Gas flaring, government policies and regulations in Nigeria: 2008, a myth or reality.

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ABTRACTS

The issue of gas flaring and the attendant environmental effects have become a common sight in the Niger Delta. Apart from being a wastage of natural resources, it is a menace to the global existence of man. The incidences of acid rain and the disruption of economic life of the locals, basically farming and fishing, have led to consistent and irresistible agitation by the people of the Niger Delta for an end to gas flaring. The consistent release of harmful gases through gas flaring, with devastating effect on the surrounding environment of the Niger Delta region is discussed in this work.

This dissertation examines why successive governments have not succeeded in their quest for a solution to gas flaring; policies and regulations are not being effectively implemented, and why despite the fact that flaring has been outlawed in Nigeria since 1st January 1984, it is still going on 24 years after. Flaring continues unabated undermining the consequences it has on the people and the effects on climate change.

Interviews and case studies were used to examine the factors responsible for the non implementation of government policies and regulations, and why the consistent extension of flare-out deadline. Countries with outstanding results were examined in order to draw a baseline for the Nigeria situation.

The research revealed that the Nigerian government has not enforced environmental regulations effectively because of its interests in the business of the multinationals. In addition there has been the dependence of environmental monitoring and regulatory agencies on government funding. This has drastically affected the proficiencies of the control and the insignificant penalties imposed on companies that flare gas.

The need for government to play the role of an umpire rather than business partner with the multinationals is therefore of paramount importance. It is also pertinent that the regulatory and monitoring agencies be independent of government's supervision. More stringent measures, (ranging from more cost per a thousand standard cubic feet of gas flared to closure of platform(s) and/or outright withdrawal of license), should also be put in place to serve as deterrent to erring oil companies.

KEYWORDS

Natural gas

Gas flaring

Associated gas

Gas re-injection

Venting

Liquefy natural gas

Multinational

Kyoto protocol

Stakeholder

Gas plant

Associated gas gathering plants

Liquefy petroleum gas

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FEPA:	Federal environmental protection agency
OGJ:	Oil and gas Journal
Tcf:	Trillion cubic feet
Bbl/d:	Barrel per day
GHG:	Green house gas
DPR:	Department of petroleum resources.
LNG	Liquefied natural gas.
NNPC:	Nigeria national petroleum corporation
IPCC:	Intergovernmental panel on climate change.
SPDC:	Shell Petroleum Development Company of Nigeria
UNDP:	United Nations Development program.
GFRPI:	Gas flaring reduction public private initiative.
UNCED:	United Nations conference on environment and development.
UNFCC:	United Nations framework convention on climate change.
NPE:	National policy on the environment
FME:	Federal ministry of environment.
Scf:	Standard cubic feet.
Bcm:	Billion cubic feet.
EIA:	Environmental impact assessment.
E.U:	European Union.

FNJ:	Fredjof Nansen Institute.
NPD:	Norwegian petroleum directorate.
MPE:	Ministry of petroleum and energy.
AG:	Associated gas.
GTL:	Gas to liquid.
GGFR:	Global gas flaring reduction.
PHCN:	Power Holding Company of Nigeria
SDMS:	Shell meddle distillate synthesis.
NGO:	Non-governmental organization.
NLNG:	Nigeria liquefied natural gas.
LPG:	Liquefied petroleum gas.
AGG:	Association gas gathering
MTPA	metric ton per annum.
IPP:	Integrated power project.

CHAPTER ONE: INTRODUCTION

1.0 OVERVIEW

The issue of environmental protection and the need to inculcate the practice of environmental friendliness in national development are of paramount importance. According to the Los Angeles Times (1998): While environmental consciousness in the developed world has witnessed, over the past two decades, a generally effective mechanism for pollution abatement, the situation in many third world nations is at best, indifferent.

In Nigeria, the problem of environmental pollution has been of crisis proportions with the oil sector possibly the worst on earth (Los Angeles Times, 1998). In response, the government has put in place legislations, established agencies, ministry, and department for environmental protection. A number of positive results may have been achieved by the nation's main environmental watchdog, the defunct Federal Environmental Protection Agency (FEPA). However, so much more still need to be done, in terms of improving implementation strategy and adopting economic measures for the management of pollution related problems, especially in the oil sector, and ensuring compliance with the set deadline for gas flaring elimination.

1.1 BACKGROUND

Nigeria oil production has increased significantly from the late fifties till date. Current official data put it at 2.28 million barrels per day (bbl/d) (Nigeria Energy Data, 2007). Approximately, two-third of this production capacity is located onshore, while the balance is located offshore. According to *Oil and Gas Journal* (*OGJ 2007*), Nigeria had 36.2 billion barrels of proven oil and 182 trillion cubic feet (tcf) of gas reserves as of January 2007. Niger Delta is the hull of Nigeria's oil and gas deposit, it accounts for over two-third of oil and gas related operations in Nigeria.

Oil exploration started in the country some forty-five years ago. However, while oil multinationals like Shell, ExxonMobil, Chevron, TotalFinaElf, and Agip have made considerable profits from the resources over the years, the poverty stricken host communities live with the daily effects of pollution and degradation caused by gas flaring.

1.2 WHAT IS GAS FLARING?

Natural gas generally refers to gaseous forms of petroleum consisting of mixtures of hydrocarbon gases and vapours, notably methane, propane, butane, pentane and hexane, (Natural gas and Energy, 1998). The term is also generically used for both associated and non-associated gas. The former occurs with oil in the same reservoir, while the later occurs alone in a reservoir. Associated gas is either re-injected into the oil wells to enhance oil recovery where the situation of the reservoir permits it, or gathered and liquefied to provide alternative energy source for domestic use or electricity generation.

Gas flaring refers to the process of burning off unwanted hydrocarbon gases. This is a common and usual practice at oil production and processing platforms and refineries. If oil is produced in any area of the world without a well-developed gas infrastructure or a gas market nearby, the associated gas produced is often released into the atmosphere, either ignited (flared) or vented.

A gas flaring stack is an elevated vertical stack, chimney or it could be constructed horizontally, parallel to the earth's surface, to a distance of not less than 100 (one hundred) meters away from the production platform, where flaring activity is carried out.

Figure.1: One of Shell's flaring sites in the Niger Delta. A typical example of gas flaring
Source: Environmental Right Action/ Friend of the Earth www.foe.co.uk/press_release/communities_sue_shell_to_s_2006/2005.

Gas flaring is a safe and controlled burning of natural gases associated with crude oil production. Flaring and venting of natural gas in oil wells is a significant source of greenhouse gas emissions (GHG)

1.3 WHY IS GAS FLARING NECESSARY?

The obvious reason for gas flaring is that associated gas are produced in very large volume and only very little quantity is utilized by the production platform as fuel for running turbines and gas engines which drives pumps, compressors and generators. A far lesser quantity is also used for operating instruments. Greater volumes of the associated gas produced are left unused, so with production platform not equipped with gas infrastructures, they are faced with the challenge of how to manage a large volume of highly flammable gases. The need to safely dispose off these gases before it ends up in fire with any slight source of ignition and result in wanton destruction of lives (both human, wild life) and property, becomes a serious and urgent issue with safety concern.

Therefore, in the light of the above, flaring is seen by oil exploration companies as a cheap and convenient means of safely disposing off waste gases through the use of combustion. This is why associated gases are routinely flared in the course of crude oil production and processing.

1.4 THE NEGATIVE EFFECTS OF GAS FLARING

The negative practice of natural gas flaring has resulted in untold hardship and mysterious death to the inhabitants of the various host communities. According to the Oil Change International Journal (2005), the toxic substances which has been continuously emitted over the past 45 years, includes benzene and particulates. It has exposed the inhabitants of the host communities to serious health risks and property damage, in violation of their fundamental human rights as enshrined in the constitution. The flare affects their livelihood and exposes them to an increasing risk of premature deaths, child respiratory illnesses, asthma and cancer, as well as acid rain. Friend of the Earth (2005) in its report of a study conducted by the World Bank information on the adverse effect of particulates, estimated that gas flaring from just

one part of the Niger Delta (Bayelsa State) would likely cause annually 49 premature deaths, 4,960 respiratory illnesses among children and 120 asthma attacks.

1.5 THE GOVERNMENT POSITION ON GAS FLARING

The Nigerian government, in realisation of the adverse effects of gas flaring on the environment and the residents of the communities, enacted the associated gas re-injection act 99 in 1979. It stipulated that associated gas produced with crude oil should be re-injected into the well to boost crude oil production. The act further stipulated that any flaring of gas after 1st January, 1984 without permission in writing from the Minister shall constitute a punishable offence.

The target date of 1st January 1984 was not met and had to be shifted to 1990. Thereafter, 1998, 2000, 2004, 2006, January 1st 2008, and the latest date December 31st 2008. It is note worthy that the date (1st January 2008) was mutually agreed upon between government and the oil companies. The reasons given by the multinationals in asking for a shift in deadlines are insecurity in the Niger-Delta, poor funding by the government, high cost of infrastructures and the lack of availability of local market (reported by the Sun, 2008).

In the words of the Director General, Department of Petroleum Resources (DPR), Mr Chukwueke:

"*The Federal Government and the oil companies agreed on the zero gas flaring on this date, January 1, 2008. In fact, it was the oil companies that chose that date.*" (Daily Guardian Newspaper, March 24, 2008 edition).

Even though it appears the government is very serious about the latest date, there are no corresponding preparations on the part of the multinationals. The country has only one operational Liquefied Natural Gas (LNG) Plant in Bonny. Only 40% of the gas produced by platforms with gas production facility are being utilised according to the Nigeria National Petroleum Corporation (NNPC). Only Chevron and Exxon Mobil, among the multinationals, are currently engaged in building Gas-To-Liquid plant, which may just cater for all the gas produced from their facilities. This again is making the hope of realising December 2008 target date very doubtful.

1.6 PROBLEM STATEMENT

Drawing from the above scenario, it becomes important to investigate the reasons why all previously set target dates for ending gas flaring had failed. The investigation aims to establish the reasons why the multinationals have consistently failed to meet the targets, and why successive governments have failed to successfully compel them towards achieving the target deadline over the last two decades.

Hence this research work aims to investigate why government legislations to end gas flaring are not being implemented.

1.7 RESEARCH OBJECTIVES:

1. To investigate the factors hindering the multinationals from the implementation of gas flare reduction regulations.

2. To investigate why in spite of the various government legislations prohibiting gas flaring, these legislations are neither being enforced by the government nor obeyed by the multinational oil industries.

1.8 OVERVIEW OF DISSERTATION

This dissertation is presented in six chapters as follows:

1. Introduction: General overview of the research work, problem statement and objective of the research work.

2. Literature review: Reviews of related literatures and laws and case study of countries with high production but minimal flare record were considered.

3. Empirical investigation: This work employed the use of personal interview targeting the host communities, DPR, multinational oil companies, independent legal professionals and environmentalists; the empirical research work also corroborates the case study of Norway, Mexico and Algeria to bench mark the Nigerian situation.

4. Interviews presentations: The results of the interviews conducted with the different stakeholders is presented

5. Findings and Interpretations: The findings were presented, discussed and inferences drawn.

6. Conclusion and recommendation: From the inferences drawn, conclusions were drawn on why policies to end gas flaring are not implemented effectively and recommendations given on the way forward.

This chapter presented the background of this research work which led to the problem statement and the objectives of this dissertation. It also highlighted the overview of the entire dissertation. In chapter two, related literature and laws are reviewed and case studies of the situations in some other countries are considered.

