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by L. Moller and J. Mohammed

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The Problem of Gas Flaring - A Review of Current Legal and Policy Efforts in the UK and Nigeria

Dr Leon Moller[*] and Jamilu Ibn Mohammed[**]

Abstract

The flaring of gas and consequent carbon dioxide emissions from oil and gas installations is a significant environmental problem in many countries and a key contributor to global warming and climate change. The process consumes useful natural resources and produces harmful waste that negatively impacts the environment and the economy. Although loosely prohibited in many countries, the global industry continues to flare a substantial amount of associated gas during exploration and production activities. Current data on global gas flaring indicates that gas flaring occurs in most oil and gas producing countries, including the United Kingdom and Nigeria. Nigeria is regarded as the seventh-largest gas flaring nation in the world, and gas flaring seems to be a major problem, despite having relevant laws in place. The oil and gas industry in the UK has managed to reduce flaring and venting significantly, with the independent regulator, in collaboration with environmental agencies, adopting a much more rigorous approach to hold the industry to account for their commitment to halving their production emissions by 2030 as a pivotal part of the government's target for net-zero emissions by 2050.

Comparing the regulatory efforts in these two countries forms the crux of this article. While the UK's regime is generally regarded as well developed, robust and effective in dealing with flaring, it appears that Nigeria still needs to do much more to tackle the menace of flaring. Consequently, the paper critically reviews the law and policy regimes for the regulation of gas flaring and enhancing gas utilisation in these two countries. It explains how the regulatory regimes emerged including key strengths and weaknesses, and it also discusses the international dimension in terms of the overall UN Climate Change agenda. The paper employs a doctrinal methodology approach involving a review of industry and library-based literature for a critical analysis of the effectiveness of the regulatory regime for gas flaring and venting in the UK and Nigeria. This discussion highlights useful lessons from the UK's experience, for countries such as Nigeria where enforcement of the existing anti-gas flaring laws and regulations has been weak as there is still a considerable amount of gas that is being flared due to ineffective regulatory practices. Though in recent years data have shown that the county has reduced gas flaring by almost 70%, and in 2021 finally passed the long-awaited controversial Petroleum Industry Bill into law which provides some clarity on gas flaring, nevertheless there is still room for improving the regulatory framework. This paper concludes with a caution that Nigeria's new framework may not likely achieve its goal unless a more professional and independent regulator adopt a transparent, robust and rigorous approach to regulation, with the supporting political will and mindset of all stakeholders, in order to effectively enforce the extant anti-gas flaring regulations.

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1. Introduction

The flaring of gas and consequent carbon dioxide emissions from oil and gas installations is a significant environmental problem in many countries and a key contributor to global warming and climate change. The process consumes useful natural resources and produces harmful waste that negatively impacts the environment and the economy. Current data on global gas flaring indicates that gas flaring occurs in most oil and gas producing countries including Nigeria and the United Kingdom (UK), both with mature oil and gas sectors, and dealing with many challenges that are strongly linked to climate change which requires drastic reductions of greenhouse gas (GHG) emissions by 2050. The 26th UN Climate Change Conference of the Parties (COP26) was held in Glasgow, Scotland in November 2021.[1] The government and stakeholders parties discussed major actions needed towards achieving the goals of the Paris Agreement.[2] The summit adopted the Glasgow Climate Pact whereby the participating countries have agreed to either put forward new or updated their existing Nationally Determined Contributions (NDC's) emissions targets covering around 80% of the world's emissions[3]. The Pact also wants further action on long-term strategies and the need for countries to take concerted and immediate action to deliver on their commitments[4]. This means reducing gas flaring which is a major source of GHG emissions among other things should be a priority to the participating countries. which include both the UK and Nigeria.

Consequently, the paper critically reviews the law and policy regimes for the regulation of gas flaring and enhancing gas utilisation in these two countries. It explains how the regulatory regimes emerged including some of the key strengths and weaknesses. The paper employs a doctrinal methodology approach involving a review of industry and library-based literature for a critical analysis of the effectiveness of the regulatory regime for gas flaring and venting in the UK and Nigeria. It highlighted several useful lessons from the UK's experience, for Nigeria on the enforcement of gas flaring laws and regulations.

2. Background: The Problem with Gas Flaring

Natural gas flaring is defined as the controlled combustion or burning of natural gas, either associated gas (AG) or non-associated gas (NAG), during production and processing activities.[5] There are many reasons why flaring became necessary for upstream activities. The two most notable reasons include operational/safety reasons and economic reasons, especially where there are no markets in proximity or where economic factors require early oil production in advance of natural gas capture.[6] Thus, flaring for operational and safety reasons is generally

[1] See UN Climate Change Conference, (COP26), 1-12 November 2021, Glasgow https://ukcop26.org/

[2] The UK signed the Paris Agreement on 22 April 2016 and ratified it on 18 November 2016. See United Nations Climate Change: Paris Agreement https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en accessed on 20/04/2021.

[3] The UN COP 26, The Glasgow Climate Pact. UN Climate Change Conference, UK 2021. Available at: https://ukcop26.org/wp-content/uploads/2021/11/COP26-The-Glasgow-Climate-Pact.pdf accessed 23/11/2021

[4] *Ibid.*

[5] Intergovernmental Panel on Climate Change, "The Report of the Working Group 1 of the IPCC, Survey for Policy Makers." (IPCC. 2001). The act of flaring releases many air pollutants into the atmosphere, including greenhouse gases, methane, carbon dioxide, and other volatile organic compounds that harm the environment and human health.

[6] The US Department of Energy, 'Natural Gas Flaring and Venting: States and Federal Regulatory Overview, Trends and Impacts' Report compiled by the Office of Oil and Natural Gas and the Office of Fossil Energy, June 2019

short term, low volume, and necessary to ensure safe operating practices. This type of flaring is what the World Bank described as non-routine and safety flares, and this flaring category could be captured and stored as a safety hazard and often released for safety reasons.[7] While the other category of flaring that relatively flares large volumes of AG, either temporarily or long term, has a severe economic and environmental impact. This category is generating the most concern around the globe and is the primary focus of this paper.[8] In short, this flaring category may persistently continue if it is not tackled by appropriate law and policy measures.

The World Bank viewed that the latter flaring category continues unabated for many reasons that cut across regulatory and non-regulatory measures. Thus, prominent among the reasons include the limited legislative, regulatory, and contractual frameworks for both AG and NAG, ineffective fiscal terms, under-developed domestic gas market, limited investment in gas utilisation projects, and lack of coordinated actions by multiple stakeholders.[9] Therefore, it is suggested that gas flaring could be reduced or prevented using appropriately designed laws and policies and effectively enforced regulatory measures. However, contemporary events unfolding in global oil and gas industries, especially those of the developing nations, have questioned the appropriateness and effectiveness of such law and policy measures.[10] Industry observers argue that an appropriately designed gas flaring law and policy regime is expected to reduce flaring and substantially increase investment in utilisation projects.[11] However, this is not always the case in some jurisdictions, as gas flaring has unfortunately become a controversial political issue in some jurisdictions around the globe. This is because of its devastating effect on the environment and its negative impacts on people's socio-economic lives in the affected area. In essence, it is a waste of a potentially valuable natural resource that could support economic growth and progress.[12]

At present, there seems to be a level of uncertainty as to the actual volume of the natural gas flared annually around the globe. The IEA finds that the lack of monitoring equipment and limited oversight makes it difficult to quantify the amount of gas flaring precisely.[13] The most recent data based on the Global Gas Flaring Reduction Partnership's (GGFRP's) satellites estimates that the amount of natural gas flared worldwide has decreased by 5% in 2020 i.e., from 150 billion cubic metres (bcm) in 2019 to 142 bcm. The decrease could be attributed to

[7] The World Bank, *Global gas flaring reduction partnership - gas flaring definitions,* Washington, D.C: World Bank Group, available at:< https://documents.worldbank.org/en/publication/documents-reports/documentdetail/755071467695306362/global-gas-flaring-reduction-partnership-gas-flaring-definitions> accessed 25/03/2021 (also *Ibid)*

[8] Ultimately, large long-term volumes of AG flaring are proving unsustainable and economically unjustifiable that require appropriate and effective law and policy measures to end the practice.

[9] The World Bank, *Guidance on Upstream Flaring and Venting Policy and Regulation*' (2009) Global Gas Flaring Reduction (a Public-Private Partnership) March 2009 Washington DC.

[10] For instance, the Nigerian Government had been trying to end gas flaring over the years with the flare out deadlines been repeatedly postponed. The most recent deadline had been December 2012. See Adeola Yusuf, 'FG Plans Another Shift for 40 Year-Old Gas Flaring Deadline – Legal Loophole Created as Flaring Deadline Expires' Daily Independent of 09/06/2014

[11] Uchenna Jerome Orji, 'Moving from Gas Flaring to Gas Conservation and Utilisation in Nigeria: A Review of the Legal and Policy Regime' (2014) OPEC Review 149.

[12] Garba I. Malumfashi, 'Phase-Out of Gas Flaring in Nigeria by 2008: The Prospect of a Multi-Win Project (Review of the Regulatory, Environmental and Socio-Economic Issues)', (2007) 4 (2) *Nigeria Gas Flaring Petroleum Training Journal* pp. 1-39.

