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Gas flaring in the oil and gas sector in Nigeria

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Abstract
Nigeria, like the rest of the world has need to evaluate and effect accounting reporting for raw materials, energy consumption and use of natural resources which have systematically depleted the environment. Besides, the nations' need to protect the environment, have made for global regulations and environmental laws which however require only voluntary disclosure of data and information in annual financial reporting of industrial emissions, degradations and all activities which impact negatively on the environment.
The objective of this conceptual paper focuses on the environmental, economic and social menace of gas flaring factors in Nigeria, and the environmental and financial issues in the operation of oil and gas industry and the environmental accounting and environmental disclosure on oil and gas accounting and the impact of IFRS adoption in Nigeria.
The study revealed the negative impacts of gas flaring on the environment and the economy is unfavorable. Consequently, the study advocated for a change in strategies currently use in the oil and gas industry.
Additionally, in Nigeria the information disclosure requirements in the financial statements under NG-GAAP were grossly inadequate to effectively bridge the information asymmetry between companies and the users of the financial statements. However, reporting under the IFRS regime requires companies especially in the Oil and Gas sector to make more disclosures regarding their reserves, discoveries and other key variables necessary for investment decision and to meet objective of financial statements, which is to show a true and fair view of the activities of a company. It is therefore envisaged that the companies will disclose more of their financial information with the transition from the NG-GAAP to IFRS.

Keywords: Gas flaring, Oil and gas, Petroleum, Natural gas, Environmental accounting, IFRS, Financial accounting.

1. Introduction

Gas flaring is the burning of natural gas that is associated with crude oil when it is pumped up from the ground. In petroleum producing areas where insufficient investment was made in infrastructure to utilize natural gas, flaring is employed to dispose of this associated gas. Also chemical factories, oil refineries, oil wells, rigs and landfills, gaseous waste products and sometimes even non-waste gases produced are routed to an elevated vertical chimney called a gas flare and burnt off at its tip, this is called gas flaring. Waste gases are subjected to such a process either because the gases are waste or it is difficult to store and transport them. Non-waste gases are burnt off to protect the processing equipment when unexpected high pressure develops within them. Gas flaring in oil rigs and wells contribute significantly to greenhouse gases in our atmosphere. According to World Bank (2009), it was estimated that, more than 100 million cubic meters of gas is flared annually around the globe, despite the incentives to capture the associated gas and bring it to market; that the quantity of gas flared in the Niger Delta region is enough to cover the annual gas consumption needs of Germany and France put together.

The exploitation of crude petroleum by various oil companies accounts for the pollution of the atmosphere globally. Odiong *et al* (2010) posited that one of the problems associated with crude oil exploitation is gas flaring. In Nigeria for instance, it is estimated that about 180 billion cubic feet of proven natural gas making it the ninth highest concentration in the world. Due to unsustainable exploration practices coupled with lack of gas utilization infrastructure in Nigeria, the country flares 75 percent of the gas it produces and re-injects only 12 percent to enhance oil recovery. Evoh (2002) estimated that about two billion standard cubic feet of gas is currently being flared in Nigeria and the highest of Petroleum Exporting Countries (OPEC). The current statistics shows that, Nigeria accounts for about 19 percent of the total amount of gas flared globally.

Gas flaring started at the end of colonial rule in Nigeria during the 60s as Shell/BP started exploring for oil in the Niger Delta region in the 1930s (Asume *et al*, 2002). Odiong *et al* (2002), defined gas flaring as burning of gas widely used in disposing of natural gas (e.g. C02, C0, N02, and S02) liberated during oil exploitation and processing where there are no infrastructures to support the production and storage of natural gases. These activities are crystal clear in the Niger Delta region of Nigeria.

Furthermore, gas flaring is a major contributor to the stock of green house gases in the atmosphere thus adding to the climate change chaos and by far the main source of carbon dioxide emissions in sub-Sahara Africa (ERA, 2008). The turning of these liberated gases vented or flared in Ogbia local government area of Bayelsa state has a lot of implications to the socio-economic well-being of farm households. Flared gas contained hazardous substances which are methane, propane, ethane, is o-butane, n-butane etc, when combine with the atmosphere moisture formed an acid rain which falls on roofs and farmlands where farm households sources of livelihood are sourced thereby causing serious health hazards and damages to crops as well as live stocks in the Niger Delta regions.

Consequently, more attention is focused on the oil sector by the Nigerian government resulting in the neglect of the agricultural sector of the economy and ignores the link between oil extraction and environmental impact as well as social and

health problems it has created. IFC (2009), reported gas flaring wastes destroyed resources in the natural environment and thus deprived the rural poor in developing economies cleaner and cheaper source of energy resources. However, farm households in the Niger Delta region state firmly perceived that gas flaring affects virtually every aspects of their livelihood (Odiong *et al*, 2008). Akpojivi *et al* (2005) submitted that, gas flaring results in the release of emissions rich in C02, C0, N02, S02 etc carried soil and water bodies in communities close to the flare sites. ERA (2008), reported that communities located close to gas flares may have serious health impacts on the form of respiratory illness, asthma, blood disorders, cancer, painful breathing and chronic bronchitis.

1.1 Statement of Research Problem(s)

Gas flaring has been condemned severally in different countries of the world. Though the practice is still obtainable in some countries with many calling for a stop, all available data/information depict the negative effects of gas flaring on the environment and humans.

Hence, the problem(s) associated with this study are the implications of gas flaring on the environment, economy, and social activities in Nigeria. The environment is also faced with the financial issues in the operations of the oil and gas industry in Nigeria. Also the need for environmental accounting as well as proper environmental disclosure in oil and gas accounting and the major role of IFRS (International Financial Reporting Standards) on oil and gas industry in Nigeria.

1.2 Objectives of the Study

In the light of the background for increasing environmental attention, and the fact that the oil and gas sector has profound production impact on the environment, the aim of this study is:

1. Highlight the environmental, economic and health implication of gas flaring in Nigeria.
2. Highlight the environmental and financial issues in the operations of oil and gas industry in Nigeria.
3. Present an overview of environmental accounting as well as the environmental disclosure in oil and gas accounting in Nigeria.
4. Highlight the impact of IFRS on oil and gas industry in Nigeria.

1. Historical Background of the petroleum Industry In Nigeria

The petroleum industry in Nigeria, Africa is the largest industry and main generator of GDP in the continent's most populous nation. In February 2013, the Nigerian Association of Chambers of Commerce, Industry, Mines and Agriculture (NACCIMA) claimed that the oil sector of the country “is killing the economy”. NACCIMA's Director General Dr John Isemede said the oil sector is affecting businesses in the country negatively by failing to add real value to them. He said the oil sector has caused substantial decline in agricultural exports, which began in the mid-1960s and continued to date.

2.1 Oil Discovery

Shell-BP and other developers in the pursuit for commercially available petroleum found oil in Nigeria in 1956. Prior to the discovery of oil, Nigeria like many other African countries strongly relied on agricultural exports to other countries to supply their economy. Many Nigerians thought the developers were looking for palm oil. But after nearly 50 years searching for oil in the country, Shell-BP discovered the oil at Oloibiri in the Niger Delta. Wishing to utilize this newfound oil opportunity, the first oil field began production in 1958. After that, the economy of Nigeria would have seemingly experienced a strong increase. However, competition for the profits that oil produces has created a great level of terror and conflict for those living in the region. Citizens of Nigeria believe that they haven’t been able to see the economic benefits of oil companies in the state. Additionally, because Nigerian government officials have remained majority shareholders in the profits created by the production of Nigerian oil, this leads to government capturing of nearly all oil production, and citizens are not seeing socio-economic benefits, and insist that oil companies should compensate people.

