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**PROF. (MRS.) S. N. ZUBAIRU, PROF. O. O. MORENIKEJI,
DR. Y. A. SANUSI, DR. A. M. JINADU & DR. L. M. OJIGI,**

GAS FLARING IN NIGERIA: Implications For Sustainable Environmental Development

Tpl. Lekan. M. Sanni, MNITP

*Department of Urban and Regional Planning, School of Environmental Technology,
Federal University of Technology, Minna*

ABSTRACT

This paper traces the origin of oil exploration and by extension gas flaring in Nigeria with its attendant costs and implications on the environment. The paper also examines the politics surrounding the inability of the country to stop flaring activities in tune with the objectives of the National Policy on the Environment, international concern and conventions on global warming and the desire to promote sustainable development. The paper therefore, concludes that if a definitive action is not taken on gas flaring in the oil sub-sector, such disasters as ocean surges and flooding which were witnessed in some parts of Asia are imminent in the African continent.

Keywords: *oil exploration, gas, flaring, environment, sustainable development.*

1. INTRODUCTION

Gas flaring in Nigeria has always been a contentious issue. Although oil is the bedrock of the Nigerian economy, the continuous flaring of associated gas (AG) in the course of its exploration has engendered national and international attention and debates. No doubt the Nigerian nation has benefited immensely from its vast oil endowments which accounts for over 80% of national revenue, 90% of foreign exchange earnings and between 90%-95% of total export earnings (Obi, 1997; EIA, 2003). However, the flaring of associated gas in the process of oil exploration in the country has impacted negatively on the environment such that if the trend continues unchecked, the present economic gains from oil would be over-shadowed by the huge costs of such exercise on the environment and health of the people in the oil-producing communities. It has been stressed that the Nigerian government's main interest in the oil industry is to maximize its monetary profits from oil exploration (ESMAP, 2001) while it is unbothered by the serious implications of continuous gas flaring on the environment.

This paper therefore, examines the environmental costs and implications of gas flaring on the environment, especially in the light of the Government's subscription to promoting sustainable development, as a signatory to Agenda 21 of the United Nations Conference on Environment and Development, the country's 1999 National Policy on the Environment, international concern about global warming and continued restiveness in the Niger Delta.

2. OIL EXPLORATION AND GAS FLARING: A PROFILE

Although oil exploration started in Nigeria in 1938, when Shell d'Archy (later Shell-BP) obtained a licence for that purpose, oil was not found until 1956 when it was discovered in Oloibiri, Bayelsa State. Its actual export did not commence until 17th February, 1958 when about 5000 barrels per day (bpd) production level was maintained. Presently, the country produces between 2.12 million and 2.24 million bpd and is the sixth largest oil exporter in the world, while it has the largest oil reserves in Africa and tenth largest in the world (Ambio, 1995). Although Iwayemi (2001) reported that the highest production level ever of 2.4 million bpd was attained in 1979, the country's petroleum reserve is presently estimated at over 23 billion barrels of crude oil and about 260 trillion cubic feet of natural gas. In fact, the gas reserve is about three times the total crude reserves.

More than 75% of Nigeria's oil is found in the coastal areas of the Niger Delta and about 95% of the country's oil (gas) production is carried out by Shell, Exxon/Mobil, Chevron/ Texaco, Agip and TotalFinaElf (ERA, 2005). Manby (1999) maintained that the Federal Ministry of Petroleum Resources reported that there are about 150 oil fields

and 1,481 oil wells are in the Niger Delta. It is however, instructive to note that gas flaring in Nigeria commenced with the drilling of the first oil well in 1958. In the course of oil exploration and production, the associated gas is continuously flared twenty-four hours a day. This is because oil and gas are mixed in every oil deposit and the natural gas called "associated gas" (AG) must be removed from oil before it could be refined (Ashton et al, 1999). Gas flaring is simply the burning of this associated gas. As oil production has increased, so has flaring of associated gas. According to GGFR (2002) Nigeria flares about 17.2 billion of natural gas yearly in the process of oil exploration, making it the highest gas flarer in the world. For the first 20 years of oil production in the country almost all associated gas was flared, 2.1 billion cubic feet per day or 92% in 1981, 88% in 1989 and reached an average 2.6 billion cubic feet per day in the late 1990s. In November, 2004, the World Bank reported that Nigeria flares about 75% of the gas it produces, while the remaining is used for power generation and by industries.

3. COSTS OF GAS FLARING ON THE NIGERIAN ENVIRONMENT AND HUMAN WELL-BEING

Although oil and gas endowments and exploitation has tremendous benefits to Nigeria, it is however, at equally huge and monumental costs to the environment and human well-being. Several studies have chronicled some of these. ERA (2005) posited that gas flaring contributes to climate change and which in turn poses serious implications for both Nigeria and the rest of the world. The body reported that the Intergovernmental Panel on Climate Change (IPCC) maintained that the burning of fossil fuel, mainly coal, oil and gas has led to warming up of the world and this is projected to get worse in the 21st Century. IPCC has further reported that climate change is particularly serious for developing countries, and Africa is regarded as highly vulnerable due to limited capacity to adapt. Particularly of concern is the prediction that coastal zones on the continent are vulnerable to sea-level rise, especially roads, bridges, buildings, and other infrastructure that is exposed to flooding and other extreme events. This is in addition to the exacerbation of desertification by changes in rainfall and intensified land-uses.