[13] International Energy Agency (IEA), *Flaring Emissions – Monitoring and Reporting Flaring Volumes.* Tracking Report June 2020, available at:< https://www.iea.org/reports/flaring-emissions> accessed 25/03/2021

the decline in oil production by almost 8%.[14] Gas flaring trends usually show an increase whenever oil production increases. An increase in oil production during 2019 led to the subsequent increase of global flaring from 145 billion bcm in 2018 to 150 bcm in 2019.[15] Flaring also increased in 2018 - from 140.5 bcm in 2017 to 145 bcm in 2018 when there was an increase in oil production (i.e. from 92.568 million barrels per day (b/d) in 2017 to 94.852 million b/d in 2018).[16] According to the research by data analytics business Brainnwave, in monetary value, the volumes of gas flares worldwide in 2018 alone amounted to $16.4 billion.[17] In contrast, PwC estimates the monetary value loss of AG flaring in that year at $20 billion, and Nigeria alone lost $762 million out of the global loss in the year, around 4% of the total global loss.[18]

Apart from being a waste of potentially valuable resources, flaring could also be argued as one of the most challenging sources of environmental pollution facing the world today and contributes as much to climate change.[19] It contributes significantly to the concentration of greenhouse gas (GHG) emissions and thus causes global warming and negatively impacts the climate system.[20] According to the Intergovernmental Panel on Climate Change (IPCC), flaring is a major source of black carbon that causes global warming, adverse effects on the environment, and affects oil communities' health. It also raises a broad spectrum of socio-political and even human rights aftermath.[21] Consequently, flaring practices have been adjudged to be a challenging pollution source facing the global environment today. Another IPCC report finds that recent GHG emissions are particularly problematic and the highest in global history. The report estimates that the magnitude of methane emissions that occur in the case of flaring (i.e. burning of gas) or venting (i.e. when the gas is released into the atmosphere) has a global warming impact of about 25 times as much as carbon dioxide over a 100-year lifespan.[22] Although law and policy measures dealing with the hazardous wastes were proving effective in some developed gas flaring nations like the UK, in developing nations like Nigeria, there is a significant concern as to the effectiveness of the enforcement process of such law and policy.[23] Consequently, comparing the regulatory measures adopted by Nigeria and the UK

[14] The World Bank, *'Global Gas Flaring Tracker Report'* Published 28th April 2021' Available at:< https://www.worldbank.org/en/topic/extractiveindustries/publication/global-gas-flaring-tracker-report> accessed 21/09/2021

[15] The World Bank, *'Global Gas Flaring Reduction Partnership (GGFR)* - Published Estimates from satellite data 2019' Available at:< https://www.worldbank.org/en/programs/gasflaringreduction#7> accessed 04/09/2020. The amount flared in 2019 is equivalent to the total annual gas consumption of Sub-Saharan Africa

[16] Statista, '*Oil Production World-Wide from 1998 to 2020*' available:< https://www.statista.com/statistics/265203/global-oil-production-since-in-barrels-per-day/> accessed 21/09/2021

[17] Energy Reporter, 'Flaring burned enough gas in 2018 to power every UK home' dated 17/09/2019 accessed 29/03/2020

[18] PwC, *'Assessing the Impact of Gas Flaring on the Nigerian Economy'* (2019) PricewaterhouseCoopers Publication available at:< https://www.pwc.com/ng/en/assets/pdf/gas-flaring-impact1.pdf> accessed 05/09/2020

[19] Zoheir Ebrahim and Jorg Friedrichs, '*Gas Flaring: The Burning Issue'* (Resilience.org September 2013), available at:<http://www.resilience.org/stories/2013-09-03/gas-flaring-the-burning-issue.> accessed on 15/02/2018

[20] The World Bank, *Guidance on Upstream Flaring and Venting Policy and Regulation*' (2009) Global Gas Flaring Reduction (a Public-Private Partnership) March 2009 Washington DC

[21] Intergovernmental Panel on Climate Change, '*The Report of the Working Group 1 of the IPCC, Survey for Policy Makers'* (IPCC. 2001)

[22] IPCC, '*AR5 Synthesis Report: Climate Change 2014'* (2014). This Synthesis Report is based on the reports of the three Working Groups of the Intergovernmental Panel on Climate Change (IPCC), including relevant Special Reports. It provides an integrated view of climate change as the final part of the IPCC's Fifth Assessment Report (AR5) 2014.

[23] Tade Oyewunmi, 'Examining the Legal and Regulatory Framework for Domestic Gas Utilization and Power Generation in Nigeria' (2014) 7(6) *Journal of World Energy Law and Business* 538-557

could be useful for Nigeria in achieving its regulatory and policy objective of ending gas flaring and unlocking the gas potential of the country.

3. An Appraisal of the Nigerian Gas Flaring Law and Policy Regime

Nigeria's oil and gas industry dominates the extractive sector, and it is seen as the mainstay of the country's economy; and the main source of the country's foreign exchange reserves.[24] The three main sources of the reserves are direct sales of petroleum products, petroleum profit tax/royalties and payment of related penalties, including that of AG flaring by oil companies.[25] Oil accounted for about 35% of Nigeria's gross domestic product and 90% of its export revenue, making its capital account vulnerable whenever oil production is affected.[26] It was reported that Nigeria produced a total average of two million barrels of crude oil daily; however, a substantial part of the produced crude oil was associated with gas. Therefore, such AG needs to be separated from the crude oil, and this process brings about the routine flaring troubling Nigeria today.[27] Recent data from Nigerian National Petroleum Corporation (NNPC) shows a decrease in gas flaring and a sudden increase in its utilisation, for instance, in the year 2020, the country produced a total of 2.7 billion standard cubic feet (bscf) and flared only 7.08% of such production while the rest were utilised.[28] However, as indicated by the World Bank, the country still retains its position as the largest gas-flaring nation in Africa and the seventh-largest gas flaring nation globally.[29] It is no doubt that AG flaring has subjected the country to ridicule in international fora.[30]

The World Bank finds that gas flaring has continued persistently in most countries due to a range of issues that include market and economic constraints, lack of appropriate regulation and political will among other things.[31] The Bank suggested that national oil and gas law and policy frameworks must consider the environmental and economic needs, objectives, and unique circumstances of that country.[32] Thus, in essence, the regime's objectives must capture the interests of the host government, the oil companies and all other oil and gas industry's stakeholders. Therefore, for Nigeria to achieve its objective of zero flaring regimes, the country needs an appropriately designed and effective legal regime that can protect the oil-producing environment, attracting more foreign investment for the utilisation of its vast AG resources without jeopardising the interest of any actor in its oil and gas industry. Consequently, the

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[24] International Monetary Fund, *Nigeria*, IMF Country Report No. 15/84, (March 2016), pages 28-30.

[25] The Central Bank of Nigeria, *International Operations – Reserve Management,* available at:< https://www.cbn.gov.ng/intops/ReserveMgmt.asp> accessed on 29/07/2018. Even though with the passage of *Petroleum Industry Act 2021*, the gas flaring penalty is now to be paid to benefit the oil communities not to the federation account.

[26] *Ibid*

[27] Nigerian National Petroleum Corporation (NNPC), *2015 Annual Statistical Bulletin'* Corporate Planning and Strategy Division, available at: <http://www.nnpcgroup.com/Portals/0/Monthly%20Performance/2013%20ASB%201st%20edition.pdf.> accessed on 22/07/2017.

[28] Nigerian National Petroleum Corporation, '2020 Annual Statistical Bulletin' – NNPC ASB 2020 1st Edition, page 16

[29] *Ibid* (n 14). The 2020 gas flaring data shows that Russia, Iraq, Iran, the United States, Algeria, Venezuela and Nigeria respectively remain the top seven gas flaring countries for nine years running. These seven countries produce 40% of the world's oil each year but account for roughly two-thirds (65%) of global gas flaring.

[30] Intergovernmental Panel on Climate Change, "The Report of the Working Group 1 of the IPCC, Survey for Policy Makers." (IPCC. 2001).

[31] The World Bank, *Regulation of Associated Gas Flaring and Venting: A Global Overview and Lessons*' (2004) Global Gas Flaring Reduction (a Public-Private Partnership) Report Number 3 Washington DC and also see ()

[32] The World Bank (n. 7)

following is a critical review of the law and policy frameworks currently in Nigeria to reduce and utilise associated gas flaring, before discussing the UK's regime to see if there are any useful suggestions for Nigeria.

3.1 Policy Objective – Policy statement

The Federal Government of Nigeria (FGN) is responsible for establishing an enabling environment in the oil and gas sector through policies, regulations, guidelines, and economic measures. The FGN has since the inception of the country's industry initiating policy measures to reaffirm its commitment to ending routine flaring. More so, at an international level, the FGN has ratified the UN Climate Change Paris Agreement and has communicated its intention to achieve emissions reduction target knowns as intended nationally determined contributions (NDCs).[33] The FGN intends to achieve its NDCs target by strengthening gas flaring regulations and working to end gas flaring by 2030 as a mitigation measure to combat global warming. It has agreed to an unconditional 20% reduction of gas flaring by 2030.[34] The country was also a signatory to the Global Gas Flaring Reduction Partnership (GGFRP) chaired by the World Bank aimed at global flare-out by 2030. To achieve the 2030 target, the FGN had in mid-2018 issued the "Flare Gas (Prevention of Waste and Pollution) Regulation, 2018" (hereinafter referred to as the Flare Regulation 2018) [35] to help the country achieve its policy objective of ending gas flaring and unlocking gas potentials by 2030.

Industry observers have adjudged the effort by Nigeria within and outside the country as a great effort towards achieving sustainable oil and gas operations.[36] Some have even tagged the Flare Regulation 2018, as a game-changer that ever happened to the country's oil and gas industry.[37] However, these commentators failed to consider that, before the approval of this Regulation, the country has passed several laws and regulations all aimed at ending gas flaring but with limited success. Realising the limitation, the UNFCCC secretariat has also advised that despite the country having adopted policies and legal measures to end gas flaring, the country requires additional legislation and regulatory changes. The measures identified by the secretariat that requires changes or improvement include improved enforcement of gas flaring restrictions and development of Gas-to-Power Plants at gas flare sites.[38] Consequently, the following headings review the country's legislative frameworks with its current policy of ending gas flaring and unlocking gas potentials to unearth impediments to achieving the policy objective.

