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GAS SECTOR UNDER PETROLEUM INDUSTRY ACT 2021: AN APPRAISALOF THE NLNG PROJECTS AND ITS IMPACT IN CURBING GASFLARINGIN NIGERIA

Prof. S. C. Dike* ,
Okpalaugo Chukwudi F.**
&
Hon. David Omereji***

Abstract

The issue of gas flaring in Nigeria has become a topical one in view of the devastating effect gas flaring has in the socio-economic lives of the people in the affected areas. Historically, it is said that gas flaring is a sold a soil production in Nigeria. Oil exploratory activities of oil companiesin Nigeria have caused gas flaring resulting in loss of lives and properties in the affected communities where gas is flared. There is no specific legal framework that prohibits gas flaring in Nigeria inspite of the environmental problems associated with it. The existing law that appears to regulategas flaring in Nigeria is not effective as it does not completely prohibit gas flaring but only providemonetary penalties for continued flaring of gas by oil companies in Nigeria. This paper adopted the doctrinal method of research. The paper examined the oil and gas industry and gave a historicalbackground of gas flaring in Nigeria. Thereafter, the paper looked at the legal measures put inplace to curb gas flaring in Nigeria as well as the institutional measures in place to address gasflaring. There search also looked at the NLNG projectin Nigeria, its problems and prospects. The paper concluded by making recommendations to include the following: that governmentshould take serious steps to stop gas flaring. That issue of corruption should be properly addressed in order to achieve results from attempts to stop gas flare and environmental pollution. It is also suggested that associated gases should be converted to and used as energy sources, only a minute percentage may be flared as obtained ino the rcountries.

Keywords: Gas, NLNG and Petroleum

* LLB; BL., LL.M, Ph.D (Arberdeen) eme.olie@yahoo.co.uk
** LLB. (NAU, Nigeria) BL (Abuja) Member Professional Negotiators and Mediators of Nigeria, 08175999948
*** LLB; BL., LL.M, Ph.D (in view RSU)

1.1 Introduction

Natural gas is a key source of energy, and supplies around one-fifth of the global energy needs, compared with one-third from crude oil and one-quarter from coal. It is clean burning, environmentally friendly and has a wide variety of uses, particularly for the Nigeria power generation which accounts for bulk of natural gas usage in the domestic sector of the economy.[2] Natural gas is considered the cleanest of all fossil fuels and a source of lower cost, sustainable fuel for power generation for industrial and commercial customersa like for economic development. Nigeria earning from natural gas has increased substantially as a result of sustainedgrowth in the Liquefied Natural Gas (LNG) project and measured by the employment and othersocioeconomic benefits it creates.[3]
Nigeria recorded her first commercial oil discovery in 1958 at Oloibiri village in what is presently referredto as Bayelsa State.[4] In the course of oil exploration over the years, natural gas which is als otermed as associated gas was discovered inlarg equantities. Presently, Nigeria is said to have an estimated proven gas reserve of about 187 trillion cubic feet, and anundiscovered potential of 600 trillion cubic feet, yet, as at 2011, there has been no significant ndependent gas exploration.[5] As are result of the incidental discoveries of gas, gas producers often times resorted to flaring the gas due to inadequate infrastructure 86 amongs to their constraints. Flaring of gas mixed with the crude oil thus began right at the start[6] of oil and gas exploration in Nigeria. Some ofthe reasons adduced for gas flaring as stated by the Colonial Secretary of State for Colonies, Lord Homein 1960 were lack of market, pipeline and storage infrastructure to enhance proper usage of gas. In his words, "until there is this worth while market and until there are facilities (e.g., pipelines and storage tanks) to use the gas. It is normal practice to burn off this by product from the oil wells.[7]

However, there were still some efforts made to utilize natural gas not withstanding the general attitude of gas producers to flare gas. Some oil companies tried establishing a local market forgas, one of which was Shell BP's agreements in 1960 to supply natural gas to some industries at Aba and to the state owned power company, the ECN for itspower stations.[8] This effort of course was one of the baby steps that culminated into large scale gas fired powerg eneration. Gradually, the Nigerian government started paying more attention to the natural gas resource such that a framework was developed for its monetization and utilization. According to Oyewunmi, the strategic framework for the Nigerian gas is: gas to power which entails increase of gas for power supply as well as support of existing and future power plants and generation; gas based industrialization particularly geared towards supporting industries like fertilizer, cement and petrochemicals; and gas export which entails high value gas export, enhancement of liquefied natural gas (LNG) export operations as well as regional and cross-border pipelines.[9]

In an effort to diversify the economy and also to provide natural gas for the domestic industry, the Nigerian government in its 4th National Development Plan (1981-86) announced its intention of establishing a multi- million dollar liquified natural gas project at Bonny in the Southern part of the country.[10] The project is basically to consist of the lifting, gathering, processing and distribution of natural gas, both for export and internal use, from Nigerian oil fields. This gave birth to the Nigerian

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[2]Philip E. Agbonifo " Opportunities, Challenges and Obstacles to Economic Growth and Sustainable Development Through Natural Gas in Nigeria" [2015] (17) (5) *Journal of Sustainable Development in Africa*, 100.
[3]*Ibid*
[4] G. E Etikerentse, *Nigerian Petroleum Law*, (2d ed, Dredew, 2004) 8.
[5] "Nigeria: The Gas Revolution – What about it?" Oil and Gas Update (June 2011) at 1,>https: Acas Law <www.acaslaw.com/cipxprobe/publications/ENERGY%20 AND % 20 PRJECT%20FINANCE% 20 NEWSLETTER% 20JUNE%202011.pdf> accessed 29 January, 2022.
[6] "Gas Flaring in Nigeria: A Human Rights, Environmental and Economic Monstrocity" at 6, online: The Climate Justice Programme, Friends of the Earth International<www.foe.co.uk/sites/default/files/downloads/gas_flaring_nigeria.pdf>.accessd 29 January, 2022.
[7]*Ibid*.
[8] S. A Khan, *Nigeria: The Political Economy of Oil* (Oxford University Press, 1994) 55.
[9] Tade Oyewunmi, "The Nigerian Gas Industry: Policy, Law & Regulatory Developments" at 12>https//: AcasLaw www.acas-law.com/cipxprobe/publications/Nigerian_Gas_Industry_ _Policy,_Law_Regulatory_Developments_-_February_20131.pdf> accessed 28 January, 2022.
[10] O. A. Oyewunmi and A.E. Oyewunmi "Managing Gas Flaring and Allied Issues in the Oil and Gas Industry: Reflections on Nigeria' [2016] (7)(4) Mediterranean Journal of Social Sciences (MCSER Publishing), 643.