CHAPTER TWO: LITERATURE REVIEW

In the previous chapter, the background of this research, which led to the problem statement and objectives of this dissertation, was presented. In this chapter, related literature and laws are reviewed. Case studies of Mexico, Norway and Algeria are considered to give a proper direction to this dissertation.

2.0 REVIEW OF RELATED LITERATURE AND LAWS

Gas flaring has become a major disturbing issue internationally because of its negative health effects and contribution to greenhouse gas (GHG) emission. With a rapidly integrating world, the global calls for collective action to curb the menace have also been on the increase.

In its third assessment report, the Inter-governmental Panel on Climate Change (IPCC; 2001), stated that "the global average surface temperature has increased by about 0.6°C over the 20th century". The report further stated that 66-90% of the observed warming over the second half of the century was due to the increase in greenhouse gas concentrations. The body therefore projected that the temperature would increase from 1990-2100 by between 1.4 to 5.8°C. It also stated that global mean sea level is projected to rise by between 0.09 to 0.88 meters between 1990 and 2100, primarily due to thermal expansion and loss of mass from glaciers and ice caps.

In July 2003, Sir John Houghton, formerly co-Chair of the IPCC's Scientific Assessment Working Group and Chief Executive of the United Kingdom's Meteorological Office said:

"The impacts of global warming are such that I have no hesitation in describing it as a weapon of mass destruction". (ibid)

World Bank (2004), in its report acknowledged that flaring, and venting of associated gas contributes significantly to greenhouse gas (GHG) emissions, with negative impact on the environment.

2.1 HOW MUCH GAS IS FLARED IN NIGERIA?

A number of local and international agencies have reported that more gas is flared in Nigeria than anywhere else in the world. Although, as a result of the current conflict in the Niger Delta area, some producing oil wells and platforms have been shut down, and this may account for a slight and temporal reduction in gas flaring.

The gas industry statistics publisher indicated in her 2002 report that Nigeria accounted for 19.79% of global flaring in 2001. This, more than the second (Iran) and third (Indonesia) countries combined. (Cedigaz, 2002)

In its report, the SPDC in 2001 restated its commitment to end the unnecessary flaring of natural gas by the year 2008. It appears therefore that the 2008 date had actually been on the agenda of the oil companies for a very long time, much earlier than when it was announced.

In a lecture given by a representative of SPDC, an action programme of how Shell hopes to achieve the phased implementation of the 2008 gas flaring phase-out deadline was unfolded. (SPDC, 2001)

The programme is as shown in Figure 2 below.

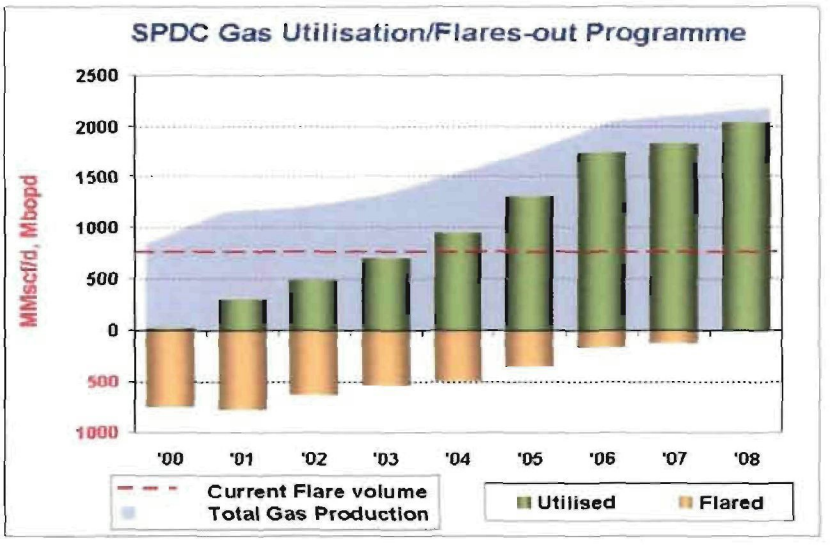

Figure 2. SPDC gas utilization/flare-out program Source: *The SPDC Nigeria, External Relations Department 2001*

One striking point indicative in this graph is that up to 2000, 99% of the gas produced by Shell in Nigeria was flared! By 2008 however, it was expected that the gas flaring would be 100% eliminated but there is little or no change in its gas flare statistics.

The UNDP/World Bank (2004), in its report, estimated that Nigeria's gas flaring is close to 2.5 million cubic feet (over 70 million cubic meters) daily, amounting to about 70 million tonnes of carbon dioxide daily emission. In addition, the report estimated that Nigeria accounts for 12.5 percent of total flared natural gas in the world.

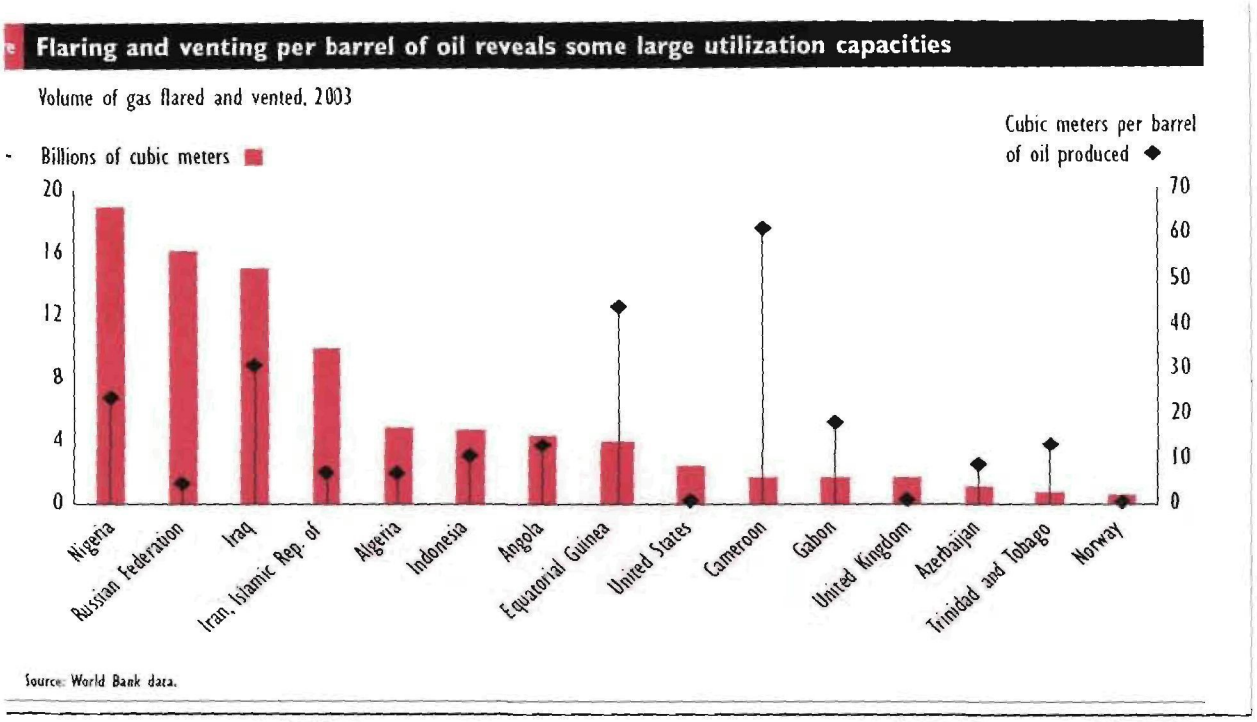

Figure 3*: High Flaring and Venting of Associated Gas per barrel of oil*
(Source: World Bank public policy journal October 2004 edition)

By implicitly acting according to the dictates of the oil companies, the Nigeria government has continued to relegate the health and environmental well-being of Nigerians to the background. This policy of accommodating the oil companies at all costs and by all means in the country bears outrageous costs. It is a dangerous trade-off between economic gains on the one hand and public and environmental health on the other, which have long-term consequences that are highly destructive.

2.2 THE COST OF GAS FLARING IN NIGERIA

The annual financial loss to Nigeria from gas flared has been put at about US $2.5 billion. The UNDP/World Bank, in a 2005 report stated that:

"*Flaring represents a significant economic loss (lost opportunity value estimated at some US$2.5 billion, based on LNG values).*"

2.3 THE GLOBAL INITIATIVE FOR GAS FLARING REDUCTION

The global awareness of the adverse environmental effect of gas flaring and by extension, greenhouse gas (GHG) emission has given rise to numerous flaring reduction activities over the last decades. These activities are aimed at capturing the gas produced at the oil extraction source and channelling it to more useful outlets including power generation in industries and for use in households.

One of such activities is the Gas flaring Reduction Public-Private Partnership Initiative (GFRPI), which enables private investment in pipelines and other infrastructure that makes this "capturing" possible. Other key activities of the Partnership include improving legal and regulatory framework for investment in flaring reductions, improving international market access for gas and provision of technical assistance to develop domestic markets for the harnessed gas and promote local small-scale use of gas.

In the 1992 United Nations Conference on Environment and Development (UNCED), tagged the 'Earth Summit' held in Rio de Janeiro, Brazil, the United Nations Framework Convention on Climate Change (UNFCCC), was adopted. The UNFCCC Convention ratified by Nigeria in August 1984, sets as its ultimate objective, "the stabilizing of greenhouse gas emissions at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system" (UNFCCC 2002; Ishone, 2006).

It states further that "such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner."

The essence of the climate policy thus is not only to curb and stabilize carbon dioxide (CO_2) emissions arising out of anthropogenic activities, but also to carry this task out in the most cost effective and sustainable manner. It is expected that the various governments that have ratified the convention should formulate, implement, publish and regularly update national and, where appropriate, regional programmes, containing measures to mitigate against climate change. They are also expected to address anthropogenic emissions by sources, and removals by sink, of all greenhouse gases.

2.4 THE KYOTO PROTOCOL (KP 1997)

The Kyoto Protocol (1997) came into force on 14th February 2005, and aims to strengthen the commitments of the UNFCCC, particularly those enshrined in Articles 4. It set out a firm scheduled for reduction of GHG emission by member countries and firms target to be met within an agreed commitment period. The specific commitments of the countries under the Protocol were to reduce their overall greenhouse emission by at least 5.2% below 1990 levels over the 2008 to 2012 period. The protocol called upon countries to:

"*strive to implement policies and measures [to combat climate change] under this Article in such a way as to minimize adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on the parties, especially developing country Parties.*"

2.5 NIGERIA'S RESPONSE TO GAS FLARING PHASE-OUT

(NIGERIA'S POLICY THRUST ON ATMOSPHERIC PROTECTION)

Nigeria, which ratified the Kyoto Protocol in October 2004, has been very active in formulation and review of policies geared towards gas flaring elimination. It has also been setting deadline and shifting goal post whenever the multinational operators signal their inability to meet the set deadline. It appears the government either lacks the initiative to implement a project to phase-out gas flaring or they do not want to disrupt the operation of their main source of income. In Nigeria, going by the regulations and policies, gas flaring has

been outlawed. It is illegal to flare gas, yet there is little or no change in the quantity of gas flared on daily basis.