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[33] *United Nations Climate Change: Paris Agreement* – Status of Ratification, available at:< https://unfccc.int/process/the-paris-agreement/status-of-ratification> Nigeria has signed the Agreement on 22/09/2016 and ratified it on 16/05/2017 *see* < https://unfccc.int/node/61130> accessed on 24/02/2020.

[33] *Ibid* article 2, UNFCCC and also 186 parties have submitted their first NDCs target but only three parties so far submitted their second NDCs target. <https://www4.unfccc.int/sites/ndcstaging/Pages/Home.aspx> accessed 03/05/2020

[34] *Ibid*

[35] The Regulation was issued pursuant to the power given to the Nigeria's Petroleum Minister under the *Petroleum Act, 1969*, s. 9. President Muhammad Buhari signed the Flare Regulation in his capacity as the substantive minister of the Petroleum Resources in the country (hereinafter referred to as the Flare Regulation, 2018).

[36] Wole Obayomi (Partner & Head, Tax, Regulatory & People Services KPMG, Nigeria), 'Flare Gas (Prevention of Waste and Pollution) Regulations, 2018' available at: <https://home.kpmg/ng/en/home/insights/2019/03/Flare-Gas-Prevention-of-Waste-and-Pollution-Regulations-2018.html> accessed on 21/09/2019, last updated 2019

[37] Israel Aye and Emmanuel Onyedi Wingate, 'Nigeria's Flare Gas (Prevention of Waste and Pollution) Regulations, 2018' (2019) *Environmental Law Review*

[38] Nigeria's Intended Nationally Determined Contribution – Submitted to the COP-UNFCCC in Preparation for the Adoption of Climate Change Agreement at the Paris Conference on Climate Change December, 2015. Prepared by the Nigerian Federal Ministry of Environment, Abuja 27 October 2015.

3.2 Legal and Regulatory Framework

The *Petroleum Act of 1969* remains the primary law regulating Nigeria's petroleum industry and the basis for law and policies relating to gas flaring regulation in Nigeria.[39] As Omukoro suggested, the Act remains the cornerstone upon which the legal and regulatory framework of the Nigerian petroleum industry is based.[40] The 1969 Act empowers the petroleum minister to make regulations and policies for oil and gas operations including licences and other matters to which issues relating to the prevention of pollution to the atmosphere are included.[41] Consequent to the power, the *Petroleum (Drilling and Production) Regulations*[42] was issued requiring oil companies to submit any feasibility study, programme or proposals for the utilisation of the AG not later than five years after the commencement of the production.[43] Although the Regulation was not about gas flaring as it relates to the regulation of oil and gas production operations, nevertheless, its provision requiring preparation and submission of the feasibility study by the oil companies is in a general sense about gas utilisation, and thus directly or indirectly affect flaring.[44] However, the provision was not complied with by the oil companies and arguably not legally obligatory because it contained no penalty for non-compliance.[45] Furthermore, there were also no measures to discourage flaring before or after submitting the required feasibility study or gas utilisation programme. Arguably, the Regulation merely required oil companies to submit a feasibility study or programme for gas utilisation and nothing more.

Consequently, it could be suggested that an oil company could engage in AG flaring before or after submitting the required feasibility study or programme for gas utilisation without any penalty. Similarly, the wording of the Regulation that, "*the licensee or lessee of an oil mining license shall not later than five years after the commencement of production, submit to the Minister of Petroleum Resources, a feasibility study…"* can be seen as express permission for the oil companies to flare AG for five years without any scrutiny or regulatory sanctions.[46] Industry observers have argued that the Drilling and Production Regulation was "not fit for purpose" as it was neither adhered to by the oil companies nor enforced by the Nigerian Government.[47] For instance, Oyewunmi argued that one major reason why, over the years, gas flaring has continued without any firm legal consequences under both the 1969 Act and its attended Regulation, was that the licensee was only required to submit a gas utilisation plan within five years after the commencement of oil production and nothing more.[48]

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[39] *Decree No. 51 of 1969, (now Cap 350 L.F.N 1990/Cap P10 L.F.N 2004)*

[40] D.E. Omukoro; 'Environmental Degradation in Nigeria: Regulatory Agencies, Conflict of Interest and the use of Unfettered Discretion' (2017) 15 (1) *OGEL*

[41] Supra (n.39) s 8 (1) & 9 (1) (b) & 12

[42] The Regulation is made pursuant to Section 9 of the *Petroleum Act, Decree No. 51 of 1969*, adopted on 27/11/1969 and can be cited L.N 69 of 1969,

[43] *Ibid*

[44] *Ibid. Regulations, 43;* see also Oyewunmi (n.23) at 546

[45] Uchenna Jerome Orji, 'An appraisal of the legal frameworks for the control of environmental pollution in Nigeria' (2012) 38 (2) *Commonwealth Law Bulletin* p. 331*see also* Yinka Omorogbe *Oil and Gas Law in Nigeria: Simplified,* (1st edn, Malthouse Press, United States, 2003).

[46] Jamilu Ibn Mohammed, 'Comparing Nigeria's Legal Framework for Combating Gas Flaring with that of Norway: Lessons for Nigeria' (2016) 2(9) *Imperial Journal of Interdisciplinary Research*

[47] Uchenna Jerome Orji, 'Moving from Gas Flaring to Gas Conservation and Utilisation: a Review of the Legal and Policy Regime' (2014) 38 (2) *OPEC Energy Review* 149-183 and Ibid Malumfashi (n 8)

[48] Oyewunmi (n 23) at 546

The Petroleum Act was later amended in 1973 providing a measure for encouraging AG flaring reduction when it gave the FGN the right to take AG at the flare area without royalty payment.[49] However, an empirical study conducted to unravel the trend of AG flaring in Nigeria concludes that there was nearly zero AG utilisation from 1965 – 1979. The country was only able to utilise from 0.6 – 10% of its AG production.[50] Thus, it could be submitted that the *Petroleum Act* has failed to effectively establish sanctions for non-compliance with the regulatory requirement neither the Regulation imposes an explicit obligation for the cessation of flaring. Following pressures from environmentalists and the host communities on the adverse effect of AG flaring, the then Government took a further step to address gas flaring through the establishment of a legal regime entrenching penal sanctions for flaring of associated gas.

In September 1979, the country for the first time established a legal regime for the treatment of AG flaring known as the *Associated Gas Re-injection Act.*[51] This is the first significant legal framework specifically for combating AG flaring in the country. Like the 1969 Regulation, the 1979 Act required oil companies to prepare and submit to the petroleum minister programmes for AG utilisation or re-injection.[52] It expressly set the 1st of January 1984 as the deadline for the cessation of gas flaring in the country with a forfeiture of the concession/licence as a likely penalty for non-compliance.[53] The Act also empowered the Minister to issue certificates in exceptional situations to an oil company to continue to flare gas if such a company pays a certain specified sum.[54] However, the Act's objectives proved unrealistic for many reasons, as Omorogbe cited, one of the many reasons was the insistence by the oil companies that they could not meet the deadline due to the huge financial resources required for gas re-injection facilities.[55]

Industry observers criticised the 1979 Act for not paying much attention to very salient issues on gas re-injection utilisation. For instance, Omorogbe argued that apart from providing a penalty for non-compliance with submission of feasibility study or gas utilisation programmes, the Act made no mention of any other related penalties for gas flaring regulation violations.[56] Similarly, the blanket permission given to the Minister to issue a certificate/permit for continued flaring if gas re-injection is not feasible could be seen as express permission for oil companies to flares gas. Thus, the Act merely granted the minister power to issue a permit without strictly setting out criteria for granting such permit, neither limiting the circumstances for the grant nor prescribing the permissible limit of AG volumes to be flared.[57]

Moreover, Nnona criticised the initial approach by the Act to out-rightly fixed a deadline for cessation of AG flaring without recognising the lack of required supporting infrastructure as

[49] S. 34 (b) of the second schedule to the *Petroleum Act 1969.*
[50] Stella Madueme, 'Economic Analysis of Wastages in the Nigerian Gas industry' (2010) 2 (4) *International Journal of Engineering Science and Technology* – The trend was from 1965 – 2008.
[51] *Decree* of 1979, (now *The Associated Gas Reinjection Act* Cap 26 L.F.N 1990/Cap A 25 L.F.N 2004)
[52] *Ibid* s. 2see also Preamble to the Act
[53] *Ibid* s 3 (1) & 4 (1)
[54] Ibid
[55] Yinka Omorogbe, *Oil and Gas Law in Nigeria: Simplified (*1ST Edition Malthouse Press 2003) 59. The Gulf Oil (now Chevron) was quoted to have said while gas flaring would cost the company one million USD, the cost of switching from water to gas re-injection would cost the company Fifty-six million USD. Another reason cited was the inability of the Nigerian Government to meet its financial obligations under the various joint venture agreements were among the reasons cited.
[56] Yinka Omorogbe, 'An Appraisal of Nigerian Natural Gas Legislation' (1985) 4 (2) *Oil and Gas Taxation Law Review* and also Yinka Omorogbe, 'Law and Investor Protection in the Nigerian Natural Gas Industry' (1996) 14 *Journal of Energy & Natural Resources Law* 179–192
[57] *The Associated Gas Reinjection Act 1979 s 3(2)*

an approach that wanted to compel gas utilisation by the "threat of a stick".[58] Similarly, the forfeiture of concession/licence as the likely penalty for AG flaring has also been argued as being too unrealistic to the extent that most operations were under Joint Venture agreements between international oil companies and the government-owned NNPC.[59] However, this argument could not be strong considering the government's huge economic loss due to flaring and its adverse effects on the affected communities and thus, the penalty imposed could be justified. It was submitted that, if not for the problem of infrastructure and funding as cited by the oil companies, coupled with a lack of political will to enforce the provisions of the law, this Act would have effectively curbed AG flaring in Nigeria.[60]

