



Redressing the Energy Challenge of Gas Flaring in Nigeria: The MEEs Approach

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Abstract

This paper examines the need to redress gas flaring activity in Nigeria considering the negative social-economic effects of this unethical practice. The paper makes use of secondary data enriched by the narrative-textual case study (NTCS), an emerging social science research method widely used in Management, Entrepreneurship and Economics (MEEs). The authors observe that gas flaring became endemic in Nigeria because the nation's regulatory agency lack the political will to stop gas flaring recklessness of the major multinational oil companies. The authors therefore counsel on the need for policy makers to be more proactive in enforcing extant gas policy and sanctioning erring multinational oil companies. The paper concludes that energy challenge of gas flaring can be redressed through the formulation of national gas flaring policy, enforcement of national policy & international protocols on gas flaring, sanctioning of culpable multinational companies, optimal gas utilisation through energy liberalisation, adoption of Public Private Partnership (PPP) model and genuine political will on the part of government.

Key words: Energy, MEEs Approach, Gas Flaring and Nigeria

Introduction

Energy is defined as the capacity to do work; it is an indispensable life blood of modern economy vital for human beings, existence and sustainability. It is a

resource that lies at the core of modern industrial society (Nagesha and Subrahmanya, 2006). Nigeria is richly endowed with abundant energy resources relative to other countries in the entire African continent. The country is rated as having the world's sixth largest reserve of crude oil. It is also rated as a crucial gas producing nation with estimated reserves of nearly 5,000 billion cubic meters (Federal Ministry of Power & Steel, 2006). Furthermore, the Oil and Gas Journal (2010) reported that Nigeria has an estimated 185 trillion cubic feet (Tcf) gas reserve, which placed Nigeria as the eight largest holder of gas deposit in the world and the largest in Africa. The most important energy resources of the Niger Delta are crude oil and gas on which the Federal Republic of Nigeria depends for its energy needs and hard-earned foreign exchange (Odiete, 1999).

Gas is required for the proper functioning of the various sectors of the Nigerian economy. In the telecommunication sector dominated by major GSM service-providers gas is required for continuous functioning of the base-stations across the country and to facilitate network interconnectivity among the various telecommunication service providers. For the transport and communication sector, the requirements for gas are very crucial. In the educational sector, gas is required to keep educational infrastructure, amenities, teaching gadgets, audio-visual aids, equipment and ICT facilities running. In the manufacturing sector, gas is required to facilitate activation of gigantic machines, plants and industrial installation for optimal capacity utilisation and production. In the health sector, twenty-four hours gas supply is inevitable for effective and efficient operation of hospital laboratories, surgery theatres, pharmaceutical plants, sick bay and other hospital infrastructure. In the agricultural sector, diverse energy sources are needed to activate tractors, harvesters, agric processing equipment/plants, feed mills, poultry farms, animal rearing project and irrigation stations. In the defence sector of the economy, the military, police and other security agencies need a stable, reliable, regular and adequate gas resource to run military installations, defence headquarters, police stations, and national

border. At the level of household, gas resources are needed for good health, quality life, self-esteem and longevity (Raimi, 2008).

Nigeria's energy resources especially oil and gas have been exploited by Shell, Chevron, ExxonMobil and TotalFinaElf with impunity and disregard for the ecosystems for more than 45 years. These multinational oil companies as they are fondly called profited from the energy resources, while the innocent local communities in the Niger-Delta in Nigeria live with the daily pollution coming from non-stop gas flaring and its attendant health consequences (Friends of the Earth, 2004).

Gas flaring is therefore a dangerous activity and human rights violation that is not tolerated in advanced developed nation because the gas pollutants contain over 250 toxins that are harmful, poisonous and unfriendly to the natural ecosystems and human habitats. With reference to the Niger-Delta in Nigeria, gas flaring manifests in the forms of gas leakages directly into the atmosphere causing fire incidents and heating up the atmospheric air. Nigerian Liquefied Natural Gas (NLNG) pipelines have been reported to have leaked and caught fire in several communities, which burned uncontrollably for days destroying plants and animals living in the affected areas and communities (Zabbey, 2004).