The Nigeria's policy thrust for the proper and efficient regulation of air quality standard and natural gas conservation is contained in the *National Policy on the Environment (NPE)* and the *Nigeria's National Agenda 21*, published by the Federal Ministry of Environment (FME). The Policy recognizes that the atmosphere is very vital for the survival of man and other living animals, and that clean air is essential for healthy environment and agricultural crops production. According to agenda 21, the Government was supposed to be committed to:

- Designating and mapping of National Air Control Zones and declaring air quality objectives for each designated Air Control Zone
- Promoting regional cooperation aimed at minimizing the atmospheric transportation of pollutants across international boundaries
- Sustainable [Oil and Gas] exploitation strategy to be adopted nationally, and seek to evolve a realistic national conservation policy. This strategy should ensure optimum economic returns from oil and gas exploration and production, while ensuring adequate provisions for strategic reserves. It should also take into consideration the welfare of the local inhabitants of the oil and gas producing areas
- Monitor air emissions and gaseous wastes (CO, CO_2, NO, H_2S, CH_4, SO_2, etc) discharged at production platforms, refineries, petrochemical and gas processing facilities, through continual air quality sampling, as well as through daily visual checks for leakages around tanks, pumps, pipelines and transfer points
- Promote conservation and restoration of natural formation pressure through elimination of gas flaring and the production of greenhouse gases
- Promote complete utilization of produced Associated Gas; reduce gas flaring and the production of greenhouse gases.

This could be considered as a very commendable starting point of a responsible Government with sense of duty, social responsibility and sensitivity to people's environmental and health concerns. For the policy to benefit the people however, it has to be properly implemented. This policy has remained a paper work not backed up with the required necessary action expected by the populace.

2.6 GAS FLARING PHASE-OUT DEADLINE: THE YEAR 2008

In most countries including Nigeria unauthorized flaring and venting of associated gas is prohibited other than for technical, safety, and emergency situations. In all other cases, regulatory approval is required. The effective tackling of the gas flaring problem is necessary for the successful harnessing and developing of Nigeria's gas resources. As noted earlier, not only has gas flaring badly stigmatized Nigeria before the international community, it has been one of the causes of grave environmental degradation and social crises in the Niger Delta region. Hence, gas flaring has been subject of incessant complaints by individuals and groups among the inhabitants of the region as well as international non-governmental organizations.

Thus the policy of the Government was initially to pursue complete elimination of gas flaring by 1st January, 1984 with the promulgation of "Association Gas Re-Injection Act" in 1979. But in 1984, the regulation was amended to provide for continuous flaring and phase elimination of gas flaring on account that utilization is still not feasible and the exorbitant cost of acquiring gas processing facilities. Consequently a fine of ₦10.00 (ten naira), equivalent to 4 UK pence or 7 US cent, though meager, increased recently from 1st April 2008 to $ 3.50, was imposed per 1000 standard cubic feet (scf) of gas flared (DPR 1).

The consistent amendment to this regulation has favoured the multinationals. They have considered the payment of a meager fine a comparative advantage to acquiring gas production facilities. This could be responsible for the regular shifting of the deadline to end gas flaring. Changes and inconsistencies in government position have resulted in amendments at different times in the association gas re-injection act. In addition, the oil companies' position not always willing to combine forces with government on flare phase-out deadline have always been attributed to unfolding socio- economic and political developments in the country.

This inconsistency on the part of the government has resulted in several court actions. Court actions have been brought against the government agency (NNPC) on one hand and the multinational oil companies on the other by either individuals or group from the various host communities across the Niger Delta. In one of such cases, Gbemre, on behalf of Iwherikan community in the Niger Delta took the SPDC and the NNPC to court for continuing an illegal act of gas flaring. Delivering judgment on 15 November 2005, the judge ordered that the practice be stopped because it violates the constitutional right to life and dignity of Nigerian

citizens. He noted that the Nigerian Constitution guarantees to her citizens the rights to clean, poison-free, pollution-free healthy environment. (Friend of the Earth, 2005)

Though, damages in terms of cost were not awarded, as it were not part of Gbemre's prayers, yet it was a victory celebrated across the length and breadth of the oil rich Niger Delta. This was an indication that the people were tired of the menace called gas flaring. The Niger Delta people's hope of seeing an end to the monstrous act called gas flaring was defeated as the judgment was completely ignored by both the NNPC and the multinational oil companies. In addition, for lack of political will, government has not done anything in line with the judgment but on the contrary has been busy amending existing laws to accommodate gas flaring in the area. Some of the legal professionals talked to, see the judgment as a once-off thing. They said that there is no record of appeal to a higher court to set the judgment aside and there is already a waiver provided by the amendment of the association gas re-injection act. So, according to the legal experts, it could have been a case of personal vendetta by an aggrieved judge. On the other hand, the environmentalists believed that the judgment has long been overdue, exposing the weakness of government to truly live up to its responsibilities of ending gas flaring in light of the judgment.

That apart, the involvement of government in the multinational oil business owing a huge percentage of shares could also have contributed to its weakness in dealing with the situation as required. The environmentalists and non-governmental organizations see government as protecting her investment rather than upholding the rule of law.

What then could be responsible for the practical enforcement of illegality or the flagrant disobedient to the rule of law in Nigeria? Gas flaring has been outlawed since 1 January 1984, documented and published yet multinational oil companies are not obeying it and the government on her part lacks the will to enforce it. These are the questions this research seeks to find answers to. Case studies of Mexico, Norway and Algeria are used to assess the extent to which gas flaring laws have been implemented and the benefit thereof.

2.7 CASE STUDY OF MEXICO, NORWAY AND ALGERIA

Some notable literature has revealed that some countries have demonstrated considerable concern at reducing gas flaring. Notable among these countries are, Mexico, Norway and Algeria. The countries' approaches and policies are reviewed below:

2.7.1 MEXICO

According to the oil and gas journal (OGJ, 2007), "Mexico had 14.6 trillion cubic feet (Tcf) of proven natural gas reserves as of January 2007".

In 2006, Mexico produced 1.71 trillion cubic feet (tcf) of natural gas of which local consumption was 1.98 tcf and imported 0.21 tcf of natural gas. In 2004, a total of 1.5 Bcm of natural gas was flared. The price Forecast, Energy Information Administration (2001) revealed that Mexico does not have any restriction or penalties for flaring associated gas, and no limits have been set on the amounts of gas being flared. Pemex is Mexico's state owned oil and gas company. It hopes to continue maximizing associated gas utilization in accordance with best international practice. It has achieved substantial reduction in gas flaring and venting, particularly from Sonda de Campeche oil production fields. Pemex shows a 47.4 percent (from 6,821 million m^3 to 3,586 million m^3) reduction in associated gas flared and vented between 1998 and 2001 (OGJ 2007).

Although, there is not enough information on the natural gas utilization program for this country, it is instructive to note the huge local consumption figure, an indication that gas is treated as an essential resource that should not be wasted. Bulk of the natural gas production goes for industrial and domestic use, a situation that is lacking in Nigeria. Even with the presence of industries with high energy demand, the preference for flare by the multinationals still outweighed the development of the local market for gas consumption.

2.7.2 NORWAY

Norway flared only 0.16% of the total annual gas production in 2004, (EIA report, 2006). "Norway had 84.3 trillion cubic feet (tcf) of proven natural gas reserves as of January 2006". (OGJ, 2006)

The Petroleum Activities Act of Norway provides for very strict flare permission procedure. Section 4.4 of the act state; "Flaring of petroleum in excess of the quantities needed for normal operational safety shall not be allowed unless approved by the Ministry. Upon application from the licensee, the Ministry shall stipulate, for fixed periods of time, the quantity that may be produced, injected or vented at all times". (FNI report, 2001)

2.7.2.1 NATURAL GAS EXPORTS

Norway exported 2.9 tcf of natural gas in 2005, according to Statistics Norway (2007). The country is the second-largest supplier of natural gas to the EU, behind Russia. The largest recipient of Norway's natural gas exports in 2005 was Germany (900 Bcf), followed by France (560 Bcf) and the United Kingdom (550 Bcf). Others are Czech Republic (97 Bcf), Poland (17 Bcf), and Switzerland (2 Bcf) (Friedjof Nansen Institute. (FNI) 2001)

According to Offshore Norway (2003), in 2002 "oil accounted for approximately 44 percent of the country's export and 24 percent of government revenue". Norway brings one of the best examples of successful oil production policies as well as environmental protection. Gas flaring volumes as a percentage of oil production has decreased substantially over the last two decades in a time when production of crude oil has almost doubled since 1990 and increased six fold since 1981. (Fridjof Nansen Institute, 2001). The Norwegian Energy Policy has been able to amalgamate its role of a large energy producer with pioneering position on environmental issues. The regulatory body called the Norwegian Petroleum Directorate (NPD), which is a part of the Ministry of Petroleum and Energy (MPE), supervises air emissions, petroleum activities and responsible for energy efficiency and safety of installations and for gas flaring and venting operations within Norway.

The natural Associated Gas (AG) in Norway is used for the following:

- **Micro-turbine generator**. Application of small gas-fired mini turbine generators to produce electricity from AG for further sale in downstream energy market. In this case, the gas is used to power micro-turbine generators for electricity production. Several countries are currently working under adapting this new technology in their respective countries. For example: the province of Alberta (Canada) has exempted such operations from provincial royalties; Cameroon is evaluating the financial feasibility of this mechanism to reduce flaring and venting, and Russia is carrying out research on implementing such generators in its petroleum industry.

- **Re-injection to improve oil.** The option deals with re-injecting the waste gas underground to maintain reservoir pressure during production. Re-injection of extracted gas is used as secondary recovery mechanism with the aim of recycling the gas. This is done by separation of the AG from the oil at the wellhead and then pumped back into the field to enhance the oil recovery factor. In this case gas could be recycled several times without being wasted, as it may still be recovered and used towards the end of the active life of the field. This positive experience with re-injection of gas to improved oil recovery led to the Norwegian gas utilization policy.

- **Gas conservation.** Conserving the waste gas for processing at natural gas facilities. One of the available options for gas conservation is under commercialization studies and includes Gas-to-Liquids (GTL). This project is currently under way in Qatar, utilizing the county's North Gas field reserves. GTL technology provides wide range products as substitutes to the traditional petroleum alternatives: clean diesel and jet fuel, middle distillates, lubricants, olefins and methanol.

Norway, a clear leader in gas flare elimination operates a very strict law with no exemption except for safety, emergency or equipment failure. Gas flare prohibitions were not just as a result of environmental impact but from resource point of view, in order to avoid wastage of valuable energy. The environmental aspect of flaring and venting were recognized later. On the contrary, in Nigeria, the multinationals see flaring as a cheap means of safely disposing off unwanted or waste gases. This singular reason explains why the act is being constantly amended and without a bite. If re-injection and utilization is feasible in Norway, then the multinationals do not have a case in Nigeria. All the regulation required is re-injection to boost oil production and utilization for both local industries and domestic consumption.

2.7.3 ALGERIA

The Oil and Gas Journal (OGJ, 2007) revealed that Algeria had 161.7 trillion cubic feet (tcf) of proven natural gas reserves, the eighth-largest in the world and the second largest among OPEC-member countries (behind Iran) as at January 2007. The country produced 2.8 tcf of natural gas in 2004. Algeria consumed 0.68 tcf of natural gas in 2004, some 24 percent of its production (OGJ, 2007).

According to the Global Gas Flaring Reduction (GGFR 2006), "Algeria flares a total of 4.3 Bcm in 2004". In 1997, Algeria's natural gas production exceeded the country's crude oil production for the first time, though it has since fallen below oil production again. The Algerian government has encouraged the domestic use of natural gas, which represented 62 percent of the country's total energy consumption in 2004. The remaining natural gas is exported, with the majority going to Europe and some to the United States. With the start-up of the Arzew GL4Z plant in 1964, Algeria became the world's first producer of liquefied natural gas (LNG).