2.2 Production and Exploration

As of 2000, oil and gas exports accounted for more than 98% of export earnings and about 83% of federal government revenue, as well as generating more than 14% of its GDP. It also provides 95% of foreign exchange earnings, and about 65% of government budgetary revenues (Wikipedia, 30 July 2014 at 07:03).

Nigeria's proven oil reserves are estimated by the U.S. United States Energy Information Administration (EIA) at between 16 and 22 billion barrels (3.5×10^9 m^3) but other sources claim there could be as much as 35.3 billion barrels (5.61×10^9 m^3). Its reserves make Nigeria the tenth most petroleum-rich nation, and by the far the most affluent in Africa. In mid-2001 its crude oil production was averaging around 2.2 million barrels (350,000 m^3) per day.

Nearly all of the country's primary reserves are concentrated in and around the delta of the Niger River, but off-shore rigs are also prominent in the well-endowed coastal region. Nigeria is one of the few major oil producing nations still capable of increasing its oil output. Unlike most of the other OPEC countries, Nigeria is not projected to exceed peak production until at least 2009. The reason for Nigeria's relative un-productivity is primarily OPEC regulations on production to regulate prices on the international market. More recently, production has been disrupted intermittently by the protests of the Niger Delta's inhabitants, who feel they are being exploited. Nigeria has a total of 159 oil fields and 1481 wells in operation according to the Ministry of Petroleum Resources. The most productive region of the nation is the coastal Niger Delta Basin in the Niger Delta or "South-south" region which encompasses 78 of the 159 oil fields. Most of Nigeria's oil fields are small and scattered, and as of 1990, these small unproductive fields accounted for 62.1% of all Nigerian production. This contrasts with the sixteen largest fields which produced 37.9% of Nigeria's petroleum at that time. As a result of the numerous small fields, an extensive and well-developed pipeline network has been engineered to transport the crude. Also due to the lack of highly productive fields, money from the jointly operated (with the federal government) companies is constantly directed towards petroleum exploration and production. Nigeria's petroleum is classified mostly as "light" and "sweet", as the oil is largely free of sulphur. Nigeria is the largest producer of sweet oil in OPEC. This sweet oil is similar in composition to petroleum extracted from the North Sea. This crude oil is known as "Bonny light". Names of other Nigerian crudes, all of which are named according to export terminal, are Qua Iboe,

Escravos blend, Brass River, Forcados, and Pennington Anfan. The U.S. remains the largest importer of Nigeria's crude oil, accounting for 40% of the country's total oil exports. Nigeria provides about 10% of overall U.S. oil imports and ranks as the fifth-largest source for oil imports in the U.S.

There are six petroleum exportation terminals in the country. Shell owns two, while Mobil, Chevron, Texaco, and Agip own one each. Shell also owns the Forcados Terminal, which is capable of storing 13 million barrels (2,100,000 m^3) of crude oil in conjunction with the nearby Bonny Terminal. Mobil operates primarily out of the Qua Iboe Terminal in Akwa Ibom State, while Chevron owns the Escravos Terminal located in Delta State and has a storage capacity of 3.6 million barrels (570,000 m^3). Agip operates the Brass Terminal in Brass, a town 113 km southwest of Port Harcourt and has a storage capacity of 3,558,000 barrels (565,700 m^3). Texaco operates the Pennington Terminal.

2.3 Oil and Gas Infrastructure

2.3.1 Offshore

Oil companies in Africa investigate offshore production as an alternative area of production. Deepwater production mainly involves underwater drilling that exists 400 m or more below the surface of the water. By expanding to deep water drilling the possible sources for finding new oil reserves is expanded. Through the introduction of deep water drilling 50% more oil is extracted than before the new forms of retrieving the oil. Angola and Nigeria are the largest oil producers in Africa. In Nigeria, the deepwater sector still has a large avenue to expand and develop. The amount of oil extracted from Nigeria is expected to expand from 15,000 bbl/d (2,400 m^3/d) in 2003 to 1.27 Mbbl/d (202,000 m^3/d) in 2010. Deepwater drilling for oil is especially attractive to oil companies because the Nigerian government has very little share in these activities and it is more difficult for the government to regulate the offshore activities of the companies. Also, the deepwater extraction plants are less disturbed by local militant attacks, seizures due to civil conflicts, and sabotage. These advancements offer more resources and alternatives to extract the oil from the Niger Delta, with hopefully less conflict than the operations on land.

2.3.2 Natural gas flaring

Nigeria flares more natural gas associated with oil extraction than any other country, with estimates suggesting that of the 3.5 billion cubic feet (99,000,000 m^3) of associated gas (AG) produced annually, 2.5 billion cubic feet (71,000,000 m^3), or about 70% is wasted via flaring. Statistical data associated with gas flaring is notoriously unreliable, but AG wasted during flaring is estimated to cost Nigeria US $2.5 billion on a yearly basis. Companies operating in Nigeria harvest natural gas for commercial purposes however prefer to extract it gas from deposits where it is found in isolation as non-associated gas. It is costly to separate commercially viable associated gas from oil, hence gas flaring to increase crude production.

Gas flaring is discouraged by the international community as it contributes to climate change. In fact, in Western Europe 99% of associated gas is used or re-injected into the ground. Gas flaring in Nigeria releases large amounts methane, which has very high global warming potential. The methane is accompanied by carbon dioxide, of which Nigeria is estimated to have emitted more than 34.38million tons in 2002, accounting for about 50% of all industrial emissions in the country and 30% of the total CO_2 emissions. As flaring in the west has been minimized, in Nigeria it has grown proportionally with oil production. While the international community, the Nigerian government, and the oil corporations seem to agree that gas flaring need to be curtailed, efforts to do so have been slow and largely ineffective.

Gas flares release a variety of potentially poisonous chemicals such as nitrogen dioxides, sulphur dioxide, volatile organic compounds like benzene, toluene, xylene and hydrogen sulfide, as well as carcinogens like benzapyrene and dioxins. Often gas flares are often close to local communities, and lack adequate fencing or protection for villagers who may risk nearing the heat of the flare in order to carry out their daily activities. Flares which are often older and inefficient are rarely relocated away from villages, and are known to coat the land and communities in the area with soot and damage adjacent vegetation. In November 2005 a judgment by, "the Federal High Court of Nigeria ordered that gas flaring must stop in a Niger Delta community as it violates guaranteed constitutional rights to life and dignity. In a case brought against the Shell Petroleum Development Company of Nigeria (Shell), Justice C. V. Nwokorie ruled in Benin City that the damaging and wasteful practice of flaring cannot lawfully continue."

