# Legal framework for utilisation and emissions-impact mitigation from natural gas production: the case for Nigeria.

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**LEGAL FRAMEWORK FOR UTILISATION AND EMISSIONS-IMPACT MITIGATION FROM NATURAL GAS PRODUCTION: THE CASE FOR NIGERIA**

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**A thesis submitted in partial fulfilment of the requirements of Robert Gordon University for the degree of Doctor of Philosophy**

**October 2022.**

**Declaration**

I, Geofrey Athanasius Eneyo, hereby declare that the work on which this thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole piece, nor any part of it has been, is being, or is to be submitted for another degree in this or any other university. I authorise the university to reproduce for research either the whole or any portion of the contents in any manner whatsoever.

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**Dedication**

I dedicate this work to the memories of my loving Aunty Gogoda Uyeazo, Daddy Peterside, my brother Edward Sunju. And my grandparents Chief Saturday Ogugo and Chief Alfred Okpanuwo, all of whom I share a special bond. I miss you.

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**Abstract**

Environmental concerns dominate every stage of oil and gas operations, from production to consumption stages. At the production stage, there is the problem of waste of associated gas through flaring emissions, while pipeline leakages and tanker accidents are common during transportation of products and services. During consumption, the combustion of these gases also causes environmental pollution and impact negatively on the health of people and communities. In emerging markets, the oil and gas sector is at the centre of the demand for reduction in global carbon emissions because 60 out of 70 per cent of energy-related global emissions are attributed to continuous extraction, processing and burning of oil and gas. Furthermore, 63 per cent of current global emissions have been estimated to come from developing and emerging market areas. As an emerging economy dependent on oil and gas, Nigeria's continuing waste of natural gas through flaring alone accounts for 40 per cent of total greenhouse gas emissions from Sub-Saharan Africa. This is due to poor gas infrastructure, an underdeveloped domestic gas market, inefficient regulation of the sector, lack of comprehensive HSE regime. Other challenges include insecurity, poor incentives for private sector engagement, and an overwhelming focus on crude oil revenue etc. This work therefore focuses on proposing new framework structures to support investment in critical gas infrastructures, drive the development of the domestic gas market and mitigate emissions impact in Nigeria. While this study is generally a doctrinal and non-doctrinal (sociolegal) inquiry, it adopts a comparative and case study analysis to resolve the research question. It does this by relying on primary and secondary sources of laws on oil and gas, including non-legal data on natural gas, impact of gas flaring and challenges to natural gas utilisation.

KEY WORDS: Natural Gas, Utilisation, Legal Framework, Emission Impact, Flaring, Emerging Markets, Developing Economies, Climate Change, Mitigation, Environment.

**List of Abbreviations**

ADB African Development Bank

AEP Alberta Environment and Parks

AER Alberta Energy Regulator

AGFA Associated Gas Framework Agreement

AGRA Associated Gas Reinjection Act

AKK Ajaokuta-Kaduna-Kano Pipeline Project

APIP Alberta Petrochemical Incentive Programme

AQIM Al Qaeda in the Islamic Maghreb

BCF Billion Cubic Feet

BEIS Department of Business, Energy, and Industrial Strategy UK

BOEM Bureau of Ocean Energy Management United States

BOO Build Own and Operate

BOOT Build Own Operate and Transfer

BRICs Brazil, Russia, India, and China

BSEE Bureau of Safety and Environmental Enforcement

CAPP Canadian Association of Petroleum Producers

CBM Coalbed Methane

CIMAH Control of Industrial Major Accidents Hazards Regulation

CIS Commonwealth of Independent States

CNOOC China National Offshore Oil Corporation

CNPC China National Petroleum Corporation

CO2 Carbon Dioxide

COMAH Control of Major Accidents Hazards Safety Reports

COP Conference of the Parties

DECC Department of Energy and Climate Change

DGSO Domestic Gas Supply Obligation

DNO Distribution Network Operator

DPR Department of Petroleum Resources

DSO Distribution Systems Operator

DSR Demand Side Response

EGASPIN Environmental Guidelines and Standards for the Petroleum Industry

EIA, Environmental Impact Assessment

ELPS Escravos-Lagos Pipeline System

EMR Electricity Market Reform

EPEA Environmental Protection and Enhancement Act Alberta

ERCB Energy Resources Conservative Board, Alberta Canada

FEPA Federal Environmental Protection Agency

FERC Federal Energy and Regulatory Commission

GDP Gross Domestic Product

GGFR Global Gas Flaring Reduction Programme

GHG Greenhouse Gas

GHSED Group Health, Safety and Environment Department

GMP Gas Master Plan, Nigeria

GSMR Gas Safety Management Regulations

GSPC Salafist Groups for Preaching and Combat

GTL Gas to Liquids

HSE Health Safety Executive

HSE Health, Safety and Environment

IGA Intergovernmental Agreement

IOCs International Oil Company

IPCC Intergovernmental Panel on Climate Change

ITMOS Internationally Transferred Mitigation Outcomes

JVs Joint Ventures

KPMG Klyveld Peat Marwick Goerdeler

LCD Least Developed Countries

LGA Local Government Area

LNG Liquefied Natural Gas

MCA Maritime and Coastguard Agency United Kingdom

MER Market Exchange Rate

MtCO2e Million Tonnes of Carbon Equivalent

MLR Ministry of Lands and Resources (China)

MMS Minerals Management Service, United States of America

MPA Minerals Planning Authority, United Kingdom

MNC Multinational Corporations

MOU Memorandum of Understanding

MPR Ministry of Petroleum Resources, Nigeria

NAPEP Nigerian Association of Petroleum Explorationists

NCDMB Nigerian Content Development and Monitoring Board

NDCs Nationally Determined Contributions

NDDC Act Niger Delta Development Commission Establishment Act

NDDC Niger Delta Development Commission

NESREA Act National Environmental Standards and Regulatory Enforcement Agency Act

NESREA National Environmental Standards and Regulatory Enforcement Agency

NGC National Gas Company Nigeria

NGFCP National Gas Flare Commercialisation Programme

NGP National Gas Policy

NIMASA Nigerian Maritime Administration and Safety Agency

NLNG Act Nigerian Liquefied Natural Gas Act

NLNG Nigerian Liquefied Natural Gas

NNPC Nigerian National Petroleum Corporation

NPSC Nigerian Pipelines and Storage Company

NOC National Oil Company

NTS National Transmission System

OB3 Obiafu-Obrikom-Obem Link Pipeline Nigeria

OEC Observatory of Economic Complexities

OGA Oil and Gas Authority United Kingdom

OGIC Oil and Gas Reform Implementation Committee

ONRR Office of Natural Resources Revenue United States

OPRED Offshore Petroleum Regulator for Environment and Decommissioning UK

PENGASSAN Petroleum and Natural Gas Senior Staff Association of Nigeria

PHCB Petroleum Host Community Bill

PIAB Petroleum Industry Administration Bill

PIA Petroleum Industry Act

PIB Petroleum Industry Bill

PIGB Petroleum Industry Governance Bill

PPMC Pipelines and Product Marketing Company Nigeria

PHICDB Petroleum and Host and Impacted Community Development Bill

PPP Purchasing Power Parity

SEMS Safety and Environment Management Systems

SEPA Scottish Environmental Protection Agency

SOEs State-Owned Enterprises

TAPI Turkmenistan-Afghanistan-Pakistan-India Pipeline

TCF Trillion Cubic Feet

TESI The Extra Step Initiative

TFEU Treaty of the Functioning of European Union

TSGP Trans-Saharan Gas Pipeline

UNEP United Nations Environment Programme

USD United States Dollars

USEPA United States Environmental Protection Agency

U.S. EIA the United States Energy Information Administration

UKCS United Kingdom Continental Shelf

UNFCCC United Nations Framework Conference on Climate Change

WAGP West African Gas Pipeline

WSN- Wireless Sensor Network

WAPCo West African Gas Pipeline Company Limited

WMO World Meteorological Organisation

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## CHAPTER 1. INTRODUCTION

### 1.1 BACKGROUND OF RESEARCH

There is a vast scientific consensus that man-made greenhouse gas (GHG) emission is impacting the global climate, and reducing those emissions in great quantity is the only way to limit the adverse effects of climate change.[1] These adverse effects ranging from sea level rise to flood disasters, droughts, low crop yields, growing heatwaves and health-related concerns[2] are currently felt most by developing economies due to poor economic conditions. In addition, due to the exposure of developing countries to extreme weather events, weak infrastructures and housing, and poor adaptation planning in the event of disasters, developing countries will continue to suffer more from the impacts of growing gas emissions in the atmosphere.[3] These impacts, unfortunately, is projected to intensify if the increase in fossil fuel emissions continues at its current pace.[4]

Historically, developed countries were responsible for contributing 79 per cent of global gas emissions from 1850 to 2011.[5] Their current contribution is now estimated to be around 36 per cent, with the United States of America (U.S.) and Europe contributing 13 and 9 per cent, respectively. They are closely followed by Russia at 5 per cent, while Eurasia, Japan and other high-income economies contribute 3 per cents apiece.[6] On the other hand, 63 per cent of current global

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[1] Christopher D. Elvidge and others, 'the Potential Role of Natural Gas Flaring in Meeting Greenhouse Gas Mitigation Targets' (2018) 20, ESR, 152-162 at 152.
[2] Bassam Fattouh, 'Oil Market: Features and Issues' in Ewan C. Nelson and John Wils (eds)' (Aberlour Press, 2011) 66.
[3] Jonah Busch, 'Climate Change and Development in Three Charts' (2015). Available at https://www.cgdev.org/blog/climate-change-and-development-three-charts accessed August 25, 2019.
[4] Michael H. Smith, 'Assessing Climate Change Risks and Opportunities for Investors: Oil and Gas Processing Sector' (Australian National University and Investors Group on Climate Change, 2016) 3.
[5] Centre for Global Development, 'Developed Countries are Responsible for 79 Percent of Historical Carbon Emissions' (August 18, 2015). Available at https://www.cgdev.org/media/who-caused-climate-change-historically accessed August 23, 2019.
[6] Fulco Ludwig and others, 'Climate Change Impacts on Developing Countries- EU Accountability' (European Parliament Policy Department, Wageningen University Research Centre and the Cooperative Programme on Water and Climate (CPWC) Netherlands, 2007) 3-8.

emissions increases reportedly comes from developing economies,[7] with China alone contributing a 23 per cent share. In contrast, other Asian and Latin American countries account for 11 and 9 per cent increases.[8] The Middle East and North Africa put together are responsible for 8 per cent of current increases while Sub-Saharan Africa and India contribute 7 and 5 per cent respectively.[9] These increases in global emissions from developing economies are occurring due to the burning of fossil fuels[10] and the vast economic activities in developing economies.[11]

A further example, between 2000 and 2013, fossil fuel emissions worldwide grew at an average rate of 2.6 per cent, driven primarily by China, whose emission growth nearly tripled[12] as high as 8.5 per cent annually before stabilising fairly from 2013 to 2016.[13] In the rest of Asia, increases in gas emissions averaged a yearly rate of 2 per cent, especially in India, Korea and Indonesia.[14] Since 2010, while average annual emissions growth in India's continued at a 5 per cent pace, in Korea and Indonesia respectively, since 2000, additional increases reached 36 per cent and 78 per cent.[15]

Although since 2000 there were observed changes in places like the U.S., generally, there has been noticeable emissions increases in the Americas,

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[7] Centre for Global Development, 'Developing Countries Are Responsible for 63 Percent of Current Carbon Emissions' (August 18, 2015). Also available at https://www.cgdev.org/media/developing-countries-are-responsible-63-percent-current-carbon-emissions accessed August 23, 2019.
[8] Jonah Busch, 2015 (n3).
[9] Jonah Busch, 2015 (n3)
[10] Christina Nunez, 'Carbon Dioxide Levels Are at A Record High: Here's What You Need to Know' (National Geographic, Published May 13, 2019). https://www.nationalgeographic.com/environment/global-warming/greenhouse-gases/ accessed September 2, 2019.
[11] Inaki Arto and Erik Dietzenbacher, 'Drivers of the Growth in Global Greenhouse Gas Emissions' (2014) American Chemical Society, 5388-5394; Carla Delgado, 'How Developing Countries Can Reduce Emissions without Compromising Growth' (2017).
[12] International Energy Agency, 'CO2 Emissions from Fuel Combustion: 2018 Highlights' (2018) 9.
[13] International Energy Agency, (2018) 10.
[14] IEA, 'CO2 Emissions from Fuel Combustion from 1971-2006' (2011); International Energy Agency (2018) 9; IEA, 'World CO2 Emissions from Fuel Combustion by Fuel, 1971-2019 (Last Updated September 20, 2021)
[15] IEA, 'World CO2 Emissions from Fuel Combustion by Fuel, 1971-2019 (Last Updated September 20, 2021

especially in places like Brazil where emissions increased by 43 per cent and in Mexico by around 24 per cent.[16] In the Middle East region, emissions in Iran grew by a whopping 80 per cent rate, while in Saudi Arabia, it has increased by an alarming 125 per cent rate since 2000. And in Africa, which contributed about 3.5 per cent in the global increase since 2016, with that rate only doubling from 1990 to surpassing the billion tons mark in 2012, the most CO2 emissions on the continent, which averages 36 per cent increase in 2016 alone comes from South Africa.[17]

In Europe, emissions decreased by nearly 12 per cent, with pronounced reductions recorded in the United Kingdom at -29 per cent; Italy -23 per cent; France -20 per cent; Spain -14 per cent while the decline in Germany reaches -10 per cent.[18] While this study acknowledged that until the late 1990s, global emissions were mainly driven by developed economies, with Europe and other developed counterparts have since 2000 reduced their emissions by less than 10 per cent, over the same period, emissions growth among developing and emerging markets have doubled.[19] In fact, according to Muntean and others, two-thirds of these growing emissions in developing economies comes from oil and gas combustion.[20] Consequently, if the impact of GHG emissions on the global economy is to be minimised or mitigated, the oil and natural gas sector will be at the centre of this significant change from developing and emerging market economies.[21] After all, apart from associated gas flaring that is still very common in these countries, growth in the global economy over the past century has been tied to increased use of petroleum energy, with the emission of GHGs mirroring that economic expansion as a result.[22]

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[16] International Energy Agency 2018, (n12) 4-5.
[17] IEA, 'CO2 Emissions from Fuel Combustion from 1971-2006' (2011); n12, International Energy Agency, (2018) 5
[18] International Energy Agency, 2021 (n15); International Energy Agency 2018 (n12) 5.
[19] International Energy Agency 2018 (n12) 10
[20] Muntean M and others, 'CO2 Emissions of all World Countries' (European Commission, JRC Science for Policy Report, 2018) 5, 13.
[21] Marco Grasso, 'Oily Politics: A Critical Assessment of the Oil and Gas Industry's Contribution to Climate Change' (2019) 50, ERSS, 106-115 at 106.
[22] Institutional Investors Group on Climate Change, Investors Group on Climate Change and Ceres, 'Global Climate Disclosures Framework for Oil and Gas Companies' (2012) 1.

Also, while energy-related activities generally contribute about 70 per cent of global GHG emissions, 60 per cent of those carbon emissions are attributed to continuing extraction, processing, and burning of oil and gas.[23] Other environmental concerns also dominate every oil and gas industry operation stage, from production to consumption stages. For instance, problems range from associated gas flaring prevalent at production stages to pipeline leakages and tanker accidents during product transportation. And at consumption stages, there are concerns with pollution and health impacts arising from burning and consuming petroleum products.[24] But of all the losses experienced from production to consumption stages of the oil and gas industry, according to Emam, natural gas flaring represents the single most significant loss of economic resource and 'one of the most challenging energies and environmental problems facing the world today.'[25] Furthermore, out of the 30 most flaring nations ranked by the World Bank from 2014 to 2018, 25 of those countries are developing economies.[26] In Africa, after Algeria, Nigeria is the most significant flare contributor burning approximately 38.4 billion cubic meters of gas over the past five years from 2014 to 2018.[27]

Nigeria has more than 123 flare sites located in the Niger Delta region.[28] And natural gas flaring in the country is as old as the inception of its oil and gas industry that began in 1956 when oil was discovered in commercial quantities at Oloibiri (present Bayelsa State, Nigeria). But while the vast discovery and production capacity soon earned Nigeria a place among the world's top ten oil and gas producing nations, the corresponding economic attraction which placed oil as her most significant revenue base also led to a weakened interest in other viable sectors like agriculture.[29] That loss of interest in different economic sectors also

[23] ibid
[24] Bassam Fattouh 2011 (n2) 66
[25] Eman A. Emam, 'Gas Flaring in Industry: An Overview' (2015) Vol. 57, Issue 5, PC, 532-555 at 532.
[26] The World Bank, 'Gas flaring volumes 2014-18 (billion cubic meters).' Available at http://pubdocs.worldbank.org/en/603281560185748682/pdf/Gas-flaring-volumes-Top-30-countries-2014-2018.pdf accessed June 29, 2019.
[27] ibid
[28] Davoudi M and others, 'The Major Sources of Gas Flaring and Air Contamination in the Natural Gas Processing Plants: A Case Study' (2013) 13, JNGSE, 7-19.
[29] The National Conference 2014: 'Final Draft of Conference Report' (Abuja, 2014) 45.

affected natural gas production and use. In addition, there was no domestic market created for the consumption of produced gas until the late 1970s[30] when Nigeria enacted its first law prohibiting gas flaring and encouraged reinjection of associated gas.[31] Although successive enactments and regulations have followed that law to date, gas flaring continues unabated in Nigeria.[32]

According to a 2004 media report by Friends of the Earth International (FoE), flaring of associated gas in Nigeria began simultaneously with the increase in oil and gas investments over 45 years ago.[33] The report accused multinationals like Shell, Total and ExxonMobil of benefitting from Nigeria's oil wealth since the discovery of oil in the country, while indigenous communities where oil is exploited continually live with pollution from continuous gas flaring.[34] They also regret that unlike in Western Europe, where 99 per cent of associated gas is reinjected into the ground or used, in Nigeria, despite several regulations in place to prohibit flaring, the practice has continued without restraint, causing climate change risk impacting the local population.[35]

On the other hand, while multinationals are equally culpable in the environmental harm, the Nigerian Government has been described as the most culpable party for consistently overlooking threats posed by gas flaring because of the revenue accruing from IOC operations.[36] Ifesinachi and Adibe, whose analysis supports the view that Government is mainly to blame for the failure to rein in oil and gas pollution, also identify commercial terms of the joint ventures (JVs) between the Government and the IOCs as the reason behind the neglect by the Government.

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http://lawnigeria.com/CONSTITUTIONHUB/2014%20CONFAB%20REPORT.pdf accessed 5 June 2019.

[30] Historical Background, Nigerian Gas Flare Commercialisation Programme http://www.ngfcp.gov.ng/about-us/historical-background/ accessed June 6, 2019.

[31] Preamble to the Associated Gas Re-injection Act, Cap 26, Laws of Nigeria 1990.

[32] The World Bank, 2014-2018 (n26)

[33] Friends of the Earth, 'Gas Flaring in Nigeria' (October 2004) 1. Available at https://www.foe.co.uk/sites/default/files/downloads/gasflaringinnigeria.pdf accessed October 26, 2018.

[34] Friends of the Earth 2004, page 1.

[35] ibid

[36] Ken Ifesinachi and Raymond Adibe, 'The Department of Petroleum Resources (DPR) and Enforcement of Environmental Regulations in the Nigerian Oil Industry (2014) Vol.1, No.1 JAPS, 1-10 at 2.