Algeria is the fourth largest exporter of LNG (behind Indonesia, Malaysia and Qatar), exporting around 13 percent of the world's total. The vast majority of Algeria's LNG exports go to Western Europe, especially France, Spain and Turkey. Sonatrach has LNG export contracts with Gaz de France, Belgium's Distrigaz, Spain's Enagas, Turkey's Botas, Italy's Snam, and Greece's DEPA.

In the 2005, Algeria exported 97 Bcf of LNG to the United States, some 15 percent of total U.S. LNG imports for that period. Algeria's largest LNG export terminal is the Arzew facility, whose three facilities produce a combined 2.47 Bcf/d of re-gasified LNG. Other important terminals include Skikda and Algiers.

Algeria, a fellow African country, from the scenario above, treated natural gas as a valuable resource that should not be wasted but rather harness for the benefit of all, gas flare reduction project were not just proposed but executed to achieve the desire flare reduction. If Algeria can achieve this, it means the Nigerian government will need to seat up and muster enough courage to be more decisive in dealing with the issue of gas flaring reduction.

A critical evaluation of the situation in the three countries above indicates a drastic flare reduction, a desirable situation in Nigeria. It also shows the extent to which the local market

has been encouraged by the government and developed by the multinationals, such that the importance of natural gas, either for cooking or running of turbine generator for power (electricity) production is highly noticeable in the domestic consumption. There is also an indication here that market forces, demand for gas either for cooking or industrial use in running generators and supply by the multinationals, has a more practical effect on gas flaring reduction in these countries than government regulations.

A critical overview of these three countries shows that the local market has been developed and properly harnessed; natural gas is used to run plants in the various industries to generate electricity and also used for cooking in homes (domestic consumption) a situation that is in high need in Nigeria, because of the prevailing epileptic power supply in the country.

Nigeria has been going through energy crisis from the inception of the nation while valuable energy resources that could be used for energy production is being flared. In February 2007, the Power Holding Company of Nigeria (PHCN), the nation's only power (electricity) producer, through its Public Affairs unit informed the country that power generation dropped again by almost 60 per cent from over 3,000MW to below 1,500MW (AllAfrica.com, 2007), and in April 2008 the nation was informed again of another drop in power generation to 1,000MW (Pointer, 2008).

The argument by the multinationals that there is no local market for gas in Nigeria therefore does not hold water. But beyond the economic benefit; is the sheer inability of Nigerian government to manage the accruing environmental problems associated with exploration and development of these natural resources. Government seems to be keener on the revenue accruing to its purse rather than the general well being of the host community's environment.

Another aspect to the gas flaring reduction is that, in most oil producing countries, the nation takes the credit for any meaningful progress in actualizing the objective of flare reduction but the multinational are to blame for any flaw.

The involvement of a multinational, Shell in Malaysia, as to the development of natural gas has been tremendous, putting infrastructures in place ensuring flare elimination. After Sasol in South Africa, Shell is the first, and so far, the only other oil and gas company to build and operate a Gas-To-Liquid (GTL) plant producing commercial fuels, Shell GTL plant was opened in 1993 in Bintulu, Malaysia (Shell report, 2005/6, 2006/7). The plant produces clean diesel, kerosene and naphtha using the patented Shell Meddle Distillate Synthesis (SDMS)

process. Today, service station in Bangko, Thailand, sell synthetic diesel supplied by the Shell GTL plant. Being motivated by the Malaysia's investment, Shell is considering several other locations such as Argentina, Australia, Egypt, Indonesia, Iran, Malaysia, Qatar and Trinidad for its first large scale plant (Shell report, 2005/6).

Challenging targets are set for a number of environmental parameters. Many which are over and above the requirement of the Malaysian legislation and related international conventions and protocols (Shell report, 2006/7).

If Shell, the first and biggest, multinational oil company in Nigeria can do this in Malaysia; What then is preventing the multinationals from effectively implementing agenda that will bring gas flaring to an end?

This chapter reviewed related laws, policies and literature governing the oil and gas industry in Nigeria, with particular reference to the initiatives aimed at addressing gas flaring. It also reviewed the global frameworks and initiatives targeted towards gas flare reduction. In addition, the situations in a number of other oil producing countries were also reviewed. In the next chapter, the methodology and processes employed in data collection is this dissertation is presented.

CHAPTER THREE: EMPIRICAL INVESTIGATION

3.0 EMPIRICAL INVESTIGATION

In this chapter, the process employed in data collection for this dissertation is presented. Empirical investigation is used in gathering data from notable and practicing experts/professionals who have been associated or concerned with the issue of gas flaring in the Niger Delta region. The targeted professionals are those who are actively involved in field work directly or indirectly associated with oil production through the practice of their profession or chosen career so as to properly enumerate and examine the factors responsible for the constant shift of deadline to end gas flaring. This chapter presents how the data was collected in order to find answers to the stated research question and thereby fulfilling the purpose of this dissertation.

3.1 PURPOSE OF RESEARCH

The purpose of this work is to investigate, enumerate and examine the factors hindering the multinationals from complying with existing policies and deadline provided for ending gas flaring and also why the policies aimed at putting an end to gas flaring in the country are not being effectively implemented by government and enforced by her supervisory and monitoring agencies. Why has the constant shift in deadline to end gas flaring become a norm? This work also looks at the possibility of achieving the current deadline of December 31st, 2008.

Case study of other countries like Mexico, Norway and Algeria with high crude oil production but minimal flare records was also considered so as to benchmark the Nigeria situation.

3.2 CASE STUDY

This work also employed case study as an empirical investigation tool, examining countries, namely, Mexico, Norway and Algeria, with high oil and gas reservoir/production but with significant record of gas flare reduction as compared to the situation in Nigeria. The research

looked at what these countries have done over the years in gas flare reduction regulations in relation to Nigeria, in terms of:

- Harnessing gas resources.
- Methods of implementation of legislation.
- Political will to enforce legislation.
- How independent are environmental regulators in enforcing regulations.
- The gas flaring permitting system.

Case study is used to complement the interview process. The findings/inferences from the interviews were measured against the process in these other countries so as to establish a benchmark for the Nigerian situation.

3.3 PERSONAL INTERVIEW

The methods employed for data gathering in this research work were personal interviews aimed at finding out the understanding of the Niger Delta host communities' leaders as it relates to their perceived effect of gas flaring, notable recurrent problem associated with gas flaring and its effects on health, the environment and the local economy (farming and fishing) of the residents.

The interviewed persons have participated in several environmental impact assessments, with wealth of experience on oil production and gas flaring. They are also knowledgeable in the laws and regulations governing gas flaring in Nigeria. The legal experts have represented the host communities on issues ranging from general environmental degradation, crude oil spill and gas flaring either at a dialogue with the multinationals and environmental regulators or at the law court.

3.3.1 WHY PERSONAL INTERVIEW WAS USED

Personal interview is a way of getting in-depth and comprehensive information. It involves one person interviewing another for personal or detailed information. It is very expensive because of the one-on-one nature of the interview when compared to questionnaire method.

Typically, an interviewer asks questions from a written set of questions and records the answers verbatim. Sometimes, the questionnaire is simply a list of topics that the researcher wants to discuss with an industry expert. Personal interviews were used because the subjects are not likely to respond adequately to other survey methods. Interview is the best used research tool when the researcher needs to answer questions that are complex and/or contain emotions or experience from a specific subject, allowing respondent to answer questions in his/her own words and develop the answer as to get the full picture at hand (Anna Puljeva and Peter Widen, 2007).

In-depth interviews with experts have been used as an alternative to questionnaires (Gordon T. J., 1994). In this approach, the experts were first identified, invited to participate and appointment made with them. They are assured of their anonymity for those of them in the government circle and also representatives of the multinational oil companies. Appointments were at the convenience of the interviewees.

An advantage of the one-on-one interview is that it provides for flexibility, which is absent in questionnaires. For example, an interview provides the opportunity to probe the reasons further and to follow up on unexpected hints dropped by the interviewees. The interviewer is able to probe deeper into a respondent's thoughts and feelings and more effective in getting answers to non-personal questions that respondents are prone to skip or provide inadequate responses to the questionnaires.

Once the list of nominees was formed, each resource person/expert was contacted individually through personal visitation. However some of the initial contacts were made through telephone, but later appointment were confirmed through visits. A great deal of attention was given to the choice of participants; the interview questions were meticulously prepared and well structured to avoid ambiguity.

Limitations of interviews

i. Data analysis could be very complex because of the divergent views that may emerge.
ii. Results obtained from interviewee may not represent the opinion of an entire group.

3.4 DATA SOURCE

Data were collected from different renowned experts/professionals involved mainly in environmental and legal field of discipline, who are conversant with the relevant laws and

progress being made by government to put an end to gas flaring. The various stakeholders were also reached for their positions on gas flaring and efforts being made by government to bring the act to an end. The stakeholders are individuals, group or government agency who are directly involved or concerned with exploration and production of crude oil with the attendant effect of gas flaring. Well structured questions tailored towards achieving the stated research objectives, with flexibility to probe fresh ideas deeper for additional insights were used for gathering data from interviewee. The multi-stakeholder approach was used in order to draw a correlation between the views of the four stakeholders identified above so as to draw a comprehensive conclusion on the subject of flaring phase out and the inhibiting factors.

The stakeholders include:

- **The Department of Petroleum Resources (DPR)**: Persons interviewed are those who have grown from being organizational foot soldiers, referred to as field workers, representing the organization at the production platforms with the mandate of ensuring that standards are complied with, to representing the organization at higher level with government and the multinationals.
- **Community leaders from different parts of the Niger Delta**: Opinion leaders who have represented the area in several environmental impact assessment forums, stakeholders meetings between government, operators and host communities; and have been involved in the consistent calls for end to gas flaring in the region.
- **The multinational oil companies**: The target were those directly involved in decision making, who are mandated to represents the multinationals with government on issues relating to gas production and flaring.
- **Professionals**: The independent professionals interviewed are environmentalist representing non-governmental organizations in different environmental impact assessment forums, involved in assessing damage caused by oil spill and have presented position papers at stakeholders' conferences on impact of oil production on host communities. The legal practitioners have represented the host communities either at arbitration panel or at a constitutional court on issues ranging from environmental degradation, oil spillage, and negative effects of gas flaring and so on.

Two representatives were carefully chosen from each of the above stakeholders groups except for the multinationals with four representatives (two each from Shell and Chevron).

The concerned officials were informed five days earlier. The selection of representatives is based on their involvement and commitment to the issue of gas flaring and its consequences on the host communities. The representatives were chosen to be two from each source so as to get adequate representation of facts from each stakeholder group.

3.5 QUESTIONS

The questions for the interviews were designed specifically to bring out what the major players and stakeholders in the oil and gas sector are doing about the menace called gas flaring. The government on her part has been very vocal, but what practical steps are being taken to end gas flaring in the country? The questions are drawn from the following, hoping that the sincere answers provided by respondents will help to define the direction of gas flaring phase out in Nigeria.

- ✓ Plans put in place to end gas flaring by both government and the multinational oil companies
- ✓ Why government consistently shift date for gas flaring phase out.
- ✓ How the local market for domestic gas consumption can be developed
- ✓ Why government have not been able to implement gas flare out regulation
- ✓ The lapses in the regulations
- ✓ The condition(s) required for a written permission by the minister of petroleum resources to flare.

3.6 DATA ANALYSIS

The methods used for data analysis comprises of comparing inferences drawn from interviews with the provisions of the various gas flare reduction acts. The findings were compared with approaches used in the implementations of gas flare reduction regulations in other countries mentioned in the case studies.