2.3.3 Down streams

Nigeria's total petroleum refining capacity is 445,000 barrels per day (70,700 m^3/d), however, only 240,000 bbl/d (38,000 m^3/d) was allotted during the 1990s. Subsequently crude oil production for refineries was reduced further to as little as 75,000 bbl/d (11,900 m^3/d) during the regime of Sanni Abacha. There are four major oil refineries: the Warri Refinery and Petrochemical Plant which can process 125,000 barrels (19,900 m^3) of crude per day, the New Port Harcourt Refinery which can produce 150,000 barrels per day (24,000 m^3/d) (there is also an 'Old' Port Harcourt Refinery with negligible production), as well as the now defunct Kaduna Refinery. The Port Harcourt and Warri Refineries both operate at only 30% capacity. It is estimated that demand and consumption of petroleum in Nigeria grows at a rate of 12.8% annually. However, petroleum products are unavailable to most Nigerians and are quite costly, because almost all of the oil extracted by the multinational oil companies is refined overseas, while only a limited quantity is supplied to Nigerians themselves.

3.2 Gas Flaring in Nigeria

Nigeria flares 17.2 billion m^3 of natural gas per year in conjunction with the exploration of crude oil in the Niger Delta. This high level of gas flaring is equal to approximately one quarter of the current power consumption of the African continent. Even though we have grown to be fairly dependent on oil and it has become the center of current industrial development and economic activities, we rarely consider how oil exploration and exploitation processes create environmental, health, and social problems in local communities near oil producing fields.

The Nigerian government has not enforced environmental regulations effectively because of the overlapping and conflicting jurisdiction of separate governmental agencies governing petroleum and the environment as well as because of non-transparent governance mechanisms. Neither the Federal Environmental Protection Agency (FEPA) nor the Department of Petroleum Resources (DPR) has implemented anti-flaring

policies for natural gas waste from oil production, nor have they monitored the emissions to ensure compliance. The Federal Environmental Protection Agency (FEPA) has had the authority to issue standards for water, air and land pollution and has had the authority to make regulations for oil industry. However, in some cases their regulations conflict with the Department of Petroleum Resources (DPR)'s regulations started in 1991 for oil exploration, Manby (1999).

From an economic perspective, the Nigerian government's main interest in the oil industry is to maximize its monetary profits from oil production. Oil companies find it more economically expedient to flare the natural gas and pay the insignificant fine than to re-inject the gas back into the oil wells. Additionally, because there is an insufficient energy market especially in rural areas, oil companies do not see an economic incentive to collect the gas. From a social perspective, the oil-producing communities have experienced severe marginalization and neglect. The environment and human health have frequently been a secondary consideration for oil companies and the Nigerian government.

However, although there may be reasons for the continuous gas flaring, there are many strong arguments suggesting that it should be stopped. Corporations' accountability to the people and environment surrounding them imply that oil companies should be required to re-inject the gas, to recover it, or to shut down any extraction facilities in which the gas flaring is occurring. Because of this massive oil exploration in the Niger Delta, the ramifications for human health, local culture, indigenous self-determination, and the environment are severe. As is the case in most oil producing regions of less developed countries, the economic and political benefits are given significantly more weight by the government than the resulting damage to the environment and human health.

3.2.1 Extent of Gas Flaring

Gas flaring, i.e. the burning of waste gas, continues to be common practice in Africa. Gas flares in the Niger Delta, visible from space, remain particularly problematic where much of the production happens onshore. The widespread use of the 'open pipe flare' method in Nigeria, which is almost obsolete outside the country, compounds the problem (UNDP 2006). According to Clarke (2008; p.94), 'Many flares have run 24 hours a day and some have been active for 40 years with over 8 MMCFD [million cubic feet per day] burnt'. Emissions from gas flaring include carbon dioxide, methane, sulphur dioxide, nitrogen dioxides, carcinogenic substances such as benz[a]pyrene and dioxin, and unburned fuel components, including benzene, toluene, xylene, and hydrogen sulphide (CJP/ERA 2005).

Table 2: Extent of gas flaring in SSA countries (1995–2010)

	1995	2000	2005	2010
Angola	4.51	5.94	4.72	4.08
Cameroon	1.15	1.19	0.97	0.92
Chad	0.00	0.00	0.09	0.05
Congo	1.08	2.02	1.79	1.88
Côte d'Ivoire	0.06	0.09	0.04	0.09
DRC	0.53	0.43	0.44	0.39
Eq. Guinea	0.61	1.21	1.36	0.39
Ghana	0.00	0.00	0.01	0.02
Gabon	2.15	2.54	2.36	1.68
Nigeria	27.09	27.19	21.25	15.18
South Africa	0.06	0.13	0.14	0.10
Global	154.97	164.90	171.65	133.90

In billion cubic metres

Source: NOAA (2011)

How much of the gas is flared in Nigeria is unclear, with estimates ranging from 20%

(According to the Nigerian Department of Petroleum Resources) to 76% (according to UNDP) of produced associated gas, compared with a worldwide average of 4.8% (UNDP 2006).

Annual figures tend to vary owing to changing policies and the intensity of militancy which have an impact on oil production levels. The NNPC, for instance, estimates that from 2001 to 2003, 47.37% of gas was flared; the figure gradually declines to 30.81% in 2007 and 27.06% in 2008, but in 2009 the official figure increases again to 27.72% (NNPC 2009). SPDC states that its total flaring dropped by around 65% between 2002 and 2009 (from about 0.6 bcf/d to about 0.2 bcf/d, representing a drop from about 14.4 mtpa to about 5.2 mtpa in CO2 emissions) – although part of this was due to production losses resulting from militancy.

3.2.2 Impacts of Gas Flaring

Communities have reported a range of illnesses associated with the pollution, including gastrointestinal problems, skin diseases, cancers and respiratory ailments. It is difficult to ascertain how many are specifically caused by the oil and gas industry as these are generally long-term illnesses. A 2001 scientific study of the adverse health effects of gas flaring in Canada lists various cancers, respiratory disease, heart disease, rheumatic disorders and eye problems (Argo 2001). EJP/ERA (2005) warn that gas flaring in Nigeria can cause leukaemia among populations living close to the flares, citing supporting evidence from the US Environmental Protection Agency. They estimate that around 35,000 people live within a 1.3 km radius

and 330,000 people within a 5 km radius of a flow station. Another study carried out in southeastern Nigeria showed evidence of acid rain due to gas flaring, which can contaminate water bodies and soils (Akpan 2003).

In addition to direct health impacts on adjacent communities, gas flaring in Nigeria has also contributed to global greenhouse gas emissions. The NGOs Climate Justice Programme and Environmental Rights Action claim that 'the flares have contributed more greenhouse gases than all of sub-Saharan Africa combined' (CJP/ERA 2005, p. 4).

Ending flaring and using the gas for local energy needs could provide important health and economic benefits for local communities. With an estimated 30% of income in the Niger Delta spent on energy, and lack of electricity identified as one of the key causes of economic stagnation across Nigeria, there is a strong case to be made for making gas to power projects at least at a local level commercially viable and quickly achievable. While there have been some successful local gas-to-power projects, oil companies say that capturing the gas for local use is not commercially viable because of artificial local pricing regimes. However, ending gas flares could affect a significant change in communities' perceptions of oil companies and thereby improve the operating environment as the flares are such visible negative markers of the presence of oil companies.