Consequently, where it became apparent to the Nigerian government that the law could not be enforced because the oil companies could not meet the deadlines, the deadline was shifted to 1st April 1984 and later to 1st January 1985.[61] Afterwards, the Associated Gas Reinjection (Continued Flaring of Gas) Regulations 1984 was issued by the Minister permitting oil companies to continue to flare AG subjects to conditions prescribed in the Regulations.[62] The Regulation prescribed that permits would only be granted where more than 75% of the AG produced is effectively utilised or re-injected or where the AG contains more than 15% impurities which render it unsuitable for industrial purposes.[63] However, these clauses were flawed to the effect that they exempted eighty-six (86) out of one hundred and fifty-five (155) fields from the prohibition while flaring continue at the remaining field without any permit.[64]

It later became obvious that both the 1979 Act and the 1984 Regulation could not achieve their stated objectives as flaring has continued unabated in the country; the FGN then resorted to an economic enforcement mechanism by amending the 1979 Act.[65] The new amendment introduced a penalty of two kobos (N0.02k) per 1000 standard cubic feet (scf) of gas flared at any place where a flare permit was not granted. The amount which later increased to fifty kobos (N0.50k) per 1000 scf in 1990[66] and ten Naira (N10.00) per 1000 scf in 1998[67] and subsequently increased to two dollars ($2) per 1000 scf in an area where more than 10,000 barrels of oil are produced or fifty cents ($0.50) per 1000 scf where the field produces less than 10,000 barrels.[68] However, it is submitted that these fines appear not to have provided an effective deterrent to discourage the practice of gas flaring as the fines were too meagre to serve as a deterrent or punishment. The fines were insufficient when compared to the amount Nigeria loses in flaring annually.

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[58] George Nnona, 'New Policy Regime for Gas in Nigeria: a Perspective on Tax and Related Incentives' (2003) 21(3) *Journal of Energy and Natural Resources Law* 285
[59] Omorogbe (n 55)
[60] See Paul Samuel Tamuno, 'Legal Response to Gas Flaring in Developed and Developing Countries: A Comparative Analysis of Nigeria, United Kingdom and Norway' (Working Research Paper Series No. 2010/14) *International Energy Law and Policy Research Paper Series*, and Supra Mohammed (n 46)
[61] Yinka Omorogbe, 'Law and Investor Protection in the Nigerian Natural Gas Industry' (1996) 14 *Journal of Energy & Natural Resources Law* 179- 192 at 181
[62] *The Associated Gas Re-injection (Continued Flaring of Gas) Regulation 1984*, Supplement to Official Gazette No. 67 Vol. 71 of 29 November 1984 (SI 43 of 1984, Cap A 25 LFN 2004)
[63] *Ibid* s 5
[64] Omorogbe (n 55, p.58)
[65] *The Associated Gas Re-injection (Amendment) Act* 1985 Decree No. 7 of 1985
[66] *The Associated Gas Re-injection (Amendment) Regulation 1990*
[67] *The Petroleum (Drilling and Production) Regulation 1998*
[68] See *The Flare Gas Regulation 2018, Reg* 13 Part II

The World Bank has observed that while oil companies in Nigeria have been charged between 20 million and 50 million Naira (at the time, approximately $150,000–$370,000) annually for AG flaring, the amount was insignificant in the overall context of gas flared. The Bank opined that the sanctions only succeeded in monetising gas flaring at a very cheap rate and made it more economical for oil companies to flare gas rather than harness or conserve them through utilisation or re-injection schemes.[69] Thus, it was reported that the gas utilisation project cost when the Act was amended amounted to about $56 million that is incomparably more than the paltry fines imposed for AG flaring.[70] Kumanov suggested that it was economically beneficial and comparatively cheaper for oil companies to continue gas flaring by paying the meagre penalty than implementing gas re-injection and utilisation programmes as envisaged by the Act.[71] Derefaka has recently claimed that the country loses approximately ten billion USD ($10 billion) of revenue to gas flaring due to the inability to capture and commercialise flared gas despite the infrastructural deficit.[72]

However, Nigeria's petroleum industry has recently witnessed some positive amendments as regards the legal and regulatory framework for gas flaring. As stated earlier, the Nigerian President in 2018 approved a new legal framework that reviewed the penalty regime for gas flaring than it currently obtains by categorising the oil fields into smaller and larger fields.[73] Moreover, the penalty payment applies to all cases irrespective of whether the flaring is routine or non-routine. Nevertheless, like the other previous Regulations before it, the Gas Flare Regulation 2018 has exempted such fields where the petroleum minister granted a permit.[74] Similarly, apart from the exception granted to permit holders, companies without permits are also not liable to pay the penalty where the flaring was because of an act of war; community disturbance; insurrection; storm; flood, earthquake or other natural phenomena which is beyond the reasonable control of the producer.[75] The Regulation also asserts the power and duty of the Department of Petroleum Resources (DPR) to request for AG flaring data from a producer while criminalises reporting of inaccurate, incomplete or falsification of flare gas. It provides that any company or person acting on behalf of the company who do so will be liable to criminal prosecution.[76]

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[69] The World Bank 2004 (n 31). A recent study carried out for the Bureau of Public Enterprises of Nigeria estimated that each year the country loses between US$500 million and US$2.5 billion to gas flaring.

[70] Sarah Ahmad Khan, 'Khan *'Nigeria: The Political Economy of Oil'* (Oxford University Press, 1994) 162

[71] Baurzhan Kumanov, 'Anti-Gas Flaring Regulations and the Law: The History and Recent Developments in Kazakhstan and Nigeria' (2012) 10 (5) *OGEL*

[72] Justice Derefaka, Programme Manager National Gas Flare Commercialisation Programme (NGFCP), 'The Monetisation of Gas: Perspectives and Opportunities in Nigerian Gas Industry' Presented at the Nigerian Norwegian Chamber of Commerce (NNCC) Q1 2018 Business Roundtable Seminar held at Lagos Nigeria on 9th April 2018

[73] President Muhammad Buhari – Nigerian President signed the ' *'The Flare Gas Reduction (Prevention of Waste and Pollution) Regulation 2018* on 6th July 2018 in his capacity as the substantive minister of Petroleum Resources. The main objective is to reduce the environmental/social impact caused by the flaring of gas, protect the environment, prevent waste of natural resources, and create social and economic benefits from flare gas capture (*see Regulation 1*). The Regulation also asserts the right of the Government to take the associated gas at any flare sites without payment of royalty. (This is provided for by section 9 Petroleum Act 1969 which gave the Nigerian government power to take associated gas from any flare site free of cost and without payment of royalty to the consolidated revenue account). As for the penalty payment review, in a licensed area where more than 10,000 barrels of oil are produced, the flare company is liable to pay $2 per 1000 scf of gas flared while the field that produces less than 10,000 barrels is liable for $0.50 per 1000 scf of gas flared (*see Regulation 13*)

[74] *Ibid Regulation 13*

[75] *Ibid Regulation 14 (1-2) & 3*

[76] *Ibid Regulation, 16-20*

Furthermore, in recent time and precisely on 16th August 2021, the Nigerian President assented the long-awaited *Petroleum Industry Act,* (the PIA) 2021 into law. The PIA repealed the Associated Gas Re-injection Act 1979 among others and thus became the significant legal framework regulating gas flaring in Nigeria.[77] The PIA was aimed at improving transparency and accountability in Nigeria's petroleum industry in general as well as combating the menace of AG flaring and promoting its utilisation among others. The key aspect of the PIA touching on AG flaring has been Chapter 2 Part II that addressed a wide range of issues.[78] The PIA criminalises gas flaring where it provides that a licensee, lessee, or marginal field operator that flares or vent gas commit an offence and shall be liable to a penalty as prescribed under the *Flare Gas Regulation 2018* and as discussed in the previous paragraphs.[79] However, the Act recognises certain exceptional situations where flaring could occur without any penalty or such situations in which permits can be granted.[80] Additionally, as opposed to the status quo, the gas flaring penalty shall not be eligible for cost recovery or tax-deductible and thus operators shall bear the cost alone. Such monies received shall be used for environmental remediation and relief for the host communities who are the direct victims of the gas flaring.[81]

Moreover, the *PIA 2021* also strengthen the requirement of measurement and reporting of the flared gas introduced by the Flare Gas Regulation 2018 where it mandates licensees and lessees to install metering equipment in accordance with the specifications prescribed by the commission prior to the commencement of oil production to measure the volume of gas flared. Failure to comply with this requirement by an oil company is a criminal offence and liable to a fine as prescribed by the commission.[82] The FGN is optimistic that the PIA 2021 will bring among others more investment into its natural gas market and end AG's flaring in the country. Nevertheless, no matter how appropriate the new amendments may be, the objective of ending gas flaring could only be realised if they were effectively enforced.[83]