3.6.1 COMPARATIVE ANALYSIS

The method employed for data analysis is comparative analysis, comparing the experts' views and opinions expressed in the interviews conducted with the provisions of the established regulations of government.

"Comparative method is the family of techniques employed in comparative political research" (Hague et al., 1998, p. 12).

The raw data collected from the interviews performed with the various experts, opinion leaders from the Niger Delta, representatives of DPR and the multinationals would be analyzed in relation to the provisions of "The Nigerian Petroleum Act" and "The Associated Gas Re-Injection Act" for consistency and differences along with the conditions spelt out for gas flaring in the acts.

This chapter present the method applied for gathering data. This empirical research applied personal interviews. The views of renowned experts/professionals, opinion leaders from the Niger Delta and that of DPR were obtained through personal interviews. The next chapter presents the data collected from field.

CHAPTER FOUR: INTERVIEW AND DATA PRESENTATION

4.0 INTRODUCTION

In this chapter, the result of the interviews done with environmental experts, legal practitioners and opinion leaders from the Niger Delta, the Department of Petroleum Resources and the multinational oil companies (Shell and Chevron) is presented.

Those interviewed includes:

1. **MR. AKINJIDE J.U.**: An environmentalist and founder of a grass root based non-governmental organization (NGO). He has worked with several communities in the Niger Delta on issues relating to the future of the environment. He has attended several seminars and training within and outside Nigeria on the challenges of the environment. He is a resource person and a notable speaker on issues relating to the future of the environment.

2. **MR. MONDAY AGBEYI**: A practicing environmentalist in the Niger Delta. He has worked with several non-governmental organizations (NGO), participated in several pollution control forums, crude oil spillage assessment, a regular participant and speaker at various environmental impact assessment (EIA) meetings.

3. **MR. ARIYO ROBINSON**: Legal adviser to some Niger Delta host communities, a resource person and a notable guest speaker on environmental degradation occasioned by oil exploration and the governing laws of the land. His fight against pollution was exemplified in the publishing of a football field-sized chemical dump of the Warri refinery as part of the environmental damage of Nigeria's petroleum industry. On gas flaring, Ariyo, who have been in the fore front of environmental struggle, revealed that several recent studies have shown that gas flaring is taking a heavy toll on the local population of the host communities.

4. **MR. TOWA JAMES**: A notable legal practitioner who has represented several host communities before arbitrators on issues ranging from environment, oil spill to gas flaring.
5. **SHELL 1**: A petroleum engineer from the gas monetization section of the organization.
6. **SHELL 2**: A senior personnel from the legal department.

7. **CHEVRON 1**: A senior personnel in the legal department
8. **CHEVRON 2**: A senior personnel in the gas department,
9. **DPR 1**: A senior personnel in the gas department. He was for many years a field officer enforcing standard and compliance to regulations.
10. **DPR 2**: A very senior personnel in the gas sector.
11. **MR TERRY YESUOH**: Opinion leader from Niger Delta and a one time community secretary
12. **MR A. C. OTIMEYIN**: Opinion leader from the Niger Delta and a one time public relations officer of an association, Delta oil producing communities association (DOPCA).

The representatives of DPR and the multinationals chose to remain anonymous. The views of the various interviewees to the questions are presented below.

4.1 ENVIRONMENTAL REGULATION AND ENFORCEMENT

In this section, answers are sought for questions relating to general environmental regulations and the approach, technique or method designed for its implementations.

QUESTION 1: WHAT IS ENVIRONMENTAL POLLUTION?

AKINJIDE: Environmental Pollution could be defined as the process of making air, water, soil, etc dangerously dirty and not suitable for people to use. It could also be described as the introduction of contaminants into an environment which could cause instability, disorder, harm or discomfort to the physical systems or living organisms therein. The contaminants which cause pollution are mostly chemical/toxic waste from production industries which defile the natural environment, disrupts ecosystem and contaminate groundwater making it unsafe for drinking. Industrial pollution has been a major challenge in Nigeria, because the respective authority has failed to recognized that strict environmental control go hand in hand with industrialization but rather has taken the part of leniency to the detriment of the populace especially people living within the area of the industry.

AGBEYI: Environmental pollution could be referred to as the contamination of air, water and/or land from humanly generated or man-made waste. This usually leads to outbreak of deadly diseases such as cholera, dysentery, etc and sometimes responsible for high death rate.

***QUESTION 2*: WHEN IS ENVIRONMENTAL PERMIT REQUIRED?**

AKINJIDE: The issuance of permit is a statutory provision in the various environmental regulations, permit are only issued under certain prevailing conditions. Permits are required for all environmentally sensitive activities and are granted or approved by the Federal Ministry of Environment (FME) if they meet the conditions as specified in the applicable regulation. In the oil industry, DPR issues all permits that regulate the environmental impact of their activities; and operators are required to obtain necessary permits.

TOWA: Permit is a statutory provision in every environmental regulation. There are some situations where permit is the only means of controlling impact on the environment, for instance the discharge of effluent water into the river or ocean.

AGBEYI: An environmental permit is a controlling tool covering a wide range of industrial waste or waste products from major production industries like cement companies, oil companies, asbestos producers, etc. These companies are required to obtain permit with the aim of limiting pollution on the environment.

ARIYO: Permitting is a regulatory tool used to control the activities of man on the environment. It is for the sole purpose of protecting human health and the environment from pollution.

***QUESTION 3*: WHAT ENFORCEMENT POWERS DO ENVIRONMENTAL REGULATORS HAVE IN CONNECTION WITH PERMIT VIOLATION?**

ARIYO: It is a systemic thing. The problem is not with the environmental regulators but with successive government and political leaders. The government has a major share in all the multinationals operating in Nigeria. An attempt by any environmental regulator to enforce regulation to its fullest against any of the multinational could lead to his dismissal or

untimely retirement from service, as government does not take lightly any interference with her source of income.

That apart, erring organizations could be sanctioned, prosecuted, made to pay fine or have its operating licence withdrawn. The process must be according to the provisions of the regulation otherwise it becomes an illegal act.

AGBEYI: Environmental regulators are constitutionally vested with a great deal of power in the event of violation of environmental permits and environmental laws in general. But the government owns the refineries and it's a major share holder in the multinationals. The environmental regulators are employed and paid by government. This is a situation which sees them doing the biding of government contrary to the provisions of the regulation. The regulators need to be independent and self-financed if they must be objective in enforcing regulations.

TOWA: The regulations gave environmental regulators a clear power of enforcement on issues relating to pollution. The mechanisms for gathering evidence should be more effective. The local residents of the area of incident should be involved in detection of pollution and reporting of offenders. And regulators should assess the appropriate compensation to the locals (people). An officer of DPR, a regulatory agency, has power to seal up premises, seize offending substances, impose fines and require the cleanup of environmental damage. Violators risk fines and in certain cases, a shutdown of the polluting/offending facility until there is compliance

4.2 GAS FLARING REGULATION AND PERMIT

Answers are sought for specific questions relating to gas flaring regulation and the process of obtaining permit to flare natural gas.

QUESTION 4: IS THERE ANY LAW IN NIGERIA PROHIBITING GAS FLARING?

ARIYO: Yes, there is a law prohibiting gas flaring but it has been amended to provide for continuous flaring with an option of fine under certain conditions as provided by the regulation.

TOWA: Yes and no. It is yes because there is a judgment declaring gas flaring as an illegal act contrary to the provisions of the constitution of the federal republic of Nigeria and the provisions of the associated gas re-injection act. It is no because the law has been amended to provide for continuous flaring after the payment of the stipulated fine.

AKINJIDE: Yes, gas flaring has been outlawed since 1st January, 1984.

AGBEYI M: Yes, but unfortunately, the regulation is like a smoke screen and the government is not serious about it. Probably, because of the importance of oil money to government budget, the sector is being "treated with kid gloves".

SHELL 1: Yes, there is a law regulating gas flaring which is being fully enforced, erring multinationals are paying the specified penalty.

SHELL 2: No, although there is an operating regulation which provides stringent measure for gas flaring including fine per quantity of gas flared.

CHEVRON 1: I will say there is a regulation on gas flaring providing for flaring under certain conditions and the payment of appropriate fine for amount of gas flared.

CHEVRON 2: I would not say prohibition but rather a regulation specifying certain condition for flaring with a fine as penalty.

DPR 1: Yes, there is a law regulating gas flaring which is being enforced as per the provisions of the regulation.

DPR 2: Yes, there is a law regulating gas flaring which makes provision for flaring under certain conditions. The condition for flaring includes inadequate facility to utilize gas produced and lack of a developed local market for increase consumption of gas by the local industries.

***QUESTION 5*: WHY THEN ARE THE MULTINATIONALS STILL FLARING GAS IN NIGERIA**

ARIYO: Although the law, "Association Gas Re-Injection Act 1979", came into effect in January 1st, 1984, in that same year a waver was provided by way of amendment; the shifting of date in an established law can only be done by the amendment of the relevant sections of

the enabling law. In 1984 when the regulation was to come into effect, it was relaxed to provide for continued flaring under permits issued by the Minister of Petroleum Resources on the payment of fine for the quantity of gas flared.

TOWA: The reason is obvious; government finds it very difficult to deal with the oil industry because it is the "goose that lays the golden egg". It accounts for more than eighty percent of the budget funding. Consequently, this accounts for why the law was amended to provide for continued gas flaring under permission.

AGBEYI: It is a very disgusting situation. The law prohibiting gas flaring has taken effect since 1st January 1984. This has made the continuous flaring of associated gas a flagrant disobedience to the rule of law and the laws of the federal republic of Nigeria which guarantee poison and pollution free air to her citizens. The issue of the implementation of this law is clear of all ambiguity except the lack of political will by successive government to implement it. They engage in monetizing gas flaring rather than enforcing its prohibition. The government collects peanut as fine to the detriment of the health and life of the citizenry and wasting away of valuable resources. The multinational oil companies have been paying royalty to the federal government for the amount of gas flared in their respective fields since 1st January 1984 when the regulation took effect.

***QUESTION 6*: WHAT ARE THE NECESSARY CONDITIONS FOR THE ISSUANCE OF A FLARE PERMIT BY THE MINISTER OF PETROLEUM RESOURCES?**

TOWA: The provision in the regulation specified the condition for flaring as a written permit (certificate) signed by the Minister of Petroleum Resources. However, this is done if he is satisfied that re-injection or utilization in any form is not feasible. Nigeria has not had a substantive Minister of Petroleum Resources for over ten years now. The office of the Minister of Petroleum Resources is in the Presidency and is attached to the office of the President. The President therefore, is not only a commander-in-chief of the Federal Republic of Nigeria but also the substantive Minister of Petroleum Resources. The President performs the oversight function of the office of the Minister of Petroleum Resources. The necessary condition for flaring is hinged on the provisions of the EIA decree. The EIA Decree of 1992 specified that EIA is mandatory and forms an integral part of the planning process for any development in any field of the oil and gas industry. Permits to flare are granted in the

framework of EIA's procedures overseen by federal ministry of environment (a function of the defunct FEPA) and the DPR. DPR now grants flaring permit to prospective applicants if all the necessary conditions specified in the regulation and that of the EIA act are complied with, but it must be with the consent of the Minister.