3.3 Negative Effects of Gas Flaring In Nigeria

3.3.1 Environmental Implications

- **Climate Change**

Gas flaring contributes to climate change, which has serious implications for both Nigeria and the rest of the world. The burning of fossil fuel, mainly coal, oil and gas-greenhouse gases-has led to warming up the world and is projected to get much, much worse during the course of the 21st century according to the intergovernmental panel on climate change (IPCC). This scientific body was set up in 1988 by the UN and the World Meteorological Organization to consider climate change. Climate change is particularly serious for developing countries, and Africa as a continent is regarded as highly vulnerable with limited ability to adapt. Gas flaring contributes to climate change by emission of carbon dioxide, the main greenhouse gas. Venting of the gas without burning, a practice for which flaring seems often to be treated as a synononym, releases methane, the second main greenhouse gas. Together and crudely, these gases make up about 80% of global warming to date.

- **Acid Rain**

Acid rains have been linked to the activities of gas flaring. Corrugated roofs in the Delta region have been corroded by the composition of the rain that falls as a result of flaring. The primary causes of acid rain are emissions of sulphur dioxide (SO_2) and nitrogen oxides (NO) which combine with atmospheric moisture to form sulfuric acid and nitric acid respectively, Friends of the Earth (FOE) and Medilinkz (2010). Size and environmental philosophy in the industry have very strong positive impact on the gas-flaring-related CO_2 emission, Hassan and Konhy (2013). Acid rain acidifies lakes and streams and damages vegetation. In addition, acid rain accelerates the decay of building materials and paints. Prior to falling to the earth, SO_2 and NO_2 gases and their particulate matter derivatives, sulfates and nitrates, contribute to visibility degradation and harm public health.

- **Agriculture**

The flares associated with gas flaring give rise to atmospheric contaminants. These include oxides of Nitrogen, Carbon and Sulphur (NO_2, CO_2, CO, SO_2), particulate matter, hydrocarbons and ash, photochemical oxidants, and hydrogen sulphide (H_2S), Obioh (1999) and Kindzierski (2000). These contaminants acidify the soil, hence depleting soil nutrient. Previous studies have shown that the nutritional values of crops within such vicinity are reduced. In some cases, there is no vegetation in the areas surrounding the flare due partly to the tremendous heat that is produced and acid nature of soil pH, Ubani (2013). The effects of the changes in temperature on crops included stunted growth, scotched plants and such other effects as withered young crops. Orimoogunje (2010) *et al* concluded that the soils of the study area are fast losing their fertility and capacity for sustainable agriculture due to the acidification of the soils by the various pollutants associated with gas flaring in the area.

The Niger Delta comprises 70,000 km² of wetlands formed primarily by sediment deposition. Home to 20 million people and 40 different ethnic groups, this floodplain makes up 7.5% of Nigeria's total land mass. It is the largest wetland and maintains the third-largest drainage area in Africa. The Delta's environment can be broken down into four ecological zones: coastal barrier islands, mangrove swamp forests, freshwater swamps, and lowland rainforests. This incredibly well-endowed ecosystem, which contains one of the highest concentrations of biodiversity on the planet, in addition to supporting the abundant flora and fauna, arable terrain that can sustain a wide variety of crops, economic trees, and more species of freshwater fish than any ecosystem in West Africa. The region could experience a loss of 40% of its inhabitable terrain in the next thirty years because of extensive dam construction in the region. The carelessness of the oil industry has also precipitated this situation, which can perhaps be best encapsulated by a 1983 report issued by the NNPC in 1983, long before popular unrest surfaced:

We witnessed the slow poisoning of the waters of this country and the destruction of vegetation and agricultural land by oil spills which occur during petroleum operations. But since the inception of the oil industry in Nigeria, more than twenty-five years ago, there has been no concerned and effective effort on the part of the government, let alone the oil operators, to control environmental problems associated with the industry.

3.3 Health Implications

- **Adverse Effects**

  The implication of gas flaring on human health are all related to the exposure of those hazardous air pollutants emitted during incomplete combustion of gas flare. These pollutants are associated with a variety of adverse health impacts, including cancer, neurological, reproductive and developmental effects. Deformities in children, lung damage and skin problems have also been reported, Ovakporaye (2012).

- **Haematological Effects**

  Hydrocarbon compounds are known to cause some adverse changes in hematological parameters. These changes affect

blood and blood-forming cells negatively. And could give rise to anemia (aplastic), pancytopenia and leukemia, Kindzierski (2000).

3.4 Economic Loss

Aside from the health and environmental consequences of gas flaring, the nation also loses billions of dollars' worth of gas which is literally burnt off daily in the atmosphere. Much of this can be converted for domestic use and for electricity generation. By so doing the level of electricity generation in the country could be raised to meet national demand. Nigeria has recorded a huge revenue loss due to gas flaring and oil spillage, Effiong (2012). Though more than 65 % of governmental revenue is from oil, it is estimated that about $2.5 billion is lost annually through gas flaring in government revenues, Arowolo (2011).

3.4.1 Pollution

Drilling mud and oil sometimes find their way to the streams, surface waters and land thus making them neither unfit for consumption nor habitable by man or animal. This problem has been produced by a range of international oil companies which have been in operation for over four decades. The economic and environmental ramifications of this high level of gas flaring are serious because this process is a significant waste of potential fuel which is simultaneously polluting water, air, and soil in the Niger Delta.

3.5 Poverty and Chronic Underdevelopment

The people of the delta states live in extreme poverty even in the face of great material wealth found in the waters by their homes. According to Amnesty International 70% of the six million people in the Niger River Delta live off of less than $1 US per day. For many people this means finding work in a labour market, which is in many instances hostile to them. Much of the labour in the past has been imported. To a growing degree the labour force for the oil companies is more and more coming from Nigeria. But discrimination is rampant and for the most part locals are discriminated against. This leads to a situation where the men in the community have to search for temporary employment. This has two negative effects on the community. First it takes the men out of the community as they go in search of work. The second is the nature of temporary employment sets up unsustainable spending habits, Boele (2001). They earn some money and spend it thinking it will be easy to earn more, when in many cases this does not turn out to be the case. As the government officials' siphon off all the money generated from oil sales the infrastructure suffers. Most of the villages do not have electricity or even running water, Egan (1999[l]). They do not have good access to schools or medical clinics. For many, even clean drinking water is difficult to come by, Junger (2007). The deterioration of the infrastructure in the delta states is so severe it is even a problem in the more urban areas. One example of this is the airport at Port Harcourt. Part of a fence was not properly maintained and an Air France flight hit a herd of cattle on the runway. The airport was closed and is still not open, Junger (2007).

The leadership of the Niger Delta region is responsible for most of the underdevelopment in the region. There is large scale corruption amongst the elected leaders especially governors and the leaders have helped sponsor the militants groups kidnapping innocent people and sabotaging efforts by the federal government for any infrastructure development. Indicted corrupt leaders are also cheered by the Niger Delta people, Ekeinde (2007).

4. Recent Development in Oil and Gas Industry in Nigeria

Nigeria flares the second largest amount of natural gas in the world, following Russia. Natural gas flared in Nigeria accounts for 10% of the total amount flared globally. Gas flaring in Nigeria has decreased in recent years, from 575 Bcf in 2007 to 515 Bcf in 2011. There are a number of recently developed and upcoming natural gas projects that are focused on monetizing natural gas that is flared. Because some of Nigeria's oil fields lack the infrastructure to capture the natural gas produced with oil, known as associated gas, much of it is flared (burned off). According to the National Oceanic and Atmospheric Administration (NOAA), Nigeria flared slightly more than 515 Bcf of natural gas in 2011 - or more than 21% of gross natural gas production in 2011. Natural gas flared in Nigeria accounts for 10% of the total amount flared globally.