The rationale behind this position stems from two elements. Firstly, since JV operations began in Nigeria, the Government has not only participated, but it has also maintained the right to hold substantial equity in most concessions granted to multinationals operating in Nigeria.[37] As Oyewunmi puts it, this right of the Government to hold equities and to participate in any licensed operation in Nigeria was one of the determining factors precipitating the issuance of lease or operational licences in oil and gas.[38] For the first time in 1971, the Petroleum Minister exercise the right to ownership of a 33 per cent share interest in the Nigerian Agip Oil Company following a prior concession agreement in 1962. Thereafter, the government has gone on to acquire majority stakes in subsequent operating concessions given to major multinationals exploring and producing in Nigeria.[39]

Secondly, the commercial terms of JVs are governed by a legal relationship that sets out the rules and procedures for the joint development of the area and property. Under this relationship, the principles to govern the offtake process, scheduling and product lifting are equally spelt out. Interests held by the parties and the sharing of proceeds accruing from the operation according to the equities held by each party under the JVs are also provided. Parties are to equally bear the royalty cost and taxable obligations according to their equities, and from the proceeds, revenue is set aside for technical and operating costs and for capital expenditure.[40]

In other words, under the JV arrangements, ownership, funding, and production sharing obligations, including liabilities arising from all operations, carried out under the JV, are to be shared according to the participatory interest of parties to the JV.[41] Therefore, as partners share exploration and financial risks as well as contribute to paying off any cost that may arise according to their participatory

[37] Edu Kingsley Omerionwan, 'A Socio-Legal Appraisal of Nigeria's Joint Venture Arrangement in the Petroleum Industry' (2010) Vol. 22, Issue 1, SLJIL, 1 and 7.
[38] Tade Oyewunmi, 'Natural Gas Exploration and Production in Nigeria and Mozambique: Legal and Contractual Issues' (2015) OGEL 2, 3-5.
[39] Simon W. Amaduobogha, 'The Legal Regime for Petroleum Activities in Nigeria' in Tina Hunter (ed), 'Regulation of the Upstream Petroleum Sector: A Comparative Study of Licensing and Concession Systems' (Edward Elgar Publishing, 2015) 263, 274, 277-279.
[40] Ogbonna G. N and Ebimobowei A, 'Impact of Petroleum Revenue and the Economy of Nigeria' (2012) Vol. 2, Issue 2, CRJET, 11-17.
[41] ibid.

interests[42] since the Government through NNPC owns the majority interest (nearly 60 per cent) in all the joint operations and contracts, the responsibility to maximise gas use or minimise waste and flare impact falls to the government. The continuous failure to address these mutually exclusive concerns can thus be said to align with the view that Government often does not fund JVs operations that would limit the constant waste of associated gas.[43]

The United States Energy Information Administration (U.S. EIA), while decrying how insecurity and supply disruptions impede Nigeria's oil production capacity, also affirm that the lack of infrastructures needed for natural gas commercialisation is another reason why gas flaring has continued in Nigeria.[44] Also, under Nigeria's Gas Master Plan (GMP) of 2008, the problem of poor utilisation of natural gas in the country was summed up in one word- 'SUPPLY.' According to the master plan, 'supply,' as the main problem facing the sector is underpinned by five other factors. These are which are- 'availability, affordability and commerciality of supply. Others are deliverability and cost-effectiveness, poor funding, and legal and regulatory framework.[45]

In terms of availability of supply, the challenges in addition to that appertain to three other matters. The first is that the availability of supply is export-focused due to the export-oriented nature of IOCs operating in Nigeria. Secondly, almost 40 per cent of the reserves in Nigeria are not available to supply gas in the short or medium term. This is because gases are often trapped in gas caps and can only be accessed after the oil is produced. Lastly, most proven reserves are not developed to aid supply availability.[46]

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[42] Ken Ifesinachi and Raymond Adibe, 2014 (n36) 6.
[43] Florence O. Akaakar, 'The Law and Natural Gas Development in Nigeria' in Natural Gas: The Energy for the Next Millennium.' A Paper Presented at the Proceeding of the 29th Annual Conference of the Nigerian Society of Chemical Engineers, November 1999 at pages 201-210.
[44] U.S. EIA, 'Country Analysis Brief: Nigeria' (Last Updated May 6, 2016) 1.
[45] Richard Ingwe, 'The Nigerian Gas Master Plan, Investment Opportunities, Challenges, Issues Affecting Power Sector: An Analysis' (2014) LIX, 2, Studia UBB Geographia, 115-124 at 115-116.
[46] Abubakar L. Yar'adua, 'The Nigerian Gas Master Plan.' (Gas Stakeholders Forum, Abuja Nigeria, November 26, 2007). Available at http://www.pppra.gov.ng/wp-content/uploads/2014/11/New-Nigeria-gas-master-plan.pdf accessed August 29, 2019.

Concerning the affordability of supply, pricing is one concern affecting gas supply. There is a history of government agencies such as the Power Holding Company of Nigeria failing to pay for gas in the domestic market, which causes disinterest among IOCs willing to invest heavily in gas supply. Also, since gas supply arrangements often involve enormous capital, it was needful to have bankable agreements to safeguard supply returns. Unfortunately, the sector has not developed enough to guarantee such investor confidence.[47]

In gas delivery and related cost-effectiveness of supply, inadequate infrastructures affect gas supply. Most of the infrastructures on the ground are project-specific or are not accessible enough to support the anticipated pace and concurrent growth of gas in Nigeria.[48] The fourth problem underpinning supply is poor or inadequate legislation specifically governing gas sector development in Nigeria, while the fifth remains a lack of funding for infrastructure projects.[49] According to the 2004 Strategic Gas Plan for Nigeria, to develop a sound and balanced gas industry like most gas-rich nations did in a very sustainable way, Nigeria's focus must first be to develop a solid domestic market driven by industry and power. And one that can absorb at least half of its available gas output, while the focus on exports should be to absorb the rest of the gas produced as and when required.[50]

## 1.2 STATEMENT OF THE PROBLEM

Since the discovery of oil and gas in commercial quantities in Nigeria, several legislations have been enacted by the Government to regulate the sector and its operations. These regulations, among other things, prohibited the flaring of gases and provided for payment of fines for defaulting operators. However, although fines for flaring gas have been reviewed over the years, they are still not punitive

[47] ibid
[48] David O. Ige, 'The Nigerian Gas Master-Plan Status Update' (January 2009) https://www.fuelsgate.com/downloads/Nigeria%20Gas%20Master%20Plan.pdf accessed August 30, 2019.
[49] Richard Ingwe 2014 (n45) 121
[50] UNDP/World Bank, 'Strategic Gas Plan for Nigeria (Joint UNDP/World Bank Energy Sector Management Assistance Programme (ESMAP), February 2004) 9.

compared to revenue accruing from oil and gas production. Consequently, operating companies often prefer to pay the fines and continue to flare.

It is also the law that where associated gas produced with crude oil cannot be utilised, operators must reinject it for enhanced oil recovery (EOR), but the failure of operating companies to deploy gas flaring reduction technologies, and a weak enforcement regime, means flaring has continued uncontrollably. There is also the failure on the part of the Government to fund gas infrastructure development projects and poor domestic gas market for gas commercialisation.

As one of the emerging markets with significant carbon emissions fuelled by vast oil and gas production activities, Nigeria currently ranks as the seventh most flaring nation globally and second behind Algeria on the African continent. Furthermore, the routine waste of gases is a significant loss of revenue to its economy, damages its environment and continues to negatively impact the health of the people living in the oil-rich region of the country.

With existing legislation not supporting efficient resource maximisation or improving domestic gas utilisation and mitigating emissions impact people's health and the environment, a new and robust legal framework can be developed to enhance the management of gas resources in Nigeria.

## 1.3 SCOPE OF STUDY

There has been a lot of interest in growing carbon emissions in developing economies, with the oil and gas sector at the centre of rising GHG concentration in these areas. In Nigeria, oil and gas companies continue to flare natural gas defying every regulation to end the practice. Apart from the health and environmental impacts of flaring emission, Nigeria could solve her electricity problems if this gas could be converted to generate power and utilised for domestic purposes. But a lack of sufficient pipeline infrastructure and a domestic gas market that is not developed enough to receive product output or attract further investments in the gas sector has hampered the growth of the sector. But over and above, these problems are underpinned by uncertainties caused by the delay in establishing an effective regulatory regime within the industry.

This study, therefore, will focus on how a new legal framework can support and attract investments in critical gas infrastructure for the development of the domestic gas market and utilisation of natural gas in Nigeria. This will be achieved by looking at lessons from regimes with efficient regulatory processes enabling successful natural gas use. That is not to say that this study is a comparative study. Rather, what this work will attempt to do is investigate regulatory practices from jurisdictions considered global best. However, not with the intent to transplant those practices as applicable in those jurisdictions but use the lessons learnt from these places to develop a new regulatory framework that is fit for the Nigerian gas market.

Chapter two offers a brief overview of basic concepts used in the study before examining how the burning of fossil fuels (mainly oil and gas) is driving current emissions increases in developing/emerging markets, with evidence of the increases in Brazil, Russia, India, and China (BRIC) highlighted. The chapter proceeded to argue that like Nigeria, the BRIC markets are political and economic powers within their continents and maintain a strong influence on their regional markets. In addition, they possess a huge population growth, and are heavily reliant on oil and gas demand and supply to meets its peculiar energy and economic needs. Furthermore, given a growing level of production activities in these areas, weak regulation of emissions and poor gas infrastructures, it is the finding of the chapter that emission in these countries will continue to growth.

Chapter three of this study then discuss selected case studies of global best jurisdictions where natural gas is efficiently utilised and impact of emissions from oil and gas operations effectively regulated. The case study examples examined in this chapter are drawn from Alberta, the United Kingdom, Norway, and the United States. The use of the case studies gave the study a combination of best practices, the analysis of which provided useful lessons for Nigeria and emerging economies whose existing legal framework do not support significant natural gas utilisation and flare gas reduction. The lessons learnt thus provided guidance for the new legal framework proposed for the Nigerian gas sector. Other emerging market areas with similar challenges like Nigeria may also find the recommendation equally useful for the.

Chapter four of this research appraises the laws governing the gas sector in Nigeria and the policies that have been introduced or put in place by the Government to drive the increase in natural gas utilisation in Nigeria. In Chapter Five, the study proceeds to assess the challenges currently affecting the development of the gas sector and domestic utilisation of gas in Nigeria. Chapter six then considers how the impact of emission from natural gas production in Nigeria affects Nigeria's environment, economy, and health, especially in communities hosting oil and gas activities over the years. To improve the utilisation of natural gas in Nigeria, chapter seven of the study examined the framework issues that will support that objective. It draws lessons from the best practices previously discussed in the study. Chapter eight of the thesis discusses regulatory framework issues for mitigating the impact of emission from natural gas natural production and utilisation. Finally, chapter nine offers the conclusion and recommendation for this study.

## 1.4 RESEARCH QUESTION

Can a new legal framework drive the development of the domestic gas market for natural gas utilisation and emission-impact mitigation in Nigeria and other emerging markets?

## 1.5 RESEARCH AIMS

To achieve the aim of the study, it is important to:

1. Analyse the current literature and industry practices on oil and gas emissions in developing and emerging markets.
2. Investigate global best practices for natural gas utilisation and emission-impact mitigation.
3. Appraise the current regulatory regime governing the Nigerian oil and gas sector.
4. Examine how Nigeria can effectively minimise waste of natural gas from flaring emissions.
5. Evaluate how the cooperative approaches under the Paris Climate Agreement 2015 can support investment in gas infrastructures and mitigate carbon emissions from natural gas production in Nigeria.

## 1.6 RESEARCH OBJECTIVES

1. Propose ways Nigeria can develop the domestic gas market for natural gas utilisation.
2. Propose a new legal framework for natural gas utilisation in Nigeria.
3. Propose a new legal framework for emissions-impact mitigation in Nigeria.

## 1.7 RESEARCH METHODOLOGY

A research methodology is a systematic way of solving a research problem or the science of understanding how particular research is conducted. In it, the reader can learn and appreciate the approach(es) adopted and steps taken by the researcher to address the problems and provide answers to the research questions.[51] In law, one or multiple strategies can be adopted to conduct research and find solutions to existing problems or questions. In this study, a combination of doctrinal, non-doctrinal, and comparative case studies is deployed to provide answers to the research question. The doctrinal also called the traditional research methodology in law is an approach that relies strictly on interpretive analysis of data from legal text such as law journals and books, case laws, judicial pronouncements, parliament proceedings, and legislative enactments. The non-doctrinal approach is often described as a modern approach to legal research where questions relating to how the law can be used to resolve non-law problems in society are investigated.[52] Comparative research methodology often allows the researcher to use comparable data from at least two or more societies. When qualitative-oriented researchers compare, they use how different conditions or causes fit together in one setting and contrast with how they fit together in one setting or another ideal setting.[53] Under the approach, the researcher becomes familiar with the cases relevant to the analysis. And to make meaningful comparisons of cases, the researcher must examine each case directly with other relevant cases.[54]

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[51] C.R. Kothari, 'Research Methodology: Methods and Techniques' (New Age International Publishers, 2nd Revised edn, 2004) 8.
[52] Ian Dobinson and Francis John, 'Qualitative Legal Research' in Mike McConville and Wing Hong Chui (eds.), 'Research Methods in Law' (EUP, 2007) 17.
[53] Charlse C. Ragin, 'The Comparative Method: Moving beyond Qualitative and Quantitative Strategies' (University of California Press, 1987) 4.
[54] Ibid 13, 14, 16.

Accordingly, given that this thesis examines the efficiency of gas legislations on the one hand and evaluates the infrastructural challenges to domestic gas utilisation in Nigeria on the other hand, a combination of the above approaches is adopted for this study. This is because while reliance on primary and secondary sources of law may offer a substantial interpretation of legislation governing natural gas activities in Nigeria, it will not offer a robust understanding of the economic or political challenges impeding infrastructure development in the domestic gas sector. Secondly, a critical assessment of the impact of gas flaring on the economy, the environment and the health of Nigerians will require that empirical data on gas emission be equally assessed to complement legal analysis for a robust study. According to Mohammed, a combination of multiple approaches is not only essential for complimentary analysis but also helps to eliminate bias and limitations that could arise from a single approach.[55]

### 1.7.1 Doctrinal and Non-doctrinal Research as Overarching Methodology

**Doctrinal Methodology in Law**

According to Dobinson and Johns, much of the past and present research in law could be put under the heading of doctrinal or theoretical legal research, which is defined as research that focuses on questioning the position of the law in each area.[56] It is a library-based black letter law research and the most common approach adopted by those researching law[57] because it reflects 'the traditional concepts of legal reasoning.'[58] Accordingly, the doctrinal researcher collects and analyses a body of case laws and applicable legislation, often called primary sources of law.[59]

[55] Khadija Mohamed, 'Combining Methods in Legal Research' (2016) Vol.11, Issue 21, TSS 5191-5198 at 5196.
[56] Rob Van Gestel and Hans-W Micklitz, 'Revitalising Doctrinal Legal Research in Europe: What About Methodology?' (EUI Working Papers No.5, 2011) 19.
[57] Salim Ibrahim Ali, and others, 'Legal Research of Doctrinal and Non-Doctrinal' (2017) Vol.4 Issue 1, IJTRD, 493-495 at 493.
[58] Kylie Burns and Terry Hutchinson, 'The Impact of "Empirical Facts" on Legal Scholarship and Legal Research Training' (2009) Vol.43, No.2, TLT, 153-178 at 153.
[59] Rob Van Gestel and Hans-W Micklitz 2011 (n56) 19.

The analysis of case laws and legislation allows the researcher to put out arguments that hold legal significance regarding the admissibility of evidence or arguments that question what the law says about an issue(s) being investigated.[60] Suppose the researcher also needs to understand how things are done in other jurisdictions in terms of applying the law. In that case, he may equally rely on secondary sources of law from journal articles, books and other written commentaries on legislation or case laws.[61] If he wishes to do a comparative study or review a case study, reliance on secondary sources can help him understand how different legal jurisdictions handle and address problems of interest in his jurisdiction.[62] Data could also be drawn from documents discussing or interpreting primary sources such as legal writings in the digest of cases, encyclopaedias, official statistics, indexes, or reports of government or local and international institutions.[63]

Traditional legal research is vital for the growth of the legal system and the ultimate good of society's values, unlike the interdisciplinary legal scholarship that is considered obscure and understood by a limited few with special interests and knowledge.[64] But, on the other hand, Burns and Hutchinson also insist that the traditional approach to investigation in law is viewed from a closed system of reasoning, especially with a wide range of social science studies now available to the modern lawyer.[65]

Accordingly, with this work aiming to evaluate the challenges of critical gas infrastructures, and how flared natural gases can be utilised to mitigate emissions impact, taking the doctrinal research approach alone will limit the depth of investigation in this study. The work is not only about synthesising different legal rules, norms, or principles; neither does it aim to provide guidance on the interpretation and application of crucial concepts in law that is the forte of doctrinal

[60] Khadija Mohamed, 2016 (n55) 5195.
[61] Rob Van Gestel and Hans-W Micklitz 2011 (n56) 19.
[62] Elias Stephen, 'Legal Research: How to Find and Understand the Law' (Nolo Publishing Company, USA, 18th edn 2018).
[63] Charlse Chatterjee, 'Methods of Research in Law' (Old Baily Press, London, 2000); Anwarul Yaqin 'Legal Research and Writing Methods' (LexisNexis Publication, 1st edn 2007).
[64] Rob Van Gestel and Hans-W Micklitz 2011 (n56) 1.
[65] Kylie Burns and Terry Hutchinson 2009 (n58) 153.

research.[66] While non-law data will also be analysed, the doctrinal strategy here 'offers a systematic discussion of the rules governing a particular legal category, analyses the relationship between the rules, explains areas of difficulty and predicts future developments.'[67]

**Non-Doctrinal Methodology in Law**

According to Mohamed and others, the non-doctrinal or interdisciplinary approach is a methodology that engages methods from other disciplines to obtain empirical data for answering questions ranging from policy to existing law reform or any other problem.[68] The questions may equally examine the 'social origins or social conditions of existence or social consequences' of legal opinions.[69] And may even extend to 'quantitative empirical inquiries' that use statistical and economic data to examine how and if legal rules matter in the real world.[70]

Although traditional legal research does not rely on numerical or social science data, Dobinson and John maintain that it can still be carried out in a qualitative and quantitative sense. Thus, implying that legal research can also rely on data from sources other than legal texts or case laws.[71] The approach is critical for this thesis because this research also examines data from sources other than law ranging from the administration of natural gas in Nigeria to the development of gas infrastructure and the impacts of flared gases on people and the environment. This type of data follows the description of non-legal data by Burns and Hutchinson. According to them, non-legal data are usually 'facts about institutions, the society, the world and human behaviour which can be established by social

[66] Terry Hutchinson and Nigel Duncan, 'Defining and Describing What We Do: Doctrinal Legal Research' (2012) 17 DLR, 83-119.
[67] Dennis Pearce and others, 'Australian Law Schools: A Discipline Assessment for the Commonwealth Tertiary Education Commission, A Summary' (1897), 307 at 6.
[68] Salim Abubakar Ali and others, 2017 (n57) 494
[69] Roger Cotterrell, 'Law's Community: Legal Theory in Sociological Perspective' (OUCP, 1995) ix.
[70] Mathias Siems, 'Measuring the Immeasurable: How to Turn Law into Numbers' in Michael Faure and Jan Smits (eds.), 'Does Law Matter? On Law and Economic Growth (Cambridge: Intersentia, 2011) 115-136; Robert M. Lawless, Jennifer K. Robbennolt, and Thomas S. Ulen, 'Empirical Methods in Law' (New York: Aspen, 2009).
[71] Ian Dobbinson and Francis John, 2007 (n52) 17

science and empirical methods. They are not a statement of legal principles or facts of litigation used by judges but may be used in various ways as part of the judicial reasoning process and can be particularly useful when judges find gaps in knowledge.'[72]

When research adopts the non-doctrinal approach, it investigates the relationship between other behavioural sciences and the law with special consideration paid to people, social institutions, and values of legal policies on the people and the institutions involved as subject matters.[73] Put in another way, the non-doctrinal analysis attempts to find out how non-legal events impact legal decisions and assess how legislation or legal decisions affect people and society.[74] In the same vein, while this thesis investigates how a new legal framework can improve natural gas utilisation in Nigeria, an assessment of how interdisciplinary interpretations on natural gas administration and emissions impact will underpin the new legal framework from this study.