ARIYO: Our laws are copied from the developed world but a major factor affecting implementation is cultural differences. While in the developed world law enforcement agents are allowed free hand to operate, in Nigeria, the government interferes with the implementation of law especially if it is affected by the law. The conditions for issuance of flare permit are clearly stated in association gas re-injection (Continued flaring of gas) regulation. This law was promulgated in 1984 to amend the existing regulation, permitting gas flaring in extreme cases where re-injection, utilization or marketing is not possible. The association gas re-injection act of 1979 stipulates an absolute end to gas flaring by January 1st 1984. The regulation was amended again in 2004 with a new clause requiring and obligating all oil producing companies in Nigeria to submit their detailed plans for gas utilization. Flare permit are granted in line with EIA guidelines provided by the EIA act overseen by the Federal Ministry of Environment and the Department of Petroleum Resources (DPR). The EIA guideline provide among others, the necessary measures to preserve air quality and the minimization of venting during operation.

AKINJIDE: The necessary condition for flare permit is where re-injection or utilization is not feasible. Re-injection and utilization are conditions that are achievable but the multinationals in Nigeria are foot-dragging on purchasing the appropriate technology for gas development in the country. This situation is encouraged by the government by constantly shifting the goal post in favour of the multinationals instead of eliminating gas flaring and addressing the attendant environmental issues. The erratic power supply can be improved with independent power from the multinational, using gas to run gas turbine for electricity generation.

AGBEYI: The major conditions are when utilization and re-injection are not feasible. More than this is the lack of political will by the government to address the issue even if it means shutting down erring platform.

QUESTION 7: **ARE THERE LAPSES IN THE PROVISIONS OF THE ASSOCIATION GAS RE-INJECTION ACT?**

ARIYO: The only lapse here is the history and cultural difference between the Western world and Nigeria. Our laws are copied from the Western world, where there is strict adherence to the rule of law and separation of power. It is actually very difficult to apply the laws in a country where government still interferes with its application. Another thing is the lack of political will by successive government to implement the regulation to the letter. This could be seen as the protection of government shares in the multinationals. Inconsistency however, on the part of government has been a major worry. Over eighty percent of budget funding comes from the oil sector. This should not be a reason why laws made in the interest of the nation should always suffer amendment. The reasons given by the multinationals are flimsy as it is not applicable in other countries where they operate. Gas flaring contributes to global warming and the signs of global warming such as flooding, drought, and heat waves are every where including Nigeria. So what hope do we have as a people?

TOWA: I do not see any lapse in the regulation, what successive government has done in shifting deadline is normal and governments do it all over the world. The only thing I see here is the lack of political will by the government and over protective nature of government over the multinational oil companies. The multinationals on the other hand are wasting valuable resources by flaring natural gas in Nigeria. The global demand for energy is increasing daily yet the only choice we have as a nation is to muddle through with the wastage of our God given natural resources.

AGBEYI: I don't think there are lapses in the association gas re-injection act, though, I am not a lawyer. Government needs to be more committed to its implementation. Constantly shifting the deadline for its compliance in favour of complains from the multinationals is a worrisome development that will not encourage the development of the gas sector. A situation portraying the nation as a people who are either not serious or do not know what they want. We could also look at this as the lack of political will to take decisive action by the successive administration.

DPR 1: No lapse in the regulation. However, lack of funding by joint venture partners has been the major constraint in the execution of gas development infrastructure. Unless there is

development of gas infrastructure it might be difficult to end gas flaring. Another reason is lack of local market for gas consumption and the cost of gas infrastructural development.

DPR 2: The regulation is okay, but government must be committed to gas flaring phase out, if not the regulation is just another document. Permits are issued by DPR to prospective applicants.

SHELL 1: There are regulations on gas flaring phase out but it did not proscribe flaring as provisions are made for flare under certain conditions.

SHELL 2: The only lapse is government not matching words with action. Joint venture projects are suffering because government is not living up to expectation. Government should contribute its own share of funding to speed up the development of gas infrastructural projects.

CHEVRON 1: Yes, there is a regulation for zero flare by 31st December, 2008; it will take effect from this date.
CHEVRON 2: Yes, there is a regulation which provides for flaring under certain conditions.

QUESTION 8: WHAT IS RESPONSIBLE FOR THE NON-IMPLEMENTATION OF THE ASSOCIATED GAS RE-INJECTION ACT OF 1979?

DPR 1: The association gas re-injection act of 1979 is being implemented. It provides for gas flaring under the conditions that a permit (a written certificate) signed by the minister of petroleum is obtained. There are four necessary conditions required for granting permit to flare associated gas in Nigeria, they are:

1. That market does not exist for the volume of associated gas produced.
2. The volume of associated gas produced exceeds operational requirement.
3. A well developed EIA report according to FEPA guidelines for exploration and production, stating the required measures to preserve air quality.
4. Atmospheric emissions must be clearly addressed in the prepared EIA report for the overall project plan, as prescribed by the Effluent Limitation Regulations 1991.

He also noted that the licensee or leaser shall adopt all practicable precautions including the provision of up-to-date equipment to prevent the pollution of inland waters, rivers, water

courses, etc. Where any such pollution occurs, prompt and necessary action shall be taken to control and end it, if possible. The equipment shall be adequately maintained to avoid failure while in use during operations that can lead to pollution, thus keeping the environment save.

Permits, according to him, are not transferable as they are usually specific for a particular job.

DPR 2: The law is being fully implemented to the letter and offenders are being punished accordingly. The necessary consent for flaring as stipulated by the regulation is being obtained and complied with by the multinationals. The reason there is still flare is because the terminal date for flare out is December 31st, 2008. Though there is no assurance that zero flare will be attained by the end of December 2008, but there shall be stiffer penalty for flaring.

The natural gas policy is aimed at promoting a public-private sector partnership for the orderly and rapid commercialization of Nigeria's natural gas resources. This is for the development and commercialization of domestic economy, recovering maximum revenue possible from gas utilization. A gas master plan has been developed to provide a framework for maximizing gas value and the multiplier effect of gas in the domestic economy and optimizing high value share in the export market.

Government focus is in attainment of zero flare in order to reduce pollution and monetize its gas reserve; this has led to a lot of gas utilization projects being undertaken by NNPC and her joint venture partners.

Major gas utilization projects operational includes;

1. **The Nigeria Liquefied Natural Gas (NLNG).** This is a joint venture project between the NNPC (49%) and Shell/Agip/TotalFinalElf (61%). The first six train facility is responsible for the production of Liquefied Natural Gas (LNG) and Liquefied Petroleum Gas (LPG) from associated and non-associated gas. NLNG has a total production capacity of 22 MTPA of NLG and 4 MTPA of LPG as at December 2007. This is the first among the several LNG and LPG planned for the country.

2. **Gas Plants:** The completion of several gas plants by the multinational oil companies for converting associated gas to liquefy petroleum gas.

3. **Association Gas Gathering (AGG) Plants:** Completion of several Association Gas Gathering (AGG) compression plants by the multinationals for the recovery of associated gas from the "Onshore/offshore" production field and sending product through pipeline to gas plant.

4. Gas Plants receive compressed gas from the AGG and convert it to Liquefy Petroleum Gas (LPG).

5. Gas pipeline supplying gas to gas turbine of Power Holding Company of Nigeria (PHCN) at Egbin, for electricity generation

6. Completion of pipeline supplying gas to the West Africa sub-region for electricity generation in Togo, Benin and Ghana.

7. The government on her part has initiated the integrated power project (IPP), using gas to run turbine generators for electricity generation. Some of the turbines have been brought into Nigeria awaiting installation.

Government is presently focused on the development of local market for increased consumption of natural gas locally, for both domestic and industrial use. In addition, it is also working to diversify from an oil focussed industry to integrated oil and gas industry and also facilitate the growth of the power sector with the establishment of independent power project using gas turbine to generate electricity for national grid and the revival of dormant gas utilization centres.

TOWA: Investment in natural or associated gas is not a lucrative business opportunity where hundred percent return is guaranteed. The oil and gas producing multinational companies do not want to invest on the appropriate technology for gas production. This could be attributed to limited market for gas, high risk associated with gas production infrastructure investment. The use of liquefied natural gas is limited so investor has to create end market. The lack of encouragement and poor funding of joint venture projects by the government is also a major factor. Government must be very decisive if she wants to end gas flaring and reduce environmental problems in the Niger Delta. It is a fact that over ninety percent of budget funding comes from the oil sector but the price for flaring is far lower than the financial risk involved with the recovery investment options.

4.3 POSITION OF MULTINATIONAL OIL COMPANIES ON GAS FLARING

The representatives of the multinationals were asked specific questions to know their position as regards gas flaring and the preparations being made to stop the act.

4.3.1 SHELL

Shell Petroleum Development Company of Nigeria (SPDC) is the biggest multinational oil company operating in Nigeria. Shell produces more than half of Nigeria's crude oil production.

***QUESTION 9*: HOW COMMITTED IS SHELL TO THE GAS FLARING PHASE OUT PLAN?**

SHELL 1: Shell has been very committed to the attainment of gas flare reduction in Nigeria. A number of projects have been executed in this regards which has lead to a reasonable reduction in the volume of gas flared by over twenty percent. This project is a huge challenge and responsibility which requires an enormous undertaking for the company to gather and bring to the market gas produced from over a thousand wells.

A major part of Shell Nigeria's flares-down program is the Nigeria Liquefied Natural gas (NLNG) project, which exports gas to overseas markets. NLNG is a joint venture project between the NNPC and Shell/Agip/TotaFinalElf. The expansion in the number of trains to six has increased the total production capacity to 22 MTPA of LNG and 4 MTPA of LPG.

Other key projects being undertaken by Shell that will help in attaining the zero flare of Nigeria's gas includes a new LNG venture at Olokola, and several independent power projects in various parts of the Niger Delta in Nigeria.

SHELL 2: The delay in achieving zero flare is due to poor funding of joint venture projects, and reluctance on the part of government in meeting her commitment towards the execution of projects aimed at gas flaring reduction. The issue of funding has been a recurrent decimal and the situation is appalling. A sleeping joint venture partner is only interested in profit sharing. She is neither interested in the day to day running of the joint venture business nor does she want to be involved in the execution of laudable projects that will promote the

business. Another reason is the incessant disturbance in the Niger Delta, a situation that could be described as the breakdown of law and order. Some of the projects undertaken by Shell to reduce gas flaring include NLNG, AGGs and gas plants.

Visit our site for all you need to know about Shell's initiatives to end gas.

SPDC remains committed to its flares-down program and plans to accelerate all gas gathering projects as soon as the security situation improves, while exploring innovative solutions for areas not currently covered by associated gas projects. This will include the installation of micro-turbines for integrated power projects to generate electricity for host communities (See Shell publication, 2008)

Shell Petroleum Development Company (SPDC) has achieved a 30 percent reduction in flaring across it's over a thousand wells.

4.3.2 CHEVRON

Chevron Nigeria Limited (CNL) an American owned multinational, believed to be the third largest multinational oil company operating in the Niger Delta, has been in the business of oil production for over thirty years in the region.

***QUESTION 10*: WHAT EFFORT IS CHEVRON MAKING TO COMPLY WITH THE ASSOCIATED GAS RE-INJECTION ACT OF 1979?**

CHEVRON 1: Chevron Nigeria Limited (CNL) is dedicated, steadfast and committed to achieving a zero flare as specified in the act. We are eliminating routine flaring of associated gas not only for the sake of the environment but also from resource point of view (conservation and effective utilization of Nigeria's resources).

Chevron is truly complying with every clause and conditions specified in the act. In some cases where Chevron had fallen short of any of the specified requirement, the full weight of the law is brought down on Chevron.