The amount of gas flared in Nigeria has decreased in recent years, from 575 Bcf in 2007 to 515 Bcf in 2011. According to Shell, one of the largest gas producers in the country, the impediments to decreasing gas flaring has been the security situation in Niger Delta and the lack of partner funding that has slowed progress on projects to capture associated gas. The company recently reported that it was able to reduce the amount of gas it flared in 2012 because of improved security in some Niger Delta areas and stable co-funding from Partners that allowed Shell to install new gas-gathering facilities and repair existing facilities damaged during the militant crisis of 2006 to 2009. Shell also plans to develop the Forcado Yokri Integrated Project and the Southern Swamp Associated Gas Gathering Project to reduce gas flaring. Other recently developed or upcoming gas projects include: the Escravos Gas-to-Liquids plant, Brass LNG, Escravos gas plant development, Sonam field development, Onshore Asset Gas Management project, Assa-North/Ohaji South development, Gbaran-Ubie, the Idu project, and the Tuomo gas field.

4.1 Current Efforts to End Gas Flaring

Ending unnecessary gas flaring in the Niger Delta would be a much easier, if financially costly, win for oil companies than dealing with the oil spills problem, as it simply requires that facilities be upgraded. SPDC reports a 65% drop in gas flaring between 2002 and 2009 after joint venture investment of $3 billion in associated gas gathering infrastructure. However, part of this decline in gas flaring was a result of lost production due to militancy. Since the amnesty process in the region, production and therefore gas flaring have once again increased. SPDC says that it intends to eliminate 90% of gas flares and keep 10% of associated gas for local use, but that being able to do this is dependent on full joint-venture funding and security.

Oil production in Nigeria began when gas was regarded only as a waste product, and since then alternatives to flaring have not been implemented in part for economic reasons:

(1) The low penalty for not re-injecting associated gas makes it more economical for companies to flare than to market or re-inject gas;

(2) The low level of domestic industrial development and regional abundance of hydroelectric resources serve as disincentives (Shaxson 2007; Hodges 2004).

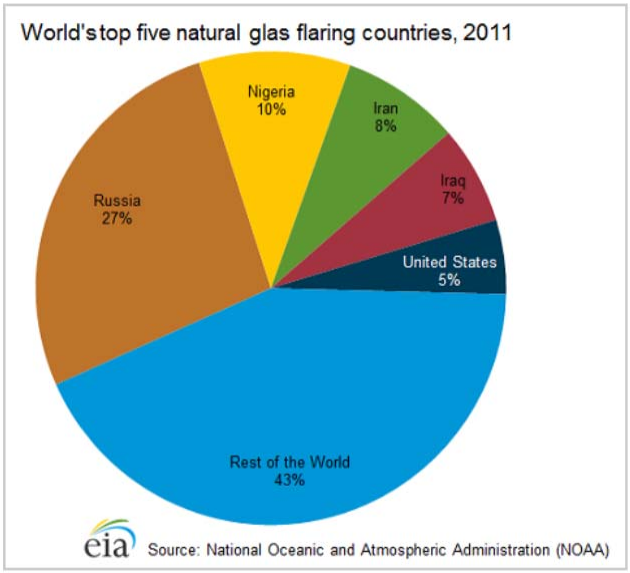
Also, as noted above, IOCs have blamed funding shortfalls from their joint-venture partners for the lack of progress.

In Nigeria, efforts to address gas flaring are hampered by a lack of political will and disagreements about who should cover the costs. The gas flares-out deadline has been repeatedly delayed, and is now set for December 2012.

The Effects of Oil Companies' Activities on the Environment, Health and Development in Africa continues owing to funding shortfalls from their joint-venture partner, the NNPC, and this has resulted in deadlock over paying the bill for the costly technology.

The Nigerian government is increasingly seeing flaring as a waste of a potentially valuable and useful resource and efforts to deal with the issue have focused on using gas for power through the National Independent Power Project. Special funding for this was first approved in 2004, but there has been little progress since. Lack of infrastructure for gas-to-power and low gas pricing locally remain major constraints. Oil companies argue that plans to turn small amounts of associated gas into fuel to market locally and for rural electrification are not sustainable if prices are to be kept artificially low; it is argued that the cost to install compressors to send the gas to power stations is so high that it would be cheaper to buy generators for communities and provide them with diesel for several years.

The Nigerian government has been working to end gas flaring for several years, but the deadline to implement the policies and fine oil companies has been repeatedly postponed, with the most recent deadline being December 2012. In 2008, the Nigerian government developed a Gas Master Plan that promoted investment in pipeline infrastructure and new gas-fired power plants to help reduce gas flaring and provide much-needed electricity generation. However, progress is still limited as security risks in the Niger Delta have made it difficult for IOCs to construct infrastructure that would support gas monetization.



4.2 Management of the Oil and Natural Gas Sectors

The Petroleum Industry Bill (PIB), which was initially proposed in 2008, is expected to change the organizational structure and fiscal terms governing the oil and natural gas sectors, if it becomes law. IOCs are concerned that proposed changes to fiscal terms may make some projects commercially unviable, particularly deepwater projects that involve greater capital spending. The Nigerian National Petroleum Corporation (NNPC) was created in 1977 to oversee the regulation of the oil and natural gas industries, with secondary responsibilities for upstream and downstream developments. In 1988, the NNPC was divided into 12 subsidiary companies to regulate the sub-sectors within the industry. The Department of Petroleum Resources, within the Ministry of Petroleum Resources, is another key regulator, focusing on general compliance, leases and permits, and environmental standards. Currently, the majority of Nigeria's major oil and natural gas projects are funded through joint ventures (JV) between international oil companies (IOCs) and NNPC, where NNPC is the majority shareholder. The rest of the contracts are managed through production sharing contracts (PSCs) with IOCs. PSCs are the fiscal regime typically, but not always, governing deepwater projects and contains more attractive terms than those in JV arrangements, the fiscal regime typically governing onshore/shallow water projects. PSC terms on deepwater projects tend to be more favorable to incentivize the development of deepwater projects.

The Petroleum Industry Bill (PIB), which was initially proposed in 2008, is expected to change the organizational structure and fiscal terms governing the oil and natural gas sectors, if it becomes law. IOCs are concerned that proposed changes to fiscal terms may make some projects commercially unviable, particularly deepwater projects that involve greater capital spending. Some of the most contentious areas of the PIB are the potential renegotiation of contracts with IOCs, changes in tax and royalty structures, deregulation of the downstream sector, restructuring of NNPC, a concentration of oversight authority in the Minister of Petroleum Resources, and a mandatory contribution by IOCs of 10% of monthly net profits to the Petroleum Host Communities Fund. The latest draft of the PIB was submitted to the National Assembly by the Ministry of Petroleum Resources in July 2012. The delay in passing the PIB has resulted in less investment in new projects as there has not been a licensing round since 2007, mainly because of regulatory uncertainty. The regulatory uncertainty has also slowed the development of natural gas projects as the PIB is expected to introduce new fiscal terms to govern the natural gas sector.