Official reports indicate that between 1976 and 1997, there were 5334 reported cases of crude oil spillages causing serious environmental degradation. The spillage culminated in the release of approximately 2.8 million barrels of oil into the land, swamp, estuaries and coastal waters of Niger-Delta communities in Nigeria (Dublin-Green et al. 1998).

The response of multinational oil companies operating in Nigeria to gas flaring has always been sweet rhetoric, excuses and operational deceit. Shell made the following statement: "*Shell remains committed to ending the continuous*

flaring of gas in its operations in Nigeria. We understand the concerns over continued flaring in Nigeria and share the desire to see it eliminated....Shell Petroleum Development Company of Nigeria Limited operated joint venture in Nigeria has made considerable progress in reducing flaring. Total flaring dropped by more than 50% between 2002 and 2007 (from 0.7 bcf/d to 0.3 bcf/d, representing a drop from 14.5 mtpa to 6.2 mtpa in CO₂ emissions..... The SPDC joint venture has invested approximately \$3 billion to date to reduce continuous flaring. More than \$3 billion of additional investment is needed to reduce flaring as low as is reasonably possible.” (SPDC, 2009).

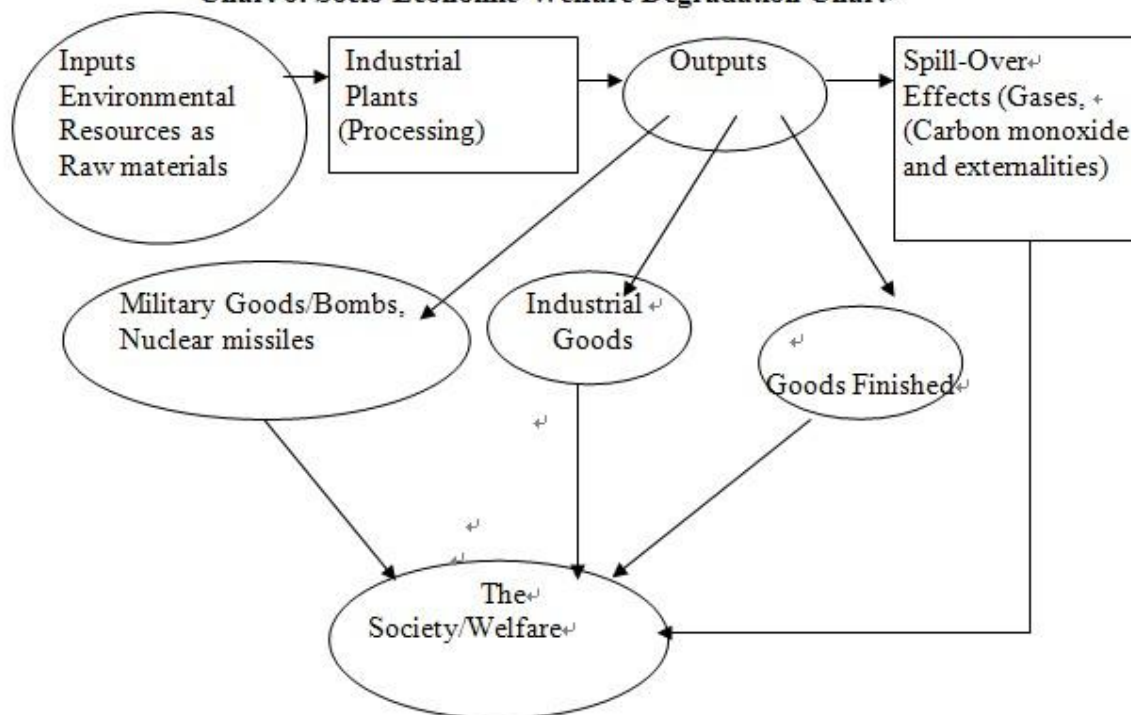
Gas flaring precipitates global climate change and greenhouse-effect resulting in gradual rise in atmospheric temperature and depletion of the ozone layer (the natural cooling shield from sun rays insulation and heat in the sky), thereby exposing the earth to high intensity of solar radiation, the impacts of these environmental threat include food insecurity, increasing risk of disease, acid rain, rain corrosion of buildings and the rising costs of extreme weather damage because of the presence of widely-recognized toxins, such as benzene in the air (Idris, 2007). Recent report indicates that gas flaring represent an annual economic loss to the country of about US \$2.5 billion.