3.3 Issues of Enforcement

For environmental legislation to achieve its objective, it must not only be appropriately designed but effectively enforced. Coglianese and Coursy advised that strategies must be developed as to how regulators/inspectors should go about intervening in the affairs of regulated organisations to ensure compliance and enforcement[84] - an aspect regarding which there is little attention in Nigeria's oil and gas industry. Fang et al. also find that effective enforcement of environmental laws and regulations is crucial for proper environmental management because legislation and regulation are only as good as their enforcement.[85] Moreover, the World Bank panel of experts viewed that enforcement is a key element of AG

[77] *The Petroleum Industry Act, 2021 S. 310*
[78] The chapter addressed a wide range on issues concerning the administration of upstream operation and environmental management.
[79] *The Petroleum Industry Act, 2021 s. 104 & 105* and Ibid (n 64 & 69)
[80] For instance, in case of emergency, acceptable safety reasons like in cases of start-up, equipment failure shut down, or where an exemption is granted by the commission for strategic operational reasons. The commission is an establishment of the PIA Act that will take over the DPR may grant a flaring permit to a licensee or lessee for the aforementioned reasons. *See generally the PIA 2021 s. 104 (1) a-c and s. 107.*
[81] *The Petroleum Industry Act, 2021 s. 104 (3&4)*
[82] *Ibid s. 106 (1&2)*
[83] Cary Coglianese and Catherine Coursy, 'Environmental Regulation' in Peter Cane and Herbert M. Kritzer, *The Oxford Handbook on Empirical Legal Research'* (Oxford University Press 2010) 449 at 455
[84] *Ibid*
[85] Liping Fang, Keith W. Hipel and D. Marc Kilgour, 1994 'Enforcement of Environmental Laws and Regulations: A Literature Review' In: Keith W. Hipel and Liping Fang, *Stochastic and Statistical Methods in Hydrology and Environmental Engineering*. Water Science and Technology Library, vol 10/2. Springer, Dordrecht, Page 3

flaring regulation. Thus, regardless of how appropriate the anti-gas flaring regime is, it is unlikely to bring the expected results unless regulatory breaches are identified and effectively enforced by the regulator.[86] This may ensure compliance with the AG flaring prohibition laws and regulations and induce oil companies to adopt environmentally sustainable measures that are not even required by the law.[87] However, a critical investigation of Nigeria's anti-gas flaring legal regime revealed that it has suffered from a weak enforcement process.

For instance, with regard to the requirement for cessation of flaring, the country had since the enactment of the 1979 Act required oil companies to stop flaring of AG except those with a permit and fixed the first deadline at 1st January 1984 but with limited success. The deadline was subsequently moved to December 2003, to 2006, to January 2008 and then December 2008. Malumfashi was strongly optimistic about the 2008 deadline, and he suggested that the deadline fixed by the country is sacrosanct and though not achievable in that year, flaring could end by 2010.[88] However, Malumfashi fails to consider that the Nigerian Government had been trying to end gas flaring over the years, with the flare out deadlines been repeatedly postponed with the penultimate deadline in December 2012.[89] According to Prof. Duruigbo, "it was pathetic and horrible the gas still being flared in Nigeria. The deadline keeps on shifting. Like Russia, and each time they imposed standards, fines, deadlines, nothing seems to come out of it".[90]

In recent years, the country had previously issued a statement permitting oil companies to continue with AG flaring until 2020, which, according to all parties involved, was the feasible year for the flare out deadline.[91] Though issued by the previous administration, the permission coincides with the current government policy of a zero-flaring regime by 2020 and there was no public retraction of the earlier permission given to the oil companies.[92] Therefore, considering the persistent reluctance of the country to enforce the gas flaring prohibition requirements, one may argue that the country had indirectly permitted oil companies to continue flaring beyond 2020. This position could be supported considering the country's endorsement of the GGFRP initiative for ending gas flaring by 2030 while maintaining its national target to end the flaring by 2020.[93] Similarly, considering the communication of its intended NDC to the UN secretariat, one may also assume that the new deadline is 2030.

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[86] The World Bank, 2009 (n. 20) and Coglianese and Coursy (n. 83)

[87] Neil Gunningham, Robert A. Kagan and Dorothy Thornton, *Shades of Green: Business, Regulation and Environment* (Stanford University Press 2003) 20; Coglianese and Coursy (n. 83), including adopting internal environmental management systems, voluntary environmental programmes, and information disclosure requirements.

[88] Malumfashi (n 12)

[89] The *Petroleum Industry Bill, 2012,* Adeola Yusuf, 'FG Plans Another Shift for 40-Year-Old Gas Flaring Deadline – Legal Loophole Created as Flaring Deadline Expires' Daily Independent of 09/06/2014

[90] Emeka Duruigbo, 'The World Bank, Multinational Oil Corporations and Resource Course in Africa' (2005) 26 (1) *Pennsylvania Journal of International Economic Law* at https://scholarship.law.upenn.edu/jil/vol26/iss1/1.

[91] The Statement was issued by the previous administration in 2014. *See* Business Day Newspaper, 'Oil Companies to Continue to Flare Gas Beyond 2015' February 19, 2014, available at: <http://businessdayonline.com/2014/02/oil-companies-to-continue-to-flare-gas-beyond-2015/> accessed on 15/02

[92] The World Bank, 'Nigeria's Flaring Reduction Target: 2020' March 2017. Available at: <http://www.worldbank.org/en/news/feature/2017/03/10/nigerias-flaring-reduction-target-2020> accessed on the 18/12/2017

[93] The World Bank, 'Nigeria's Flaring Reduction Target: 2020, 10 March 2017. Available at: <http://www.worldbank.org/en/news/feature/2017/03/10/nigerias-flaring-reduction-target-2020> accessed on 30/01/2018

Apart from the country's failure to enforce the deadlines, another regime's enforcement failure is the issue of monitoring and reporting. As stated earlier, there seems to be a level of uncertainty about the actual volume of gas flared globally due to a lack of monitoring equipment and limited oversight.[94] The United States Accountability Office also found that the inability of many oil-producing countries to report AG flaring volumes publicly compound the uncertainty as to the actual volumes of gas flare globally.[95] Similarly, the FGN had recently alleged that the oil companies are falsifying AG flaring data to avoid penalty payment.[96] According to Kachikwu, the country is not effectively monitoring the volumes of the AG flared and thus, in a true sense, it is much higher than what the oil companies are reporting.[97] Kachikwu further explained that the country plans to enforce AG flaring regulations using a new technology that will measure the flares gas's actual volumes by 2017. Kachikwu made a bold statement that that country could no longer continue relying on oil companies' figures. However, 2017 has since passed, and there was no report of new technology deployed to monitor and report the actual volume of the flares AG in Nigeria.

Furthermore, the failure of the country to enforce the extant gas flaring prohibition laws and regulations has also been attributed to the ineffective regulatory agency. The country had in the recent passage of the PIA 2021 established a new regulatory agency named the Nigerian Upstream Regulatory Commission (hereinafter referred to as the Commission) with regulatory powers over technical and commercial upstream petroleum operations.[98] Among the technical regulatory functions of the Commissions include setting, defining and enforcing standards and regulations for natural gas treatment and the elimination of natural gas flaring and venting.[99] The Commission is expected to take over all the liabilities, assets and transfer of staff from the DPR within 24 months of the coming of PIA into law.[100] Thus, until such transfer has taken place, DPR remains the primary agency setting, defining and enforcing standards and regulations for the elimination of natural gas flaring and venting in Nigeria.

However, the DPR appears to have been less effective in ensuring the efficient regulation of gas flares due to many reasons. For instance, as stated above, there was the absence of requisite technological capacities to monitor the volume of gas flared by oil-producing companies to levy commensurate fines.[101] There was also an issue of conflict of interest by the regulator because DPR as the primary regulator in monitoring and enforcement comprises of an inspectorate division under the NNPC – a government subsidiary/partner with the majority shares in most of the joint venture exploration and production agreements with the oil

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[94] *Ibid*

[95] United States Accountability Office, 'Natural Gas Flaring and Venting: Opportunities to Improve Data and Reduce Emissions' Government Accountability Office (GAO 2008)

[96] Chris Bignell, 'Gas Flaring in the News – December/January 2017' available at: <https://www.fluenta.com/news/flaring-in-the-news/gas-flaring-in-the-news-december-january/> accessed on 28/01/2018

[97] Dr. Ibe Kachikwu is the former Nigeria's Minister of Petroleum Resources and made the remark at the Gas Competence Seminar titled 'Towards Ending Gas Flaring and Unlocking Gas Potential in Nigeria' organised by Nigeria in collaboration with World Bank and International Gas Union held at Abuja 13-14 December 2016.

[98] Supra (n 77) s. 4 (a-c). In terms of the PIA the main objective of establishing the Commission among other things is regulating both commercial and technical upstream activities to ensure that such operations are carried out in such a manner to minimise waste, achieve optimal revenue, and promote healthy, safe, efficient and effective conduct of upstream activities in an environmentally acceptable and sustainable manner. *See* s. 5 (a-d)

[99] *Ibid* s. *7 (e) iii - iv*

[100] *Ibid* s. *312 and 315*

[101] *Ibid* (n 97)

companies.[102] Tamuno argued that this conflict of interest is a fundamental challenge that could affect the NNPC's commercial and regulatory functions.[103] Even though this issue has been resolved with the passage of PIA 2021, however, it is suggested that the dual status of partner-regulator played by the NNPC creates a conflict of interest and has led to failures in strict enforcement of the AG flaring regulations against the oil companies.[104] It would have also unfavourably affected the interest of the NNPC too. Thus, this could be one reason for failure by the oil companies to ensure maximum compliance with the standards and guidelines.[105]

Moreover, it was also argued that DPR experiences insufficient funding and financial standing, and thereby limiting its determination to initiate and implement regulatory measures.[106] Adegoke has argued that since both NNPC and DPR are statutorily inter-dependent bodies that perform strategic roles, adequate financial provisions should have been made for their funding in the national budgetary allocation.[107] However, the reverse is the case, because DPR as an inspectorate under the NNPC is required to secure its funds from the NNPC.[108] Hence, the DPR, which is the primary regulator of AG flaring in the country, is funded by another FGN's institution that is a business partner with the alleged violators – oil companies. Therefore, where NNPC does not make enough funds in a year, it would automatically limit the funds available to the DPR to function, hence limit the capacity of the DPR to enforce the flaring regulations effectively. One would be left to wonder how an agency would be expected to perform without the necessary resources to enforce the sanctions stipulated under relevant laws.