Liquefied Natural Gas Limited (NLNG)[11] which has been adjudged to be a successstory in gas utilization in Nigeria.[12]

The reality in Nigeria was that prior to the regime of the NLNG project, around 3,000 million standard cubic feet of gas is produced annually. Due to lack of gas utilization infrastructure, Nigeria flares 75% of the gas it produces and re-injects 12% to enhance oil recovery.[13] A major export of liquified natural gas in Nigeria is the NLNG.[14] The export of liquified natural gascommenced in 1999 with the establishment of the NLNGand designed to utilise Nigeria'senormous gas reserves. The NLNG and the Brass NLG are Nigeria's operating LNG companies. NLNG has sixtrains and the seven this currently under construction.[15]

Prior to the NLNG regime, Nigeria was the world's highest natural gas flaring country with 42. 6 percent of its total annual natural gas production beingflared. Nigerian National Petroleum Company[16] (NNPC) had estimated that Nigerian flared gas accounts for approximately 20 percent of the world total.[17] With the aim of increasing gas utilization, the NNPC set up a company, the Nigerian Gas Company Limited in 1988, with the specific task of developing, harnessing and marketing natural gas from the domestic market. A number of projects are being developed to increase the utilization of gas and reduce gas flaring.[18] This paper will therefore, look at the gas sector under the Petroleum Industry Act (PIA) 2021 while specifically addressing issues bordering on gas infrastructure, gas transportation with a view to bringing out its prospects and challenges.

2.0 Conceptual Classification

2.1 Gas Flaring

Gas flaring is the process of burning-off associated gas from wells, hydrocarbon processing plants or refineries, either as a means of disposal or as a safety measure to relieve pressure.[19] It is now recognized as a major environmental problem, contributing an amount of about150 billion m3 of natural gas is flared around the world, contaminating the environment with about 400 Mt CO2 per year.[20] Losses from flares are the single largest loss in many industrial operations, suchas oil-gas production, refinery, chemical plant, coal industry and land fills. Wastes or losses to the flare include process gases, fuel gas, steam, nitrogen and natural gas.

Similarly, the Canadian Association of Petroleum Producers defined gas flaring as the controlled burning of natural gas that cannot be processed for sale or use because oftechnicalor economic reasons.[21] Gas flaring can also be defined by the combustion devices designed to safely and efficiently destroy waste gases generated in a plant during normal operation.Itis coming from different sources such as associated gas, gas plants, well-tests and other places. It is collected in piping headers and delivered to a flare system for safe disposal. A flare system has multiple flares to treat the various sources for waste gases.[22] Most flaring processes usually take place at the top of stack by burning of gases with the visible flame. Height of the flame depends upon the volume of released gas, while brightness and color depend upon composition.[23]

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[11] Established by virtue of the Nigeria LNG (Fiscal Incentives, Guarantees and Assurances) Act, Cap.N87, LFN,2004.
[12] *Ibid*
[13] Yemi Oke, *Nigerian Energy Resources Law and Practice*, (Princeton, 2019) 802.
[14] *Ibid*
[15] *Ibid*
[16] Now known as NNPC Limited by the coming into effect of the Petroleum Industry Act, 2021
[17] Isabella E. Okagbue, "The Law and Development of Natural Gas in Nigeria", Occasional Paper no. 9, Nigeria Institute of Advanced Legal Studies.
[18] R. Mabro(ed.) Natural Gas: An International Perspective (Oxford UniversityPress,1986)5.
[19] F. Ghadyanlou and A. Vatani., Chemical Engineering, Essentials for the CPI Professional.
2015, chemengonline.com. Cited in Eman A. Eman "Gas Flaring in Industry: An Overview" [2015] (57) (5)
Journal of Petroleum and Coal, 532.
[20] *Ibid*
[21] Canadian Association of Petroleum Producers, Flaring & venting,> http://www.capp.ca/environmentCommunity/airClimateChange/Pages/FlaringVenting.asp>accessed 2 February 2022.
[22] Eman (n.18) 532.
[23] *Ibid*

2.2 Natural Gas

Natural gas (also called fossil gas) is a naturally occurring hydrocarbon gas mixture consisting primarily of methane, but commonly including varying amounts of other higher alkanes, and sometimes a small percentage of carbon dioxide, nitrogen, hydrogen sulfide, or helium. Methane makes up 70-90% of natural gas. As the name and definition suggests, it is a completely natural gas, because it comes from dead animals buried deep under the earth's surface.[24]

2.3 Liquefied Natural Gas

Natural Gas can be converted into liquid that is known as Liquefied Natural Gas (LNG). At 162oC in the presence of atmospheric pressure, natural gas is converted to liquid. After liquefaction, volume of natural gas is reduced 600 times of its original volume that makes it easier to transportfrom one place to another place as compare to another source of fuel energy.[25] LNG is green gasbecause impurities including dust, carbon dioxide, some of the heavier hydrocarbons and water vapours present in natural gas are removed during condensation. After removing of impurities, LNG is basically consisting of me thane with only small number of other hydrocarbons. Chance offlammability is decreased after condensation; it is anon-toxic, non-corrosive and odourless liquid. LNG is lighter than water, weight of LNG is half the weight of water. This therefore, means that it may float if spilled on water.[26]