The non-doctrinal data obtained and analysed here were particularly useful for the following reasons:

1. Inadequate legal or case law reviews on the impacts of natural gas waste on the environment and human health show that relying on available scarce legal data only offers limited inquiry. Therefore, examining relevant socio-legal data also makes for robust findings.

2. The challenges of natural gas flaring and its global warming potentials are subjects that have been widely investigated using empirical data. However, the interpretations from legal scholarship in this area remain narrow. Therefore, it is essential to assess data from interdisciplinary studies to critically evaluate the impacts of natural gas emissions on the environment, agriculture, and food security.

[72] Kylie Burns and Terry Hutchinson, (n58) 154-156.
[73] Trinity, 'Empirical or Non-doctrinal Legal Research' (Tuesday, September 22, 2015). https://lawdessertation.blogspot.com/2015/09/empirical-or-non-doctrinal-legal.html accessed June 7, 2019.
[74] ibid

3. The mixed-method approach taken for this study will allow for a combined review of how natural gases that are often wasted can be utilised and how the law can regulate gas production and emission on people and the environment.

### 1.7.2 Comparative and Case Study as the Research Method Adopted

To resolve research problems or questions raised in an academic investigation, clarity must be made between the overarching research methodology and the methods or steps taken to arrive at a finding or conclusion. According to Henn and others, while research methodology is the overall strategy deployed in the study, the methods are steps and different techniques used in gathering or assembling data for the project.[75] While this study is generally a doctrinal and non-doctrinal inquiry, it adopts a comparative and case study analysis to resolve the research question. The adoption of comparative legal methods in any legal research, firstly, provides the researcher with a vehicle for learning and knowledge, and a means of understanding information on law from different jurisdictions. Secondly, it is employed as a method with which the research can classify, name or describe how a particular law and or aspect(s) of law has evolved. The third reason for engaging in comparative legal research is to contribute to and improve one's legal system.[76]

Further to this, to answer the research questions and propose how a new legal framework will drive efficient management and utilisation of gas in Nigeria, data on specific case studies or practices that support efficiency in gas production and utilisation across Alberta, Norway, the UK and the US were obtained and examined. This helped the researcher to draw insight, lessons and guidance for proposed recommendations that Nigeria could devise to support gas development. According to Small, case studies often allow the researcher to produce a reliable

[75] Matt Henn, Nick Foard and Mark Weinstein, 'A Critical Introduction to Social Research' (Sage Publications, 2nd edn, 2006) 10.
[76] Patrick Glenn, 'Legal Cultures and Legal Traditions' in Mark Van Hoecke (ed), 'Epistemology and Methodology of Comparative Law' (2004) 7-12.

and fair assessment of situations and provide useful insights about a given situation in a particular place, time, or relevant subject matter.[77]

The comparative case studies allow phenomena, places, persons, events, or other subjects of analysis to be examined so that results and key themes can be drawn to help the researcher predict future occurrences, illuminate hidden concerns, put them to practice, as well as provide a means for understanding crucial research problems clearly. When case studies are used in research it is to help the researcher generate an in-depth, multifaceted understanding of complex issues in a real-life situation.[78] In this study, a combination of the comparative analysis of regulatory strategies or practices adopted in different gas sectors allowed the researcher to understand how operators and regulators in the select jurisdiction view, interpret, and understand procedures, and implement policies to enhance gas production and utilisation. It also helps the researcher appreciate how laws are understood, applied, or misapplied, and why they are complied with, rejected, or even subverted in other jurisdictions.[79]

### 1.7.3 Collection of Data for the Study

While a combination of doctrinal and socio-legal approaches is identified as the overall strategy for this work, as per technique for obtaining data, it is important to state that this is a library and desk-based research. Primary and secondary sources of data ranging from case laws to legislation, law journals, and textbooks were obtained from the library, reviewed, studied, and analysed in the work. In addition, interdisciplinary non-law data from oil and gas journals and articles, policy documents from Government and global institutional reports relating to the objectives of this study were also retrieved from the library and online library databases and analysed. Although the work is largely desk-based, as at the time of writing phone call interviews were had with applicants and a non-governmental organisation in an ongoing lawsuit between The *Extra Step Initiative v Federal*

[77] Small M.L., 'How Many Cases do I Need? On Science and the Logic of Case Selection in Field-based Research' (2009) vol. 10 No.1, Ethnography 5, 18.
[78] Sarah Crowe and others, 'The Case Study Approach' (2011) Vol 11, Issue 100, BMC Medical Research Methodology, 1-9 at 1-2.
[79] Lisa Webley, 'Stumbling Blocks in Empirical Legal Research' (2016) Law and Method, 1-21 at 2-3.

*Government of Nigeria and others* (FHC/PH/FHR/140/2019) seeking the enforcement of fundamental human right and a satisfactory environment for living. The action was instituted because of the inactivity of the State, Federal Government and its environmental agencies to protect human lives from harmful health and environmental consequences of oil and gas-related black soot emission in Rivers State Nigeria.

## 1.8 IMPACT OF STUDY

Contribution to knowledge requires doing innovative or extensive research to create new knowledge based on existing knowledge. "A good regulatory practice is not complicated, bureaucratic, and costly. It is simple, impactful and money-saving. The best regulation will stop environmental damage at the source rather than the costly impact to the public purse and the environment of responding to damage after the event."[80] As far as the author understands, effective regulation of oil and gas activities often depends on efficient coordination of regulatory functions among relevant institutions and seamless cooperation between national and subnational governments. In Nigeria however, the regulation of oil and gas activities is under the exclusive control of the federal government even though the critical oil and gas operations take place in locations within the jurisdiction of the federating States,[81] with the latter constitutionally incapable of exercising oversight into oil and gas activities. This absence of an efficiently coordinated enforcement of laws between the federal, state, and local authorities in the oil and gas sector is responsible for the continuous pollution of the Niger Delta environment. This study will explore steps to improve regulatory cooperation between federal and state governments for efficient regulation of oil and gas pollution in Nigeria.

[80] Darrel Moore, 'Modern Approach to Regulation Needed to Protect Environment' (February 22, 2021). Available at https://www.circulaonline.co.uk/news/modern-approach-to-regulation-needed-to-protect-environment/ accessed December 1, 2021.

[81] Section 43 of the Constitution of Nigeria, 1999 (as amended); Section 1 of the Petroleum Act 1969, Nigeria.

Nigeria recently passed its Petroleum Industry Act (PIA) 2021 to overhaul the oil and gas sector's regulatory, fiscal and governance arrangements. This, of course, has brought a renewed hope that if the new law is robustly implemented, it could indeed lead to the transformation of Nigeria's petroleum industry, and attract much-needed investment to the Nigerian gas sector. But while the PIA 2021 is expected to improve gas administration, it is not an entirely perfect document as the development of the domestic gas market is currently threatened by divestments and the withdrawal of investment by multinationals from Nigeria. In addition to that, there are certain administrative and regulatory flaws from the previous legal regime that still characterise the new regulatory structures envisioned under the PIA and could undermine gas utilisation and the development of the gas sector in Nigeria. This work will address these concerns and propose useful steps to guide legislative action that will support the maximisation of Nigerian gas.

Under the PIA 2021, the economic and environmental functions in the Nigerian oil and gas sector are both retained in the Commission and Authority as the new regulatory bodies in the industry. Worryingly, the combination of revenue and environmental functions in a regulator has often proven to be the recipe for conflict of interests in the regulation of safe oil and gas operations. Under the previous regulatory regime overseen by the Department of Petroleum Resources (DPR), the combination of the duty to maximise revenue from oil and gas operations with the duty to protect the environment from damaging oil and gas operations, the DPR often leaves the environment poorly protected. This is because, crude oil production is the mainstay of the Nigerian economy, as such any activity that is considered to defeat or stand in the way of the State actualising its economic objectives from crude oil production notwithstanding the impact on the environment was hardly given the serious regulatory attention it deserves. This is part of the reasons the Niger Delta region of Nigeria which houses the oil and gas industry remains very polluted to date. In fact, according to the Environmental Assessment of Ogoniland by the United Nations Environment Programme of 2011, it could take more than 30 years to clean up Ogoniland given the level of oil and gas pollution found in the area.

In addition to seeking legislative clarity in the functions of the Commission and Authority to minimise conflict of interests in their duties, there is also, the urgency to boost investors' confidence in the gas sector. To deepen and sustain investors' confidence in the development of the domestic gas market, the composition of the Board of Nigerian National Petroleum Company Limited (NNPC Ltd) must be transparent and not subject to political favouritism. Under section 59 subsection 2 of the PIA 2021, appointments to the Board of NNPC Ltd to manage the State's interests in oil and gas operations is to be made by the President. Already nominations into the Board of NNPC Ltd by the Nigerian President have courted controversies and public scrutiny. Critics already blame the President for appointing his political allies and their wives to the Board. The public criticism that trailed these appointments is believed to be the reason why the President immediately suspended the inauguration of the Board for relevant adjustments.[82] This work will examine these issues and provide practical measures to boost investors' confidence and attract new investments to the gas sector, beginning with appointments to the Board of the NNPC.

Most effective regulatory processes often require regulatory efforts to be coordinated between the different regulatory institutions and even so, including all critical oversight control from the primary environmental regulatory authority in any country. In Nigeria however, the power of the nation's primary environmental regulator- the National Environmental Standards and Regulatory Enforcement Agency (NESREA) to exercise oversight into oil and gas pollution is legally curtailed.[83] The right and power to regulate oil and gas pollution is only available to the DPR and National Oil Spill Detection Regulatory Authority (NOSDRA). Also, although the PIA 2021 provides for an environmental remediation fund for the rehabilitation of a polluted area, and went on to say that where an operator fails to rehabilitate or manage the impact, the Commission or Authority will write to a holder of the licence to do the needful or it will apply the fund directly.[84] While this is a novel provision under Nigerian oil and gas law and

[82] How Buhari Compensated Allies with NNPC Board Appointments (Daily Trust, January 7, 2022 07:42:48 GMT). Available at https://dailytrust.com/how-buhari-compensated-old-allies-with-nnpc-board-appointments accessed January 8, 2022.
[83] Section 7 and 8 of the NESREA Act 2007, Nigeria.
[84] Section 103 (1) and (4) of the Petroleum Industry Act, 2021, Nigeria.

commendable too, the PIA missed an opportunity to deepen public participation in environmental protection from oil and gas operations. With prior experience of poor environmental protection in Nigeria, leaving remediation enforcement to the Commission or Authority without a judicial option for dissatisfied communities or private citizens to adjudicate adequate rehabilitation makes this provision simply academic. This work will provide direction for legislative action to strengthen public participation in environmental governance in Nigeria.

In terms of efficient management of natural gas resources, the inability of a national company to solely concentrate on gas exploration and production is a challenge to the growth of the domestic gas market. In fact, an initial proposal that a new national gas company be created to specifically focus on coordinating the production and maximisation of gas resources in Nigeria was deleted from the final draft of the PIA 2021. The gas sector over the years had received minimal attention under NNPC's control because of its focus on crude oil production and revenue. Leaving the coordination and gathering of both natural gas and crude oil to the NNPC could continue to slow down the growth of the gas sector where crude production is the primary interest of the Government. Nevertheless, this work will offer a sustainable path for efficient gas administration and utilisation in Nigeria.

Fourthly, the PIA 2021 also introduced a ten-year tax incentive to attract pipeline developers, growing concerns over the future of carbon-intensive investment and the transition from fossil fuel mean that no certainty exists that tax breaks are still a viable option to attract sufficient investment in gas production.[85] Therefore, this work will offer additional incentivisation steps that the Government can implement to secure more infrastructure development for the domestic gas market. Before PIA 2021, policies and programmes aimed at developing the domestic gas market did not integrate equity and inclusive stakeholder process to ensure that the voices of disadvantaged minorities and host communities are heard and that gas projects are a blessing than a burden to them. Whereas the PIA 2021 introduced the Host Community Development Trust Fund for purposes of remediation and sustainable socio-economic benefits to hosting communities,[86]

[85] Section 10 of the Capital Gain Tax Act, Nigeria
[86] Section 234, 235 of the Petroleum Industry Act 2021, Nigeria.

leaving the constitution and functioning of the Board of Trustees to the overriding determination of any settlor[87] could derail the purpose of the trust fund. Among others, analysing these contentious issues will offer guidance to lawmakers when reviewing strategies to improve regulatory transparency in the oil and gas sector and approach to robust environmental protection in Nigeria.

Although laws regulating the environment exist, these laws do not directly address climate change issues in Nigeria. Analysis of how gas flaring contributes to global warming and economic, health and security risk will provide useful direction for a legislative framework for climate change mitigation in Nigeria. In addition, a discussion of how the international climate change mitigation outcomes under the 2015 Paris Agreement could support investment in gas utilisation will also guide regulators and stakeholders in the energy sector. In professional practice, this work will provide teachers and scholars with relevant direction and fresh perspectives on the current debate on gas flaring, particularly in developing economies and enrich teaching and learning outcomes. Investors and industry stakeholders can also look to it for guidance when making investment decisions in Nigeria, Africa, and other emerging markets.

## 1.9 RATIONALE FOR THE STUDY

The rationale for this study follows an outbreak of black soot emissions in and around Port Harcourt, Nigeria, in 2016. Port Harcourt is one of the major cities hosting several multinational corporations carrying out oil and gas exploration and production activities and is sometimes referred to as the energy hub of Niger Delta, housing Nigeria's oil and gas industry. For several years flare stacks continued to burn in and around the city. This is because the infrastructure needed to contain and capture such gas waste remains inadequate. Over the years also, oil bunkering and illegal refining operations have continued within the region because of poor regulatory control and a lack of coordination with States and local authorities. These operations appeared to reach their crescendo in 2016 when black soot from poorly combusted flares and flames began falling from the skies into homes, offices, and every public space within and around the city.

[87] Section 242 subsection 3 of the Petroleum Industry Act 2021, Nigeria.

And while this continued even up till 2022 with unquantifiable short- and long-term health risks, environmental regulators were unable to address the situation and regional and federal government traded blames over whose responsibility it was to tackle the menace from illegal oil and gas operators. Thus, this study is necessary to find a probable solution to the region's age-long problem of gas flaring impacts and the growing menace of black soot emissions.

# CHAPTER 2: CARBON CAPACITY IN EMERGING MARKETS: MEANINGS AND OVERVIEW

## 2.1 Introduction

This chapter provides meanings and an overview of basic concepts used in the study- 'carbon capacity, and emerging markets.' First, it explores what constitutes carbon capacity before offering a working definition of the term appropriate for the study. It then examines the concept and features of an emerging market. Next, and using examples from BRIC economies, the chapter analyses the extent of natural gas emissions in emerging market areas, including reasons these countries struggle to reduce their carbon capacities. Finally, it concludes that while current global increases in gas emissions come from developing/emerging markets, mitigation action must begin from the oil and gas sector in these areas to minimise emission impact because the sector contributes around 60 per cent of current global carbon emissions.

Although a reader might find the interpretation given to ''carbon capacity'' in this work similar to such concepts as ''carbon footprint, carbon portfolio or emission profile.'' It must be emphasised that as much as the author knows, the adoption of the term 'carbon capacity' and the meaning accorded to it in this work has not been used in previous pieces of literature. An emerging market is another term used often in this work; its meaning has remained subject to different literature interpretations. However, in this thesis, the term emerging markets is used interchangeably with developing economies and emerging economies to mean the same thing.

## 2.2 Carbon Capacity and Emerging Markets

### 2.2.1 Understanding the Concept of Carbon Capacity

To the extent this study knows, there has been no definition for the term ''Carbon Capacity.'' However, to offer some perspective underlining its adoption within the scope of this exercise, the words ''carbon'' and ''capacity'' will be explained separately. In doing so, a clearer understanding of the term 'carbon capacity' can then be developed for this work.

Carbon is a commonly dispersed substance in the form of graphite spread on the human environment.[88] It is ''a chemical element that is contained in all animals and plants, and that is, an essential part of other substances such as coal and oil and exists in its pure form as diamonds and graphite.''[89] When burned, it produces carbon dioxide (CO2) and carbon monoxide (CO). Also, in most instances, mainly when discussions border on the environment and climate change, the term ''carbon'' is often used as a short form for carbon dioxide.[90]

In this study, however, the meaning given to the word ''carbon'' encompasses all greenhouse gases (GHG) whose releases into the atmosphere absorb and re-emit heat, thereby keeping the global atmosphere warmer than it ordinarily would be.[91] Moreover, the United Nations Framework Conference on Climate Change (UNFCCC) also reiterated this definition, stating that carbons or GHGs are both natural and human-induced gaseous constituents of the atmosphere, both natural and anthropogenic; that absorb and re-emit infrared radiation.''[92] Accordingly, while the word 'carbon and greenhouse gas' will be used interchangeably to look at greenhouse gases forcing climate change, this work will focus only on oil and natural gas emissions and, principally, gas flaring. Carbon and greenhouse gas in this work, of course, will include emissions from natural and associated gases arising during production to final consumption stages across the upstream, midstream, and downstream value chain of the oil and gas industry.

On the other hand, ''capacity'' refers to the volume and maximum amount something can contain, absorb or hold.[93] The Oxford Dictionary of Synonyms and Antonyms also highlight 'capacity' as synonymous with content, dimensions,

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[88] George S. Philander (eds), 'Encyclopaedia of Global Warming and Climate Change' (SAGE Publications, 2008) 165.
[89] Cambridge Advanced Learners Dictionary and Thesaurus (CUP, 2017). See also, Cambridge Academic Content Dictionary (CUP, 2008).
[90] Matthew Brander and Gary Davis, 'Greenhouse Gas, CO2, CO2e, and Carbon: What Do All These Terms Mean?' (Ecometrica, 2012) 3. https://ecometrica.com/assets/GHGs-CO2-CO2e-and-Carbon-What-Do-These-Mean-v2.1.pdf accessed September 25, 2018.
[91] Ibid 1-3.
[92] Article 1(5) United Nations Framework Convention on Climate Change, 1992.
[93] Gerry Breslin, Ian Brookes, Robert Groves, Andrew Holmes (eds), 'Collins English Dictionary' (HarperCollins Publishers, 11th edn 2011) 255.

magnitude, size and room.[94] Moreover, the Compact Oxford Thesaurus for Students espoused that 'capacity' among other lexes is synonymous with proportion and measurement.[95] Interestingly, when words like measurement, proportion, dimension and magnitude are used in any given context, a sense of estimation or quantification is generally conceived.

Also, in this work, the term ''capacity'' could be used interchangeably with ''footprint.'' According to Wiedmann and Minx, footprint suggests a measurement (expression) in area-based units,'[96] whereas ''carbon footprint is used as a generic synonym for emissions of carbon dioxide or greenhouse gases expressed in CO2 equivalents.''[97] According to the Mekong River Commission on Climate Change and Adaptation Initiative, carbon footprint means 'all GHG emissions associated with an individual or organisation's activities.'[98] Remarkably, the meaning ascribed to carbon footprint by the IPCC in its Fifth Assessment report very well leans towards what carbon capacity within the scope of this work entails. According to the report, a carbon footprint is the 'measure of the exclusive total amount of carbon dioxide (CO2) emissions directly or indirectly caused by an activity or accumulated over a product's life stages.'[99]

Given the above explanations, in this work, the term 'carbon capacity' could be described as the volume, extent and amount of greenhouse gas a given business operation generates or can emit over a given period. It could also be defined as the proportion of emissions or the amount or volume of emission an activity (in this case, oil and gas activities) generates. And in this work, when the word carbon as used would entail oil and natural gas emissions.

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[94] Alan Spooner, 'Oxford Dictionary of Synonyms and Antonyms' (Oxford University Press, 1999) 51.
[95] Sarah Hawker, Maurice Waite (eds), 'Compact Oxford Thesaurus for Students' (Oxford University Press, 2007) 105.
[96] Thomas Wiedmann and Jan Minx, 'A Definition of Carbon Footprint' (ISA UK Research Report, 2007) 2.
[97] ibid 3.
[98] Mekong River Commission on Climate Change and Adaptation Initiative, 'Glossary of Terms and Definition on Climate Change and Adaptation' (2013) 6.
[99] IPCC Fifth Assessment Report, 'Glossary, Acronyms and Chemical Symbols' (2014) 1255; See also, Thomas Wiedmann and Jan Minx, 'A Definition of Carbon Footprint' (2007) Ecological Economics Research Trends, 1-11 at 2-3.