Consequently. it is submitted that the highlighted difficulties such as conflicting statutory mandates, inadequate funding, and fragmented management responsibilities between regulatory frameworks on one hand and environmental policies on the other have impeded enforcement of relevant laws governing anti-gas law and policies in Nigeria. In a saner clime, regulatory institutions must be entirely independent of the subjects they regulate to avoid any conflict of interest, Nigeria's situation is quite the opposite. Similarly, the absence of effective mechanisms for monitoring and enforcing compliance with the laws and regulations have led to sub-optimal performance and thus decreases the efficiency of the DPR to regulate gas flaring effectively. It is further submitted these and many more have negated the ability and effort of Nigeria to end gas flaring and unlock gas potential, an issue that has occasioned unsustainable oil and gas operations in the country.

4. An Appraisal of the UK Gas Flaring Regime

The global energy landscape is changing significantly because of increased concerns about the environment, climate change and sustainability. Consequently, the UK's oil and gas sector is currently facing several critical challenges that are shaping a new future direction

[102] The *Petroleum Act 1969,* Schedule 1, paragraph 24-27 and Ibironke T. Odumosu, 'Transferring Alberta's Gas Flaring Reduction Regulatory Framework to Nigeria: Potentials and Limitations' (2007) 44 (4) *Alberta Law Review*
[103] Tamuno (n 60)
[104] The newly established Nigerian Upstream Regulatory Commissions is now responsible for both the technical and commercial regulation of the petroleum operations in the country's upstream sector. *See generally Chapter 2 of the PIA 2021* and also (n 92-94) above.
[105] N. Ojukwu-Ogba, 'Legal and Regulatory Instrument on Environmental Pollution in Nigeria: Much Talk, Less Teeth' (2006) 8 (9) I*.E.L.T.L*
[106] Tamuno (n 60)
[107] Adegoroye Adegoke, 'The Challenges of Environmental Enforcement in Africa: The Nigerian Experience' (2019) *Third International Conference on Environmental Enforcement* accessed 01/06/2020
[108] *The Nigerian National Petroleum Corporation Act Chap 320 No. 33 of 1977 (LFN 1990) s. 10*

within the wider energy transition and climate change agenda including the target of net-zero greenhouse gas emissions by 2050. The 26th UN Climate Change Conference of the Parties (COP26) brought together all the UNFCCC parties to accelerate action towards the goals of the Paris Agreement and the Climate Change Convention.[109] The government as the main organiser clearly demonstrated that the UK is fully committed to tackling climate change.[110] The UK is a signatory to the Climate Change Convention (UNFCCC), and subsequent agreements (including the 2015 Paris Agreement).[111] The ultimate objective of the UNFCCC Convention is to stabilize greenhouse gas concentrations "at a level that would prevent dangerous anthropogenic (human-induced) interference with the climate system." It states that "such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner."[112] The UK endorsed the World Bank's "Zero Routine Flaring by 2030" Initiative which prohibits the routinely flaring of gas in new oil field developments, and seek solutions to end routine flaring at existing oil production sites as soon as possible and no later than 2030.[113]

The Oil and Gas Authority (OGA), is responsible for regulating the oil and gas industry in the UK, accordingly, it is committed to eliminating any unnecessary or wasteful flaring and venting of gas.[114] Recently the OGA indicated in their latest Flaring and Venting report that there has been a significant reduction in gas flaring and that in 2019, for every barrel of oil and condensate (bbl) that was produced on the UKCS, 114 scf of gas was flared, meaning that the flaring intensity has fallen for two consecutive years from a high of 129 scf/bbl in 2017, mainly due to an increase in oil production and a fall in flaring.[115] The Report indicates that in 2019, an estimated 1,560 bcf of natural gas was produced from the UKCS, excluding gas which was injected back into the reservoir, 88% of produced gas was for export, 9% was utilised offshore as a fuel, the remaining 3% of gas produced was flared or vented at the offshore installation for

[109] See UN Conference on Climate Change UK 2021 at https://ukcop26.org/ accessed 23/11/2021

[110] See for example See PM statement at COP26 press conference: 10 November 2021 at https://www.gov.uk/government/speeches/pm-statement-at-cop26-press-conference-10-november-2021; and COP26: Climate deal sounds the death knell for coal power – PM, By Doug Faulkner, BBC News, 14 November 2021, at https://www.bbc.co.uk/news/uk-59284505

[111] UN Annual Conference of Parties (COP26) - https://ukcop26.org/; The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016 –see United Nations Climate Change: Paris Agreement https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en accessed on 20/04/2021.

[112]See https://unfccc.int/process-and-meetings/the-convention/what-is-the-united-nations-framework-convention-on-climate-change

[113] See https://www.worldbank.org/en/programs/zero-routine-flaring-by-2030#1 – The Initiative has been endorsed by several key international oil companies, development institutions and governments see list of endorsers including 34 Governments, 44 Oil Companies, and 15 Development Institutions at https://www.worldbank.org/en/programs/zero-routine-flaring-by-2030#4

[114] According to the OGA, 'flaring and venting are controlled processes to dispose of waste gas, essential for emergency and safety purposes on oil and gas installations, and in situations where it may not be feasible for the gas to be used, exported or re-injected. Flaring is the burning of gas, and venting is the release of unburned gas' - See OGA, UKCS Flaring and Venting Report, September 2020 at https://www.ogauthority.co.uk/media/6795/oga_ukcs_flaring_venting_report_2020_pdf.pdf

[115] For detailed information on the current flaring statistics in the UK see, Oil and Gas Authority (OGA), UKCS Flaring and Venting Report, September 2020 at https://www.ogauthority.co.uk/media/6795/oga_ukcs_flaring_venting_report_2020_pdf.pdf

either safety, operational or economic reasons (of which 98% was flared and 2% was vented).[116]

The UK's oil and gas industry has established itself as the major contributor to the national economy since the first offshore licences were awarded in 1964, subsequent discoveries and rapid production by the major international oil companies from 1965 onwards.[117] According to the industry body, Oil and Gas UK (OGUK), since production started in 1967, the sector has produced around 45 billion barrels of oil equivalent from the UK's Continental Shelf (UKCS), generating over £350 billion in production tax revenue alone, and providing significant employment opportunities to nationals. Most oil and gas activities are located offshore on the UKCS, which is the mature geological basin for the exploration and extraction of hydrocarbons in the UK. According to the OGUK, the oil and gas industry supplies around 75% of the UK's primary energy needs. Oil and gas production from the UKCS play a major role in the UK's primary energy demand and will continue to be a central element of the nation's energy supply as the UK transitions to net zero.[118]

There are many valuable lessons from the oil and gas sector including the transfer of skills, experience, technology for offshore energy projects (i.e. wind and wave); a need for stronger collaboration, innovation & investment (infrastructure, supply chain & local content). It is therefore important to have robust legal, regulatory, policy and contractual regimes for effective management of associated risks and challenges; and creating an enabling framework for innovative opportunities in the green revolution. Some suggest that the "post-oil" reality for the North Sea region is beginning to loom. Consequently, the UK industry in agreement with the Government adopted the *North Sea Transition Deal* in March 2021 to harness the sector's 50 years of energy expertise, accelerate the green energy transition and create new generation jobs in the country.[119] It is now widely accepted that the UK is in the midst of a profound energy transition, in which the role of renewable energy, the protection of the environment, and the climate change agenda including carbon capture and storage, and zero emissions targets have become increasingly important. Recently, there have been strong calls for the future direction of energy transition and a managed transition for the oil and gas sector after Covid-19, supported by both government and industry.[120] Recent events have demonstrated a concrete move towards an energy transition with zero emissions by 2050 including the 2020 *Government Policy Paper: Ten Point Plan for a Green Industrial Revolution* which focus on supporting green jobs, accelerating the path to net-zero, i.e., offshore wind; low carbon hydrogen; nuclear power; zero-emission vehicles; green finance (ships, buildings, public transport); carbon capture storage; and the protection of the natural environment.[121] *The Scottish Government also* adopted several energy-related policies including *Renewable and Low Carbon Energy* to provide the foundation of the future energy system, offering a huge

[116] *Ibid*

[117] For a detailed historical overview of the UK oil and gas industry see, Kemp Alex, The Official History of North Sea Oil and Gas, Volume 1: The Growing Dominance of the State; Volume 2: Moderating the State's Role; 2012, Routledge

[118] See North Sea Transition Deal, Department for Business, Energy & Industrial Strategy, and Oil and Gas UK, March 2021 at

[119] See North Sea Transition Deal at https://oilandgasuk.co.uk/nstd/

[120] See Net Zero North Sea Report, a managed transition for the oil and gas sector in Scotland and the UK after Covid-19, Emden, Murphy and Gunson, Institute for Public Policy Research (IPPR), December 2020, at https://www.ippr.org/files/2020-12/net-zero-north-sea-nov2020.pdf

[121] *Policy Paper: Ten point plan for a green industrial revolution*, Department for Business, Energy and Industrial Strategy, 18 November 2020, at https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution

opportunity for economic and industrial growth in Scotland. It is estimated that by 2030 –50% of energy consumption will come from renewable energy (RE) sources, and by 2050 - to decarbonise the energy system completely in Scotland.[122] The OGUK have adopted an agreed pathway to net zero in addition to the North Sea Transition Deal and have indicated its response and commitment to the net zero challenge with their Roadmap2035.