It is instructive to note that Nigeria is the highest flarer of AG worldwide. While GGFR (2002) reported that Nigeria flares about 16% of the world's total, ERA (2005) put the figure at 19.795 claiming that the country has contributed more emissions of greenhouse gases than all other sources in sub-Saharan Africa combined. See table 1 for gas flaring trends in selected countries.

Ishisone (2004) has also argued that the environmental costs of gas flaring include the contamination of both underground and surface water by pollutants it produces such as benzene, xylene, toluence and ethylbenzene (all dangerous and harmful compounds), increased deforestation, production of greenhouse gases (GHGs) including carbon-dioxide (CO₂), methane (CH₄) and propane. The author further reported that the WorldBank has estimated that about 10% of global CO₂ emissions come from gas flaring, with Nigeria gas flaring alone releasing about 35 million tons of CO₂ and 12 million tons of CH₄, which has a higher warming potential than CO₂. This is in addition to gas flaring producing other hazardous compounds that harm human health and the ecosystem. He highlighted these adverse health impacts including cancer and non-cancer, neurological, reproductive and developmental. Table 2 extracted from Ishisone (2004) for likely health impacts of gas flaring.

Table 1. Gas flaring trends in some selected countries.

Country	Flared gas in cubic m	Share of World total (%)
Algeria	6.8	6
Angola	4.3	4
China	3.2	3
Egypt	0.9	1
Indonesia	4.5	4
Iran	10.5	10
Nigeria	17.2	16
Mexico	5.6	5
North Sea *	2.7	3
Russia	11.5	11
Venezuela	4.5	4
United State	2.3	3
Others	33	30
WORLD	107.5	100

Source : ERA(2005)

Table 2. Likely Health Effects of Gas Flaring.

Compounds	Health Effects
Benzene	Blood disorders, including reduced number of red blood cells and aplastic anamemia, pancytopenia, leukemia.
Naphthalene	Destroying the membrane of the red blood cells with liberation of hemoglobin, cataracts, headache, confusion, excitement, malaise, profuse sweating
Styrene	Irritant of the skin, eyes, and mucous membranes, and affects central nervous system.
Toluerice	Central nervous system effects which leas to narcosis, incoordination, emotional liability, headache and fatigue.
Xylene	Central nervous system effects, which lead to delayed development, decreased fetal body weight and altered enzyme activities.

Source: Ishisone, 2004.

4. PROMOTING SUSTAINABLE ENVIRONMENTAL DEVELOPMENT IN NIGERIA

Following continuous degrading effects of economic development activities on the environment, resource analysts worldwide called for increased attention on the environment. They opined that despite the development attained in the economic spheres of our life, without an enduring environmental protection and management the much sought after sustainable development would be difficult to achieve (IUCN, 1977).As a result, numerous international conferences with concern for the environment being the central theme were held. This concern prompted the United Nations in the 1980s to establish the World Commission on Environment and Development (WCED) to examine the relationship between the environment and development an to fashion ways to make the two compatible (Daniel, 1998). Therefore, WCED was later to define sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their needs".

Although the term "sustainable development" have been given varied meanings since then, one outstanding theme in most of the definitions is the need for an integration of social, economic and environmental goals in ways that while honouring the Earth, engender improvements or advancements in human conditions. To achieve this central goal, proponents of sustainable development were later to develop several

principles and these are generally categorized as ecological, social/ ethical and political. Since space constraints would not permit us to explore the sub-themes of each of these principles, the few that are particularly germane to our interest here would be briefly explored.

Of particular interest in this discuss are the principles of interdependence, intragenerational equity, ecological justice and participation. While the principle of interdependence preaches a harmonious relationship between humans and the planet Earth which they live in, the principle of intragenerational equity calls on the present generations to act in ways that do not impair others who are alive today from meeting their own needs. Similarly, while the principle of ecological justice calls on humans to honour and protect all other species with which they co-habit the Earth, the principle of participation calls for widespread collaboration in economic and political decision-making and actions for improved ways of living. Therefore, since the 1992 United Nations Conference on Environment and Development (UNCED) which was held in Rio de Janeiro adopted Agenda 21 as a blue-print of action to promote sustainable development worldwide, it is expected that signatories to that agenda would put in place policies and strategies that would promote the subject in their respective domains.

As a signatory to Agenda 21 of the UNCED which seeks to promote sustainable development, Nigeria has since put in place institutional frameworks, policies, strategies and legislations to achieve an improved environmental development and management. Amongst others are the promulgation of a National Policy on the Environment in 1999, preparation of a National Agenda 21, also in 1999, promulgation of the Environmental Impact Assessment Act (Decree 86 of 1992)creation of separate ministry for the environment in 2003 (this was later merged with housing and urban development). The extent to which all these have actually promoted sustainable development in the country would later be discussed in subsequent sections.