3.0 An Overview of Nigeria's Oil and Gas Industry

According to United States Energy Information Administration (US-EIA), Nigeria has an estimated 37.062 billion barrels of proven crude oil reserves as of December 2015equal to 2.2% of the world's share that brings the country in the top ten.[27] It also had an estimated 182 trillion cubic feet of proven natural gas reserves, which is equivalent to 2.7% of world's gas reserves and this makes Nigeria the ninth largest deposit of natural gas in the world and the largest in Africa.[28]

As Africa's leading hydrocarbon producer, Nigeria accounted for 26% of African and 2.7% of total world crude oil production in 2012, where in the same year it accounted for 1.1% of global gas production.[29] The Nigeria's oil and gas dominate the extractive sector and is the main stay of the country'seconomy; it was estimated to account for about 14% of Nigeria's real gross domestic productin 2013[30]. In 2012, the Nigeria'soil and gas industry accounted for 96%of exporter venue, a more than USD$100 billion of revenue to the government.

The NNPC reported that, total crude oil production for the year 2013 was 800,488,102 barrels, giving a daily average of 2.19mm/pad while a total of 2,325.14 Billion Standard Cubic Feet (BSCF) of Natural Gas production was reported.[31] However, a substantial part of the production is being flared because of major factors that would be discussed later in this article. Even though petroleum activities in Nigeria started in 1908,[32] the Gas flaring began at the commencement of the production in 1956 where 95% of the total gas produced was flare.[33]At that time there was no any legal frame work regulating Gas flaring but was only covered in general under the Nigerian Constitution where it provides that; "The State shall protect and improve the environment and safeguard the water, air and

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[24] MET Group" What is Natural Gas? Meaning, Definition and Description>https://www.grup.met.com>accessed 2 February 2022.
[25] Muhammad Shoukat Hussain "Introduction, Advantages and Chemistry of Liquefied Natural Gas" [2019] *Research and Development, Parkistan Steel*, 1.
[26] *Ibid*
[27] OPEC Annual Statistical Bulletin "Overview of Nigeria's Oil and Gas Sector", available at: http://www.opec.org/opec_web/en/about_us/167.htm accessed on 31 January 2022.
[28] British Petroleum (BP), 'Statistical Review of World Energy' June 2014, <http://www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2014/BP-statistical-review- of- world-energy-2014-full-report.pdf.> accessed 14 January/2022.
[29] *Ibid*
[30] British Petroleum (n27)
[31] *Ibid*
[32] Nigerian National Petroleum Corporation (NNPC), 2013 Annual Statistical Bulletin' Corporate Planning and Strategy Division, <http://www.nnpcgroup.com/Portals/0/Monthly%20Performance/2013%20ASB%201st%20editio n.pdf.>accessed 25 January 2022.
[33] George Sampson Akpan, 'The Failure of Environmental Governance and Implications for Foreign Investors and the Host State – A Study of the Niger Delta Region of Nigeria' [2005] (3) OGEL.

land, forestand wild life of Nigeria".[34] In the course of oil exploration over the years, natural gas which is also termed as associated gas was discovered inlarge quantities. As a result of the incidental discoveries of gas, gas producers of tentimes resorted to flaring the gas due to inadequate infrastructure[35] amongst other constraints. Flaring of gas mixed with the crude oil thus began right at the start[36] of oil and gas exploration in Nigeria. Some of the reasons adduced for gas flaring as stated by the Colonial Secretary of Statefor Colonies, Lord Home in 1960 were lack of market, pipeline and storage infrastructure toenhance proper usage of gas. In his words, "until there is this worthwhile market and until thereare facilities (e.g., pipelines and storage tanks) to use the gas, it is normal practice to burn off thisby product from the oil wells.[37]

However, there were still some efforts made to utilize natural gas not withstanding the general attitude of gas producers to flare gas. Some oil companies triedestablishing a local market for gas, one of which was Shell BP's agreements in 1960 to supply natural gas to some industries at Aba and to the state owned power company, the ECN for itspower stations.[38] This effort of course was one of the baby steps that culminated into large scale gas fired power generation over the years. Gradually, the Nigerian government started paying more attention to the natural gas resource such that aframe work was developed for its monetization an dutilization.

The nation's gas agenda puts gas-to-power at the core, while it also envisions an aggressive gas based industrial growth which in turn will drive further growth of power demand.[39] Installed generation capacity has been scaled up from about 6000MW (4 Gas Fueled & 3 Hydro Powered) in year 2002 to about13, 700MW (25 Gas Fueled & 3 Hydro Powered) in 2013–a very significant growing thing as fired generating capacity.[40] However, unreliable and non-existent gas supplies for gas fired plants as at when due have contributed to a major ongoing crisis in power deliveries, crippling the nation's economy and inhibiting new investment.[41]Several power plants are down because of gas supply.[42]

3.1 Gas Flaring in the Niger Delta

Shell British Petroleum (Shell BP) started exploring oil in the Niger Delta in the 1930s.[43] The first export was made in 1958.[44] In this same year, the Secretary of State forthe colonies referred to gas flaring[45] as wastage of energy and resources for which those giving advice to the Nigerians (i.e. the British) could be reproached.[46] In Nigeria, over 50% of the gas associated with crude oil extracted is flared. However, this separated gas could be made more useful as liquefied natural gas, re-injected into the earth, venting flared.[47]

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[34] 1999Constitution (asamended), s. 20.

[35] Theresa O. Okenabirhie, "The Domestic Gas Supply Obligation: Is this the Final Solution to Power Failure in Nigeria? How Can the Government make the Obligation Work?" [2009] (13) CEPMLP Annual Rev, 10, online: Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee<www.dundee.ac.uk/cepmlp/gateway/index.php?news=30880> accessed 29 January 2022.