### 2.2.2 Emerging Markets: Meaning and Overview

Emerging market (EMs) comes with several meanings and characteristics. Still, essential features show they are economies whose degree of volatility is high and transitional, with the transitions occurring across economic, political, social and demographic dimensions.[100] But notwithstanding its high signs of volatility, these markets still offer a potential contribution in the early stages of the socio-economic development of a country with the likelihood of higher returns.[101] In broad terms, they are countries attempting to improve and change their economy to raise their performance to those of more advanced global nations.[102]

They have also been referred to as *developing countries* or nations "investing in more productive capacity and are moving away from their traditional economies that relied on agriculture and export of raw materials. Their leaders are also now aspiring to create a better quality of life for their people and to achieve that objective, are rapidly industrialising and adopting a free market or mixed economy."[103] Cavusgil also described them as 'high growth *developing countries* that represent attractive business opportunities for Western corporations. Their remarkable features in terms of economic potentials include that they are geographically large and demographically possess quite a significant young workforce. As a result, they are attractive for selling and sourcing, and they also enjoy outstanding growth rates with prospects for market expansion. Moreover, they are countries that have embarked on economic reforms and are indeed economic drivers in their regions and command huge political influence in those regions.'[104]

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[100] Ashoka Mody, 'What is Emerging Market?' (2004) 35 GJIL, 641-663 at 643.
[101] SELCO Community Credit Union, 'Glossary: Savings & Investment' in Ashoka Mody, 'What is Emerging Market?' (2004) 35 GJIL, 641-663 at 642.
[102] Emerging Market Directory, 'What is Emerging Market?' in Aziz Sunje and Emin Civi, 'Emerging Markets: A Review of Conceptual Frameworks' (2000) pages 203-216 at 205.
[103] Kimberly Amadeo, 'Emerging Markets Countries and their Five Defining Characteristics' (Updated July 11, 2019) 1. Available also at https://www.thebalance.com/what-are-emerging-markets-3305927 accessed August 14, 2019.
[104] Cavusgil, S. Tamer, 'Measuring the Potential of Emerging Markets: An Indexing Approach' (1997) Vol. 40, No.1, Business Horizons, 87-91.

According to Arnold and Quelch, three aspects of an economy must underlie any definition of an emerging market. First, they are levels of economic development relative to the balance of agricultural and commercial/industrial activities or often shown by average GDP per capita. Secondly, the frequency of that development compared to other economies like ''least developed countries'' (LDCs), and thirdly, the governance system of its market, particularly, the degree and lack of instability in a free-market system. And whether the country is liberalising its economy from a command economy which in some definition meant they could be called a transitional economy.[105]

In the same breadth, Sunje and Civi also highlighted three criteria that must exist before an economy can be said to be an emerging economy, and they include that: (1) they are less-developed economies with a low level of economic development that can be expressed in GDP per capita terms. (2) their governments often attempt to create a structured market economy and democratic institutions through acceptable political and economic reforms that enhance growth that can be measured using the rate of GDP growth (usually 5 per cent per year). Finally, (3) they also possess a very high chance of growth in the future, which can be seen in her level of developmental achievements and purchasing power parity placed side by side with the average GDP of developed economies.[106]

The above criteria also support five elements of an emerging economy that Amadeo identified in his work. According to him, those elements involve:

(1) Markets that possess a lower-than-average per capita income, which, according to the World Bank are less than 4.035 dollars;

(2) Markets whose economic growth pace is slow. Although in 2018, most developed economies such as the United States, Germany, Japan witnessed a less than 3 per cent growth rate in their economy compared

[105] David J, Arnold and John A, Quelch, 'New Strategies in Emerging Markets' (Fall 1998) MIT SMR, Vol. 40, No.1, 7-20 at 8.
[106] Aziz Sunje and Emin Civi, 'Emerging Markets: A Review of Conceptual Frameworks' (2000) pages 203-216 at 204. Available also at Rynki wschodzące w stosunkach międzynarodowych - Uniwersytet Warszawski (uw.edu.pl) accessed October 11, 2021.

to those of emerging countries such as Egypt, Bolivia, Poland and Malaysia that saw over 4 per cent increase while those of China, India and Vietnam almost doubled every other country at over 7 per cent growth pace;

(3) Also, these markets are highly volatile because of their rapid social changes. And these volatilities, according to Amadeo, essentially occur as a result of political instabilities at home, external price shocks and natural disasters like earthquakes such as seen in Haiti, droughts as witnessed in Sudan, and tsunami as observed in Thailand;

(4) These markets are also very vulnerable to currency and commodity swings, respectively. Especially those of them that are United States' dollar-driven or involve oil and food products. And the reason for such vulnerabilities follows from their lack of power to influence or determine these movements; and

(5) Notwithstanding the above highlights, these countries still hold growth potential. On the other hand, such growth potential will require massive investment capital and an open stock market against a relatively closed one, where it is usually challenging to keep track of investments listed on the market. Such market openness and accessibility would in turn attract foreign direct investments. However, not every investor will be willing to go through the rigours of background research necessary for the understanding of the markets' functionality to invest in.[107]

Furthermore, although emerging markets themselves have their differences, they all have in common the potential for future growth and market expansion, which is a unique feature that significantly sets them apart from countries usually referred to as less developed. Moreover, their system of economic incentives also attracts new technologies, foreign investments and external participation in their

[107] Kimberly Amadeo 2019 (n103)

commercial activities, that further qualifies them as countries whose policies support increased growth.[108]

According to Pricewaterhouse Coopers, from 2014 to 2050, the global economy will double in size by 2037 and triple further by 2050. But this growth trajectory, which is expected to continue for the next 35 years, will shift from the most advanced economies of Western Europe, North America and Japan to emerging markets.[109] Accordingly, among the emerging markets areas identified to become the critical drivers of that global economic growth are those of China, India, Indonesia, Brazil, Russia, Mexico and Turkey (E7), with a combined and estimated share increase of 35 to nearly 50 per cent global GDP.[110]

Already as of 2014, China overtook the United States to emerge as the largest market in terms of purchasing power parity (PPP2) and market exchange rate (MER). The country is also expected to overtake the United States by 2028, notwithstanding any projected growth slowdown.[111] It is already headed towards becoming the largest economy in the world, going by its purchasing power parity and using GDPs. The country will account for about 20 per cent of global GDP by 2050.[112] India is also adjudged to possess the potential to emerge as the next second-largest economy in terms of purchasing power parity by 2050 and third in a market exchange rate through a sustained programme of structural reforms,[113] while Indonesia would place fourth going by similar metrics.[114] With these growth indicators, it is instructive to understand why emission increases are said to continue among developing and emerging market areas.

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[108] Miller R. R., 'Selling to Newly Emerging Markets' (Greenwood Publishing Group Incorporated, 1998) 10-15.
[109] PricewaterhouseCoopers, 'The World in 2050: Will the Shift in Global Economic Power Continue?' (2015) 1. Available at https://www.pwc.com/gx/en/the-economy/assets/world-in-2050-february-2015.pdf accessed December 3, 2018.
[110] PricewaterhouseCoopers, 'The World in 2050: How Will the Global Economic Order Change by 2050?' (February 2017) 5. Available at https://www.pwc.com/gx/en/world-2050/assets/pwc-the-world-in-2050-full-report-feb-2017.pdf accessed December 3, 2018.
[111] PricewaterhouseCoopers 2015 (n109)
[112] PricewaterhouseCoopers 2017 (n110) 5.
[113] PricewaterhouseCoopers 2015 (n109)
[114] PricewaterhouseCoopers 2017 (n110) 5.

A couple of other emerging markets are also projected to be at the centre of this growth. Mexico, for instance, is projected to have a much larger economy than Germany and the United Kingdom by 2050 in terms of PPP. Also, it is anticipated that of the seven largest economies by 2050, six could be from emerging markets areas. On the other hand, the economies of EU27 is expected to have less than 10 per cent of the combined share of global GDP by 2050, which would be smaller than that of India.[115] Nonetheless, whereas the economies of advanced countries will continue to maintain a higher average income rate, it is widely agreed that emerging markets can close in on this gap by 2050. This will create enormous opportunities for investors to undertake long term investment activities in emerging markets economies.

Further to this, the ability of markets such as Nigeria, Brazil and Turkey to come out of her recent economic challenges is also believed to be critical to the projected direction of the global economy come 2050. This is because these countries still have 'considerable long-term economic potential' based on similar analysis.[116] Accordingly, to achieve this future growth potential, it is advised that governments of emerging market countries must begin to implement structural reforms that will improve her macroeconomic stability and develop efficient legal and political institutions. And where a nation is unduly reliant on a particular natural resource(s) such as oil and gas, it must necessarily diversify its economy.[117]

### 2.2.3 Emerging Markets with Carbon Capacities

This part of the work will focus on oil and gas-related emissions in Brazil, Russia, India, China and South African (BRICS) economies. The term BRIC was coined by economist Jim O'Neil to highlight the economic potentials of the countries involved.[118] In fact, according to a Goldman Sach's report of 2003, the countries were described as rapidly developing economies that will become bigger than the economies of the great six (G6) countries of the United States, the United

[115] PricewaterhouseCoopers 2017 (n110) 5
[116] ibid
[117] PricewaterhouseCoopers 2017 (n110) 5
[118] Adeolu Durotoye, 'The MINT Countries as Emerging Economic Power Bloc: Prospects and Challenges' (2014) vol.4, No.15, DCS, 99-106 at 99.

Kingdom, Japan, Italy, Germany and France by 2050.[119] Also, apart from shared prospects for economic growth, these countries have large populations with potentials for real GDP growth. And as economies that began relatively small (especially China and India) to countries that have become important players in the global economy due to their rapid growth and rising share of global trade,[120] understanding the extent of oil and gas emission from these economies will be insightful for a new legal framework for emission-impact mitigation. This is also because, even though developed economies are largely to blame for much of the GHG causing climate change, the IPCC now reports that aggregating the current level of emissions from developing economies shows they now command the potentials for rapid emission growth contribution to global warming due to their quest for industrialisation.[121]

According to the 2017 report of Observatory of Economic Complexities (OEC) on global oil and gas demand and supply, emerging economies like the BRICS markets currently rank among the top world exporters and importers of oil and gas; therefore, the likelihood of growing carbon emissions in these areas could be presumed. For instance, from crude petroleum that was the most traded product around the world, Russia was the second most exporting country after Saudi Arabia. At the same time, China ranks as the highest importer of crude petroleum, with India as the third most importing country after the United States.[122]

[119] Hassan Rustemoglu and Antonio R. Andres, 'Determinants of CO2 Emissions in Brazil and Russia Between 1992-2011: A Decomposition Analysis' (2016) 58 ESP 95-106 at 95.
[120] Anne Krueger, 'The Rise of Emerging Markets' (2012) 18 LBRA, 445-454 at 450.
[121] IPCC, 'Fourth Assessment Report: The Mitigation of Climate Change' (Cambridge 2007) 253. Available also at www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-chapter4.pdf accessed August 21, 2019.
[122] Alexander Simoes, 'The Observatory of Economic Complexity (OEC): Crude Petroleum' (2019). Available also at https://oec.world/en/profile/hs92/2709/ accessed August 22, 2019.

Regarding petroleum gas, the 10th most traded product,[123] Russia was the 5th most exporting country, while China was the second most importing country in 2017.[124] For refined petroleum products and the 4th most traded product, Russia again was the second top exporter after the US, with India also ranking as another leading exporter. In contrast, Brazil ranks among other top importing developing economies.[125] As for the 14th most traded good- natural gas in a gaseous state, Russia again was the second most exporting country behind Norway while the most importing countries were from Europe.[126] But for liquefied natural gas (LNG) and 18th most traded product globally, in 2017, Nigeria was among the top exporters whereas China, India joined the record number of top importers globally, ranking 3rd and 4th places after Japan and South Korea.[127]

Incidentally, with such a level of economic activity in oil and gas ongoing in BRIC countries, it is not surprising to see why the 2018 World Investment Report propose that carbon intensity in BRIC markets will continue to rise.[128] Trucost, which also described the BRIC as 'very prominent' among the most significant global emitters, also projected that these countries will contribute about 70 per cent of the total global emissions by 2050.[129]

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[123] Petroleum Gas in this context is known as propane, hydrocarbon, butane, liquefied petroleum gas, gas, and natural gas. See https://oec.world/en/profile/hr92/2711/

[124] Alexander Simoes, 'The Observatory of Economic Complexity (OEC): Petroleum Gas' (2019) Available also at https://oec.world/en/profile/hs92/2711/ accessed August 22, 2019.

[125] Alexander Simoes, 'The Observatory of Economic Complexity (OEC): Refined Petroleum' (2019). Available also at https://oec.world/en/profile/hs92/2710/ accessed August 22, 2019.

[126] Alexander Simoes, 'The Observatory of Economic Complexity (OEC): Natural Gas in Gaseous State' (2019). Available also at https://oec.world/en/profile/hs92/271121/ accessed August 22, 2019.

[127] ibid

[128] United Nations Conference on Trade and Development, 'World Investment Report 2018: Investment and New Industrial Policies' (2018) 43. Also available at http://unctad.org/en/PublicationsLibrary/wir2018_en.pdf accessed September 18, 2018.

[129] Trucost, 'Carbon Risks and Opportunities in Emerging Markets' (2010) 4. Available at https://www.ifc.org/wps/wcm/connect/c3fe190048855d1b8de4df6a6515bb18/TrucostIFC_Emerging_Markets_Report.pdf?MOD=AJPERES&CACHEID=c3fe190048855d1b8de4df6a6515bb18 accessed September 18, 2018.

Already flare data released by the World Bank over the last five years also suggest that the carbon capacities of emerging markets could continue to rise.[130] Under the 30 most flaring nations on earth, from 2014 to 2018, the BRIC countries featured prominently, with Russia ranking tops, with approximately 101.5 billion cubic meters (bcm) of flare emission over the period. Over the same period, China came in the seventeenth spot, flaring a total of 19.6 bcm, while India ranked the 21st most flaring nation accounting for 9 bcm, and Brazil came in as the 26th most flaring nation with its gas flaring over the past five years reaching 6.4 bcm.[131]

As the most gas flaring economy in the World since 2011,[132] Russia has wasted 100.1 billion cubic meters of gas between 2013 and 2017.[133] Despite its commitment to global initiatives like 'The Zero Routine Flaring by 2030' aimed at reducing gas flaring, of the BRIC countries, only Russia continues to experience fluctuations in its flaring estimate without real reductions seen over the past three years. For instance, it burnt 19.9 bcm of gas in 2013; 18.3 bcm in 2014, and 19.6 bcm in 2015. On the other hand, 2016 saw Russia burning off its highest natural gas over the previous five years with 22.4 bcm and less by 2.5 bcm from burning 19.9 bcm in 2017.[134]

Being one of the top five Commonwealth of Independent States (CIS), including Azerbaijan, Kazakhstan and Turkmenistan and Serbia that accounted for 81 per cent of foreign direct investments inflow to its region in 2017, Russia's multinational companies were involved in a few great acquisitions and significant Greenfield investments,[135] further outlining its oil and gas interest within and outside of the country. Howbeit, it remains to be seen how Russia plans to substantially cut down on its continuing oil and gas emission, more so, as the government has hesitated to ratify the 2015 Paris Climate Agreement until

[130] The World Bank 2014-2018 (n26)
[131] ibid
[132] European Commission, 'Study on Actual Greenhouse Gas Data for Diesel, Petrol, Kerosene and Natural Gas: Internet Report' (2014) 130-131.
[133] The World Bank Group, 'Gas Flaring Data 2013-2017 (BCM) (2018) http://www.worldbank.org/content/dam/infographics/780xany/2018/jul/GGFR_1-page-001.jpg accessed October 15, 2018.
[134] ibid
[135] United Nations Conference on Trade and Development 2018 (n128) 58.

September 2019- four years and after more than 181 ratifications[136] had been obtained.

In the Asian region, China continues its dominance. For instance, in 2017, investment inflows in China rose by 2 per cent to 136 billion dollars due to the 28 per cent growth experienced in 2017 from the influx of over 35,650 foreign partners.[137] And between 2011 and 2016, of the top 10 investor economies by FDI stock, China has remained dominant ahead of other big economies such as the US, UK, Germany, Switzerland and the Netherlands.[138] By the end of 2013, the US Energy Information Administration (US EIA) stated that China overtook the US as the 'largest net importer of petroleum and other liquids' globally. And due to a consistent rise in oil consumption, in 2014, China accounted for a 43 per cent growth in global oil consumption, and a further than one-fourth of global oil consumption increase in 2015.[139]

In terms of natural gas use for the past ten years, the increase in demand also grew significantly, making China adopt a means of importing gas through pipelines and as an LNG product.[140] Further to this, with increasing demand for energy to service a rising population which as of 2013 had hit 1.36 billion people,[141] the level of gas flaring in the country is also expected to increase. According to the World Bank, of the top 30 gas flaring countries investigated, China ranks 18th,[142] flaring approximately 8,041 million cubic meters of gas between 2013 and 2016 from its

[136] Paris Agreement 2015, 'Status of Ratification as at: 29-10-2018 05:00:32 EDT. Available at https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en accessed October 29, 2018.
[137] United Nations Conference on Trade and Development 2018 (n128) 46.
[138] United Nations Conference on Trade and Development 2018 (n128) 58.
[139] US Energy Information Administration, 'Country Analysis Brief: China' (Last Updated, May 14, 2015) 1.
[140] ibid
[141] US Energy Information Administration: China (2015) n139.
[142] The World Bank Group, 'Flaring Intensity- Top 30 Flaring Countries (2013-2016), (2017). Available at http://www.worldbank.org/en/programs/gasflaringreduction#7 accessed September 10, 2018.

upstream sector alone.[143] In 2017, its economy grew by 7 per cent, but despite the continuous deployment of renewables and coal-to-gas switching, China's emissions grew by about 150 million tonnes, approximately 1.7 per cent. With demands for coal reaching the peak in 2013 and a growth in demand for oil and gas, energy-related emissions also increased and contributed to CO2 emissions reaching 9.1 gigatonnes and nearly 1 per cent higher than 2014 levels.[144] In compliance with its obligation under the Paris Agreement 2015, China commits to a 60 to 65 emission reduction per unit of GDP below the 2005 level by 2030. Furthermore, in energy consumption, China commits to increasing its share of non-fossil fuel use to around 20 per cent.[145] Already, seven emission trading schemes run in 42 cities and provinces in China, howbeit in their pilot phases.[146]

Also, within the Asian sub-region, China is closely followed by India in terms of economic and carbon-intensive investments. Although a 40 billion dollar worth of foreign direct investments in 2017 signifies a 4-billion-dollar deficit from 2016, in cross-border merger and acquisition purchases, investments in India rose from 8 billion dollars to 23 billion dollars with most deals in technology and oil gas-based industries.[147] Although since 2016, oil and gas-related emissions in India have been dropping slowly. With more investments in extractive-based industries, it is doubtful if falling emissions in India could be sustained. Between 2015 and 2017, oil and gas flaring alone in India accounted for approximately 5.8 billion cubic meters of wasted natural gas.[148] Further to this, with economic growth

[143] The World Bank Group, 'Upstream Gas Flaring 2013-2016' (2017). Available at http://dataviz.worldbank.org/views/GGFRDashboard08_28_2017/GasFlaring?:embed=y&:showShareOptions=true&:display_count=no&:showVizHome=no&:toolbar=no accessed September 10, 2018.
[144] International Energy Agency, 'Global Energy and CO2 Status Report 2017' (March 2018) 3. Also available at https://www.iea.org/publications/freepublications/publication/GECO2017.pdf accessed September 19, 2018.
[145] Department of Climate Change, National Development and Reform Commission of China, 'Enhanced Actions on Climate Change: China's Intended Nationally Determined Contribution' (June 6, 2015) 5. Also available at http://www4.unfccc.int/ndcregistry/PublishedDocuments/China%20First/China%27s%20First%20NDC%20Submission.pdf accessed October 5, 2018.
[146] Ibid 3.
[147] United Nations Conference on Trade and Development 2018 (n128) 47.
[148] World Bank Group, 'Global Gas Flaring Reduction Partnership (GGFR): Global Flaring Data 2013-2017' (2018). Available at

accelerating increase in energy demands, in 2017, India witnessed a surge in emission, though, just about half the level of emissions seen in the last decade. In per capita levels (that is, when taken in relation to each person within the country), last years' emissions in India amounted to 1.7 total carbon dioxide emissions and well below 4.3 total carbon dioxide emissions- the official global per capita average.[149] India currently ranks as the 20th most flaring nation in the world, burning 11.4 billion cubic meters of gas from 2013 to 2017.[150]

In the Americas, foreign direct investments into Brazil grew by 8 per cent to 62 billion dollars in 2017, making Brazil the largest economy in South America. As a country that attracted as much as 40 per cent of total investments coming to Latin America, of the ten largest acquisitions by foreign companies that took place in the region, 9 were in Brazil, with Chinese buyers purchasing 7 of the deals ranging from oil to gas transmission infrastructures, electricity and agribusinesses.[151] In addition, Brazil's Nationally Determined Contribution (NDCs) to the Paris Agreement 2015 commits to a 37 per cent GHG emissions reduction below 2005 levels by 2025 and, subsequently, 43 per cent by 2030.[152]

While this commitment looked ambitious, and notwithstanding that Brazil's emission levels remain the least of the BRIC markets discussed, in terms of emission reduction in its oil and gas sector, the country has continued to struggle to reach a low carbon path. Between 2013 and 2016, gas flaring alone in Brazil amounted to about 5.5 billion cubic metres. In 2017 the country could only cut its flare emission by 300 million cubic meters by flaring 1.1 billion cubic meters compared to 2016, where it burnt approximately 1.4 billion cubic meters of flare.[153] Brazil currently ranks as the 25th most flaring nation among the global 30

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http://www.worldbank.org/en/programs/gasflaringreduction#7 accessed October 10, 2018.