4.3 Environmental and Financial Accounting Issues in the Operations of Oil and Gas Industry in Nigeria

Several decades ago, environmental accounting or issues were not considered a matter of utmost importance by both organizations and individuals. Things have changed as developed and developing countries have now recognized the benefits of caring for the environment. Jaggi and Zhao (1996), noted that the increase in natural environment degradation; drastic changes in climatic conditions due to global warming and ozone layer depletion have since made the general public to become conscious of environmental matters. Today issues relating to the environment now take the centre stage in any political and socioeconomic disclosure. A good accounting system that indicates economic performance must reflect sustainable income. In computing the national income accounts, accountants ignored the role of nature in the productive process when the nation's population was not as large as it is now and economic activities were also at their low ebb. Then, environmental services were treated as free goods; hence, no value was attached to the intrinsic cost of natural resources being exploited. Harmful emissions released by individuals,

household, firms and governments, with their attendant high economic loss by way of medical bills, increased morbidity and mortality, loss of beautiful natural environments were often ignored in national accounts (EL Serafy, 1995; Fakiyesi, 2006). The national accounts often provide inflated estimates of income or reduce national product when full effect of pollution is not properly accounted for as a cost of production. The cost associated with depletion and degradation of natural capital ought to be integrated into the national income accounts.

Valuation of Environmental functions and aesthetic aspects of nature in money terms has equally proved difficult. Also, accounting for pollution in the national accounts has not been easy either. This is because environmentalists and economists view environment differently. The former view it as wealth counted physical units, hence, they regard the balance sheet at the primary instrument for environmental accounting where changes in the environment from year to year in terms of cost are reported, while the latter value capital stock as discounted value of all future goods and services that the capital is capable of producing. To the economists, natural capital cannot be accurately measured and can never be comprehensively valued (El Serafy, 1995). The user approach has been advocated for natural resource accounting in spite of the inherent drawback that this method heavily rely on many estimated and uncertain measurements. El Serafy (1981, 1989), advocated that the user cost can be computed in relative terms as proportion of sales value using life expectancy of the resource at current extraction rates, expected yield rates or interest which may be earned from re-investing the user cost in new capital formation so that income can be perpetuated. The objective is to have sustainable income even after total resource depletion, with new investment being either financial or material.

The controversy on the most appropriate methods of oil and gas industry has generated a lot of cost, environmental externalities. Owolabi (2006) advocated that the two main approaches currently being used in the energy industry for quantifying and monetizing externalities are the:

- Cost of control approach, and
- Damage function approach

The cost control approach deals with installation and operational environmental costs, which are usually proxied for naira value of actual damages. The damage function approach uses the naira site-specific data and modeling techniques that are usually combined with econometric methods to estimate external impact and costs.

However, the management of oil and gas industry seems to have been at crossroads in arriving at a most suitable and less controversial model of determining externality charges. Up till 2009 an acceptable framework that would identify, analyze and quantify the minor and major causes of environmental problems in monetary terms is yet to be developed. Modern technology management tools that dwell in continuous improvement of quality as a process could be applied to handle various causes (minor and major) of the environmental problems. A comprehensive identification and knowledge of the causes of environmental issue may further help quantify the various environmental costs.

4.3.1 Environmental Disclosure in Nigeria

Disclosure entails the release of a set of information relating to a company's past, current and future environment management activities, performance and financial implications. It also comprises information about the implications resulting from corporate environmental management decisions and actions. These may include issues such as expenditures or operating costs for pollution control equipment and facilities; future estimates of expenditures or operating costs for pollution control equipment and facilities. These may also include sites restoration costs, financing for pollution control equipment or facilities, present or potential litigation, air, water or solid waste releases; description of pollution control processes or facilities; compliance status of facilities; among others. Discussions of environmental regulations and requirements; environmental or conservation policies, environmental awards or prizes; existence of environmental management or audit departments, are contained in the long list (Aerts, Cormier and Magnan, 2006:327). Soonawalla (2006:398) observes that the main environmental issues in financial reporting are summarized as:

- Environmental costs, whether to expense or capitalize
- Classification of environmental costs
- Disclosure on details and / or breakdowns about environmental costs
- Treatment of environment-related financial impacts on assets
- Treatment of liabilities and contingent liabilities and how to recognize these
- Measurement of liabilities and contingent liabilities
- Environmental reserves, provisions and charges to income
- Impact of accounting rules (GAAP) on corporate behavior
- Environment information to be disclose in greater details.

4.3.2 Institutional Framework and policy framework in Nigeria

In recognition of the importance of addressing the problem of environmental degradation, the government of Nigeria established the Federal Environmental Protection Agency (FEPA) in 1988, now Federal Ministry of Environment. The duties include devising policies for the protection of the environment such as biodiversity and conservation, management and monitoring of environmental standards. The Federal Ministry of Environment (FMEnv) is also saddled with the responsibility for the sustainable development of Nigeria's natural resources and the development of operation of procedures for conducting environmental impact assessments of all development projects. To ensure that the FMEnv is empowered to manage environmental issues, the Environmental Impact Assessment (EIA) Act was passed in 1992 under FEPA. The EIA Act, 1992 empowers the regulatory institution to ensure the implementation of mitigation measures and follow-up programmes such as the elimination, reduction or control of the adverse environmental effects of any project. Also, responsible for the restitution of any damage caused by such effects, through replacement, restoration, compensation or any other means (FEPA, 1992)

The following are some of the identified export-induced increases in production that have increased environmental problems in Nigeria:

- Deforestation and desertification resulting from the exploitation of unprocessed log wood for export;
- Depletion of wild fauna and flora due to exportation of certain endangered species;

- Depletion of fish stock resulting from over-fishing in the territorial waters for exportation;
- Oil and Gas exploration which has resulted in serious environmental degradation especially in the Niger Delta area of Nigeria; and
- Increased activities in the Tannery industries leading to discharge of increased volume of effluents which have exacerbated the incidence of pollution of rivers and streams including underground water in certain industrialized areas of Nigeria.

4.3.3 Regulations, Standards and Codes on Environmental in Nigeria

In Nigeria, there are various statutes, regulations, standards and recommended practices of the Federal Ministry of Environment. Nigeria has regulations prohibiting and controlling of pollution of water, air and land before the enactment of the Environmental Impact Assessment Act of 1992. These include the following:

- The Oil in Navigable Water Act of 1968
- The Petroleum Act of 1969, Section 8
- The Petroleum (Drilling and Production) Regulation of 1969
- The Mineral Oils (Safety) Regulation
- The National Environmental Protection Regulation (NEPR) 1991
- Important regulations subsisting on Environmental Impact Assessment (EIA) in Nigeria are:
- The Environmental Impact Assessment Act (EIA), 1992 and
- The Department of Petroleum Resources (DPR) Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN), 2002
- The Environmental Impact Assessment Act (1992)
- Exxon Mobil (2004) in EIA of EAP-AOR Project the EIA Act of 1992, No. 86, makes EIA mandatory for all new major public and private projects in Nigeria and sets out the following guidelines:
- consider the likely impacts, and the extent of these impacts on the environment before embarking on project and activities;
- promote the implementation of appropriate policy in all Federal Lands and Territorial Waters consistent with all laws and decision making processes through which the goal of the Act is realized; and
- encourage the development of procedures for information exchange notification and consultation between organizations and persons when the proposed activities are likely to have significant environmental effects on boundaries or trans-state of the environment of bordering towns and villages.