4.1 UK's Gas Flaring Policy Objective

The UK's policy on flaring is set out in the OGA's Flaring and Venting Policy position paper, with the main objective ' to ensure consistency of the OGA's offshore flaring and venting regime with MER UK and wider government policy, including emissions targets, by eliminating any unnecessary or wasteful flaring and venting of gas throughout the lifecycle of a petroleum installation and relevant facilities such as terminals.'[123] In summary, the Policy paper contains a list of regulatory actions, including the issuing of consents for flaring and venting of gas; ensuring that volumes are at technically and economically justified levels; requiring operators to execute their operations properly in accordance with methods and practise customarily used in good oilfield practise; engaging with applicants; approving unplanned events; ensuring a stable system of regulation (including financial penalties and sanctions); ensuring engagement with the government regulator for the offshore environment and decommissioning (OPRED);[124] and supporting industry in the development of best practice. The Flaring Policy further requires OGA to take into account all appropriate data and evidence, whether alternative uses for the gas and best application of technology have been considered, and the historic performance of the operator and installation against flare and vent consents.[125]

4.2 Legal and Regulatory Framework

The Petroleum Act 1998 is the main legal framework for the exploration and production of oil and gas in the UK. The OGA is the main regulator of the industry and is also responsible for regulating flaring and venting on the UKCS. The OGA share this responsibility with the Environmental Agency in England and Wales, and the Scottish Environmental Protection Agency (SEPA), in Scotland which is responsible for onshore environmental protection. The OGA was set up after the 2014 Wood Review recommended the creation of a new arm's length regulatory body charged with effective stewardship and regulation of UKCS hydrocarbon recovery and maximising collaboration across the industry. The following year, in 2015, the OGA was set up as an Executive Agency, an independent Government Company, with headquarters in Aberdeen, Scotland, and funded by an industry levy.[126] It was set up as a 'government company with a separate Board of Directors to ensure operational independence

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[122] See *Scottish Government Policy on Renewable and Low Carbon*, 2021 - https://www.gov.scot/policies/renewable-and-low-carbon-energy/latest/

[123] See *Oil and Gas Authority, Gas Flaring and Venting, Policy Position* – see also a detailed list of actions in regulating flaring in the UK, at https://www.ogauthority.co.uk/media/5014/flaring-and-venting-policy-position-website.pdf

[124] The Offshore Regulator for the environment and decommissioning (OPRED) is responsible for regulating environmental and decommissioning activity for offshore oil and gas operations in the UK. See https://www.gov.uk/government/organisations/offshore-petroleum-regulator-for-environment-and-decommissioning

[125] *Ibid.*

[126] The OGA became a government company in October 2016, limited by shares under the *Companies Act 2006*, with the Secretary of State for Business, Energy and Industrial Strategy (BEIS), the sole shareholder. See https://www.ogauthority.co.uk/about-us/what-we-do/our-history/

from the government's Department for Business, Energy and Industrial Strategy (BEIS)'. The OGA consists of various directorates (Operations, Regulation, Strategy, HR, Decommissioning, and Supply Chain, and Corporate). The CEO is only accountable to the OGA Board of Directors for implementing the regulator's objectives, plans and strategies. The Board of Directors are accountable to the government's Secretary of State for BEIS who is in turn answerable to Parliament. [127]

The OGA's regulatory responsibility is to regulate, influence and promote the UK oil and gas industry, in conjunction with other regulatory authorities. Until OGA came into being, the government department that was responsible for the regulation of the industry, was the Department of Energy and Climate Change (DECC), previously known as the Department of Business, Enterprise and Regulatory Reform (DBERR). The OGA took over most of the regulatory functions from DECC, as the new independent regulator for the UK's oil and gas industry. Some of the regulatory oversight responsibilities are shared with the Department for Business, Energy and Industrial Strategy (BEIS) (formerly DECC) on the decommissioning of offshore oil and gas installations and pipelines on the UKCS. As stated earlier, BEIS retained certain regulatory functions relating to decommissioning and the offshore environment, and the operational independence between the two bodies have been determined in a 2016 memorandum signed between BEIS and the OGA.[128] The OGA also collaborates with the Health and Safety Executive as the main regulator for health and safety of the UK's oil and gas industry.[129] The original mandate of the OGA was the maximising economic recovery of the UK petroleum, however, the strategy was recently adapted to reflect the ongoing energy transition, including the efforts to reduce production emissions, support carbon capture and storage (CCS) projects and unlock clean hydrogen production.[130] The OGA's policy is to ensure consistency of the OGA's offshore flaring and venting regime with MER UK and wider government policy, including emissions targets, by eliminating any unnecessary or wasteful flaring and venting of gas throughout the lifecycle of a petroleum installation and relevant facilities such as terminals. The OGA's regulatory powers are based on the 1976 Energy Act (as amended by the 2016 Energy Act) and the Petroleum Act of 1998, which require operators to apply for consents for any flaring and venting of hydrocarbons during commissioning and production operations. The regime contains specific legal requirements for flaring and venting gas during the commissioning and production stages. During commissioning, flaring is restricted to between one and three months, and for a fixed quantity of gas based on an auditable programme, however, these can be increased by the OGA once-stable conditions have been achieved. Flaring and venting of hydrocarbons during the production phase are allowed provided the operators have the necessary regulatory consents in place. For the production phase, flaring consents are issued on an annual basis, however, the period can be reduced where the OGA has concerns over the level of flaring at an installation.[131]

[127] See OGA relationship with government at https://www.ogauthority.co.uk/about-us/leadership-governance/our-relationship-with-the-uk-government/

[128] See Memorandum of Understanding between BEIS and OGA, September 2016 at https://www.ogauthority.co.uk/media/7718/beis-oga-mou-final-30-september-2016.pdf

[129] See Memorandum of Understanding between the Health and Safety Executive and OGA, May 2015 at https://www.ogauthority.co.uk/media/7717/mou-oga-hse-may-2015.pdf

[130] See *OGA's Maximising Economic Recovery Strategy* at https://www.ogauthority.co.uk/news-publications/publications/2016/maximising-economic-recovery-of-uk-petroleum-the-mer-uk-strategy/

[131] See OGA Corporate Plan Template (ogauthority.co.uk) - Flaring consents are issued in terms of the Energy Act 1976 (combined rate for both inert gas and the hydrocarbon fraction) and the Petroleum Act 1998 (only the hydrocarbon fraction flared from the licensed area requires consent).

4.3 Contractual Obligations and Enforcement

The Petroleum licence provides the main contractual and regulatory hybrid instrument for the exploration and production of hydrocarbons in the UK.[132] The 1998 Petroleum Act vests all rights in hydrocarbon resources in the Crown and the OGA is empowered by the Act to grant licences for exploration and production of oil and gas in the UK. The licence imposes several obligations including environmental requirements on licence holders during oil and gas activities. In terms of gas flaring, licensees (e.g., the operator on behalf of the licence group) or the terminal operator are required to apply to the OGA for consent to flare and/or vent gas emitted from their petroleum installations and relevant infrastructure. The application process is transparent and there is guidance available on the application process, and it is expected that the applicant maintains a good line of communication with the regulators. Additionally, environmental consents and permits may also be required under the EU Emissions Trading Scheme (EU ETS).[133] In addition to OGA's role as the main regulator for the oil and gas industry, including offshore flaring activities, the environmental regulators in England and Wales, the Environment Agency (EA),[134] and in Scotland, the Scottish Environmental Protection Agency (SEPA) have regulatory powers for flaring and venting from onshore petroleum installations and terminals.[135]

In 2019, SEPA enforced their regulatory powers and launched a criminal investigation into the unplanned flaring of gas by ExxonMobil at their Ethylene Plant at Mossmorran in Fife, Scotland. The investigation resulted in the temporary shutdown of the plant, which has been operating since 1985. There were issues with the flaring of gas that cannot be processed, or for planned flaring and safety reasons.[136] As a result of the shutdown "significant" volumes of ethane had to be burnt off.[137] The local community in Fife protested and pushed for an independent inquiry into the health, social and environmental impact of flaring from the ageing plant, and in April 2018, SEPA issued "final warning letters" to ExxonMobil concerning flaring that was found to be "preventable and unacceptable".[138]

The petroleum licence contains model clauses requiring licensees to avoid harmful methods of working, to maintain all apparatus in good repair and condition, to execute all their operations properly in accordance with methods and practice customarily used in good oilfield practice, and to take all steps practicable in order to control the flow and to prevent the escape or waste

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[132] See Daintith and Gault, Pacta sunt ser vanda and the licensing and taxation of North Sea oil production, 8 *Cambrian L. Rev*. 27 1977, p.27.