[149] International Energy Agency 2018 (n144) 4.

[150] World Bank Group, 2018 (n148)

[151] United Nations Conference on Trade and Development 2018 (n128) 52.

[152] Federative Republic of Brazil, 'Intended Nationally Determined Contribution Towards Achieving the Objective of the United Nations Framework Convention on Climate Change.' (Submitted 28 September, 2015) 1 and 2. Available at http://www4.unfccc.int/ndcregistry/PublishedDocuments/Brazil%20First/BRAZIL%20iNDC%20english%20FINAL.pdf accessed October 5, 2018.

[153] World Bank Group, 2018 (n148)

gas flaring countries.[154] Also, with regards to addressing gas flaring from its oil and gas industry, Brazil's NDC submitted to the UNFCCC only mentioned plans to promote new clean technology standards and enhance low carbon infrastructures and energy efficiency measures in the sector[155] without specifically highlighting the oil and gas industry. Accordingly, it only commits to achieve 45 per cent renewables in its energy mix by 2030.[156]

## 2.3 Challenges of Mitigating Impacts of Carbon Capacities in Emerging Markets

### 2.3.1 Overdependency on Oil and Natural Gas and Sustainable Development Issues

In 1992, following growing threats from global warming due to excessive carbon emission in the atmosphere, the idea of mainstreaming environmental protection into national economic development objectives was considered a means of driving a sustainable future for every country.[157] Also, in the spirit of global partnership, nations were to cooperate equally to preserve, protect, and restore the health and integrity of Earth's ecosystem.[158] And as regarding how resources are exploited and used, nations declared their commitments to honour 'the sovereign right of one another to explore their resources according to individual environmental and developmental policies in a manner that would not cause environmental damage to others or areas outside their boundaries.'[159] And to achieve these objectives, parties agree to enact effective environmental legislation, standards and put in place priorities and management objectives to support environmental protection, sustainable development, and such that will not lead to social cost and economic burden on other countries.[160]

[154] ibid
[155] Federative Republic of Brazil 2015 (n152) 4.
[156] ibid
[157] Principle 4, Rio Declaration on Environment and Development 1992.
[158] Principle 7, Rio Declaration on Environment and Development 1992.
[159] Principle 2, Rio Declaration on Environment and Development 1992.
[160] Principle 11, Rio Declaration on Environment and Development 1992.

However, as countries continue to strive for economic independence, their exploration and use of resources have done little to mitigate damages to the global environment. From 1992 when the first non-binding global climate agreement was negotiated[161] to 2017, GHG emissions have been on the increase with associated impacts at a high cost to humanity.[162] According to 2017 forecast by the Global Carbon Project, although carbon dioxide emissions flattened out between 2014-2016 (but still higher than previous years), in 2017, emissions from industry and fossil fuel rose by 1.6 per cent amounting to 36.2 gigatons CO2 and increased by 2.7 per cent amounting to 37.1 gigatons CO2 in 2018.[163] Projections for the year 2019 were that more increase could be expected than previous years. This was confirmed by the UN Secretary-General- Antonio Guterres, who on August 1 announced July 2019 as the hottest month in human history with a record 1.2 degrees Celsius above pre-industrial levels surpassing the previous record held as of July 2016 by the World Meteorological Organisation (WMO).[164]

It was for these future occurrences in global emission increases that ab initio, the need for shared responsibility between developed and developing economies to mitigate global warming gave room to the adoption of common but differentiated responsibilities (CBDR) in 1992.[165] However, countries have struggled to abide by that principle of shared responsibility to minimise GHG increases. As for emerging economies, the inability to regulate rising emissions have been based on three main reasons. The first is that they consider any obligation to reduce emissions as

[161] The United Nations Framework Conference on Climate Change, 1992.
[162] European Commission Joint Research Centre, 'Fossil CO2 Emissions of All World Countries, 2018 Report' (2018). Available at https://edgar.jrc.ec.europa.eu/overview.php?v=booklet2018 accessed August 27, 2018.
[163] Kelly Levin, 'New Global CO2 Emissions Numbers Are In. They are not Good' (World Resources Institute, December 5, 2018). Available at https://www.wri.org/blog/2018/12/new-global-co2-emissions-numbers-are-they-re-not-good accessed August 26, 2019.
[164] Eric Holthaus, 'July 2019 was the Hottest Month in Human History: The Climate Disaster isn't coming. It's Here' (Rolling Stone, August 1, 2019, 5:06PM ET). Available at https://www.rollingstone.com/politics/politics-news/july-2019-hottest-month-ever-866436/
[165] Principle 7, Rio Declaration on Environment and Development 1992.

a huge limitation on their aspiration to grow and industrialise.[166] Secondly, failure to rein in emissions is based on the notion that those who were primarily responsible for the problem of climate change should also be responsible for addressing it.[167] Thus, requiring them to solve the problem whose impacts were caused mainly by developed economies will limit their aspiration to industrialise and move their population out of poverty.[168] And thirdly, those developed economies possess the financial resources and technology needed to address the problem; hence that responsibility should squarely lie on their shoulders.[169]

On the other hand, developed economies continue to argue that with the extent of emissions currently generated from developing economies in their bid to industrialise, which they think is escalating the problem of climate change, serious mitigation action is required from developing countries. This position was equally acknowledged by the 4th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).[170] But a lack of consensus on CBDR among parties and perhaps lack of binding targets on the part of developing economies could be said to contribute to driving emissions increases in developing and emerging market areas.

### 2.3.2 Weak Regulatory Control of Oil and Gas Emissions

In most developing and emerging markets, the institutions responsible for regulating oil and gas pollution could be described as appendages of the government. This is particularly so where the government (as is the case in Nigeria) through its national oil company (NNPC) directly participates in oil and gas activities in joint ventures or petroleum sharing contracts with overriding

[166] Daniel Behn, 'Linking Climate Change Mitigation Poverty Reduction: Using Kyoto's Clean Development Mechanism to Promote Energy Development on the African Continent' (CAR 13, 2012) 1
[167] Principle 7, Rio Declaration on Environment and Development 1992.
[168] Daniel Behn, 2012 (n153).
[169] Principle 7, Rio Declaration on Environment and Development 1992.
[170] IPCC, 2007 (n121) 253

equities.[171] As a result of this lack of independence or clear separation of environmental powers from revenue functions, the focus is often placed on maximising revenues from operations of the sector above environmental protection.[172] For example, in Nigeria, the Department of Petroleum Resources (DPR) - a subsidiary of the State oil company and the petroleum regulatory agency combines both statutory functions such as granting licenses, ensuring regulatory compliance, supervising operations, and maximising revenues from the sector on behalf of the State.[173]

Brazil's state-owned Petrobras, on its part, dominated and monopolised all sector operations[174] until 1997 when the government finally decided to open up the sector for competition and to attract several investors home and abroad.[175] However, since March 2014, operations and investments in the industry has been disrupted as a result of unethical practices involving Brazil's national oil company and even the country's presidency in what is called '*Operation Car Wash*-' a 'multi-billion-dollar corruption scandal.'[176] The corruption scandal involving allegations of kickbacks in government did not just undermine or expose poor regulatory control over oil and gas activities in Brazil; it also led to the loss of

(i) 8 billion dollars by Petrobras;

(ii) Resignation of its Chief Executive Officer- Maria Das Gracas Foster;[177]

(iii) Arrests of its 2004-2012 head of refining operations- Paulo Roberto Costa;[178] and

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[171] NNPC, 'Corporate Information.' Available at https://www.nnpcgroup.com/About-NNPC/Pages/Corporate-Information.aspx# accessed June 1, 2019.

[172] Wifa Eddy and others, 'Potential Conflicts of Interest in the Dual Functions of the Nigerian Department of Petroleum Resources as both Economic and Environmental Regulator.' Available at https://www.academia.edu/30309994/Potential_Conflicts_of_Interest_in_the_Dual_Functions_of_the_Nigerian_Department_of_Petroleum_Resources_as_both_Economic_and_Environmental_Regulator?auto=download accessed September 25, 2019.

[173] Department of Petroleum Resources (DPR), 'Functions of DPR. Available at https://www.dpr.gov.ng/functions-of-dpr/ accessed January 30, 2019.

[174] U.S. Energy Information Administration, 'Country Analysis Brief: Brazil' (Last Updated, November 21, 2017) 10.

[175] Ibid, 2

[176] U.S. Energy Information Administration, Brazil 2017 (n174)

[177] U.S. Energy Information Administration, Brazil 2017 (n174) 2, 3.

[178] U.S. Energy Information Administration, Brazil 2017 (n174)

(iv) Over 80 others, including top politicians and prominent businessmen, were charged with money laundering and bribery.[179]

Furthermore, political tension in the Senate also led to the removal of President of Brazil Dilma Rousseff in August 2016 over allegations that her 2014 election was funded from money received through 'Operation Car Wash.'[180] In July 2017, Aldemir Bendine, Petrobras' Ex-Chief between 2015 and 2016, was also arrested for corruption.[181] In addition, there were accusations that former President Luiz Inacio Lula da Silva attempted to influence the judiciary over the scandal.[182] All these issues have continued to unsettle the industry to date, as investigations of bribery and money laundering allegation against Petrobras are ongoing in the United States and Brazil.[183] Now, it could be said that the entire sector is undergoing a wholistic reform, including sales of assets to service a debt of 122.7 billion dollars.[184] In February 2017, the country's Energy Ministry recommended changes to its local content rules that was criticized as a disincentive to locally sourced goods and services.[185] The new rules cut[186] local content requirements to allow for domestic competition.[187] By the middle of 2016, the Ministry of Mines and Energy also initiated *'Gas to Grow,'* designed to improve sectoral regulatory

[179] U.S. Energy Information Administration, Brazil 2017 (n174) 3.
[180] IHS Energy, "Brazil's Cabinet Reshuffle Likely to Improve Relations with PMDB Ally, Reducing Impeachment Risk for President Dilma Rousseff" (October 2, 2015) in US Energy Information Administration, 'Country Analysis Brief: Brazil' (Last Updated, November 21, 2017) 3-10.
[181] "Former Petrobras CEO Aldemir Bendine Arrested in in Corruption Bribe" (Wall Street Journal, July 27, 2017) in US Energy Information Administration, 'Country Analysis Brief: Brazil' (Last Updated, November 21, 2017) 3-10.
[182] IHS Energy, "Brazil's Cabinet Reshuffle 2015 (n180).
[183] Former Petrobras CEO Aldemir Bendine Arrested in in Corruption Bribe, 2017 (n181) 3
[184] IHS Energy, "Changes to Brazil's Pre-Salt Rules and New strategic Plan Ease Pressures on Petrobras" (December 2, 2016) in US Energy Information Administration, 'Country Analysis Brief: Brazil' (Last Updated, November 21, 2017) 3.
[185] BN Americas, 'Brazil to ease local content rules for existing Exploration and Production Contracts' (July 18, 2017) in US Energy Information Administration, 'Country Analysis Brief: Brazil' (Last Updated, November 21, 2017).
[186] Prior to now in Brazil, oil and gas operators had to source for almost 85% equipment and services domestically. This local content requirement was one of the highest percentages ever required in the world. The consequences of which contributed to increased breakeven prices. See n96 [3].
[187] PricewaterhouseCoopers 2015 (n109).

framework that will open up the market for competition and adopt best global practices "to build a favourable environment for new investments."[188]

The similar far-reaching economic interest of the State characterises oil and gas operations in China and weakens regulatory control. In China, three major state companies hold dominant control of its oil sector operations- the China National Petroleum Corporation (CNPC), China Petrochemical Corporation (Sinopec), and China National Offshore Oil Corporation (CNOOC).[189] Whereas CNPC takes charge of most of China's onshore upstream assets, CNOOC mainly explores and develop oil and gas assets in China's offshore regions. Sinopec, on its part, takes care of downstream activities ranging from refining to distribution and petrochemicals.[190] Also, whereas there is nothing questionable about State ownership of its oil and gas resources, it is very telling that approval of rights and licenses to prospect for oil and gas which proceeds from its Ministry of Land and Resources (MLR) can only be granted subject to a Sino-foreign co-operation and development plans.'[191] This, of course, is indicative of State dominance of operations,[192] meaning its Ministry of Environment that is responsible for protecting China's air, land and water from pollution,[193] can barely exercise any oversights or issue sanctions on oil and gas-related pollution from corporate operations with dominant State presence.

### 2.3.3 Poor Natural Gas Infrastructures and Resource Maximisation

The effect of infrastructures in any sector cannot be overemphasised. According to Ernst and Young, the most cited impacts include low cost of production, increased net output for any nation's economy, and increased domestic investments. Infrastructures also attract more labour, lead to reorganisation of

[188] Petrobras, 'Report of the Administration' (2016) 29, 30.
[189] Xiong Jin, Zhao Yan and Zhao George, 'Oil and Gas Regulation in China: Overview' (Thomson Reuters, Multi-jurisdictional Guide, 2014) 2.
[190] US EIA, 'China International Energy Data and Analysis' (Last Updated May 14, 2015) 4.
[191] Xiong Jin, Zhao Yan and Zhao George 2014 (n189) 2.
[192] US EIA, 'China 2015 (n190) 4.
[193] AECN, 'People's Republic of China Ministry of Environmental Protection' (2019). Available at https://www.aecen.org/index.php/stories/people%E2%80%99s-republic-china-ministry-environmental-protection accessed August 19, 2019.

land use, and make once inaccessible sites or areas open for development.[194] A general challenge with most emerging market economies in mitigating emission-impacts from natural gas flows from inadequate infrastructures to maximise gas us. Or where a country already possesses the infrastructures, improving on decaying facilities or attracting new investments in the sector is rarely supported with friendly and transparent policies.[195]

For instance, Russia supplies gas to most Eurasia via a wide range of pipeline facilities linking Germany, the Czech Republic, Turkey, Poland, the Commonwealth of Independent States (CIS), and the Baltic countries. However, over the past 10 to 20 years, there has been a need to improve infrastructures. Still, a lack of investment in this area has pushed the country to 93rd place on global infrastructure quality competitiveness.[196] According to EY, investments in infrastructures in Russia from 2009 to 2030 was projected to reach 969 billion dollars, but proper legislative reforms and transparency with decision-making obligations required to facilitate the growth of infrastructures are lacking. And according to a survey conducted by EY, 69 per cent of the participants believe that if Russia ensures transparency in its bid process, investing in infrastructures within the country could be effective. However, others insist that the lack of guarantee that an investor can recover investments also serves as another bottleneck.[197]

As part of efforts by the Russian Federation to improve its facilities, in the last five years, a total of 325 infrastructure projects had been announced, with 51 per cent (majority) of these projects initially billed for completion from 2015-2020, while others will be concluded by before 2030. And among the sectors where infrastructures will be boosted, the greatest projects are being planned for the power and utility sector, which covers water, electricity, and gas.[198]

[194] Ernst and Young Global Limited, 'The road to 2030: a survey of infrastructure development in Russia' (2014) 9.
[195] Report by Industry Group for Petroleum and Natural Gas Regulatory Board (PNGRB), 'Vision 2030: Natural Gas Infrastructure in India' (2013) 54-56.
[196] Ernst and Young Global Limited (n194) 5.
[197] Ernst and Young Global Limited (n194) 3
[198] ibid 5.

In Brazil, over 90 per cent of its natural gas reserves are found offshore close to the State of Rio de Janeiro,[199] but a lack of infrastructure means a lot of those gases are either reinjected[200] or flared, making the country the 21st most flaring nation in the world.[201] Also, following the recent discovery of new natural gas deposits in the massive pre-salt oil field, natural gas production in Brazil is expected to increase.[202] But production and maximisation of these gases could be hindered or flared for the failure of Brazil to connect most pipelines predominantly located along the northeast and southeast areas of the country from the State of Rio Grande do Sul to Ceara linking the Southeast Northeast Integration Gas pipelines and longest in Brazil.[203]

Until 2004, India was self-sufficient in natural gas before it began importing liquefied natural gas (LNG) from Qatar. Since then, it has relied on the import of LNG as a substitute for coal-generated electricity. According to the US EIA, the reason for high import dependence is that India failed to develop adequate gas infrastructure across the country and does not produce enough 'domestic natural gas to meet domestic demand.'[204] As part of new measures to utilise gas resources, the state-owned company- GAIL and other companies are investing in different pipeline projects. Yet, inadequate pipeline infrastructure and the absence of a 'nationally integrated system' have continued to hinder domestic natural gas supply. Also, some of the newly planned pipeline expansion projects by GAIL, which were expected to come on stream by 2016, are being held up by land acquisition issues.[205]

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[199] Agência Nacional do Petróleo, Gás Natural e Biocombustíveis, 'Oil, Natural Gas, and Biofuels Statistical Yearbook 2017' (2017).
[200] IHS Energy, "Brazil: LNG Market Profile" (September 11, 2017) in US Energy Information Administration, 'Country Analysis Brief: Brazil' (Last Updated, November 21, 2017)10.
[201] The World Bank Group 2017 (n143).
[202] Department of Petroleum Resources (DPR) 2019 (n173) 11.
[203] U.S. Energy Information Administration: Brazil 2017 (n174)
[204] U.S. Energy Information Administration, 'Country Analysis Brief: India' (Last Updated June 14, 2016) 11.
[205] The New Indian Express, "LNG Pipeline Laying to be Over by Mid-2016," June 25, 2015; The Financial Express, "Supreme Court paves way for GAIL's Rs 3,400-crore Tamil Nadu gas pipeline project," February 3, 2016 in US. Energy Information Administration, 'Country Analysis Brief: India' (Last Updated June 14, 2016) 15.