[36] "Gas Flaring in Nigeria: A Human Rights, Environmental and Economic Monstrocity", 6, online: The Climate Justice Programme, Friends of the Earth International www.foe.co.uk/sites/default/files/downloads/gas_flaring_nigeria.pdfaccessed 25 January 2022.

[37] Ibid

[38] S.A. Khan, Nigeria: The Political Economy of Oil (Oxford University Press, 1994); E.U. Azaino, "Gas Supply Availability: Can Nigeria Effectively Balance its need of Gas for Domestic Economic
Growth and Revenue Generation from Export of Gas?" (LLM Thesis, Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee, 2012) ,16 (Unpublished).

[39] Stanley Opara, "Gas Master Plan and Challenge of Inadequate Funding" Punch Newspaper (26 July, 2012)
>www.punchng.com/business/energy/gas-master-plan-and-challenge-of- inadequate-funding/ accessed 25 January, 2022.

[40] Adedamola A Adegun, "Fix It: Nigeria's Power Sector Is Too Exposed to Gas" Africa Oil and Gas Report [2014] Africa Oil and Gas Report, online: Africa Oil and Gas Report <www.africaoilgasreport.com/2014/03/opinion/fix-it- nigerias-power-sector-is-too-exposed-to-gas-by- adedamola-a-adegun-3/> accessed 25 January 2022.

[41] Ibid

[42] Ademola, (n.31).

[43] ERA/CJP, Gas Flaring in Nigeria: A Human Rights, Environmental and Economic Monstrosity, (Amsterdam, 2005) 52.

[44] Ibid

[45] Ibid

[46] S. Sadler, the British Trade Commissioner in Lagos to the Economic Relations Department of the Foreign office in London on 9th August, 1963.

[47] N. Bassey "Assaulting Communities, Jeopardising the World", Environmental Rights action in conjunction with Federal Ministry of Environment held at Reiz Hotel, Abuja, 10th to 11th November, 2008.

The first major move to halt gas flaring in Nigeria was made in 1969 via the Petroleum Decree and the Land Use Act of 1978. These Laws vested oil and land resources, respectively, in the State. 12 Subsequently, Nigeria joined the Organization of Petroleum Exporting Countries (OPEC) in 1971, and in furtherance of member states to acquire controlling interest inconcession sheld by foreign companies, the Nigeria military government established the Nigerian National Oil Corporation (NNOC)[48] and ordered the set-up of infrastructure to utilize associated gases within 5years of their commencement of operations. The order was neglected by oil companies, until 1979 when the Associated Gas Re-injection Act[49] was made to finally out law routine gas flaring in Nigeria. The Act required oil corporations to produced tailed plans for gas utilization and guarantee zero flares by January 1, 1984, except with the express permission of the minister.[50]

Upon return of civilian administration in 1999, oil companies were required to end flaring of gases by 2003, later shifted to 2004, and December 2008 subsequently.[51] Shell in its sustainability Report 2006 asserted that they would end routine gas flaring every where in the world in 2008 except in the Niger Delta,[52] because the locations are not easily accessible, and ending of flares may lead to the shut down of production in some areas. Again, in 2007, Shell in its sustainability report raised the violent nature of the region as a further excuse for notending gas flaring. [53]Exxon Mobil declared 2010 as appropriate for ending gas flaring.[54] While Chevron also opted for year 2010 asthe appropriate time for ending gas flaring.[55]

Efforts to penalize oil companies for flaring gasses beyond the stipulated date has been futile, as the companies opt for payment of fines rather than stopping flaring of gases. For instance, in the Associated Gas Re-injection Act of 1979, the sum of 0.50Nairais being charged per million cubic feet (mcf) for flaring gases, but in 1998 this penalty wasincreased to 10 Naira permcf.[56] In 2009, the penalty was raised to $ 3.5022 for every 1,000cubic feet of gas flared. However, the former Senate President, David Mark noted that theproposed fineof $3.50 per 1,000 cubic feet of gas flare dismeager and would not deterth ecompanies.[57] Considering the continuous shift of the date forending flaring of associated gases, it is difficult to state when themenace will end.

4.0 Legal and Institutional Framework against Gas Flaring in Nigeria

As early as the 1960s, Government has started putting laws in place to stop flaring of gases in the Niger Delta; these include Petroleum Act of 196 9and the Gas Re-injection Act of 1979. [58] Prior to this time, here were some laws that regulate oil activities though mosto fit was enacted indirect response to problems associated with processing foil.[59] Also, the increased international concern about the need for environmental protection has led to development of various treaties and declaration to which States are signatories.

4.1.1 Constitution of the Federal Republic of Nigeria 1999 (as Amended)

The 1999 Constitution which is the Supreme Law in Nigeria provides for environmental protection[60]

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[48] Ibid

[49] Cap A, LFN, 2004 now repealed by the PIA Act.

[50]Hakeem Ijaiya1, Mutiat Abdulsalam La-Kadri and Maryam Bayero Jimoh "Institutional and Legal Control of Gas Flaring in the Niger Delta Region of Nigeria" [2018] (5) (1) Brawijaya Law Journal of Legal Studies, 31.

[51] Ibid

[52] Ibid

[53] C., Nwachukwu, Gas Flaring: Oil Majors Seek extension of Deadline to 2010, The Punch, Lagos, Wednesday 14, November, 2007

[54]*Ibid*

[55]*Ibid*

[56] GAS, Global Gas Flaring Reduction Initiative: Report No. 3: Regulation of Associated Gas Flaring and Venting ± A Global Overview and Lessons" (World Bank, March 2004), 60-64.

[57]*Daniel, Alifa, "Gas Flare Fine Meager says Mark," The Guardian, Thursday, November 25, 2008.*

[58] Nowrepealedbythe PIAAct2021.