The Act gives specific powers to the Federal Ministry of Environment (FMEnv) to facilitate the execution of EIA Studies of all projects. The DPR Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN), 2002 The Department of Petroleum Resources Act 1979 which set up the Department empowers it to supervise the operations of the Nigeria Oil and Gas industry and to ensure that the petroleum industry does not degrade the environment in their operation. The DPR EGASPIN 2002 is guidelines for control of:

- discharge of produced fluids, drilling mud, drill cuttings, etc;
- air emissions and flaring;
- noise;
- management of wastes; and
- Decommission of facilities.

4.3.4 Environmental Standards in Nigeria

Environmental Legislation and Regulations in Nigeria Agenda 21 of the 1992 Earth Summit, the unprecedented attendance of heads of governments (ERA 1998:37), is the global plan of action to focus world attention on environmental issues to which Nigeria is a signatory. The Nigeria National Agenda 21, states some of the relevant legislations that have either been reviewed or are under review. These were in response to the possible negative impacts of trade on environment, which include:

- Gas Re-Injection Act
- Endangered Species (Control of International Trade and Traffic) Act.
- Minerals Act
- Forestry Laws
- Harmful Wastes (Special Criminal Provisions, etc) Act

4.4 Accounting perspective of oil and gas industry in Nigeria

4.4.1 The Impact of IFRS on Oil and gas Industry in Nigeria

Considering the significance of the oil and gas industry to the Nigerian economy and as the country moves to the adoption of IFRS; the oil and gas industry companies needs to take on a leadership role to demonstrate best practice in financial reporting. The Nigerian economy is largely dependent on its oil sector which supplies 95% of its foreign exchange earnings and its wealth of oil also makes it most attractive to the major oil-multinationals. The upstream oil industry can be considered as Nigeria's lifeblood, being the single most important sector in the economy, while the downstream oil industry is also a key sector. To tackle the complexity of accounting for extractive activities and the variety of accounting policy choices available to a company in the sector, the Nigerian standard setter issued in 1993 Statement of Accounting Standards dealing with upstream activities and later completed the task by issuing standards for downstream activities. But in terms of IFRS, not willing to issue industry specific standards, the IASB has issued only one standard so far, IFRS 6, which deals with Exploration for and evaluation of mineral resources.

When considering IFRS conversion by the oil and gas industry companies, there will be a variety of challenges faced by the companies in that sector. There are the companies which subsidiaries of oil-multinationals, with some of the multi-nationals already preparing IFRS financial statements and which would technically have no difficulties to understand the IFRS implications while there are others for whom IFRS would be new - such as the US multi-nationals, Then, there is the giant parastatal, NNOC which, with all its subsidiary companies, controls and dominates all sectors of the oil industry, both upstream and downstream and for whom the local Nigerian GAAP will be the only reporting framework. Nevertheless, the local Nigerian GAAP is common to all and it is important that all oil and gas stakeholders to understand the gap between Nigerian SAS and IFRS. IFRS prescribes the minimum standards of disclosure and with only IFRS6 issued so far, the

oil and gas industry company to provide additional disclosure to explain any unusual circumstances faced by it. In addition, where there are no IFRS standards which specifically address circumstances, particular events, transactions or other conditions arising in the industry, the oil and gas industry companies will have to select their own accounting policy. Following the IFRS hierarchy of guidance for the selection of an accounting policy, will existing accounting policies in line with the SASs be sufficient or are there alternatives which will provide more relevant and useful information? Nigerian accountants working in the oil and gas industry faces the challenge of moving to a new framework – IFRS – which does not deal with all the intricacies, complexities of transactions and events common to the sector.

4.4.2 IFRS Adoption and Implementation in Nigeria

The Nigeria's Federal Executive Council (FEC) gave approval for the convergence of Nigerian SAS with the IFRS from January 1, 2012. The adoption was organized such that all stakeholders use IFRS by January 2014. According to the IFRS adoption Roadmap Committee (2010), Public Listed Entities and Significant Public Interest Entities are expected to adopt the IFRS by January 2012. All Other Public Interest Entities are expected to mandatorily adopt the IFRS for statutory purposes by January 2013, and Small and Medium-sized Entities (SMEs) shall mandatorily adopt IFRS by January 2014. Nigerian listed entities were required to prepare their closing balances as at December 31, 2010 according to IFRS. The closing figures of December 31, 2010 will become the opening balances as at January 1, 2011 for IFRS based financial statements as at December 31, 2011. The opening balances for January 1, 2012 will be the first IFRS full financial statements prepared in accordance with the provision of IFRS as at December 31, 2012.

"It will be in the interest of the Nigerian economy for listed companies to adopt globally accepted, high quality accounting standards, by fully converging Nigerian national accounting standards with International Financial Reporting Standards (IFRS) over the earliest possible transition period, given the increasing globalization of capital markets" IFRS Adoption Roadmap Committee,(2010: p.10)

4.4.3 Oil and Gas Accounting Methods

There are basically two alternative methods for accounting for acquisition, exploration and development and productions costs in Oil and Gas exploration and Production, viz., Successful Efforts (SE) Method and Full Cost (FC) Method

- **Successful Efforts (SE) Accounting Method**

Under the SE method, generally only those costs that lead directly to the discovery, acquisition, or development of specific, discrete oil and gas reserves are capitalized and become part of the capitalized costs of the cost centre. Costs that are known at the time of incurrence to fail to meet this criterion are generally charged to expense in the period they are incurred. When the outcome of such costs is unknown at the time they are incurred, they are recorded as capital work-in-progress and written off when the costs are determined to be non-productive. Under the SE method, the propriety of carrying forward costs incurred and subsequently matching them against future revenues depends on whether a specific cost can be identified with specific reserves. If this direct relationship does not exist, the cost should be charged to expense. If a direct association does not exist between a non-productive cost and reserves found and developed, the cost should not be classified as an asset because it is deemed to not provide future benefits in the form of cash flows. Charging non-productive costs to expense is consistent with the Framework - costs that do not result directly in future benefits are properly charged to expense. If costs related to unsuccessful ventures are not charged to expense, both current and future financial statements are distorted because those costs must eventually be removed from the balance sheet and reported in the statement of profit and loss even though they contribute nothing to future revenues.

- **Full Cost (FC) Accounting Method**

Under the FC method, all costs incurred in prospecting, acquiring mineral interests, exploration and development are capitalized and accumulated in large cost centers that may not be related to geological factors. The cost centre, under this method, is not normally smaller than a country except where warranted by major difference in economic, fiscal or other factors in the country. The capitalized costs of each cost centre are depreciated as the reserves in each cost centre are produced. Under the FC method, all costs incurred at any time and at any place in a cost centre in an attempt to add commercial reserves are an essential part of the cost of any reserves added in that cost centre. As a result they are directly associated with the enterprise's reserves in that centre and all the costs should be treated as part of the cost of the mineral assets in the cost centre. Under the FC method, in respect of a cost centre, all acquisition costs, all exploration costs and all development costs should be treated as capital work-in-progress when incurred; all costs other than the above should be charged as expense when incurred.