Currently, the country possesses approximately 53 trillion cubic feet of natural gas reserves,[206] with 66% of this located offshore.[207] In 2002, large natural gas deposits were found in the Krishna-Godavari basin off the eastern coast of India. But production in the mature fields in the basin (block D1 and D2), including block KG-D6 which came on stream in 2009, dropped significantly because of the high cost of field development and technical issues.[208]

The Indian government has, however, been trying to woo foreign investors to the sector, and to start with, in 2001, its coalbed methane (CBM) block was awarded for exploration. Still, as of June 2016, production is yet to begin for lack of foreign investments, and domestic companies there continue to struggle to attract expertise and technology needed for development.[209] While it is agreed that there are other CBM blocks with relative output,[210] the Financial Express maintains that the CBM industry remains nascent, and that production is confronted by 'geological and water supply challenges.' In addition, like its Nigerian counterpart, the Indian gas sector is also affected by poor sector investment due to 'low natural gas prices, slow development of gas infrastructure and delayed regulatory approvals.[211]

As an alternative to securing gas supplies, the Indian Government also planned to import natural gas through different international pipeline projects, like the pipeline project for natural gas import from Turkmenistan to India.[212] There is also the 'Turkmenistan-Afghanistan-Pakistan-India (TAPI)' pipeline project, also referred to as 'Trans-Afghanistan Pipeline', for which discussion has extended over a decade. But notwithstanding protracted negotiations, the Economic Times of India and Reuters acknowledged that lack of adequate financial support, technical

[206] 3 Oil & Gas Journal, 'Worldwide Look at Reserves and Production' (December 7, 2015).
[207] Ministry of Petroleum and Natural Gas, India, 'Indian Petroleum and Natural Gas Statistics 2014-15,' at 23.
[208] U.S. Energy Information Administration, India 2016 (n204) 14.
[209] ibid
[210] Ministry of Petroleum and Natural Gas, India (2014-2015) (n207) 23.
[211] The Financial Express, 'RIL, Essar Seek to Sell CBM Gas at Market Rates,' October 10, 2015; World Coal, "Indian CBM gas production threatened by low prices and potential bottlenecks," October 20, 2014; In US. Energy Information Administration, 'Country Analysis Brief: India' (Last Updated June 14, 2016) 1.
[212] U.S. Energy Information Administration, India 2016 (n204) 15.

challenges, again, like Nigeria, the Indian sector is bedeviled by major geopolitical risks that kept the project from commencing.[213]

On the other hand, some progress has been made with TAPI. For example, in 2010, parties signed a framework agreement, and earlier on in 2012 agreed to a unified transit tariff for the project route. India also endorsed a supply and purchase agreement with Turkmenistan in May 2012 and approved a 'special-purpose legal entity' in which investment funds from pipeline members can be deposited.[214] Lastly, all four members also elect the 'Asian Development Bank (ADB) as 'project's technical and financial advisor.' Although parties continue to seek overseas investment in the project, security uncertainties are still high. Turkmenistan started constructing the project in December 2015 and was initially billed for operational take off in 2019.[215] However, as of March 6, 2022, the project is yet to commence operation.

And in China, under its Energy Development Strategy Action Plan for 2014-2020, at least 10 per cent of energy consumption by 2020 is targeted to come from natural gas. China plans to improve domestic infrastructures to enhance utilisation and minimise emission impacts to meet this target. However, overreliance on external supplies from piped natural gas from Russia presents very stiff competition to its LNG growth.[216]

## 2.4 Conclusion

In addition to providing clarity on the concepts of carbon capacity and emerging markets as used in the study, this chapter has attempted to evaluate the extent or level to which fossil fuel emissions occur in emerging markets. Although Nigeria is the central jurisdiction for this thesis, little or no mention of Nigeria was had in this chapter. The analysis here only sought to and explained why oil and gas

[213] U.S. Energy Information Administration, India 2016 (n204) 10-16; Economic Times of India, "TAPI Project: Work on $10 billion gas pipeline to serve India's energy needs begins," November 7, 2015; See also, Reuters, 'Update 1-Turkmenistan to Start Work on TAPI Pipeline in December,' September 15, 2015.
[214] ibid
[215] U.S. Energy Information Administration, India 2016 (n204) 10-16.
[216] KPMG, 'Natural Gas: The Road Towards a Cleaner and Prosperous Future' (2016)

emission is not declining among developing economies and markets in transition for which Nigeria is not an exemption. Furthermore, to demonstrate the point that future increases in global emissions will be led by developing/emerging countries, analysis of data from BRIC countries shows that just like Nigeria, the overreliance of these countries on oil and gas, their weakened regulatory control of oil and gas emissions, and existing infrastructure deficit in these countries means fossil fuel emissions from these countries will continue to grow. On the other hand, like Nigeria too, given that these countries will continue to rely on fossil fuels to sustain their economy, to balance this need in the wake of the growing challenges of global warming, these countries must have to bridge the infrastructure gap in their oil and gas sectors and create an independent regulatory authority that focuses on turning gases often wasted through flaring into a valuable commodity rather than as burnt flames. This is particularly important given the need for power generation and revenue boost required to drive the economy back home.

## CHAPTER 3: AN OVERVIEW OF GLOBAL BEST PRACTICES FOR NATURAL GAS UTILISATION AND EMISSION IMPACT MITIGATION

### 3.1 Introduction

This chapter critically examines specific best practices implemented by gas sectors in the United States, the United Kingdom, Norway, and Alberta- Canada that enables them effectively to utilise its gas and mitigate their impacts on the environment. From each jurisdiction, the practices examined were compared with existing practice adopted by the Nigeria gas sector to improve gas utilisation. By doing this, lessons and insights drawn from the discussion provided guidance to the recommendations proposed in this study and by which a new legal framework can be developed by Nigeria to develop its gas sector and minimise the flaring impact on the environment. In addition to that, the chapter also examines how carbon disclosure practices and the international mitigation outcomes (ITMOs) regime under the Paris Agreement can enhance cooperative action for emission-impact mitigation and reduce waste of natural gas in Nigeria and, by extension, other developing economies. But before the specific best practices are examined, it is important to elucidate why these four countries have been selected as case study jurisdictions with global best practices for this study.

### 3.2 The Jurisdictions with Global Best Practices for Gas Utilisation

All four regions- the United States, the United Kingdom, Norway, and Alberta-Canada are gas dependent economies like Nigeria and have similar regulatory strategies such as incentivised investment in gas infrastructure, environmental impact assessment, health and safety protocol, public right to a safe environment from oil and gas etc that are implemented to enhance safe production and effective utilisation of gas. However, these strategies are deployed and used differently by all four jurisdictions from how they are deployed by Nigeria. Accordingly, while they have resulted in efficient gas production and improved gas utilisation in these countries, the same result has not been achieved in Nigeria. Therefore, there are lessons Nigeria take from how these countries implement these regulatory strategies to improve gas maximisation and develop their gas sector. Because each best practice jurisdictions implement similar strategies to enhance gas production and use, the work will do a random selection of a specific practice

deployed by one or two regions, assess how they are deployed in their gas sector while comparing them to how they are implemented in the Nigerian gas sector.

### 3.2.1. Alberta Canada: An Incentivised Investment Landscape for the Natural Gas Sector

Nigeria remains the largest holder of natural gas reserves on the African continent with over 200 trillion cubic feet of proven natural gas reserves in 2019. As of 2018, Nigeria was the fifth largest exporter of liquefied natural gas (LNG) in the world. The Nigeria Government is heavily reliant on oil and gas revenue to sustain its economy. In 2019, Nigeria produced a total of 1.6 trillion cubic feet of dry natural gas, but the sector remains highly impacted by security and regulatory issues. Unlike Alberta, Norway, the United Kingdom and the United States, most gross natural gas produced in Nigeria is either flared or reinjected. This is because most producing fields lack the infrastructure to capture gas produced with crude oil.[217]

No country can achieve energy security without a vast network of pipelines to transmit and distribute products to its domestic consumers and regional market. This is one area Nigeria is lagging in and which continues to precipitate huge waste of its gas resources.[218] Although Nigeria is currently developing new gas pipelines, under the original project plan, completion and operationalisation were set for the last quarter of 2021 and the first quarter of 2022. However, the inability of project developers to secure necessary funding for project completion has undermined progress nearly 4 years after a set of new pipeline development began.[219]

There is no doubt that developing new gas projects requires a lot of capital and securing funding for ambitious energy projects like major gas pipelines can be tough. To raise funding for the construction of new pipelines, the Nigerian oil and gas industry always look to attract private funding for the sector to operate

[217] U.S. EIA, Country Analysis Executive Summary: Nigeria' (Last Updated: June 25, 2020) 1, 5
[218] Ahmed Adamu, 'Economic Analysis of Gas Pipeline Projects in Nigeria' (2017) Vol. 8, No. 2, JESD, 39-67 at 40, 44.
[219] NNPC Targets 2023 Q1 Completion Date for AKK Pipeline (Channels Tv, 2020). Available at https://youtu.be/tu8Y8OFgfk8 accessed July 6, 2022.

successfully.[220] However, for it to secure the kind of funding it requires to meet the number of critical gas projects that it planned to develop to optimise gas production and use, the investment climate for gas projects must be attractive. Also, the security of existing assets, the promotion of fair business environment, and certainty and transparency in regulatory process are key considerations that any gas sector must ensure.[221] In addition, with the financial downturn since 2014, a growing opposition to fossil fuel investments, and ongoing recovery from the global pandemic, even under a fair, secure investment climate and transparent sector governance, these challenges pose unpredictable risks for investors. Therefore, to attract a significant level of project investment to a sector that is competing with green revolution, and cash strap, beyond an attractive and open business environment, private investors now expect governments to also commit paying a significant share of proposed funding of project development.[222]

Unlike Nigeria, to attract investments, gas-producing jurisdictions like Alberta with already developed market and ease of doing business will rather focus on designing a more flexible and innovative financing arrangement that guarantees minimum risk and a good return on investment.[223] In addition to that, they also provide substantial share of funding to support and incentivise the cost of burden on investors in new projects. Currently in Nigeria, there is an ongoing domestic gas development projects that have suffered huge set back due to lack of funding to complete the projects. During the first half of 2022, the Nigerian National Petroleum Company Limited (NNPC) is only able raised 8 billion Naira out of the 25 billion Naira budgeted for the projects with gas infrastructure receiving 7.4 billion Naira which is less than a third of 23 billion Naira conceived to complete the gas projects. Although the new Petroleum Industry Act 2021 introduced a 10-year

[220] Olusola J. Jegede and Winifred Idiaru, 'Nigeria: Legal Framework and Requirements for Oil and Gas Investment in Nigeria' (Resolution Law Firm, October 27, 2020)
[221] Prince Okafor, 'Foreign Investments: Nigeria Loses to Other African Countries in Oil, Gas' (Vanguard Newspaper, March 29, 2022). Available at https://www.vanguardngr.com/2022/03/foreign-investments-nigeria-loses-to-other-african-countries-in-oil-gas-2/ accessed June 2, 2022.
[222] International Public Funds for Gas in Developing Countries- Report' (July 8, 2021) 2-4.
[223] Boris Ivanov, 'Oil and Gas Companies must Find New Ways to Attract Investment as the Energy Sector Evolves' (World Finance, November 19, 2019) 1-4.

tax break for investments in gas pipeline development, until full implementation of the new regime commences, Nigeria can only remain optimistic while hoping this tax allowance is attractive to investors in gas pipeline development.

Two-third of the natural gas produced in Canada comes from Alberta's energy sector. The sector also employs tens of thousands of Albertans and can generate billions of dollars in revenue every year.[224] For example, during the 2005/2006 fiscal year, the Government of Alberta received a total of 8.4 billion Canadian dollars in royalties from natural gas and by-products and in 2006 produced a total of 14.1 billion cubic feet of natural gas per day which made an immense contribution to the economy of Alberta.[225] However, with time insufficient pipeline access, delayed constructions for additional capacity and intense competition from neighbouring United States continued to force natural gas producers from Alberta to lose their market share and sell off products at discounted value. As a result, in the 2019/2020 fiscal year, the Government of Alberta only received 371 million Canadian dollars as royalties from natural gas and by-products while production fell to 11.1 billion cubic feet each day.[226]

In order to help the Province get the most value out of its natural gas deposits, new investment strategies are being planned to support the diversification of Alberta's energy industry and to help the economic recovery of the province[227] under Alberta's *Natural Gas Vision Strategy.* Under the Strategy, the Government of Alberta will, among other things:

1. Advocate strongly for natural gas development in Canada by building valued partnerships among its western provinces and throughout Canada
2. Pursue investments relentlessly and improve Alberta's competitiveness
3. Enable meaningful involvement and investment in natural gas development across the entire industry value chain

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[224] 'Natural Gas Vision and Strategy' (2021). Available at https://www.alberta.ca/natural-gas-vision-and-strategy.aspx accessed October 19, 2021

[225] Government of Alberta, 'Natural Gas Vision and Strategy' (October 2020) 9.

[226] ibid

[227] Janetta McKenzie, Estan Beedell and Vanessa Corkal, 'Blocking Ambition: Fossil Fuel Subsidies in Alberta, British Columbia, Saskatchewan, and Newfoundland and Labrador' (International Institute for Sustainable Development Report, February 2022) 6, 7.

4. Continue to implement global best environment frameworks
5. Move towards an efficient regulatory environment, and
6. Advance new, expanded, and circular ways to grow the gas sector.[228]

In keeping with its vision of 'meaningful involvement and investment in natural gas development across the industry's value chain,' the Strategy identified five natural gas industry sectors that are considered to have excellent growth potential. These are the Alberta industry demand, petrochemical manufacturing, hydrogen, liquefied natural gas, and plastics. The Government of Alberta also has a goal for each of these areas.[229] But for case study purposes reference, which shall be explored later in the study, the analysis here will only focus on the petrochemical sector and the strategy the government of Alberta is deploying to attract new infrastructure into the gas sector.

As one of the top 10 global producers of petrochemicals, the Alberta sector makes input for many essential products such as plastics, fertilisers, personal protective equipment, eyeglasses, medical supplies etc., making the sector account for about one-third of manufacturing exports. While demands for petrochemical products is projected to grow, there is an available opportunity for the sector to grow by more than 30 billion Canadian Dollars by 2030. This will result in over 90,000 direct and indirect jobs during the construction and operation of the new facilities. A further 10 billion Canadian Dollars could also be earned in revenue by the Government of Alberta from derivable corporate and income taxes.[230]

Over the previous ten years, the petrochemical sector in Canada has generated approximately 20 billion Canadian Dollars in investment compared to 250 billion Canadian Dollars realised by the United States.[231] Under the first and second rounds of the Petrochemical Diversification Programme, the Alberta Government pumped in about 11 billion Canadian Dollars-worth of new petrochemical investment, including a total of 650 million Canadian Dollars in fiscal incentives

[228] Government of Alberta 2020 (n225) 6.
[229] Natural Gas Vision and Strategy 2021 (n224).
[230] Government of Alberta 2020 (n225) 12.
[231] United States Census Bureau 2019 in Government of Alberta, 'Natural Gas Vision and Strategy' (October 2020) 12

with very positive results.[232] These investments and incentives supporting the development of the petrochemical project also led to the final investment decision for two propane-based petrochemical facilities. The construction of Inter Pipeline Petrochemical complex has begun, with the facility expected to come on stream by the end of 2021. As of the first quarter of 2020, about 2.5 billion Canadian Dollars was invested in the Inter Pipeline Petrochemical development project, with approximately 1,800 people working on-site.[233] At the same time, investments in the downstream project belonging to the Pembina Pipeline Corporation project were deferred pending when the company is ready to redeploy to the project site.

As part of its recovery plan from the pandemic, the province launched Alberta's Petrochemicals Incentive Programme (APIP)- a ten-year infrastructure development programme run by the Department of Energy in Alberta in the fall of 2020 to attract investment to the growing petrochemical sector.[234] To boost investments in petrochemical projects, the Government of Alberta provided a financial incentive in the form of grants to stimulate private sectors interests in new or expanded market-led petrochemical infrastructure projects to produce value-added, petrochemical, fertiliser, hydrogen and fuel products.[235] Under the programme, which could be a 5-10-year initiative, the proposed project must be confirmed to have met eligibility criteria that the APIP Committee determines and must be operational to qualify to receive the grant. Eligibility for projects is that a project must be physically located in Alberta; it must use natural gas and natural gas liquids or petrochemical intermediaries like benzene, ethylene, and propylene. And the projects must also have at least 50 million Canadian Dollars-worth of minimum investment capital and create new and permanent jobs in Alberta.[236]

[232] Government of Alberta 2020 (n225) 12.
[233] ibid
[234] Government of Alberta, 'Alberta Petrochemicals Incentive Program' (2021). Available at https://www.alberta.ca/alberta-petrochemicals-incentive-program.aspx accessed October 19, 2021.
[235] Lyndon Chiasson, 'Resource Industry of the Future: Pathways Framework' (The Alberta Chamber of Resources, April 2020) 32, 39, 56; Government of Alberta, 'The Alberta Petrochemicals Incentive Program' (October 28, 2020) 3.
[236] The Government of Alberta, 'The Alberta Petrochemicals Incentive Program' (October 28, 2020) 4,5.

A company interested in petrochemical project development will have to register its interest through an electronic transfer system. Then, depending on the eligible project, the project's capital cost determines how much grant a project developer qualifies for. Smaller projects, for instance, with a capital investment cost of 50-150 million Canadian Dollars, must be completed and become operational in five years from October 30, 2020, when applications were open to the public.[237] Larger projects with total investment capital above 150 million dollars must be completed and be operational in ten years. In both instances, grants are paid to the companies or operators in 3 equal instalments over a period of 3 years. And grants worth 12 per cent of the eligible project's total investment cost are payable after projects have become operational to allow operators to account for the full value of incentive when taking stock of their return on investment.[238]

As of April 25, 2021, Inter Pipeline Limited announced it had received a total of 408 million Canadian Dollars in grant under the APIP awarded in support of the Inter Pipeline's Heartland Petrochemical Complex (HPC). The HPC is a world-class integrated dehydrogenation and polypropylene facility and is expected to come on stream fully by the first quarter of 2022. The economic impact of the HCP project is that over 150 Alberta businesses have contributed to the development of the project since its inception.[239] Also, estimates spanning almost four years of project construction indicates that HPC has created about 16,000 direct and indirect permanent jobs. It has also generated roughly 200 million dollars in tax revenue for the municipal and provincial governments and contributed about 3 billion dollars to the economy of Alberta. Inter Pipeline also expects HPC to create over 1000 direct and indirect full-time jobs. It will in addition, contribute almost 50 million dollars in tax revenue annually to assist schools, hospitals, roads, and other incidental public infrastructure and services.[240]

[237] Government of Alberta 2021 (n234).
[238] ibid
[239] Inter Pipeline Limited, 'Inter Pipeline Awarded $408 Million Grant Under Alberta's Petrochemicals Incentive Program' (Calgary Alberta, April 5, 2021) 1-2.
[240] ibid

### 3.2.2. United States: Efficient Natural Gas Distribution Channels

Other than poor natural gas infrastructures, one of the challenges affecting efficient utilisation of natural gas in most emerging market areas is the regulation of access routes (easement) for such facilities. Developing enough transmission lines for product delivery to domestic markets and use, is another critical issue facing regulators. While it is true that pipelines are often buried underground, there are instances where some of the associated facilities like valves, taps, interconnection metering stations, pig launchers and receivers and compressors may be constructed over-ground.[241] A natural gas storage field, for instance, will include subsurface gas storage rights and may involve storage field pipelines and associated gas wells with its storage rights as well.[242]

Consequently, differences between national and state governments over who determines the right of way for planned infrastructure projects, what law governs the process and the shared benefits arising from there could derail or delay gas projects. In other instances, the location of pipelines and other facilities could concern private landowners against federal/state actors who are often intent on asserting their authority in the guise of public interest. In any case, overcoming these issues is critical to achieving a steady and uninterrupted supply of gas throughout any country. Under the Nigerian Constitution of 1999 and the Land Use Act of 1979, all lands in Nigeria and everything underneath it is belonging to the government. Also, under the Nigerian Constitution, only the federal government can exercise control over oil and gas activities or projects.[243]

Although Nigeria has a huge deposit of natural gas, it does not possess a vast network of gas pipeline infrastructure. But where there is an objection to a proposed pipeline route by a person with an interest in land and who feels that granting a license for constructing a pipeline may injuriously affect his interest, he may verbally object or write stating the grounds of his objection to the Minister of

[241] Federal Energy Regulatory Commission, 'An Interstate Natural Gas Facility on my Land? What do I Need to Know? (Updated August 2015) 4.
[242] The U.S. Federal Energy Regulatory Commission, 'Current State of and Issues Concerning Underground Natural Gas Storage' (Staff Report, September 30, 2004) 4-6.
[243] Section 44 subsection 3 of the Nigerian Constitution of 1999 (as amended); Section 1 of the Land Use Act of 1979, Nigeria.