[59] For example, Mineral Oils Ordinance of 1914, Mineral Act of 1945, Exclusive Economic Zone Decree now Act of 1978 (No 28 of 1978, Cap. 110, LFN 1990), Petroleum Drilling and Production Regulations of 1969 ± Decree No.
51 of 1969, Petroleum Refining Regulations of 1974 and Oil Pipeline Act 1958.

[60] CFRN, 1999, S.20.

in a broad manner, and it falls under Chapter 2 of the Constitution, which is non-justiciable. To this end, it will not bringabout any serious environmental change, especially as it relates to regulating gas flaring.

4.1.2 Petroleum IndustryAct 2021

Petroleum Industry Act,[61] has provisions that are instructive incombating themenace of gas flaring if implemented. This Act seeks to consolidate all the existing oil and gas laws in the country. The Act provides for prudent management and allocation of petroleum resources and their derivatives inaccordance with the principles of good governance, transparency and the sustainable development of Nigeria.[62] It prohibits gas flaring after a specified date to be fixed by the minister through regulations to be made pursuant to the Act.[63] Where a licensee or lessee flares gas without the permission of the Minister, payment of a fine, of an amount not be less than the value of the gas flare is prescribed.[64] The Act prohibits the issuances of a license or lease for the production of oil and gas to any applicant without an acceptable comprehensive program or the utilization or reinjection of natural gas.[65] It mandates all operators to install metering equipment to measure the volume of gas flared,[66] within three months of the Act coming into force, criminalizes flaring without a permit[67] and mandates any person, group of persons or community to lodge a documented report of gas flarin for venting with the nearest office of the inspectorate.[68] An officer of the Inspectorate is required to inspect the facility within forty eight hours of receiving the report, andwithin seven days submit a verification report to the inspectorate, if convinced, fine may be imposed or a shutdown order may be made.[69]

4.1.3. Environmental Impact Assessment Act 1992

Environmental Impact Assessment (EIA) Act[70] requires the developers of major development projectsto subject their projects to the provisions of the EIA Act by conducting an environmental impact assessment before commencing work. It therefore recognizes the need for proper legal framework in order to curtail gas flaring. However, most projects are carried-out without EIA.

4.1.4 West African Gas Pipeline Project (Ratification and Enforcement) Act 2003

The government in order to facilitate the utilization of gas entered into a treaty with three West African Countries for the West African Gas Pipeline Project in January 31, 2003. This Treaty established theWest African Gas Project Authority (WAGP Authority), an international institution having legal personality and financial autonomy with powers to implement the project on behalf of member states.[71]

4.1.5 The Nigeria Liquefied Natural Gas Act 1989

Nigeria LNG Limited was incorporated as a limited liability company on May 17, 1989 to harness Nigeria's vast natural gas resources and produce Liquefied Natural Gas (LNG) and Natural Gas Liquids (NGLs) for export.[72] The company is owned by four shareholders, namely, the Federal Government of Nigeria, represented by Nigeria National Petroleum Corporation Limited (49%); Shell (25.6%); Total LNG Limited (15%) and Eni (10.4%).[73] The Act confers on the company the status of a pioneer company.[74] In addition, interest or any other amount payable or paid to any company other than a Nigerian company in respect of any loans or financial arrangements made with the company is

[61] Passedandassentedtoin2021.
[62] PIA, ss. 8-9
[63] *Ibid*,275.
[64] *Ibid*, s.277(3).
[65] *Ibid*, s.278
[66] *Ibid*, s.279.
[67] *Ibid*, s.281.
[68] *Ibid*, s.280.
[69] *Ibid*, s.280(2) (6).
[70] Cap.E8, LFN,2004.
[71] Jaiya, La-Kadri and Jimbo (n41), 33
[72] Oke, (n.12),813
[73] Ibid
[74] NLNG Act, s.1(1).

exempted from taxation in Nigeria.[75]

5.1.6 National Gas Policy

The aim of the National Gas Policy the policy is to stimulate the growth of gas-based industries in the country. The features of the Nigerian Gas Policy are:

a. Establish gas to be as stand-alone product
b. Developed midstream activity for the gas sector
c. Give priority on domestic gas supply.
d. Stress on gas industry structure for ensuring sustainable growth.
e. Provide new reforms to boost efficiency of multi-national gas operation companies
f. Focus on gas sector improvement, infrastructure, and resourceas well as building gas markets.
g. Lay a solid foundation for transparency inpolicy, regulation, procurement licence, lease, awards and renewals.[76]

Fundamentally, the objectives of the gas policy include:

(a) Encourage increased participation of private investors in the gas sector.
(b) Remove barriers to investment in the gas sector.
(c) Diversify the domestic gas supply options to ensure energy security in the country.
(d) Expand gas penetration within Nigerian market inorder to facilitate the growth of the industries, electricity, and agricultural sectors.
(e) Gain acceptability of Nigerian gas indomestic and international markets.
(f) Introduce standard in health, safety and environment.
(g) Endgas flaring and protect the environment.[77]

4.2 International Legal Framework

4.2.1 Stockholm Conference 1972

The 1972 Stockholm Conference on Human Environment which ignited government's consciousness son the need for a holistic rather than sectorial approach to environmental protection.[78] It was regarded as a success and as soft law instrument by international standard. The conference came up with 26 principles, calling on States and international organisations to play acoordinated, efficient and dynamic roleinthe protection of the environment.[79]

4.2.2 World Summiton Sustainable Development

The Summit encouraged and recognizeda total of 266 partnerships on sustainable development.[80] The most significant of which was the Global Gas Flaring Reduction Initiative (GGFR), launched formally at the World Summit on Sustainable Development (WSSD), in Johannesburg, SouthAfrica in 2002, with the objective of reducing carbon emissions and environmental impact offlaring, monetization of wasted resources, improvement of energy efficiency and access to energy.[81] The initiative seeks to commercialize and regulate associated gas, implement global flaring and venting standard to obtain carbon credits for gas flaring, flaring projects and harnessthe support of relevant stakeholders in developing a feasible approach to flare reduction throughthe Nigerian Flare Reduction Committee (NFRC).[82]