Chevron's effort in gas flare reduction is exemplified in the execution of several projects including gas gathering compression plant, gas plants 1,2 and 3, West Africa Gas Pipeline

(WAGP) project, Escravos gas to liquid plant and many more are in the construction stages some nearing completion. Go through our publication for confirmation.

QUESTION 11: WHAT IS CHEVRON FLARE REDUCTION PLAN?

CHEVRON 2: Chevron adopted a phase approach to the gas flaring phase out policy. Major milestone has been achieved yet we are not relenting on our success but forging ahead. The CNL flare reduction plan includes:

- Identification of various gas market opportunities, evaluate and select one for development.
- Gather gas in the expected demand volume of the identified market.
- Ensure the development of appropriate gas production infrastructures.
- Sell gas in both local and sub-regional market
- Extracted LPG are sold on the world market
- Use latest technology to convert gas to liquids (GTL).

Chevron has three major gas plants; two are operational while the third is under construction. It is expected to start production in 2009. When completed, the production capacity of both LNG and LPG would increase from present 285 million to 680 million cubic feet per day and 12,000 to 47,000 barrel per day respectively.

Chevron is also developing her gas-to-liquid (GLT) plant designed to process about 320 million standard cubic feet per day of natural gas converting it to 34,000 barrel per day. The construction work which commenced in 2005 is expected to be completed and operational in the first quarter of 2010.

QUESTION 12: WHAT IS WAGP?

CHEVRON 2: The West Africa Gas Pipeline (**WAGP**) is a 687kilomitres (421 miles) long pipeline from the gas reserve in Escravos region of the Niger-Delta area to Benin, Togo and Ghana. It is the first regional natural gas transmission system in sub-Saharan Africa. Chevron holds 36.7% share in the West Africa Gas Pipeline Company Limited (WAGPCo) in joint ventures with NNPC (25%), Shell (18%), Volta River Authority of Ghana (16.3%), SoToGaz of Togo (2%) and SoBeGaz of Benin (2%) (See Chevron publication, 2008)

The WAGP project was commission on 13th May, 2008 and it is expected to commence production any moment from now. The transported gas is expected to be used for electricity generation in Benin, Togo and Ghana and for other industrial uses.

***QUESTION 13*: WHAT ARE THE NECESSARY CONDITIONS THAT COULD FACILITATE EASY COMPLIANCE TO GAS FLARE OUT DEADLINE?**

AKINJIDE: The attainment and sustenance of peace in the Niger Delta is paramount to the construction and development of gas production facilities in the country.

CHEVRON 1: Government should be committed to joint venture project funding and improved security situation in the Niger Delta.

CHEVRON 2: The necessary conditions include:

1. Improvement on government tendering and approval process
2. Commitment to joint venture funding by government
3. Removal of complexity in legal and commercial agreements.
4. The local content directive factor on the cost, timing and schedule plan for flare elimination.
5. Improved synergy between flare elimination and other gas development project.

SHELL 1: Government should improve security situation in the Niger Delta and be committed to joint venture funding of gas flare reduction projects.

SHELL 2: The major issues are government funding and the poor security situation in the Niger Delta region.

AGBEYI: Political will by the government in taking decisive actions that ensures full implementation and also responsiveness on her part to the joint venture projects funding.

TOWA: A little more seriousness from government, shutting down a few fields for lack of compliance would yield the desired result.

DPR 1: A little commitment on the part of government in meeting her own part of joint ventures funding, effective development of the local market and taking care of the security

situation in the Niger Delta. The multinationals should take advantage of the tax incentive given for the development of gas infrastructure. The introduction of tax reduction incentives and waivers on import duty of gas production facilities are to encourage the multinational companies to speed up and stop gas flaring.

4.4 INCREASE IN COMMUNITY AGITATIONS AND THE WAY FORWARD.

Gas flaring has become a major issue in the Niger Delta host communities. This section is designed to know the root cause of the increased agitations and the way forward.

QUESTION 14: WHY ARE THERE INCREASED AGITATIONS AGAINST GAS FLARING IN THE NIGER DELTA?

YESUOH: There are so many reasons for the agitations against the illegal act called gas flaring. The impact is great on the host communities. We experience all manner of respiratory diseases, acid rain which corrode roofing sheets and is responsible for frequent replacement of roofing sheets in the area.

Permit to flare are granted on the bases of recommendation from an EIA report. For over five years we have not been invited for any EIA meeting, probably the government through DPR is vetoing it. EIA meetings have not been genuine, because DPR will secretly invite poor illiterate people from the community, enticing them with money to attend. EIA is not important. We want an end to gas flaring.

Lastly, both the government and the multinational oil companies are not doing anything to ameliorate the life threatening effect of flaring. There are very few hospitals in the area and sometimes you have to ferry for over two hours to get to an empty hospital with no medical doctor and no medicines. We are aware that the government has monetized the flaring. They are at Abuja channelling the money into their pockets while we are here suffering the impact. Why can't they use the money to cushion the effect?

OTI: We are not benefiting anything from gas flaring; rather it is a curse to our land. Agricultural yield from the land is zero as a result of heat from the flare that has cooked the land. Fishing, which is another major occupation, has been affected greatly by flaring. We have been agitating for so long. Even with a court judgement in our favour very little has

been done to end the menace. We have been drawing the attention of government to the fact that gas flaring is illegal and this unjustifiable act should be brought to an end.

***QUESTION 15*: HOW CAN WE AS A NATION HARNESS GAS RESOURCE?**

ARIYO: This is in the hand of decision makers. However, we can contribute our own part by suggesting the way forward. Let government hands-off her shares in the multinationals and play her role of ensuring implementation of laws and regulations. We all know that gas can be used to power turbine for electricity generation. This could be used to solve the problem of erratic power in the country. Gas could be piped to major manufacturing companies like Delta Steel Company (DSC), Ajaokuta Steel company etc, to run their private turbines for power generation. Investors could be sought for the power sector using gas to generate power for the national grid. There are so many investors who will want to show interest if only the sector is independent of government.

AGBEYI: Government will be more focused if it sells its shares in the multinational and allow environmental regulators free hands to do their job. If private investors are given free hands to invest there will be a rapid development in the gas sector. Gas can be used for so many things including the provision of electricity to solve the present power imbroglio in the country. Gas can be refined or compressed for sale to the outside world as liquefied petroleum gas (LPG) and liquefied natural gas (LNG).

TOWA: Government should be an umpire rather than being a partner in business with multinationals. There should be a more realistic and holistic gas utilization policy.

AKINJIDE: The only way forward I see here is for government to remove its hands from the business of the multinationals.

DPR1: Government should sell her shares and create an enabling environment for genuine investors. I am sure once this is done, we will see the end to gas flaring sooner than envisaged.

This chapter presented the results of the interviews conducted with the various stake holders and seasoned experts. Their views as regards the appalling situation of gas flaring and the governing regulation in Nigeria were also highlighted. In the next chapter, the result of these

interviews is analyzed. The findings are compared with the situations in Mexico, Norway and Algeria so as to properly understand the situation in Nigeria.

CHAPTER FIVE: RESULT OF FINDINGS AND INTERPRETATION

5.0 INTRODUCTION

In this chapter, the result of the interviews done is interpreted and compared with what is obtainable in Norway, Mexico and Algeria so as to benchmark the situation in Nigeria.

5.1 FINDINGS AND INTERPRETATIONS

Gas flaring is a menace that has brought complex multiple negative effects to the prestigious and highly esteemed country, Nigeria. Whatever the reason for flaring natural gas, it is wastage of God's given, precious and valuable resources needed for economic development. Several attempts to bring the menace to an end have been futile.

The interview analysis is done under the following sections:

5.1.1 THE PROVISIONS OF THE REGULATION

It was in the realization of the negative consequences of gas flaring, on the lives of the people in the Niger Delta, that government in its wisdom promulgated "The Petroleum Act, 1969" and "The Petroleum (Drilling and Production) regulations 1969". In 1979, the associated gas re-injection act was promulgated. The petroleum act does not contain provisions for gas utilization. The petroleum drilling and production regulation was explicit on designing program that will end gas flaring. It states in section 42, that not more than five years after the commencement of production, the prospective company must submit to the minister. Any feasibility study, program or proposal for the utilization of natural gas produced, whether associated or not, discovered in the relevant area must be submitted. There were no provisions in the regulation for sanction to erring multinationals. Although, it was an interesting provision, there was no information indicating that the above regulation was ever implemented by government or complied with by the multinationals. The associated gas re-injection act of 1979 specified, in section 14 a, and b, that gas flaring should stop on 1st January, 1984. Instead of enforcing this regulation, the government took the soft part by amending this regulation to provide for continuous flaring to protect its interest.

5.1.2 HARNESSING GAS RESOURCES

The financial cost of gas infrastructural development is huge and the prospect of recovering the money within a short time after investment is very slim. The situation has led to the preference for flaring rather than investing to harness the non-renewable, gas energy resources. If government is serious about flare out, the penalty for flaring must be increased in line with current reality and inflationary trend applicable in the country. The current penalty for flaring in the country is just too small and shameful to serve as deterrent. A fine or penalty should not always be money. It could come in a way of sanctions up to and including shutting down any platform that can not comply with the provisions of the regulation to end gas flaring.

Although, there are major ongoing infrastructural developmental projects for gas production undertaken by the multinationals, many of them are still at their design stage; some are at advance stage while others are at the proposal stage. The rate of development of gas infrastructure in Nigeria is slow when compared to what Shell did in Malaysia. It took Shell less than six years to complete and start-up the project. The proposed liquefied natural gas plant (LNG) in Brass submitted by Shell since early 90s has remained a proposal till date.

The integrated power project (IPP) is for the purpose of using gas to run turbine generators for electricity generation in order to increase the power generation for the national grid. However, government's award of contracts and the dishing out of large sum of money as mobilization fee could be classified as a failed project. There is nothing on ground to show for it. The turbines have been imported and kept in several designated River-Ports for over two years.

The researcher visited one of the River-Ports, Koko Port in Delta State, to see things for himself, see figure 4 and 5. The reason given by one of the contractor's representative met in Koko was that government has not paid contractors for over two years now, and until they are paid the situation will remain unchanged. It is a disturbing situation because the turbines could stay and rot away at the Ports and the accompanying guarantee and warranty will expire. This situation may warrant the contractor to demand for more money for servicing and maintenance of these turbines thereafter.

The situation has increased the call on government to give investors free hands to bring in turbines, buy gas to run it from the multinational, sell power to interesting members of the public and pay tax to government.