4.4.4 IFRS vs. Nigerian GAAP

The Nigerian Statement of Accounting Standards (SAS) or Nigerian GAAP, the UK GAAP and IFRS are in many ways different in terms of guidance and application of the standards, although, some of these standards are similar or comparable in certain areas. Most of the SAS under NG-GAAP are found to be similar to Financial Reporting Standards (FRS) and Statement of Standard Accounting Practice (SSAP) under UK-GAAP. This could be attributed to the strong interrelationships in terms of accounting education, oil and gas, business, finance, banking as well as the colonial relationship between the UK and Nigeria. The extractive industry is a specialized sector with lots of complications regarding the recognition, measurement, classification and treatment of assets in the books of Oil and Gas companies. Oil and Gas sector is characterized by heavy initial investment in terms of Exploration and Evaluation (E&E) operations. These activities require the use of high level and sophisticated technology for geological and geophysical (G&G) evaluation of the field to determine whether a commercially producible deposit of Oil and Gas is present. Despite the commitment of huge resources at the (E&E) stages, there is no guarantee that the well would produce a commercial quantity of Oil and Gas to pay for the investment. This unique nature of the extractive industry makes accounting for the Oil and Gas sector equally unique.

It is only in the extractive industry that different accounting methods (FC or SE) are used to account for the costs incurred in the acquisition, exploration, development and productions phases of Oil and Gas production. A special standard "IFRS 6

– *exploration for and evaluation of mineral resources*" issued by the IASB is dedicated strictly for the extractive industry to provide guidance for the treatment of acquisition, exploration and evaluation costs. In Nigeria however, SAS 14, *accounting in the Petroleum industry - Upstream Activities* and SAS 17, *Accounting in the Petroleum Industry – Downstream Activities* are the two standards that provide guidance for the treatment of all costs incurred in Oil and Gas exploration and production prior to IFRS adoption. Most of the IASs issued by IASB have equivalent SASs issued by NASB. However certain standards issued by the NASB do not have equivalent IAS and vice versa. For instance, IAS where no equivalent SAS exist are framework for preparation of financial statements; IAS 14, Segment Reporting; IAS 18, Revenue; IAS 20, Accounting for Government Grants and Disclosure of Government Assistance; IAS 22, Business Combinations; IAS 23, Borrowing Costs; IAS 24, Related Party Disclosures; IAS 27, Consolidated Financial Statements and Accounting for Investment in Subsidiaries; IAS 32, IFRS 7, Financial Instruments: Disclosure And Presentation; IAS 39, Financial instruments: Recognition and Measurement, IAS 36 Impairment of Assets and IAS 41: Agriculture, despite agriculture being the second major source of income in Nigeria. Whereas local standards where no international standards equivalents exist include SAS 14, accounting in the Petroleum industry - Upstream Activities; SAS 17, Accounting in the Petroleum Industry – Downstream Activities; SAS 16, Accounting for insurance Business; and SAS 20, Abridge Financial Statements.

4.4.5 IFRS Adoption and Income Taxes

The adoption of IFRS in Nigeria will greatly impact the system and administration of the country taxation. Taxation in the Oil and Gas sector is regulated by the Petroleum Profits Tax Act Cap P13 LFN 2004 (PPTA). However, the legislative framework relating to the oil and gas industry is currently being overhauled and is likely to have a significant impact on the Nigerian oil and gas industry. The draft of the Petroleum Industry Bill (PIB) which is aimed at restructuring the entire oil and gas sector is currently before the Nigerian parliament waiting to be passed into law. The draft contains changes to taxation regimes, improved economies for small, onshore developments, review of JVs and PSCs and an amended royalty structure. Petroleum taxes generally fall into two main categories – those that are calculated on profits earned (income taxes) and those calculated on sales (royalty or excise taxes). In Nigeria, the profits of the oil producing companies are chargeable to tax under the PPTA and are also governed by the terms of any relevant memorandum of understanding or PSC. The tax rate under the PPTA is 85% for JV companies and 50% for PSC companies operating in deep offshore sites. However, a special rate of 65.75% applies when a company has not yet started the sale or bulk disposal of chargeable oil under a programme of continuous production, and all preproduction capitalized costs have not been fully amortized (Ajayi 2013). Capital allowances are charged at the rate of 20% per annum in the first four years of production, 19% in the fifth year and the remaining 1% retained in the books of the company. Firms in PSCs are however, entitled to an investment tax credit of 5%. Royalty is payable in ranges from 0 – 20% of production, depending on the location and depth of the area of production. Other taxes and levies in the oil and gas sector include the education tax at 2% and the Niger Delta Development Commission (NDDC) levy at 3%. VAT is generally applicable to oil and gas operations at a flat rate of 5%. The classification and treatment of taxes under different accounting regimes will have a significant impact on the firm's financial statement.

4.5 IFRS Adoption and Financial Statement Disclosures

It is a statutory requirement for companies to provide supplementary information regarding the basis and justification for the preparation of their financial reports. Financial statement disclosures are secondary information provided by companies to clarify, interpret or justify certain published financial information. Disclosures normally provide further clarity of the financial information in order to assist users with additional information for the purpose of making informed investments decisions in the business. Management also uses disclosures to attest to the accuracy and validity of reported financial information.

Private companies are not required to disclose certain financial information regarding the company. However, listed companies are mandatorily required to disclose certain information regarding the company in order to fulfil the requirements of the Securities and Exchange Commission (SEC) and other regulatory bodies. Companies voluntarily disclose their financial information.

In Nigeria the information disclosure requirements in the financial statements under NG-GAAP were grossly inadequate to effectively bridge the information asymmetry between companies and the users of the financial statements. However, reporting under the IFRS regime requires companies especially in the Oil and Gas sector to make more disclosures regarding their reserves, discoveries and other key variables necessary for investment decision and to meet objective of financial statements, which is to show a true and fair view of the activities of a company. It is therefore envisaged that the companies will disclose more of their financial information with the transition from the NG-GAAP to IFRS.

5. Conclusion

Gas is being increasingly seen as a viable source of energy to speed up developmental needs in Africa. In Nigeria, while gas is wasted through the air, creating harmful air pollutants, biomass is still the mainstay of cooking and other heating. As a matter of fact, the natural gas currently flared in Nigeria can serve the cooking needs of 320 million people not served by modern fuels.

Petroleum exploitation and production in the Niger Delta over the years have resulted in a number of environmental, socio-economic and political problems in the region. Oil spillage and gas flaring have caused severe environmental damages, loss of plants, animals and human lives, and loss of revenue to both the oil producing companies and the government. Petroleum exploration, exploitation, production, storage, distribution and transportation activities affect the environment in a conspicuously negative manner.

To put an end to the recurring issue of gas flaring in Nigeria's oil and gas sector, the Federal Government should make the practice unprofitable by enforcing stringent penalties against defaulting companies.

Finally, more detailed environmental information should be disclosed by companies operating in the oil and gas sector in their financial or annual reports. Apart from making detailed disclosures by the management of oil and gas companies in

their financial accounts or reports more, costs should be appointed to each factors disclosed as eternality charge. This would make their financial reports more lucid. The Accounting Standard board should make it mandatory for oil and gas companies operating in Nigeria to always present cost-based externality charges in their financial accounts or annual reports.

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