4.2.3 African Charteron Humanand Peoples' Rights

African Charter on Human and Peoples' Right became part of the law of Nigeria pursuant to its adoption and domestication as African Charter on (Application and Enforcement) Act. The Charter

[75] Ibid, NLNG Act, S.2
[76]Abdulkadir, Sarauta, Abdullahi, Ahmed Chinade & Hajara Salihu Bawa "Review of Nigeria's Effort to Stop Gas Flaring by 2020" [2019] (6) (1) International Journal of Strategic Research in Education, Technology and Humanities, 139-140.
[77] Abdulkadir(n75)
[78]NLNG Act s.2
[79]*Ibid*
[80] The UN Secretary-General Report of the Secretary General on Partnership, 3, delivered to the Economic and Social Council, UN Doc. E/CN.17/2004/16. (February 10, 2004).
[81] Jaya, Lakadri and Jimo (n.62), 37.
[82] Jaya, Lakadri and Jimo (n.62).

contains ample provisions on civil and political rights, economic, social and cultural rights, and right to a general satisfactory environment among others.[83] On how the provisions of this Charter could help to protect the environment, the case of *The Social and Economic Rights Action Center and the Center for Economic and Social Rights v Federal Republic of Nigeria*[84] is instructive. The right to a healthy environment was addressed by the African Commissionon Human Rights. This case was a land mark decision because it represents the turning point where the provisions of the Charter were interpreted broadly to incorporate the protection of environment.

4.2.4 The Nigerian Upstream Regulatory Commission

The oil and gas industry comprise of the upstream, down-stream and the midstream sectors. The upstream sector involves hydrocarbon exploration, drilling exploratory wells and subsequently drilling production, management of the Wells that produce crude oil or raw natural gas to the surface. The upstream sector is regulated by the Nigerian Upstream Regulatory Commission (Commission).[85] Part of the objectives of the Commission is to regulate upstream petroleum operations including technical, operational and commercial activities and to ensure compliance with all applicable laws and regulations governing upstream operations. Section 7 provides for the technical function of the Commission which includes issuing permits issuing permits and other authorization for as may be necessary for technical activities.

4.2.5 The Nigerian Midstream and Down Stream Petroleum RegulatoryAuthority

Midstream operations include processing, storing, transporting and marketing of oil, natural gas and natural gas liquids. The down stream operations include such activity such as refining of crude oil, processing and purifying of raw natural gas as well as aspect of marketing and distribution of crude oil and gas. The Nigerian Midstream and Down Stream Petroleum Regulatory Authority (Authority) is empowered to grant license for both midstream and downstream operations.Where it meet stechnical standards required for petroleum operations based on good international petroleum industry practices; meets the health, safety and environmental standards; and provides for the economic and efficientuse of facilities and pipelines.[86]

The Authority can issue wider ange of licenses to qualified applicants.[87] The licenses includes:

1. Gas process inglicense.[88]
2. Bulk gas storage license.[89]
3. Gas transportation pipeline license.[90]
4. Gas transportation network operator license.[91]
5. Whole sale gas supply license.[92]
6. Retail gas supply license.[93]
7. Domestic gas aggregation license.[94]

Consistent with the power to grant, the Authority can still revoke the license subject to the grounds under section 120 of thePIA.

4.2.6 Federal Ministry of Environment

The Federal Ministry of Environment (FME) through the oil and gas division overlap with the statutory responsibility of the Commission and Authority to a great extent. The FME affirms in its website that it carries out review of environmental compliance monitoring reports submitted by the operators in the oil and gas industry, monitors upstream and downstream operations, including the

[83] Articles 4, 16, 24, and 25 among others
[84] Comm. No. 155/96 (2001).
[85] See generally the Petroleum Industry Act (PIA), ss. 4-25.
[86] PIA, s.111.
[87] Subject however to the exception provided under the PIA, s.114
[88] PIA (n. 85), s.129.
[89] Ibid, s. 132.
[90] Ibid, s. 135.
[91] PIA (n. 84), s.138
[92] Ibid, s. 142.
[93] Ibid, s. 146
[94] Ibid, s. 148.

implementation of federal government gas flare down policy, gas gathering, processing andutilization projects as well as the monitoring and certification of facilities, decommissioning and oil well closure. Similar to the role of FME, section 7 (e) (ii) PIA define and enforce approved standards. Also, section 108 PIA require licensee producing natural gas to produce natural gas flare eliminationand monetization plan. The Commission can also monitor compliance and impose gas flarepenalties.

5.0 Efforts made to Address Gas Flaring in Nigeria

After many years of working overhauling the legislative framework of the oil and gas industry in Nigeria, the Nigerian government made a significant legislative effort to combat the menace of gas flaring in Nigeria through the Petroleum Industry Act 2021 (PIA).[95] The Act seeks to consolidate all existing oil and gas in the country into one piece of legislation[96] by addressing certain fundamental issues as the dichotomy between oil and gas regimes; progressive acreage management, among others. The Petroleum Industry Act is an Act that provides for the establishment of legal, fiscal and regulatory framework for the Petroleum industry in Nigeria and for other related matters.

Part 1 of the Act lists a number of objectives which include the creation of conducive business environment for petroleum operations[97], enhancement of exploration and exploitation of petroleum resources in Nigeria for the benefit of the Nigerian people[98], creation of an efficient and effective regulatory agencies 48, among many others. Of particular interest is the provision of Part 1, Section 1(j) which enumerates another objective of the Act as being to 'protect health, safety and the environment in the course of petroleum operations; for the benefit of the Nigerian people. Regrettably, this provision is a contradiction to what is obtainable in the sense that it still offers no protection on the health of citizensin vulnerable locations where gasflaring persists.