Figure 4: *A set of gas turbine covered with trampoline at the Koko Port.*

(Source: Photograph taken by the reseacher on 29th April, 2008)

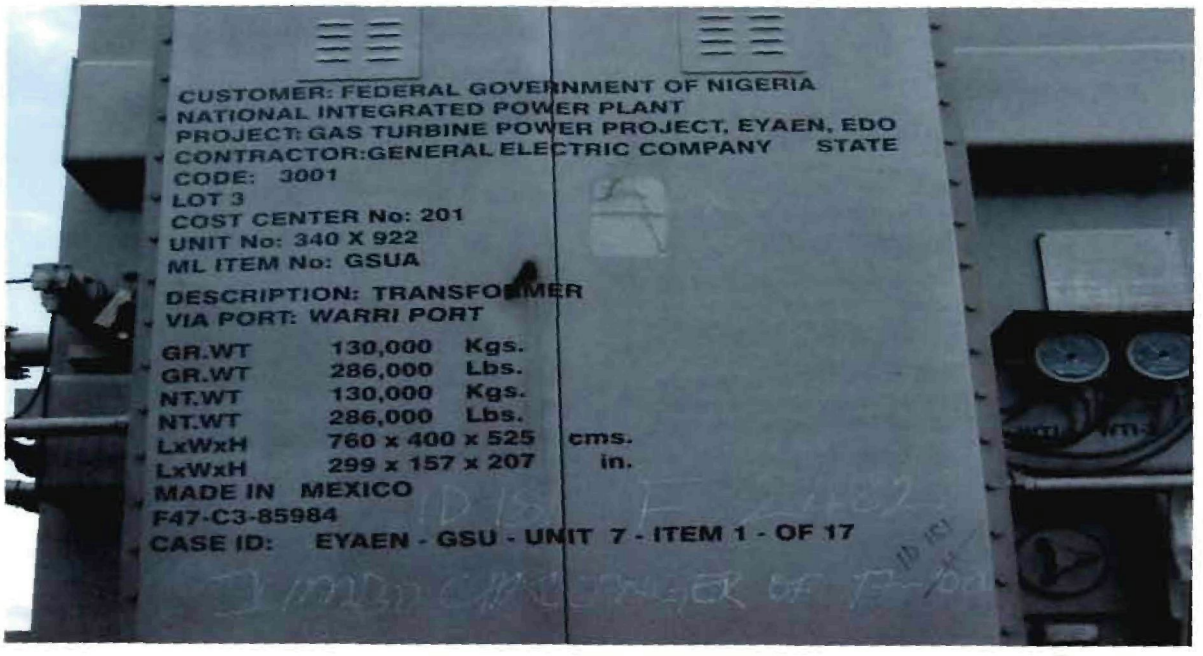

Figure 5: *An end view of one of the accompanying transformers at Koko Port.*

(Source: Photograph taken by the researcher on 29th April, 2008)

5.1.3 IMPLEMENTATION OF LEGISLATIONS

The complaint by the multinational of poor funding by government could be described as a factor that has affected the implementation of the regulation. It also strengthens the sayings that he that comes to equity must come with clean hands and you cannot be a judge in your own case.

Government owns major shares in the multinational oil business in some cases as much as 60% and yet will not want to pay its own share of project funding. This situation that has led to calls on government to sell her shares. If government is not involved in the oil business in any form but commits business completely to private hands, there might be an increase in political will to implement regulation and independent of judgment.

One other factor is budget funding. Over eighty percent of budget funding comes from oil money. The over dependant of government on oil money for budgeting expenditures is not good enough for a dynamic economy. It should be diversified to encourage other sectors like the agricultural sector, manufacturing sector, etc. If government continues to depend solely on the oil sector for its budget funding, it would not want to take any drastic measure that will affect its source of income.

5.1.4 INDEPENDENCE OF ENVIRONMENTAL REGULATORS

Regulatory agencies are set up and managed by government. Regulators are employed and paid by government to do her biddings. Government has good intention in setting out bodies to regulate environmental impact but since government is a stakeholder in this business, some level of independence is required by the regulators for objective and unbiased implementation of regulations. It therefore goes to show that Regulatory bodies being funded by government is in a way detrimental to strict adherent to the existing laws and regulation. The regulators are limited by government's interest.

5.1.5 THE GAS FLARING PERMITTING SYSTEM

The process of obtaining permit is by conducting an environmental impact assessment (EIA). In addition, by the regulation, an official report is submitted to the federal ministry of environment. Based on the recommendation of the EIA report, permit is granted and signed by the minister of petroleum. The locals from the host communities are invited to the EIA and are paid a seating allowance for attending. The illiterate, poor local is happy for the money he receives; most times the enlightened ones are not invited, (as claimed by Mr Yesuoh). But for over five years now, nobody from the host communities has been invited for any EIA meeting on gas flaring as the locals are protesting against the act.

The idea of issuing permit based on fine that the multinational will pay for flaring is absurd. The money cannot commensurate with the damage on the environment and lives of the locals. The amount paid by the multinational as penalty for flaring is too meager and does not serve the purpose of a deterrent. In contrast to the huge cost of gas development, the multinational will rather prefer to pay the fine than invest in gas production facilities. Which means it is cheaper to flare than to harness gas or develop gas production facilities, a situation requiring change. The conditions for obtaining permit are based on environmental impact assessment done for the execution of the project with government interest taken into consideration.

Though the process of gas utilization seems complex and resource intensive, this should have come with time as in other oil producing countries like Norway, Algeria, etc. The government must not be concerned with only resources accruing from the oil sector but with the preservation of the environment and provision of better life for the people of the region.

5.1.6 POLITICAL WILL

Under the provisions of the petroleum act, the minister of petroleum may revoke a lease or license or order the suspension of operations under a lease or license granted. This suspension could remain until he is satisfied that necessary arrangements have been made to prevent danger to life or/and property. The government has been very silent on this section of the regulation while oil producing host communities have been suffering grave danger to life and properties as a result of oil exploration activity. Government's action in ignoring the

negative effect on the host communities rather than invoke the relevant sections of the regulation is propelled by the need to protect the petrol-dollars that would have been loss to operations interruption.

Government lacks the political will to enforce regulations because it is involved in the business of the multinational.

5.2 COMPARISON OF THE FLARING SITUATION IN NIGERIA TO THAT OF NORWAY, MEXICO AND ALGERIA

From the six themes discussed in section 5.1 above, the Nigeria situation needs to be juxtaposed with some of the countries mentioned in the case study in order to draw a baseline. This is highlighted in table 1 below.

Table 1: Comparison of the Nigeria, Norway, Mexico and Algeria implementation of gas flaring regulations.

ITEM	NORWAY	MEXICO	ALGERIA	NIGERIA
Harnessing gas resources	Fully harnessed and used for electricity production and re-injection to boost production.	No records of utilization but witnessed significant flare reduction	Gas is treated as a resource and harnessed for the production of LNG for export.	Slow pace of gas infrastructural development, re-injection not practice, poor funding from government.
Implementation of legislation	Strict implementation of legislation, flaring of any kind must be approved with respect to time	No restriction or penalty of any kind for flaring.	No enough information on legislation, but government encouraged and developed the local market	The legislation is very flexible and such had witnessed several amendments.

	of flare and the quantity to be flared.			
Independence of environmental regulators.	Though part of the ministry of petroleum and energy, but are given free hands to implement regulations and prosecute offender.	No information on regulators.	No information on regulators.	They do the bidding of government, a stake holder in the oil and gas business.
Political Will	The government is very strict and decisive about its action. No compromise on regulations as a matter of policy	No enough information on the actions of government in the oil sector.	Strong political will in policy implementations	Lacks political will on policy implementation but rather resort to amending regulations.
The permitting System	A very strict permitting procedure which does not allow flaring except for safety reasons.	Does not require permit to flare gas.	The permitting system is also strict, utilization is encouraged to flaring.	The permitting system is strict on paper but weak in implementation due to lack of political will by the government.

The table 1 above shows that the major factor that accounts for the success of gas flare reduction in the Norway and Algeria is proper harnessing of gas resources. If natural gas is not treated as a resource there will not be a need to commit resources to its development.

Therefore, until the realization that natural gas is an essential resource with very high economic value, flaring will not stop in Nigeria.

Even without a strict regulation, there is an impressive record of gas flare reduction in Mexico. However, Nigeria with a strict regulation has achieved very little in gas flare reduction because of poor funding from the government. Norway, like Nigeria has a very strict law prohibiting flaring. But unlike Nigeria, the law treats gas flaring as an economic sabotage not only as an environmental nuisance.

Environmental regulators must have some level of autonomy to do their job effectively as in the case of Norway. The Nigeria situation shows that environmental regulators are being monitored and conditioned by the government. It is only an uninterrupted liberty for the regulators that will yield the desired result of gas flare reduction in Nigeria.

The involvement of government in the business of the multinationals leads to compromise in implementation of regulation, resulting in lack of political will. The improvement made in Norway and Algeria is because of the fact that governments do not compromise their position on policies. For a remarkable achievement to be made in Nigeria on gas flaring reduction, political will of successive administration must be addressed.

A strict permitting system is good if only the political will is there. It is not enough to make strict policies. The Nigeria government must remove its hands from the business of the multinationals for the policies to succeed. In Mexico, permit is not required to flare but yet gas is treated as a resource not a waste.

Norway, a clear leader in the gas flare reduction program, has been involved in several gas flare reduction seminal in Nigeria in association with the World Bank. In the past two decades, the success of minimizing flare has been a major achievement of the Norwegian government in dialoguing and partnering oil companies regarding research and development in the field of gas utilization. (www.worldbank.org/html/fpd/ggfrforum06/)

This chapter presented the findings and compared the situation with what is obtainable in some other countries where there is high production but minimal flare. The following chapter presents the conclusions and recommendations for a way forward.

6.0 CHAPTER SIX: CONCLUSION AND RECOMMENDATION

In the previous chapter the findings of the interviews and case studies were analyzed and compared to get a clearer picture of the gas flaring situation in Nigeria. In this chapter the result of the dissertation is summarized into a set of conclusions followed by recommendations.

6.1 CONCLUSIONS

The aim of this dissertation was to establish the reason(s) why gas flaring regulations in Nigeria are not being implemented. In order to achieve this empirical investigations as well as case studies' analysis were successfully completed.

After critical analysis of the findings of this dissertation, the following conclusions are drawn.

1. In Nigeria, the regular amendment to the associated gas re-injection act, occasioned by the constraints put forward regularly by the multinationals, has brought to fiasco the objective of eliminating gas flaring and addressing the numerous environmental issues associated with it.

2. Government has been and still is involved as joint partners in the business of the multinationals. This prohibited the desired environment for genuine investors to invest and increase private sector participation, and worked against the development of the domestic market and power sector.

3. The present penalty for flaring is too meager. This situation has made it more cost effective to flare and pay the penalty rather than to comply with the regulation's zero flaring position.

4. The failure of policies designed to curb gas flaring in Nigeria is mainly due to lack of political will by the successive administration (government) to privatize the sector and focus fully on the business of governance.

5. Lack of infrastructural base for domestic gas utilization has also contributed to the gas flaring at will by multinationals.

6. Undue influence on environmental regulators by government has hindered the proper monitoring and implementation of gas flare regulation. Most of the officers are government political appointees. They do the biddings of their Godfathers.

From the above conclusion, it becomes obvious that the set target of 31st December 2008 will not be realized.

In order to avoid incessant policy and regulation amendment and shift in deadline of gas flaring reduction as reported in this dissertation, the following recommendations are made.

6.2 RECOMMENDATION

1. Government should be an umpire rather than partner in business with the multinationals.

2. Environmental regulators should be a stand-alone body solely responsible for the monitoring and implementations of gas flaring policies and regulations.

3. Owing to the negative effect of gas flaring on both the environment and the people, stringent and uncompromising measures should be put in place to serve as deterrent to erring multinationals and indigenous oil companies. Such measures could include high cost of flaring per thousand standard cubic feet of gas. It could also include the closure of flaring platform or outright withdrawal of license.

6.3 RECOMMENDATION FOR FURTHER RESEARCH

This dissertation examined the reasons why despite sound gas flaring policies and regulation in the country, flaring continues unabated. The involvement of the Nigeria government was seen as an albatross to the implementation of these policies and regulation. The interest was mainly on the proceeds accruable from the crude oil component and not the associated gas.

Meanwhile, the holistic economic implication of gas flaring reduction was not one of the objectives of this dissertation. Therefore,

Further research into the economic implication of gas flaring reduction to both the multinational and the country could be carried out.

The feasibility of infrastructural development for the local market with regards to gas distribution network could be investigated.

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