Socio-Economic and Environmental Effects of Gas Flaring

Gas flaring has diverse social-economic effects on the environment, humans and other living creatures. Salient socio-economic impacts of gas flaring are as discussed hereunder.

- a) The first impact of gas flaring in the Niger-Delta is destruction of the ozone layer. In 2002, the World Bank declared that gas flaring in Nigeria had contributed more greenhouse gases to the Earth's atmosphere than the combined contribution in the sub-Saharan Africa. Ironically, gas is not being used as a fuel in the country (Friends of the Earth, 2004).

- b) The health of the people in the Niger-Delta has been mortgaged; although the people may not be educated enough to know the reality of death by instalment. Official report of the Friends of the Earth (2004) indicates that gases flared into the oil communities in Nigeria contain widely-recognised toxins, such as benzene, which pollute the air and causes serious respiratory inflammation, asthma and bronchitis. Gas flares have contribute to acid rain, air pollution, water pollution, corrosion of the buildings, roaring noise and the intense heat from the flares. They live and work alongside the flares with no protection.
- c) Gas flaring causes serious social-economic environmental degradation and systemic poisoning of the ecosystem in the Niger-Delta in particular and the country in general. Ekeng (1999) explains the socio-economic impacts of gas exploitation and industrial activities with socio-economic welfare degradation chart. The chart below speaks volume on the negative externalities of gas flaring combined with industrial combustion.

Chart 6: Socio-Economic Welfare Degradation Chart

Source: Emmanuel, E. E. (1999).

- d) Gas flaring precipitates global climate change and greenhouse-effect resulting in gradual rise in atmospheric temperature thereby exposing the earth and human beings to high intensity of solar radiation, the impacts of these environmental threat include food insecurity, increasing risk of disease, acid rain, rain corrosion of buildings and the rising costs of extreme weather damage because of the presence of widely-recognized toxins, such as benzene in the air (Idris, 2007).
- e) Economically, gas flaring has robbed the nation of huge revenue and foreign exchange. Recent report indicates that gas flaring when quantified financially represents an annual economic loss of about US \$2.5 billion.
- f) Gas flaring and other environmental abuses are the major causes of the Niger-delta crisis and attendant consequences like pipeline vandalism, hostage taking. The neglect of the region for many years by successive

governments in Nigeria degenerated into violent political crisis and armed conflict, which began to surge appreciably in the late 1990s and reached a dangerous dimension in 2009 (Raimi and Adeleke, 2010).

Material and Methodology

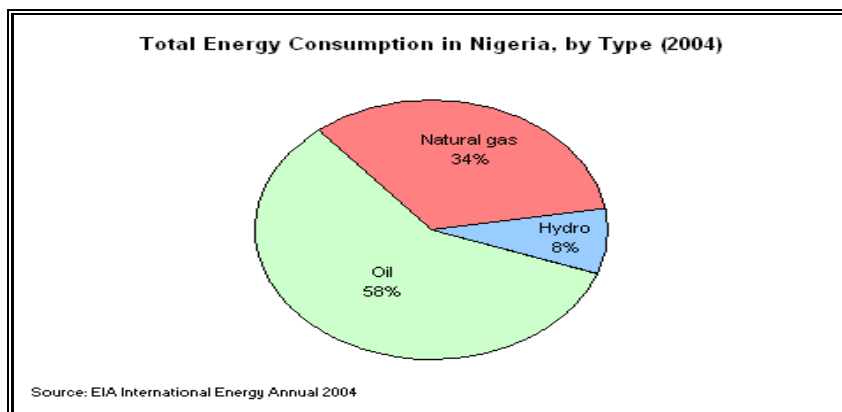
This presentation makes use of secondary data enriched by the narrative-textual case study (NTCS), an emerging social science research method that is widely used in Management, Entrepreneurship and Economics (MEEs). The approach relies on, and sources the required data for research on intranet, internet, World Wide Web, online databases, e-libraries et cetera for problem-identification, problem-solving and/or both. Secondary data were sourced from institutional publications like Oil & Gas Journal, Policy document of Federal Ministry of Power & Steel, National Energy Policy document; National Bureau of Statistics and International Energy Annual, Central Bank Nigeria statistical bulletin et cetera. The approach relies on, and sources the required secondary data for the research on intranet, internet, World Wide Web, online databases, e-libraries et cetera for problem-identification, problem-solving and/or both. The sources data were analyzed using tables, graphs and textual analysis.

