses billions of dollars worth of gas which is literally burnt off daily in the atmosphere. Much of this can be converted for domestic and industrial use, exported or used for electricity generation. By so doing the level of electricity generation in the country could be raised to meet national demand.

DISCUSSION

The results showed that there is evidence of a clear and present danger of environmental degradation of air, land and water resources from gas flaring in the Niger Delta area of Nigeria. In Nigeria, while gas is wasted through the air, creating harmful air pollutants, biomass is still the mainstay of

cooking and other heating (ERA/FOE, 2005). The natural gas currently flared in Nigeria can serve the cooking needs of 320 million people not served by modern fuels (Goldenberge, 2000). Gas flaring is currently illegal in most countries of the world, where gas flaring may only occur in certain circumstances such as emergency shutdowns, non-planned maintenance, or disruption to the processing system. Gas flaring should be brought to an end because of the monumental waste of resources especially in a country like Nigeria where energy demand surpasses supply and where over 70% of the population still lives in abject poverty. The Nigerian government had taken diverse steps towards putting an end to gas flaring.

Legislative framework

This damage to man and the environment in the oil producing areas has continued just because successive national governments have failed to take decisive action on the matter. For instance, the administration of General Yakubu Gowon in 1969, set the first deadline that within five years of business, an operating oil company must cease flaring gas in the country. Then it ordered corporations to set up infrastructure to utilize associated gas. The oil companies ignored this order and the deadlines came and passed while the harmful activity continued. The Nigerian Government passed the Associated Gas Reinjection Act in 1979 that required oil companies to

submit a detailed plan for utilizing all gas with an ultimate goal of ending gas flaring by 1984 (Omorogbe, 2001). Since the oil companies have continued flaring choosing to pay a fine rather than clean up their operations. Oil companies were again ordered to stop flaring in year 2005 when Nigeria's Federal High Court declared that gas flaring as a great violation of the neighboring communities' human rights. However, the oil companies continue giving excuses for not stopping this menace. It is noteworthy that the draft Petroleum Industry Bill (PIB) stipulates that "natural gas shall not be flared or vented after 31st December, 2012 in any oil and gas production operation, block or field, onshore or offshore, or gas facility, except under exceptional and temporary circumstances"(Sunmonu, 2013). As it were that deadline has again lapsed because the National Assembly is bogged down with endless semantics and squabbles over which aspect of the PIB to accept or reject before passing the bill into law. Meanwhile, gas flaring and its damaging effects on man, environment and the economy have continued. I thus urge the National Assembly to hasten action on the passage of the PIB. It ought to be taken as a non-partisan agenda that deserves their prompt attention. It is in the overall national interest(Sunmonu, 2013).

Elimination of gas flaring in Nigeria

Eliminating gas flaring reaps economic and ecological benefit to the country.



Figure 2: The Cawthorne Gas Channelling has been helping to eliminate flaring in Nigeria by recovering 200 million standard cubic feet per day of associated gas from oil fields. (Source: <http://www.sustainability.mottmac.com>)

An array of technologies to capture, or the use of associated natural gas exists as viable alternatives to flaring. It can be re-injected, which boosts oil production and contains the gas; transported via gas pipelines; converted to liquids that can be more readily transported; or used on site (Bassey, 2008). In business and other commercial activities, petroleum and natural gas enhances the construction of electric generating plants or energy supply source like turbine. The export of quality liquefied natural gas would earn Nigeria hard currency increasing our foreign reserve and service our foreign debit which will increase our per capital Gross Domestic Product (GDP) (World Bank, 2004). Natural gas can be used for the operation of fleets of industrial equipments, plants, machineries, vehicles, and cars that use diesel and petrol for transportation at the national and international levels. Natural gas has wide application in refrigeration and air conditioner; a sure way of discontinuing with the use of chlorofluoro compounds

which is contributing significantly to the depletion of the ozone layer, global warming and the resultant heat wave.

Nigeria is currently one of the leading oil producers and exporters in the world. However, the economic benefits of these natural resources have not been reaped. Oil and gas deposit exploration have caused a series of environmental degradation for over forty years and that existing environmental legislation is amorphous in addition to being inequitable with respect to overlying communities in the Niger Delta area. The lack of proper environmental accountability and integrity on the part of the oil and gas companies operating in this region over the decades has resulted in colossal damage to the environment. The government, organized private sector and all stakeholders in the oil and gas industry should join hands in the promotion of even utilization of liquefied natural gas and create other

avenues that will lead to the stoppage of gas flaring in Nigeria.

In view of the gas flaring situation in Niger Delta area with respect to the negative impact on the environment, the following recommendations are made:

- i. Oil companies should be compelled to stop gas flaring so as to reduce the detrimental effects on man, plants, animals and the environment.
- ii. Gas should not be flared but put into other uses.
- iii. In Niger Delta, residential areas should be situated at a minimum of 5 km away from the flare point.
- iv. Enforcement Agencies, especially DPR (Department of Petroleum Resources), should be more involved in enforcing all existing environmental laws on gas flaring.
- v. Petroleum Industry Bill should be passed as a law without delay.

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