5. IMPLICATIONS OF GAS FLARING ON SUSTAINABLE ENVIRONMENTAL DEVELOPMENT

Given the negative impacts of gas flaring on the environment and health of the people living in the oil-producing communities where gas is continuously being flared, it is expedient to ask whether the various principles of sustainable development are being met in spite of an array of instruments put in place by the Nigerian government. One of the very fundamental principles of sustainable development is ensuring intragenerational equity as earlier stated. In other words, apart from the concern for future generations which sustainable development seeks to promote, it also calls on nations and resource analysts to ensure the promotion of the health and well-being of those presently alive. The trend of gas flaring in Nigeria with its attendant impacts on health of the people of the Niger Delta is antithetical to the principle of intragenerational equity of sustainable development. Not only are the people presently at risk, continuous gas flaring in the area is likely to precipitate disastrous occurrences such as acid rain and further environmental pollution with life-threatening implications on the people of the Niger Delta region.

Equally worthy of consideration in this discuss is the principle of interdependence which posit that since humans and the Earth exist in a somewhat precarious interdependence, what we today or fail to do will have profound effects on the natural environment in ways that could have serious consequences for virtually all living things, including ourselves (Daniel, 1998). And despite the Nigerian government's desire to integrate environmental consciousness into development planning at all levels and ensure sustenance of human and ecosystem's health in the oil sector as spelt out in the country's National Agenda 21 and National Policy on the Environment, continuous gas flaring would produce the contrary. Continuous warming of the Earth which the IPCC said would continue in this century with dare consequences for vulnerable regions such as Africa if the trend of gas flaring continues calls to question the desire of the Nigerian government to promote sustainable development. The likely consequences of global warming on flora and fauna with particular implications on food security are also of utmost concern. In addition, it should be emphasized that allowing gas flaring to continue in Nigeria is clearly against the 1999 constitution as Article 20 provides that "

the state shall protect and improve the environment and safeguard the water, air and land and wildlife of Nigeria ”.

Finally, apart from the imports of all other principles of sustainable development as related to gas flaring in Nigeria, the principle of participation calls for widespread collaboration in economic and political decision making and actions in any nation or society that seeks to promote sustainability. This being so, it is incumbent on the Nigerian government to hearken to the calls of numerous groups, researchers and other stakeholders, especially NGOs human right activists, environmentalists and the depressed people of the Niger Delta to halt gas flaring forthwith. The continued vacillation about gas flaring stoppage has clearly rubbished the country's pretension about promoting good environmental protection and management.

6. DISCUSSION AND CONCLUSION

The present trend of gas flaring in Nigeria and the frequency of flare-out postponement (first from 2003, to 2004, 2008 and now 2010 is being canvassed) is a testimony to the fact that the country has never taken the issue of environmental protection and management seriously despite a plethora of instruments designed for that purpose. Genuine concern for the Nigerian environment should transcend the borders of politics and economics as is presently the case. Being a signatory to Agenda 21, a document that emanated from the 1992 Earth Summit, it is expected that the country would promote sustainable environmental development with the vigour and purposefulness that would see it addressing the fundamental problems and practices affecting and degrading its environment. It is equally instructive to note that despite the series of reforms that were introduced in the environmental management sub-sector, the government lacks the will and capacity to operationalise them for effective sustainable development. The norm nowadays is to integrate environmental concern into economic development initiatives. This is not however, the case in Nigeria.

In recent times, some parts of the world, particularly South East Asia and the United States of America have been under the yoke of series of flooding and hurricanes. These developments, no doubt cannot be divested from the series of past abuses on the environment, especially practices that debased the environment. If the pattern of greenhouse gases emissions in this part of the world is allowed to continue unchecked, such debilitating occurrences like large-scale flooding and hurricanes that is presently ravaging Asia are imminent on the African continent. Important note should be taken of the warnings of the World Bank that Africa lacks the adaptive capacities to cope with such developments if and when they occur on the continent.

Aside from the damages being done to the environment by obnoxious practices in the oil-exploration sub-sector, the health and livelihoods of the multitude of residents in the oil-producing communities are constantly under threats. This trend has promoted a culture of resistance and youth restiveness in the Niger Delta region. This has recently assumed a more alarming dimension as hostage takings and kidnappings are becoming more entrenched in the area while the people are daily traumatized by the culture of violence that has engulfed the area. Therefore, if more pro-active attentions are taken to address the environmental costs of oil exploration and gas flaring, it will douse the present level of violence and engender the elusive peace in the area. As a step to ensuring this, the government of Nigeria should stick to the 2008 deadline for gas flaring stoppage. The present lukewarm attitude of both the government and oil-producing companies calls to question the pretence about promoting sustainable development in Nigeria. The present situations where the environment and human health are of secondary consideration in the oil-production sector both for the government and the oil companies is totally unacceptable and make nonsense of the desire to promote sustainable development. Therefore, more than ever before, the Nigerian government in addition to strengthening existing environmental protection and management institutions and agencies in the country should put in place a more robust, active and result-oriented mechanisms to promote sustainable development in the country.

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