Results of the Exploratory Study

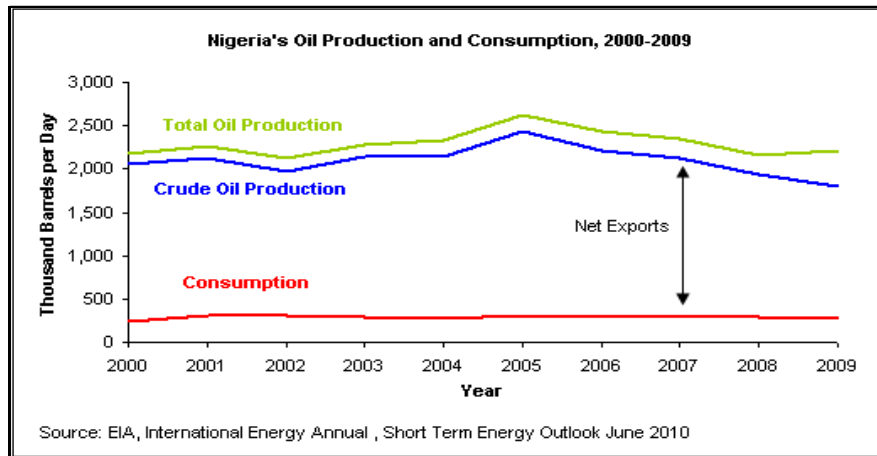
The results of the narrative-textual case study (NTCS) reveal the following, as reasons why gas flaring persist in Nigeria:

- i. Nigeria tolerates gas flaring because it is blessed with many energy resources. Official records indicate that the country has twelve different energy resources (National Energy Policy document, 2003, Akarakiri, Afonja and Okejiri, 1991), these include among others: Oil, Natural Gas, Tar Sands, Coal, Nuclear, Hydropower, Fuel-wood, Solar, Biomass, Wind, Hydrogen, and Other Renewables. It needs to be mentioned that only three of the resources are currently being exploited, these include Oil, Gas and

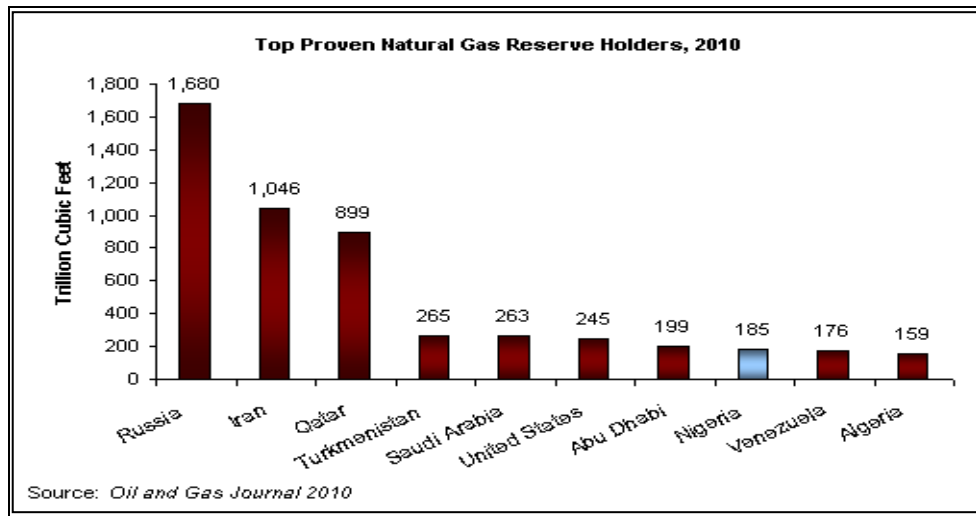
Hydro. Figure 1 below shows the level of utilisation of the three energy resources in use in Nigeria.