A comparison of the PIA and the repealed Associated Gas Re-Injection Act of 1979 reveals a similarity between the two legislations as the PIA does not outrightly prohibit gas flaring in Nigeria. Rather, the Act makes provision for the payment of penalties for gas flaring violations, a merereplication of the earlier Acts. Specifically, section 201 of the Act stipulates that the 'lessee shall pay such gas flaring penalties as the Minister may determine from time to time'. There is also an added obligation on the part of the lessee to install all such measurement equipment as ordered by the Inspectorate 49 to properly measure the amount of gas being flared.[99]

The current state of affairs in the gas industry reveal clear reluctance on the part of the Nigerian government to prohibit gas flaring in the country. There are many plausible reasons for this status quo which include the concern by the government about the likely effect of such a prohibition on oil operations that may ultimately affect the Nigerian economy, the huge financial resources required for gas re-injection and the inability of the Government to meet their financial obligations in the various joint ventures, coupled with the lack of required infrastructural facility, and the insistence by the oil and gas companies of their inability to meet the various deadlines.[100] The foregoing reasons notwithstanding, it is hoped that after the transition period, the effective administration of the PIA, will in no small measure address the issue of gas flaring to its minimum. The key aspect of the Act touching on Associated Gas (AG) flaring has been the Chapter D[101] that addressed a wide range of issues. The Act prohibits AG flaring, but provides certain exceptional situations, which permit may be granted.[102] For instance, for safety reason, in cases of start-up, equipment failure, shutdown, or due to the inability of the gas customer to take-off delivery-outdate, which is to be prescribed by the Minister in regulations to be made pursuant to the Act.[103] It declared that, any company that flares or vents AG without a permit from the Minister shall liable to pay a fine, which

[95] Uwem Udok & Enobong Bassey Akpan "Gas Flaring in Nigeria: Problems and Prospects" [2017] (5) (1) Global Journal of Politics and Law Research, 23.
[96] Ibid
[97] PIA, S.1(a)
[98] Ibid s.1(b)
[99] Udok and Akpan (n.70), 23
[100] Ibid
[101] PIA, ss. 251-259.
[102] Ibid, s.251
[103] PIA, s. 233 (1)(b).

shall not beless than the value of the gas flared.[104] It also makes AG flaring without a permit a criminal offence.[105] In particular, the Act imposes the requirement of a gas utilisation plan as a condition precedent for grant of an oil production lease or license in the Nigerian petroleum industry. It provides that; "a license or lease for the production of oil and gas in Nigeria shall not be granted to a company unless the application is accompanied by a comprehensive gas utilization or re-injection programme which is acceptable to the Minister". [106]It also mandates all operators to install metering equipment within three months of the Act coming into force to measure the volume of gas flared.[107]

5.1 The Nigeria Liquefied Natural Gas Project

It is reported that since the 1960s several attempts have been made to build LNG plants in Nigeria. The Nigerian Government renewed efforts at securing foreign capital for the venture, leading tothe restructuring of the project's equity participation.[108] The NLNG project was on the drawing board for over 30 years until bankable agreements that offered incentives were reached to instill the confidence of reputable British, France and Italian investors to accept committing huge investment for the project. Presently, NLNG has become Nigeria's cash cow, and the country has reaped over 33 billion US dollars from its investment of only 2.5 billion US Dollars. The company has been able to grow from its original 2 Trains to 6 Trains and the seventh currently under way creating an asset base of 30 billion US Dollars.[109]

The Nigerian LNG projectat Bonny Island has been constantly expanded since it began commercial operations in 1999.[110] A turnkey Engineering procurement and Construction (EPC) Contract was awarded to a consortium off our engineering firms comprising Shamrogetti, MvKellong, Technip and Janpuru Gas Corporation (TSK) for 1.2 billion USD. The contract included construction of the plant, gas transmission systemand the residential area.[111]

Presently, with six trains currently operational, NLNG's plant on Bonny Island in Rivers State, is capable of producing 22 Million Tonnes Per Annum (MTPA) of LNG, and 5 MTPA of (LPG and Condensate) from 3.5 Billion (standard) cubic feet per day (Bcf/d) of natural gas intake. NLNG near term expansion plans include the construction of seventh train to complement the existing six trains structure, when in operation will up the company's total production capacity to 30 million tons per annum of LNG.[112]

The basis for the NLNG is to stop gas flaring in Nigeria and to ensure increased revenue to the government from energy resources sector. Liquefied natural gas is natural gas that has been cooled to the point that it condenses to a liquid, which occurs at a temperature of approximately 256 of (161Oc) and at atmospheric pressure. The major stages of the NLG value chain, excluding pipeline operations between the stages, consist of the following:

1. Exploration to find natural gas in the earth's crust and production of the gas for delivery to gas users. Most of the time, natural gas is discovered during the search foroil.
2. Liquefaction to convert natural gas into a liquid state so that it can be transported in ships.
3. Shipping the LNG inspecial purpose vessels.
4. Storage and regasification, to convert the LNG stored inspecially made storage tanks, from the liquefied phase to the gaseous sphase, ready to be moved to the final destination through gas pipeline systems.[113]

Liquefied Natural Gas is about the turning or transforming natural gas into liquid so as to allow usage in that state. Mainly, this is done for ease of transportation. Prior to the NLNG regime, Nigeria was

[104] Ibid, s. 277 (3).
[105] Ibid, s. 281.
[106] Ibid, s.278.
[107] Ibid, s.279.
[108] Oke, (n.71), 813.
[109] *Ibid*.,
[110] Facts and Figures on NLNG 2018>https//;nlng.com/media-center/pages/Facts-and-Figures.asp>accessed 29 January 2022.
[111] Oke, (n.107), 814
[112] Nigeria LNG Limited>https//:www.nlng.com/our-company/pages/profile.asp>accessed 29 January 2022.
[113] Oke, (n.110), 803.