Petroleum.[244] The Minster may cause his objection to be heard but a quantum of compensation cannot be a material ground for this objection. Parties will be heard, but depending on how the Minister draws his assessment, he may or may not grant the license or revoke same where already issued.[245] In Nigeria, an operator is not required to give a direct formal notice to the person with an interest in land after applying to construct pipelines on his property. But in the U.S., an operator must personally email to the landowner a copy of his filings and other incidental information as a matter of obligation. This information equips the landowner on what to do and what steps he can take to claim compensation or raise an objection.[246]

The Federal Energy Commission of the United States offers useful and practical steps to overcome easement barriers beginning from project conception stages through to completion and onwards during transmission lifespan of the lines. For example, suppose a pipeline route is proposed, or abuts your land in the US. In that case, such landowner may first learn of this from the licensed natural gas company of its plans and studying the routes during the voluntary pre-filing process or during the application development process with the Commission.[247] After a company applies to the Commission seeking an authorisation certificate to construct a pipeline project, within three days of the Commission issuing a Notice of Application, the company is obligated to mail a copy of the filings, including other information to the landowner. The Commission's staff, on their part, will organise an environmental study of the proposal that could either be an Environmental Assessment or an Environmental Impact Statement based on the scope of the project.[248]

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[244] Section 9 of the Oil Pipelines Act, 1956 Nigeria
[245] Section 10 of the Oil Pipelines Act, 1956 Nigeria
[246] Section 8(D) of the Oil Pipelines Act, 1956 Nigeria; Federal Energy Regulatory Commission, 'An Interstate Natural Gas Facility on my Land? What do I Need to Know? (Updated August 2015) 4.
[247] Federal Energy Regulatory Commission 2015, (n241).
[248] Carolyn Elefant, 'Knowing and Protecting your Rights when an Interstate Gas Pipeline Comes to your Community: A Legal and Practical Guide for States, Local Government Units, Non-Governmental Organisations and Landowners on How the FERC Pipeline Certification Process Works and How You can Participate' (The Law Offices of Carolyn Elefant, Washington DC, 2010) 6, 7.

And for major construction projects, the local media will be informed, and public sessions will be held to consider the views of the people on the project. The meeting also presents an opportunity to listen to the views of other concerned persons or groups. The Commission may reject or approve of the project, but it may do so with or without modifications in approving. On the other hand, even if the Commission had approved a project, the company may still be unable to conclude an easement agreement with landowners who are often concerned with pipeline locations, though, access to and compensation for the use of private land will eventually be determined by a court of law.[249]

What is interesting about ensuring an uninterrupted distribution channel for natural gas by FERC is the openness and transparency in the process. For instance, information ranging from filing an application for a project construction certificate to granting approvals are publicly accessible from the company's and the Commission's website. In addition, a meeting conducted to gauge public reaction and response towards a proposed project makes for public inclusiveness in issues affecting them and, consequently, ease permission for the right of way for gas infrastructures.[250]

Also, if a private individual disagrees with the Commission's final decision, such a person could apply to be an 'intervenor' through the Commission's official website. As an intervenor, he has official rights to receive an applicant's filings, materials filed by interested 3rd parties, and other documents from the Commission relating to a party case, thus allowing him to raise legal action and be heard in court to appeal the decision of the Commission.[251] An intervening party must raise his complaints within 21 days. He also must make copies of his application available to all interested parties to the project decision. And other than filing to intervene in the Commission's final decision on the project, an intervenor could also seek that right for the purpose of addressing environmental issues which would have been elicited from the draft environmental impact assessment of the project.[252]

[249] The U.S. Constitution, Fifth Amendment. See also *United States v Dickinson*, 331 U.S. 745
[250] Federal Energy Regulatory Commission 2015 (n241) 6.
[251] ibid
[252] Federal Energy Regulatory Commission 2015 (n241) 7.

### 3.2.3. The United Kingdom and Norway: Reduced Risk from Health, Safety and Environmental Compliance

To reduce the health and safety risks often associated with oil and gas operations, and to strengthen compliance with operational and environmental standards, like the United Kingdom and Norway, Nigeria introduced laws, guidelines, and standards to enhance safe operations in the oil and gas sector. But of all the regulations introduced to that effect, the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) have remained the most critical piece of document for environmental and safety standards in the Nigerian oil and gas sector since 1992.[253] While the EGASPIN has provisions which if vigorously enforced and transparently implemented could enhance environmental protection and safe operations, the legal status of EGASPIN as a regulatory instrument for the Nigerian petroleum industry has often been called to question. As an instrument whose legal status emanate from the powers of the Petroleum Minister to make regulations and exercise general oversight over all licensed oil and gas operation,[254] the poor compliance with EGASPIN is among other factors blamed on the document not being an act of parliament. Consequently, licensees, operators continue to relate with it only as a guidance document that has no force of law having not been through rigorous legislative debate.[255]

While the legal status of EGASPIN as a mere guideline may have contributed to undermining its efficacy, it is arguable to say that its provisions do not level up with internationally accepted standards for safe oil and gas operations.[256] Instead, what in the opinion of this study is the main challenge to compliance with EGASPIN is poor coordination of compliance and weak enforcement on the part of the Department which regulates oil and gas operation and enforce the applicable standards. For example, under the EGASPIN, operators are prohibited from flaring

[253] Damilola Olawuyi and Zibima Tubodenyefa, 'Review of the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria' (OGEES Institute, Afe Babalola University Ado-Ekiti, Nigeria, November 2018) 5-8, 13.
[254] Section 9 and 8 of the Petroleum Act of 1969, Nigeria.
[255] Damilola Olawuyi and Zibima Tubodenyefa 2018 (n253) 7.
[256] Damilola Olawuyi and Zibima Tubodenyefa 2018 (n253).

gases, except a permit or a waiver is granted for flaring.[257] And where no permit is granted, fines must be paid for every standard cubic meter of gas flared. Further to that, for flaring to occur, gas must be pre-treated, while a setback of 60m radius must be created for a flare. The guideline also require that a complete combustion must equally be ensured, and system valves must be closed when flaring is carried out to prevent venting. Minimal leakages must also be ensured.[258]

Another critically important provision of EGASPIN is Part 6 of the guideline and standards which requires licensees and operators to control hydrocarbon emissions which are likely to arise from vessels and cargos by using a vapour recovery system. They are also required to patrol and carry out monthly inspections of pipeline facilities with the approval of the Department of Petroleum Resources as well as using technological sensors to detect pipeline safety infringements.[259] However, the frequency with which oil and gas accidents/pollution occur in Nigeria indicates that licensees and operators are either not complying with the guidelines or that regulators are not strictly enforcing the guideline to ensure that oil and gas operations follow the protocols set by the guideline.[260]

For instance, between 1998 and 2013 oil and gas-related fatalities accounted for around 2,246 deaths including numerous injuries and other undetermined losses.[261] Also, while other oil and gas accidents had occurred since 2014, the most recent pipeline explosion in Abule Ado in Lagos in March 2020 which resulted in the death of 23 people, injuring 60 school children, and leaving over 50 buildings and vehicles destroyed[262] further shows enforcement and monitoring of

[257] Part 3.8.8.1 of the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) 1992 (Revised 2002) Nigeria.
[258] Part 3.8.8.1 of the EGASPIN, 1992 (Revised 2002) Nigeria.
[259] Part 5 of the EGASPIN 1992 (Revised 2002) Nigeria.
[260] Cleverly T. Brown and Okogbule Nlerum, 'Redressing Harmful Environmental Practices in the Nigerian Petroleum Industry through the Criminal Justice Approach' (2018) Journal of Sustainable Development Law and Policy, 19-55.
[261] Uzoma Nnadi, Zaki EL-Hassan, David Smyth and James Mooney, 'Lack of Proper Safety Management Systems in Nigeria Oil and Gas Pipelines' (Havard Symposium Series, No. 159, 2014) 2.
[262] Taiwo Adebulu, 'How BBC Africa Eye Exposed Real Cause of Abule Ado Explosion' (The Cable, September 21, 2020 9:58 PM). Available at

compliance with safety protocols remains weak. In fact, according to the Environmental Rights Action (ERA) and Friends of the Earth Nigeria (FoEN), unlike previous accidents and explosions, the Abule Ado disaster was radically different given a scale of destruction that is likened to scenes from 'military grade explosion or aerial bombardments.'[263]

This is made even worse by the lack of proper inter-agency response and oversight between the federal, states, and local authorities to coordinate enforcements and control of poor environmental practices. Secondly, to make matters worse, no existing law including EGASPIN provides for strict liability into oil and gas accidents occur which would have served as a precautionary measure to licensees and operators in Nigeria. It is true that no country is immune from oil and gas accidents. However, the scale of accidents that Nigeria has seen in recent history cannot be compared to the incidents in the UK or Norway where compliance with health and safety regulations runs through every stage of oil or gas value chain.

According to the United Kingdom's Health and Safety Executive, every worker is entitled to work in an environment with controlled risk to their health and safety.[264] Unlike most sectors, activities involving natural gas production and supply must be done with the utmost regard to HSE because before any project construction comes into full operation, duty holders must apply inherent principles of safety in the management of risk as a matter of priority. One of such safety principles a duty holder must undertake is to complete a robust COMAH safety report and review process that ensures that risks are identified, and measures of control are put in place at an onshore site before it goes into full operation and the standards are maintained.[265]

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https://www.thecable.ng/how-bbc-africa-eye-exposed-real-cause-of-abule-ado-explosion/amp accessed February 28, 2021.

[263] Nneoma Benson, 'Lagos Pipeline Explosion is Suspiciously Different- ERA/FoEN' (March 16, 2020). Available at https://www.icirnigeria.org/lagos-pipeline-explosion-is-suspiciously-different-era-foen/#.YDx19FQvxgU.whatsapp accessed February 28, 2021.

[264] Health and Safety Executive, 'Health and Safety Law: What you need to know' (2014) 1. Also available at http://www.hse.gov.uk/pubns/law.pdf accessed July 22, 2019.

[265] Onshore Gas and Pipelines Safety Strategy 2014-2017. Available at http://www.hse.gov.uk/gas/onshore-strategic-context.pdf accessed July 25, 2019.

The Control of Major Accident Hazard (COMAH) Safety Report is a "substantial report detailing risks due to plausible major accident scenarios generated at your site for your staff, nearby populations and the environment. The process involves identifying your hazards, demonstrating the preventive and mitigating measures you have in place and (where existing risk levels are identified as low as reasonably practicable or intolerable), developing options for additional preventive or mitigating measures."[266] This, of course, is often done before the commencement of any establishment or business by an operator.

The general duties of operators of all establishments under the 2015 COMAH Regulation include taking every necessary step to prevent major accidents and also limit their consequences on humans, health and the environment.[267] And the operator must demonstrate to the competent authority that it has taken every necessary measure as stipulated in the regulations and provide necessary assistance required by the competent authority to allow it inspect, investigate, and gather any information necessary in the performance of its duties under the regulation.[268]

Among the prior information to be included in its safety report that will be sent to the Competent Authority are the name of the operator, registered place of business, the position of the person in charge of the establishment, and sufficient information to assist with the identification of dangerous substances and the category of substances involved or that is likely to be present. Also, the report must contain information relating to the quantity and physical form of those dangerous substances. The nature of activities or activities planned to be undertaken by the project installation and storage facilities must also be reported. Furthermore, the operator must equally describe the immediate environment of this project, the factors likely to cause a major accident(s) or even aggravate their consequences, and where available, details of establishments bordering the new

[266] Peter Kinsman, 'COMAH Safety Reports.' Available at www.solve-scientific.co.uk/comah-safety-reports accessed July 23, 2019.
[267] Regulation 5, paras (1) of The Control of Major Accident Hazards Regulations 2015, United Kingdom.
[268] Regulation 5, paras (2-4) of The Control of Major Accident Hazards Regulations 2015, United Kingdom.

project, including operation sites that fall outside of the scope of COMAH regulations must also be revealed.[269]

Before COMAH, there was the 'Control of Industrial Major Accident Hazards Regulation (CIMAH) of 1984 with similar goal-setting ambition and responsibilities placed on operators of establishments always to report all necessary measures put in place to prevent accidents and limit their consequences on the people and the environment.[270] However, there were observable deficiencies in CIMAH which eventually led to the change to COMAH. Some of such deficiencies under CIMAH included the limitation of safety reports only to hazardous installations with dangerous substances and not on the entire site. Another shortcoming with CIMAH is that regulators only receive safety reports relating to those hazardous installations without necessarily requiring the operators to submit these reports to demonstrate how they are preventing and limiting the impacts of major accidents.[271] These limitations and other shortcomings with CIMAH have now been addressed under the current COMAH regulation.

Furthermore, COMAH safety reports as of today are implemented by an expanded 'competent authority' which includes the Health and Safety Executive (HSE) and the Environmental Agency in England and Wales on one hand, and the HSE and Scottish Environmental Protection Agency (SEPA) on the other hand.[272] This means enhanced coordination and creates more room for knowledge sharing among the jurisdiction for efficient implementation of COMAH regulation. But be that as it may, COMAH, on its part, faces challenges ranging from compliance-related issues to inadequate data such as those concerning measures put in place and how relevant these data are.[273]

To ensure the security of gas supply in the UK, the Gas Safety (Management) Regulations (GSMR) 1996 was issued by the Health and Safety Executive,

[269] Regulation 6, paras (1a-g) of The Control of Major Accident Hazards Regulations 2015, United Kingdom.
[270] The Control of Industrial Major Accident Hazards Regulation (CIMAH) 1984.
[271] Trevor Britton, 'Lessons Learned About Preparing COMAH Safety Reports' (Symposium Series No. 149, Crown Copyright 2003) 55, 56.
[272] Ibid, 55
[273] Trevor Britton 2003 (n271) 58.

providing a framework for GSMR safety case assessment and applying to natural gas conveyance through pipes to domestic users and other consumers.[274] The regulation covers four key areas that include:

(1) Safe management of gas flow through such networks, especially those areas supplying gas to households, and a duty to minimise risk from any gas supply emergency;
(2) Arrangements for handling such supply emergencies;
(3) Arrangements for addressing reported cases of gas escape and gas incidents;
(4) And the composition of the gas.[275]

Under the GMSR, a person who wishes to engage in the business of conveying gas to end-users must prepare a safety case report which contains information required under schedule 1 to the regulation. The prepared safety case must be accepted first by the HSE before the conveyor can begin to transport or convey gas to users.[276]

The information required under Schedule 1 to be contained in the safety case report must include the 'name and address of the duty holder; the description of the operations to be undertaken by that duty holder; a general description of the plant and premises a duty holder intends to use in connection with the operation including the geographical location where the pipes he uses joins the pipes used by other persons for conveying gas. And particulars of any technical specification, and of procedures or arrangements relating to operation and maintenance which the duty holder intends to follow in connection with the operation he intends to undertake insofar as they affect the health and safety of persons must also be included.'[277]

[274] Health and Safety Executive U.K., 'Gas Supply Legislation, Guidance and Summitting Gas Transporter Safety Cases.' Available at http://www.hse.gov.uk/gas/supply/legislation.htm accessed July 27, 2019.
[275] Health and Safety Executive (HSE), 'Gas Safety Management Regulations 1996: Safety Case Assessment Manual' (Version 7.1 November 2017) 1.
[276] Regulation 3 paras 1 of the U.K. Gas Safety (Management) Regulations 1996.
[277] Schedule 1 paras (1-4) of U.K. Gas Safety (Management) Regulations 1996.

Other information that a gas conveyor's safety case report must include is the statement of significant findings of the risk assessment a duty holder has made in accordance with regulation 3[278] of the Management of Health and Safety at Work Regulations 1992(1), and particulars of the arrangements he has made according to regulation 4(1) thereof.'[279]

Suppose there are several conveyors on a particular supply network or line, in that case, there must be appointed for that network- an emergency coordinator who must himself prepare the safety case for that network containing the information described under Schedule 2 of the Regulation and must have had it accepted by the HSE.[280] The particulars listed under Schedule 2 of the GSMR 1996 ranges from the name and address of the duty holder (the network emergency coordinator in this case) preparing the safety case to the description of the network in question as well as the geographical location where the pipes used by each of the gas conveyors meet or join.[281] A general description of the premises and plant facilities the duty holder intends to use alongside procedures described in the safety case must also be included in the report.[282]

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[278] Regulation 3(1) of the Management of Health and Safety at Work Regulations 1992 says *"every employee shall make a suitable and sufficient assessment of (a) the risks to the health and safety of his employees to which they are exposed whilst they are at work; and (b) the risks to the health and safety of persons not in his employment arising out of or in connection with the conduct by him of his undertaking, for the purpose of identifying the measures he needs to take to comply with the requirements and prohibitions imposed upon him by or under the relevant statutory provisions. Under regulation 3(2) a person who is self-employed must also equally risk-assess himself and of those likely to be injured because of his own activity. Under 3(3) the assessments must be reviewed by the duty holder or employer if there are reasons to believe they are no longer valid, or due to significant changes in related matters therewith. In subsection 4, if 5 or more employees are hired, a record of significant findings of assessment, and any group of employees identified as being especially at risk must be included in your safety case*." Regulation 4(1) of the Management of Health and Safety at Work Regulations 1992 says *"every employer shall make and give effect to such arrangements as are appropriate, having regard to the nature of his activities and the size of his undertaking, for the effective planning, control, monitoring and review of the preventive and protective measures."*

[279] Schedule 1 paras (5) of the U.K. Gas Safety (Management) Regulations 1996.

[280] Regulation 3 paras 1(B) and 2 of the U.K. Gas Safety (Management) Regulations 1996

[281] Schedule 2 paras (1 and 2) of the U.K. Gas Safety (Management) Regulations 1996.

[282] Schedule 2 paras 3(F) of the U.K. Gas Safety (Management) Regulations 1996.