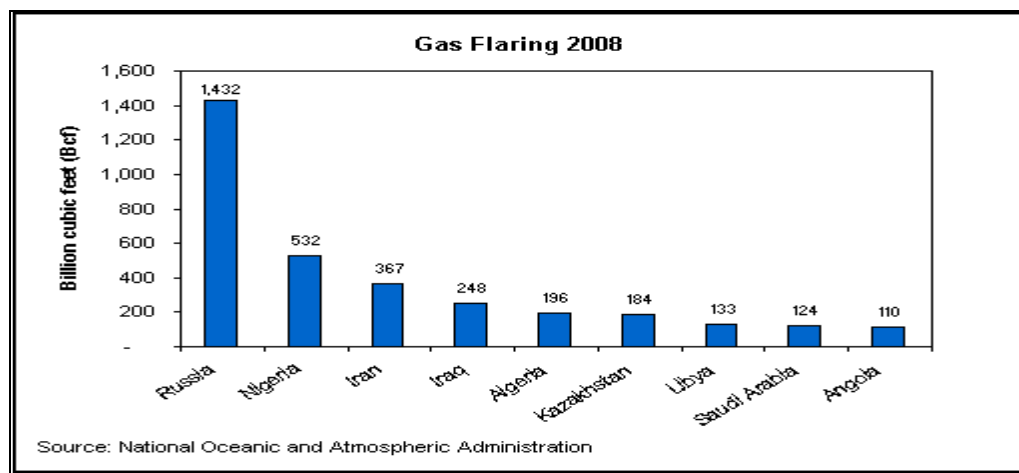
- ii. Gas flaring also persists in Nigeria because of emphasis on crude oil to the neglect of gas for local use and exports. Nigeria has 36.2 billion barrels of proven oil reserves (Oil and Gas Journal, 2007). Nigeria's crude oil production and consumption level from 1986 – 2009 is graphically captured figure 2 below.



- iii. Lack of adequate industrial facilities required to commercialise abundant gas resource being flagrantly flared is another cogent reason. Oil and Gas Journal (2010) reports that Nigeria had an estimated 185 trillion cubic feet (Tcf) of gas resources making it the eight largest natural gas reserve holder in the world and the largest in Africa. Figure 3 below shows that Nigeria is one of the top proven Gas reserve holders in the world.



iv. The phenomenon of flaring gas exists in different oil fields in the Niger-Delta because of apathy. Gas flaring is a by-product of crude oil production and is a common sight in the Niger Delta. The apathy to stop gas flaring has made Nigeria the world's biggest gas flarer (Idris, 2007). Nigeria flares 40 percent of its annual natural gas production, while the World Bank estimates that Nigeria accounts for 12.5 percent of total flared natural gas in the world.



- v. Gas flaring also persists because of insincerity on the part of the multinational oil companies. For instance, Shell's (2005) Annual Report indicated that it would eliminate natural gas flaring until 2009. We are in 2011; the practice of gas flaring lingers on. The quantum of gas being flared by Nigeria relative to other oil producing nations is presented here-under. The picture is pathetic and calls for serious policy reversal of the trend by the Federal Government of Nigeria.
- vi. The flares from Nigeria alone have contributed more greenhouse gases to the atmosphere than the combined flares from sub-Saharan African nations (Friends of the Earth, 2004). The energy challenge of gas flaring is socially and economically undesirable, as huge revenue loss and health hazards are engendered by this action. The quantity of gas has double the oil, and the availability of natural gas is longer than that of oil. Nigeria therefore can triple its foreign exchange earnings through effective and efficient exploitation of its natural gas instead of encouraging gas flaring.
- vii. The issue of gas flaring is so devastating, considering average rate of gas flaring in the Niger-Delta from 1986 to 2003, which is put at 70.15 percent, while its utilization by oil firms is abysmally low for same periods; this is put at only 29.85 percent. Figure 4 below gives a picture of the rate of gas flaring between 1986 – 2003.

Table 4: Gas Flaring Between 1986 – 2003.