the world's highest natural gas flaring country with 42.6 percent of its total annual natural gas production being flared.[114] With the aim of increasing gas utilization, the NNPC setup the NLNG Limited with specific task of developing, harnessing and marketing natural gas from the domestic market. A number of projects are being developed to increase the utilization of gas and to reduce gas flaring.[115]

5.2 Gas Infrastructure

In the context of security of supply, gas infrastructure development plays a crucial role.[116] A principal requirement of natural gas transportation systems is that it be capable of meeting peak demand under uncertainty in an economically viable way.To meet this requirement, the facilities developed by the natural gas transportation industry are a combinationof transmission pipelines to bring the gas to the market areas and of underground natural gas storage sites and liquefied natural gas (LNG) facilities located in the market areas.[117]

5.3 Problems of the NLNG Gas Project

Current estimates put the proven reserve at about 187 Tcf and NNPC Limited estimates that probable gas reserves may be over 600Tcf. This makes Nigeria with the highest gas reserve in Africa and 7th in the world. In other to ensure overall sustainability of the venture, the NLN centered into agreements to ensure gas feedstock supply with three joint venture stock partners.[118] This is often cited as one of there reasons for insufficient gas production and or supply for domestic consumption, particularly for power generation. This is unconnected with the fact that NLNG has secured readily available gas supply at globally competitive prices which could not be matched by local gas users in the power sector and other segments ofthe country. According to estimates made by NLNG, the sixth train requires additional feedbags to the extentof 670MMscfd.[119] NLNG is not threatened by the lack or inadequacy of gas supply to its trains unlike the power plants in Nigeria.[120]

In spite of the above, NLNG faces some key barriers which have militated against the growth, development and economic impact to date and these include inappropriate/unrealistic pricing of gas, especially for domestic use; inadequate gas supply infrastructure; low level of industralisation; in adequate consumptive capacities; corruption and lack of managerial ability on the Nigerians amongst others.[121]

5.4 Prospects and Strategic Intervention to reposition the NLNG Gas Project

To address the problems of the NLNG project, the Government deployed a four-pronged approach initiated in order to reposition the gas sector. These are the development of a natural gas policy, legislative view, fiscal reforms and a gas master plan. The quest of the Nigerian government or regime of effective gas utilisation led to the formulation and publication of the Nigerian Gas Master Plan.[122] The underlying thrust of the policy rested on protection of the rights and interestof the country with respect to its vast gas resources. The policy initiative listed the elimination of gas flaring as one of its cardinal objectives, it sought to develop the local economy and also maintain reasonable export market through an optimalutilization of gas resources.[123]

The vision of the 2017 National Gas Policy (NGP) is "to be an attractive gas based industrialnation, giving primary attention to meeting local gas demand requirements, and developing a significant presence in international markets and by its mission, it intend store move Nigeria from a crude oil

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[114] *Ibid*
[115] R. Mabro (ed.) Natural Gas: An International Perspective (OxfordUniversityPress,1998)803
[116] *Ibid*
[117] R.Mabro,805
[118] Oke,(n.112).
[119] *Ibid*, 817.
[120] *Ibid*.
[121] *Ibid*
[122] This led to the formulation of the 2017 National Gas Policy. See also Banwo and Ighodalo, "Synopsis of the 2017 National Gas Policy">https://www.banwo-ighodalo.com/resources/synopsis-of-nationalgas- policy>accessed 1 February, 2022.
[123] Amanze R. Ejiogu, "Gas Flaring in Nigeria: Costs and Policy" [2013] (24) (6) *Energy & Environment Journal*,983.

export-based economy to an attractive oul and gas – based industrial economy.[124] The core principles upon which gas -based industrialization will be driven include: to separate the respective roles and responsibilities of government and the private sector, to establish a single independent petroleum regulatory authority; to implement international best practice for environmental protection; to establish strong linkages with electric power, agriculture, transport and industrial sectors; to ensure security of assets; among others.[125]

The gas master plan has been developed to provide a framework for Nigeria to maximize the benefits derivable from its gas resources through leveraging the multiplier effect of gas in the domestic economy and optimization of Nigeria's share in the high value export market.[126]

6.0 Conclusion

Due to lack of utilization infrastructure, Nigeria flares 75% of the gas it produces and re-injects12% to enhance oil recovery. A major export- oriented gas production in Nigeria is the NLNG.[127]The primary objective of setting up of the NLNG is profit and the elimination of wasteful gas flaring which pollutes the environment. NLNG is a success story and a profitable venture. To ensure the success of the venture, the Government provided series of institutional incentives toencourage gas export related activities of the NLNG. Key among these initiatives include tax free dividends, accelerated capital allowances, non-application of withholding tax on interest payable on any loan obtained with the prior approval of the Minister of Finance for a gas project and tax free period.[128] NLNG and its contractors and sub-contractors are also exempted from the payment of import duties, taxes and all other duties, levies, charges and imports of a similar nature. These are in respect of necessary imports of plant, machinery, goods and materials for use in the construction of, or incorporation in the plant, jetties, shipping, and transmission facilities. Similarly, no export duties, taxes or other duties, levies, charges or import of a similar nature is payable or imposed on the export of liquefied natural gas or other hydrocarbons produced byNLNG.[129]

7.0 Recommendations

In the light of the above, the following recommendations is suggested:

1. Government should take serious steps to stop gas flaring. The issue of corruption should be properly addressed in order to achieve results from attempts to stop gas flares and environmental pollution.
2. It is also suggested that associated gases should be converted to and used as energy sources, only a minute percentage may be flared as obtained in other countries. To this end, legal obligations must be put in place to ensure that associated gases are utilized judiciously.
3. The government should not give an option of fine alone as gas flaring should also becriminalized and any corporation that refuses to halt flaring should be shut down.

[124] *Ibid*
[125] *Ibid*.
[126] Oke (n.117).
[127] *Ibid*
[128] Ibid, 821.
[129] *Ibid*