[133] The revised EU ETS Directive is implemented by the Greenhouse Gas Emissions Trading System Regulations 2012 (the Regulations) which requires a permit for a 'regulated activity' (emission of specified greenhouse gases (Co_2 for offshore installations). See https://www.gov.uk/guidance/oil-and-gas-offshore-environmental-legislation#greenhouse-gases-emissions-trading-scheme-ets

[134] See Environment Agency - https://www.gov.uk/government/organisations/environment-agency

[135] See SEPA at https://www.sepa.org.uk/regulations/air/air-quality/mossmorran-and-braefoot-bay-complexes/

[136] See SEPA - Clear pathway to compliance For Mossmorran as watchdog strengthens regulation and monitoring of Fife sites; SEPA statement on planned temporary shutdown of Fife Ethylene Plant (Tuesday 6 April 2021), ExxonMobil Chemical Limited Fife Ethylene Plant planned shutdown (Wednesday 14 April 2021) at https://www.sepa.org.uk/regulations/air/air-quality/mossmorran-and-braefoot-bay-complexes/

[137] See Incidents: Mossmorran flaring: Shell forced to burn off gas it cannot sell, Angie Brown, BBC Scotland, 3 October 2019, at
https://www.bbc.co.uk/news/uk-scotland-edinburgh-east-fife-49906062

[138] See 'It's a nightmare': Fife residents demand inquiry into flaring at petrochemical plant, Aamna Mohdin, The Guardian, 15 March 2020 at
https://www.theguardian.com/uk-news/2020/mar/15/its-a-nightmare-fife-residents-demand-inquiry-into-flaring-at-petrochemical-plant;

of petroleum. [139] The licence further requires that operators demonstrate all reasonable steps have been taken to keep flaring and venting during operations to a minimum, and to engage with the OGA at the earliest opportunity if any events, planned or unplanned, are expected to cause a breach of consent. The licensing regime includes a sanction regime for failure to comply with a flare or vent consent, or the flaring or venting of gas without OGA's regulatory consent, as ultimately, the OGA has powers to revoke the licence for any breach or non-observance of any terms and conditions of the licence.[140]

Finally, in 2021, the OGA indicated that their regulatory control resulted in the reduction of flaring in the UKCS by 22% in one year and that the results were encouraging, as a clear regulatory focus can make a significant impact. The Director of Strategy stated that "the OGA is supporting and holding the industry to account to reduce emissions and will soon be publishing net zero expectations, which set out how every stage of operations must demonstrate a commitment to reducing greenhouse gases. We will continue monitoring closely and reflect that in decision-making when operators apply for consents and authorisations for flaring and venting."[141]

5. Discussion

The discussion highlighted the status of the regulation of gas flaring in Nigeria and the UK. It seems on the one hand that the UK's regime is well developed, robust and effective in dealing with flaring, whilst Nigeria's regime is weak on implementation and enforcement, and much still needs to be done to tackle the menace of flaring. This review on the law and policy aspects of gas flaring highlighted the key features of the two regimes including some of the key strengths and weaknesses. Thus, there are several useful lessons from the UK's experience, for countries such as Nigeria where enforcement of the existing anti-gas flaring laws and regulations has not been largely successful due to ineffective enforcement processes. Nigeria is ranked as the seventh-largest gas flaring nation in the world, and a new legal framework in the form of the PIA was passed in 2021, in addition to the Gas Flare Regulation of 2018to tackle gas flaring, however, there are still implementation and enforcement challenges, and large amounts of gas are still being flared illegally in the country. The UK has achieved some degree of success in reducing flaring and venting significantly, and the regulator adopted a much tougher approach to hold industry to account on their commitment to halving their production emissions by 2030 as a pivotal part of the government's target for net-zero emissions by 2050. The OGA recently indicated that they have been able to reduce flaring in the UKCS by 22% in one year because of their commitment and clear regulatory focus.[142]

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[139] See in particular *Clause 21* Avoidance of harmful methods of working, *Petroleum Model Clauses - Petroleum (Current Model Clauses) Order 1999* entered into force on 15th February 1999 – at https://www.legislation.gov.uk/uksi/1999/160/article/1/made

[140] See Power of revocation, Model Clause 39, Petroleum (Current Model Clauses) Order 1999 at https://www.legislation.gov.uk/uksi/1999/160/article/1/made

[141] See OGA Announcement - 10 March 2021 UK North Sea flaring cut by 22% in one year, Oil and Gas Authority: UK North Sea flaring cut by 22% in one year - 2021 - News - News & publications (ogauthority.co.uk) - https://www.ogauthority.co.uk/news-publications/news/2021/uk-north-sea-flaring-cut-by-22-in-one-year/; see also UK regulator 'exploring tougher measures' on flaring and venting of greenhouse gases in oil & gas production, Nermina Kulovic, Offshore Energy, Environment, 28 September 2020, at https://www.offshore-energy.biz/uk-regulator-exploring-tougher-measures-on-flaring-and-venting-of-greenhouse-gases-in-oil-gas-production/

[142] *Ibid.*

Therefore, in comparing the regulatory efforts in these two countries, it was established that while the UK's regime is regarded as well developed, robust and effective in dealing with flaring, Nigeria's regime is required to do much more to effectively tackle the menace of flaring in the country. For instance, the UK's regulator has evolved from a mere government department into an independent organisation funded by an industry levy that operates within a well-established legal framework and a transparent monitoring system. The setting up of the OGA as an autonomous industry regulator was certainly a major shift from the original model of a government department regulator to a fully-fledged independent industry regulatory body. The licensing regime includes a sanction regime for failure to comply with a flare or vent consent, or the flaring or venting of gas without OGA's regulatory consent, as ultimately, the OGA has powers to revoke the licence for any breach or non-observance of any terms and conditions of the licence.[143]

It is suggested that, since the purpose of enforcement is to ensure and encourage transparency and compliance with anti-gas flaring laws and regulations, the industry should be supervised by a dedicated and empowered institution either in the form of a standalone independent regulatory body, or a competent department with initial connection with the petroleum ministry, but eventually evolving into a fully-fledged independent industry regulator, staffed by competent professionals, and funded by industry. It is important that whatever the form of the regulatory institution, it should be transparent, autonomous, and predictable with clarity of roles and objectives, independent of influence by the politicians or the oil and gas operators. The UK's regulatory experience is a useful demonstration of a paradigm shift from the typical government department regulator to that of an independent regulator for the oil and gas industry. Although the OGA is answerable to a government department (BEIS), it remains outside the bureaucratic confines of government, and has operational independence, with an industry-oriented Board of Directors. A recent review demonstrated OGA's effectiveness in ensuring an improvement in complying with the regulatory regime, including gas flaring and venting.[144] However, the reverse has been the case in Nigeria, where authorities have established different overlapping agencies with unclear responsibilities and hierarchy over the others. Therefore, it is submitted that to ensure effective and efficient enforcement of the extent of anti-gas flaring regulations, regulatory institutions should have clearly defined responsibilities with no overlapping or conflicting mandates. The institutions must be fully independent of the operators they regulate to avoid any conflict of interest and be adequately financed to enforce compliance. Hence, it is further submitted that nothing good would come out of the enforcement of Nigeria's anti-gas flaring legal regime if the regulator remains influenced by the political whims of the government and industry.[145]

This paper also discussed the significant modifications to the UK's legal, regulatory and policy frameworks that address key institutional changes, the maturity of the UKCS industry and realities of a post oil environment, and the growing importance of climate change, renewable energy, and carbon capture and storage, all within a major transitional shift of the UK's energy sector. These challenges are important to many countries; however, they may not have the same level of urgency in Nigeria with an economy still highly dependent on the oil and gas industry. However, the calls for change in Nigeria are getting stronger for an effective regulatory regime,

[143] See Power of revocation, *Model Clause 39, Petroleum (Current Model Clauses) Order 1999* at https://www.legislation.gov.uk/uksi/1999/160/article/1/made

[144] See The OGA's final report on its Thematic Review, 29 October 2020, OGA publication at https://www.ogauthority.co.uk/news-publications/publications/2020/the-oga-s-final-report-on-its-thematic-review/

[145] See also Oyewunmi (n.23) and also Omukoro (n.40)

competent regulator, effective enforcement of laws and regulations, more transparency, proper environmental protection, promotion of renewable energy, and the involvement of affected local communities in the overall decision-making processes that affect their daily lives. It is our collective view that the recent amendments introduced by the Petroleum Industry Act of 2021 could be seen as an opportunity by the regulator to adapt to a more professional, robust and independent approach to the regulation of the industry as a whole.

6. Conclusion

The above review of the law and policy regimes for the regulation of gas flaring and enhancing gas utilisation in these two countries formed an important part of this discussion. Gas flaring is a significant environmental problem in many countries and a key contributor to global warming and climate change whilst the oil and gas industries around the globe continue to flare a substantial amount of associated gas during exploration and production activities. Current global data indicates that gas flaring and atmospheric pollution are taking place in most oil and gas producing countries, thus in order to effectvely reduce this practice, it should be addressed not only in the national legal frameworks but also at a regional and international level. This paper highligted several aspects of the the regulatory regimes for gas flaring in the UK and Nigeria including some of the notable features in achieving an effective system in the regulation of gas flaring. It also indicated several useful lessons from the UK's experience, for countries such as Nigeria where implementation of existing anti-gas flaring laws and regulations have not been successful due to ineffective enforcement and operational processes.

Some of the areas discussed albeit not in much detail, stress the importance of an effective legal, regulatory and policy regime that clearly underline the role of flaring reductions as part of the overall target of zero emissions. It is important to establish a competent independent regulatory body, properly funded and staffed, with clearly defined responsibilities, and with transparent monitoring and enforcement procedures in place, supported by relevant legislation including regulations, that empowers the regulator to effectively address the problems of gas flaring.

This paper concludes with a 'cautionary optimistic' note that Nigeria's regulatory framework under the *Flare Gas Regulation 2018* and the new *PIA* of 2021 may not likely achieve its goal unless a more professional and independent regulator adapt a transparent, robust and rigorous approach to regulation, with the required supporting political will, and mindset of all stakeholders, in order to effectively enforce the current gas flaring laws and regulations to the benefit of society at large.