Year	Gas Production *(MCB)	Gas Utilization (MCB)	Gas Flaring (MCB)	Gas Flaring Rate (%)
1986	18,739.0	4,822.0	13,917.0	74.27
1987	17,085.0	4,794.0	12,291.0	71.94
1988	20,253.0	5,516.0	14,737.0	72.76
1989	25,053.0	6,323.0	18,730.0	74.76
1990	28,163.0	6,343.0	21,820.0	77.48

1991	31,588.0	7,000.0	24,588.0	77.84
1992	32,464.0	7,058.0	25,406.0	78.26
1993	33,444.6	7,536.2	25,908.4	77.47
1994	32,793.0	6,577.0	26,216.0	79.94
1995	32,980.0	6,910.0	26,070.0	79.05
1996	36,970.0	10,150.0	26,820.0	72.54
1997	36,754.8	10,207.0	26,547.8	72.23
1998	36,036.6	10,886.5	25,150.1	69.79
1999	36,156.4	12,664.6	23,191.8	64.97
2000	47,537.5	21,945.3	25,592.2	53.84
2001	57,530.0	29,639.7	27,890.3	48.48
2002	101,976.0	26,203.4	75,772.7	74.30
2003	53,379.0	30,583.0	22,796.0	42.71

SOURCE: *Nigerian National Petroleum Corporation (NNPC) published in CBN Statistical Bulletin, December 2004. *MCB means million cubic metres.*

- viii. Organization of Petroleum Exporting Countries (OPEC) presented an analysis of the impact of gas flaring and consequent environmental degradation among eleven (11) nations for a period of almost 20 years nations. The comparative analysis of gas flaring OPEC nations reveals that Nigeria occupies the first position among the OPEC member nations (*OPEC Bulletin, 1997*)

Conclusion

In view of the critical issues discussed in this paper, it is expedient for the government and policy-makers in the oil industry make every effort to appreciably reduce the quantum of gases being chunked into the atmosphere in order to protect lives of human beings, animals and plants in the abused ecosystem in Nigeria.

Way forward

Considering the fact that gas flaring is a violation of human rights of the innocent Nigerians, it should be an activity that should be curbed with immediate effect.

To fast-track the process, the following policy recommendations are suggested as veritable ways of redressing the endemic challenge of gas flaring:

- a) An improvement of the institutional framework for energy policy in Nigeria is proposed. The renewed framework should state clearly the tolerable level of gas flaring and sanction to be meted out to multinational oil companies that flout policy on gas flaring in Nigeria. This is in line with international best practices and protocols.
- b) There is dire need for constitutional amendment to allow active participation by states and organised private sector in the oil exploitation and production in Nigeria. With indigenous involvement, the spirit of patriotism would prevent abuse of gas flaring, pollution and spillages. Currently, the 1999 Constitution of the Federal Republic of Nigeria places energy matters on the Exclusive list. With constitutional amendment, control and utilisation of energy resources should be listed in the Concurrent Legislative List because it would allow all levels of government and interested private investors to be involved in all aspects of the energy in Nigeria. This is a genuine liberalisation.
- c) To realize optimal energy development, there should be effective coordination of the various energy sub-sectors in Nigeria (ECN, NERC, PHCN, NNPC, DPR et cetera) to ensure compliance with protocols on gas flaring, climate change and environmental sustainability. This would be possible with engagement of energy experts and technocrats.
- d) Government must promote cooperation between the Energy regulatory bodies like NNPC, DPR, and major oil multinationals like Shell, Chevron, ExxonMobil and TotalFinaElf in order to increase the efficiency and effectiveness of utilisation of Natural gas thereby ending the hazard of gas flaring.

- e) There is the need for genuine liberalisation in the energy sector in order to attract new investments to the sector like Federal Government did for the telecommunications sector in 1999. Liberalisation would facilitate effective utilisation and monetisation of gas resources presently being flared thereby helping to accelerate massive jobs for Nigerians in the oil and gas industry.
- f) In the same vein, public private partnership (PPP) arrangement to utilise the erstwhile natural gas being flared with impunity in Nigeria. PPP initiative in Lagos state is a testimony to viability of this management approach at problem-solving.
- g) The nation should explore and adopt all viable financing options from local and international sources for cost effective exploitation of its gas resources being flared way in order to generate foreign exchange and increase employment generation to Nigerians.
- h) A return to true federalism and control over resources would help resolve the endemic gas flaring, as each state of the federation would have autonomy to formulate energy policy (including gas flaring), tap, develop and utilise its energy potentials to the fullest without short-changed by multinational oil companies resident in their state.
- i) A genuine political to redress headlong the challenge of gas flaring and poisoning of the Nigeria ecosystem is recommended. Political will is pivotal and germane in order to attain energy El-Dorado ceaselessly awaited by Nigerians.

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