Also, the safety case report must establish that the duty holder has demonstrated sufficient arrangements for coordinating the actions that would be undertaken to avert any supply emergency.[283] The safety case must also establish that duty holders have arrangements for monitoring gas flow within the network, so it is easier to identify impending supply emergencies.[284] The report must also demonstrate that procedures are in place to monitor situations during the period of emergency and establish how to restore supplies to users when emergency periods are over.[285] Among other particulars, a duty holder must also demonstrate in his safety case that when it is impossible to receive sufficient gas, arrangements are in place to direct conveyors to secure a reduced consumption rate and confirm that such directions were indeed followed.[286]

To ensure that the safety of installations and facilities used in conveying gas to households and other users remain a priority consideration among operators and duty holders, the GSMR 1996 requires that safety cases previously submitted and approved by the HSE be revised whenever appropriate,[287] but at least every three years.[288] A person who revises his safety case is not necessarily required under any provision to have the revision accepted by the HSE. However, suppose such revision will render the safety case significantly different from the previous version that was initially accepted, in that case, such revision shall not be sanctioned unless the HSE accepts the revision. In the event HSE sanctions the revision, regards must be had to the cumulative impacts of the proposed revision and any prior revisions made that did not require acceptance from the HSE.[289]

Under Regulation 5 of GMSR 1996, a person who prepared a gas safety case report and had it accepted by the HSE has a duty to conform with its content and shall ensure that so long as he conveys gas through networks described in the safety case or by a network emergency co-ordinator, that the arrangements and

[283] Schedule 2 paras (1-3) of the U.K. Gas Safety (Management) Regulations 1996.
[284] Schedule 2 paras 3(A) of the U.K. Gas Safety (Management) Regulations 1996.
[285] Schedule 2 paras 3(C) of the U.K. Gas Safety (Management) Regulations 1996.
[286] Schedule 2 paras 3(B) of the U.K. Gas Safety (Management) Regulations 1996.
[287] Regulation 4 paras (1) of the U.K. Gas Safety (Management) Regulations 1996.
[288] Regulation 4 paras (3) of the U.K. Gas Safety (Management) Regulations 1996.
[289] Regulation 4 paras (2) of the U.K. Gas Safety (Management) Regulations 1996.

procedures contained in the safety case is followed through.[290] In the event of any violation of the contents, procedures and arrangements described in the safety case by the conveyor, a substantive burden of proof is automatically placed on him as an accused in a criminal proceeding to show that:

(a) In the particular situation, it could not have been in the best interest of health and safety to follow laid down procedures under his accepted safety case, and that there was not enough time to revise the safety case in line with regulation 4; or

(b) The offence committed was a result of contravention by another person in line with regulation 6. The accused had taken all reasonable precautions and displayed due diligence to ensure that the prescribed procedure or arrangements were complied with.[291]

Regulation 6 requires every person conveying gas in a network and the network emergency coordinator to cooperate as far as possible to enhance compliance with gas safety regulations. This duty to co-operate also extends to emergency service providers; those who control gas production facility, storage facility or an interconnector that supplies gas to a network; licence holders under Section 7A of the Gas Act of 1986 (relating to persons licensed to transport gas or convey same through pipes situate in authorised areas under his licence or an approved area under a previous license holder; a person named under paragraph 5(1) of Schedule 2A to the Gas Act of 1986 (that is a gas supplier to very large consumers/premises above 2000000 thermal units per year).[292]

Under regulation 7 paragraph 1 of the GSMR 1996, British Gas PLC provides a telephone number service in Great Britain that shall be continuously manned and be assessable to the public for reporting excessive gas escape from a given network or leaks from leaks a fitting supplied from a gas network. Where British Gas is informed of gas escape from a network or from a fitting supplied from a

[290] Regulation 5 paras (1) of the U.K. Gas Safety (Management) Regulations 1996.
[291] Regulation 5 paras 2(A and B) of the U.K. Gas Safety (Management) Regulations 1996.
[292] Regulation 6 paras (1 and 2) of the U.K. Gas Safety (Management) Regulations 1996.

network but is not responsible for preventing the escape, British Gas shall immediately notify the person conveying the gas from that network or from 'that part of the network immediately upstream of the emergency control of the supply of gas to that fitting' about it. And the latter shall, within 12 hours of being so informed, prevent the gas from further escape.[293]

Also, where a gas conveyer reasonably suspects that the gas he is transporting has escaped and may enter a premise, he must as quickly as practicably take steps to avoid the danger thereof to persons from such escape. And where a person answerable for a premise reasonably suspects or knows that gas has escaped from a 'gas fitting'[294] in the premises where gas from a network has been supplied, he shall quickly take all reasonable measures to ensure that supplies are cut or shut off from such place to avert further escape. And in the event the gas continues to escape into the premises after supplies have been shut off or the smell of gas remains, the person responsible for such premises must immediately inform British Gas PLC.[295]

Where a conveyor is unable to prevent gas escaping from a network or from gas fitting connected to a network within the stipulated 12 hours from the time he became aware of the leaks, the only defence that attaches to him is to show that within the lawful time the regulation accords him, it was reasonably impracticable for him to have effectually stopped the escape. And that as soon as practicable, he took reasonable measures to stop the escape.[296]

Although in Norway, there is no single law that completely covers the health and safety aspects of the sector's operations, three acts are relevant for offshore

[293] Regulation 7 Paras 2-5 of the Gas Safety (Management) Regulation 1996.
[294] A gas fitting as defined by Regulation 2 paras 1 of the Safety (Installation and Use) Regulation 1998 as amended means 'gas pipework, valves (other than emergency controls), regulators and meters, and fittings, apparatus and appliances designed for use by consumers of gas for heating, lighting, cooking or other purposes for which gas can be used (other than the purpose of an industrial process carried out on industrial premises), but it does not mean- *(a) any part of a service; (b) any part of a distribution main or other type pipe upstream of the service pipe; (c) a gas storage vessels; or (d) a gas cylinder or cartridge designed to be disposed of when empty.
[295] Regulation 7 Paras 6-8 of the Gas Safety (Management) Regulation 1996.
[296] Regulation 7 Paras 10 of the Gas Safety (Management) Regulation 1996

health and safety in Norway. They include the Petroleum Act, the Ship Safety Act and Working Environment Act,[297] with the Petroleum Act being the most direct, especially on oil and gas damages occurring offshore.

Chapter 2 of Norway's Petroleum Act specifically provides for the health, safety, and environmental protection. The chapter covers "natural gas undertaking, any natural or legal person carrying out at least one of the following functions: production, transmission, distribution, supply, purchase or storage of natural gas, including liquefied natural gas (LNG), and which is responsible for the commercial and technical tasks or maintenance related to these functions, but shall not include final customers."[298] Further to this, to protect the environment and to ensure that appropriate steps are taken to enhance safety practices by licensees, there is a *financial strict liability provision* applicable to every licensee regardless of the fault[299] causing any loss or damage from pollution such as petroleum discharge or effluents from a facility or a well. The licensee is also strictly liable for the cost of reasonable measures adopted to limit or avert such loss and damage.[300]

The strict liability rule also applies to damages and loss experienced by any fisherman as a result of reduced fishing possibilities due to petroleum discharges or effluence.[301] However, the law is not specifically clear on how 'reduced fishing possibilities' could be quantified, thereby subjecting this to different interpretations. Howbeit, it could be said that having acknowledged this legal lapse, the framers of that law perhaps were intent for the courts to have a final opinion on this by providing for those affected to pursue legal action for compensation for damages before the courts within the jurisdiction where the damage occurred or is caused.[302]

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[297] Thomas K Svensen, Sandra Simonsen and Kristian M. Lind, 'Oil and Gas Regulation in Norway: Overview' (Thomson Reuters, 2019) 11.
[298] Section 1-6 paras (n) of the Act 29, November 1996 No. 72 Relating to Petroleum Activities in Norway.
[299] Chapter 8-3 of the Act 29, November 1996 No. 72 Relating to Petroleum Activities in Norway
[300] Chapter 7-1 of the Act 29, November 1996 No. 72 Relating to Petroleum Activities in Norway.
[301] Chapter 7-1 of the Act 29, November 1996 No. 72 Relating to Petroleum Activities in Norway.
[302] Chapter 7-8 of the Act 29, November 1996 No. 72 Relating to Petroleum Activities in Norway.

The law went further to define the scope of pollution and waste for which legal compensation could be sought. Under chapter 8-1 the pollution and waste from petroleum activities for which legal compensations could be sought would have occupied the fishing field or would have been caused by actions or a facility in connection with how the facility was placed.[303] The definition of pollution and waste referred to here included the introduction of liquids, solids, or gases to air, ground, or water. It also provides noise and vibrations, the extent of light and other radiation treated by the pollution control authority as pollution, and pollution having effects on temperature which causes or may cause nuisance and damage to the environment.[304]

Chapter 9 further provides that operations must be conducted in a way that ensures the highest level of safety is sustained and pursued in line with technological improvements.[305] Further to that, it is also provided that licensees must take necessary measures to deal with emergencies and accidents that may lead to fatalities and personal injuries, major damages to properties or pollution to avoid harmful impact and possibly return the environment to the condition it was prior to the accident. The Ministry too 'may issue rules about such emergency preparedness and such measures and may in this connection order co-operation between several licensees in matters of emergency preparedness.'[306]

And 'in the event of accidents and emergencies as mentioned in first paragraph, the Ministry may decide that other parties shall make available necessary contingency resources for the account of a licensee. The Ministry may also, for the account of the licensee, take measures to obtain the necessary additional resources in other ways.[307] More detailed provisions are also to be seen in the

[303] Section 8-1 of the Act 29 November 1996 No. 72 Relating to Petroleum Activities in Norway.
[304] Chapter 2 Section 6 of the 1981 Act Concerning Protection against Pollution and Concerning Waste (as amended June 20, 2003).
[305] Section 9-1 of the Act 29 November 1996 No. 72 Relating to Petroleum Activities in Norway.
[306] Section 9-2 of the Act 29 November 1996 No. 72 Relating to Petroleum Activities in Norway.
[307] Section 9-2 of the Act 29 November 1996 No. 72 Relating to Petroleum Activities in Norway.

Guidelines Regarding the Framework Regulations- "Rammeforskriften_veiledning" establishing basic requirements for health, safety and environment in petroleum operations.[308] These regulations also allude to guidelines and standards such as the NORSORK standards, the ISO standards, and the Standards of the American Petroleum Institute, which prescribes acceptable methods of compliance and what is required of operators.[309]

### 3.2.4. Alberta Canada: Effective Environmental Impact Assessment (EIA) Process

Environmental Impact Assessment (EIA) is a widely accepted tool in environmental management used by regulatory authorities in many countries to assess the environmental implications of a decision to initiate development projects and implement policies and plans.[310] Put simply, 'it is a process used by governments to forecast the effects of a planned project before carrying it out. It is also used to determine how the environmental impacts of a project can be mitigated by stipulating that project activities take place in a certain manner. Also, the government uses the information gathered from the process to decide if project proponents can still apply or not apply for a licence, approvals or other forms of permission needed to go ahead with the project.'[311]

In most oil-rich countries, even with extant EIA laws, this most critical part of the procedure for assessing the impact of a proposed project (that is public engagement) is often bypassed for overriding economic interest, most especially when it concerns oil and gas projects.[312] And unlike in Alberta where EIA process is rigorous and transparent, this same cannot be said about Nigeria and oil and gas projects especially with the States holding an overriding vested interest in

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[308] Guidelines Regarding the Framework Regulations (2011). https://www.ptil.no/contentassets/b26c9bec2a1b42f98d34180eb82ab8c6/before-2013/rammeforskriften_veiledning-2011_e.pdf accessed July 11, 2019.
[309] Thomas K Svensen, Sandra Simonsen and Kristian M. Lind, 2019 (n297)
[310] Peter Wathern, 'An Introductory Guide to EIA' in Peter Wathern (eds), 'Environmental Impact Assessment: Theory and Practice' (Routledge, 2nd edn 2004) 1.
[311] Fact Sheet: Environmental Assessments (Environmental Law Centre, Alberta, 2007) 1.
[312] Gbemre v. Shell Petroleum Development Company of Nigeria Limited and Others (2005) AHRLR 151

petroleum projects. In Nigeria, for instance, with the Land Use Act vesting control of lands in the State Governors[313] and a constitution that cedes control of natural resources beneath or above every land in Nigeria to the Federal Government,[314] the Government is often inclined to undertake projects without assessing the environmental impacts of such projects. And even when it does conduct, the input of the people most likely to be affected by the projects are often ignored in place of select stakeholders, thus undermining the cardinal essence of the act fully captured in section 7 and 9 of Nigeria's Environmental Impact Assessment Act (EIA) of 1992.

Under sections 7, 9(2)(3) and 21(3) of Nigeria's Environmental Impact Assessment (EIA) Act 1992, the Federal Ministry of Environment is required to publish the EIA of a proposed project so that the public can access the information on the planned project, have a say or raise objections before a final decision is taken. However, even where EIAs are conducted, not much of the project information is publicised, let alone do regulators indicate how community inputs factor into the final decision-making process. Also, even when the EIA Act 1992 provides a public register of all project EIAs including information from commencement to conclusion stage for public access, this is not always the case as access to these records is not usually available to the Nigerian public. Furthermore, where project documents prescribe community participation in EIA processes, this is often ignored as well. Or better still, when public engagement is attempted, it is usually limited to a select few or focused on community leaders.[315] This top-down approach to public engagement in the EIA process in Nigeria, coupled with the inability of the citizens to legally compel enforcement of EIA in oil and gas projects, is contributory to why regulators and operators always prefer to go ahead with their oil and gas projects without an adequate impact assessment conducted as can be seen in *Oronto Douglas v. Shell PDC and five others*. [316]

[313] Section 1 of Land Use Act 1978, Nigeria.
[314] Section 44 subsection 3, 1999 Constitution of Nigeria (as amended).
[315] John O. Kalonge, Problems with Public Participation in EIA Process: Examples from Sub-Saharan Africa (1996) Vol. 14, No. 3, Impact Assessment, 309-320 at 310.
[316] *Oronto Douglas v. Shell PDC and 5 others,* Unreported Suit No. FHC/CS/573/93, delivered on 17 February 1997

In *Oronto Douglas v. Shell PDC and five others*, the Appellant approached the Court seeking an order directing the Respondents not to proceed with construction of LNG facility without first carrying out mandatory EIA of the planned project as required by section 2 of EIA Act of 1992. However, the trial Court held that the Appellant had no locus standi to institute the action because he was not able to show prima facie evidence that the project development in question affected him or his properties personally.[317] Had the court found for the Appellant by mandating Respondents to conduct EIA of the planned LNG facility first before commencing development of the gas project, perhaps subsequent project development would have prioritised EIA and the role of the public in environmental protection.

Similarly, this was the underlining contention in the case of *Gbemre v Shell Petroleum Development Company and others*, where the applicant, among other reliefs, sought a declaration that the failure of the 1st and 2nd Respondents (Nigerian Government) to conduct EIA on the impact of flaring on the Applicant's community as both a violation of their fundamental rights to life and human dignity and a breach of section 2(2) of the EIA Act of Nigeria 2004.[318] Under the said section, it is provided that:

> Where the extent, nature or location of a proposed project or activity is such that it is likely to significantly affect the environment, its environmental impact assessment shall be undertaken in accordance with the provisions of this Act.

Yet regardless of the provision restricting the development of public or private projects without prior consideration of the environmental impact, EIA only recently became standard practice in environmental and project planning in Nigeria. Further to that, even though oil and gas development had long begun in Nigeria in the late 1950s, it was not until March 1991 that project developers including those in oil and gas began to undertake an impact assessment seriously.[319] Notwithstanding, two decades after the EIA Act was passed in Nigeria, the country's ecology

[317] Unreported Suit No. FHC/CS/573/93, delivered on 17 February 1997
[318] Gbemre v. Shell, 2005 (n312).
[319] Akpofure E and Echefu N, 'Environmental Impact Assessment in Nigeria: Regulatory Background and Procedural Framework' (EIA Training Manual, 2002) 63-74.

continues to suffer tremendous damages from waste and pollution, especially in oil and gas projects and due mainly to weak enforcement of EIA. According to Onyenekenwa, 'weak implementation has simply rendered the EIA Act of Nigeria, a paper tiger.'[320]

In Alberta, Canada, upstream oil and gas projects, oil sands and coal projects are specifically regulated by the Alberta Energy Regulator (AER), while the environmental assessment process for other types of industrial operations is administered by Alberta Environment and Parks (AEP).[321] The AEP also keep a single register of information on every environmental assessment activity on their website for accessibility and public referrals where necessary.[322] Like most oil-rich economies, Alberta is a province with significant oil and gas activity, but before new projects are developed, project impact assessment must comply with a number of laws such as the Environmental Protection and Enhancement Act (EPEA); the Water Act; the Public Lands Act; Oil Sands Act; and Coal Conservation Act.[323]

The application process begins with informing the Environmental Assessment Director about a proposed project, determining if such a project requires an EIA report based on Environmental Assessment (Mandatory and Exempted Activities) Regulation.[324] The regulation outlines certain activities as mandatory and must have an EIA report, while those exempted do not need one.[325] There are also discretionary projects which are not listed in the regulation but are left to the

[320] Onyenekenwa Cyprian Eneh, 'Managing Nigeria's Environment: The Unresolved Issues' (2011) Vol. 4, Issue 3, Journal of Environmental Science and Technology, 250-263 at 250.
[321] Alberta Government, 'Alberta's Environmental Assessment Process' (Updated December 2015) 1.
[322] Alberta Environment and Parks, 'Environmental Impact Assessment Activities.' Available at https://exts2.aep.alberta.ca/DocArc/EIA/Pages/default.aspx accessed September 28, 2019.
[323] Alberta Energy Regulator, 'Environmental Impact Assessment Reports' (2013-2019). Available at https://www.aer.ca/regulating-development/project-application/application-process/epea-and-water-act-EIA-projects accessed September 28, 2019.
[324] n290 [2].
[325] Schedules 1 and 2 of the Environmental Assessment (Mandatory and Exempted Activities) Regulation, Alberta Regulation 111/1993, (Amended up to and including Alberta Regulation 54/2017).

Director to decide whether further consideration is required under the EIA process.[326] On its own, the process of determining whether a proposed project requires an EIA also involves submitting a Project Summary Table and a map to the Director, who then makes the decision for EIA to be conducted or, where otherwise, calls for more information having considered the initial information insufficient. If the latter is, then together with already available information, the Director can request a Screening Report to be prepared and call for public input to enable him to decide if an EIA report is required for the new project.[327] On the other hand, even if a planned project is listed as exempted project, the Minister in charge of the Environmental Protection Enhancement Act may still call for an EIA report to be prepared.[328]

Where an EIA report is required, the proponent will, in accordance with requirements specified by the Director, submit a proposed term of reference to prepare the EIA report and make the same available to the public in accordance with the regulations.[329] Thereafter, after what he considers a reasonable time allowed for receiving public comments on the proposed terms of reference, the Director will issue final terms of reference setting out the scope of the EIA report to be prepared and publicised same in line with the regulations.[330] In addition, and except the Director provides otherwise, the EIA report on a new project must be detailed, including the following:

(a) Description of proposed activity and analysis of the reasons for the project;
(b) Analysis of site selection procedure for the project. This must also include reasons why the proposed site was selected and statements on alternative sites considered;

[326] n290 [2].
[327] n290 [22]; Section 45(1) of the Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000 Cap E- 12, Province of Alberta.
[328] Section 47 of the Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000 Cap E- 12, Province of Alberta.
[329] Section 48(1)(2) of the Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000 Cap E- 12, Province of Alberta.
[330] Section 48(3)(4) of the Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000 Cap E- 12, Province of Alberta.

(c) Identify existing baseline environmental conditions, including areas of major concern that should be considered;

(d) A description of potential negative and positive environmental, economic, social and cultural impacts of the project, including cumulative, temporal, spatial and regional considerations;

(e) Analysis of the importance of the potential impacts identified under previous clause (d);

(f) What plans are in place or will be put in place to mitigate potential adverse effects identified under clause (d);

(g) Identify human health-related issues that should be considered;

(h) Considered alternatives to proposed activity including alternative options where a proposed project activity did not continue;

(i) Plans developed or will be put in place to monitor environmental impacts that are likely to happen, and the plans developed or will be put in place to monitor proposed mitigation measures;

(j) Contingency plans developed or will be developed to respond to unforeseen negative impacts;

(k) Plans put in place or to be developed to minimise waste or recycle;

(l) How project proponent plans to implement a public consultation program in line with undertakings of the proposed activity and how results of that program will be presented;

(m) Plans developed or be put in place to reduce the production or release of environmental substances with adverse effects;

(n) And final terms of reference issued by the Director under Section 48(3) and any other information the Director deems necessary for assessing the project activity.[331]

Upon submission of the final EIA report to the Director, the proponent shall be required by the Director,[332] if there is any additional information the Director considers necessary towards a review of the proposed activity, the proponent must

[331] Section 49 of the Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000 Cap E- 12, Province of Alberta.

[332] Section 50 of the Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000 Cap E- 12, Province of Alberta.

provide the same.[333] And upon the request of the Director, he shall also publish the report and make same available according to regulations. [334] Furthermore, where the Director adjudges the report complete, he then must advise the Alberta Utilities Commission or the Alberta Energy Regulator that the EIA report is complete depending on if by nature of the proposed activity, it is a project that requires their approval.[335] And if the proposed activity can be reviewed within the meaning of the Natural Resources Conservation Board Act, the Director must advise the Natural Resources Conservation Board. And if it is in any other case, the Director will have to submit the EIA report to the Minister, including any additional information or recommendations deemed appropriate.[336]

The EIA report submitted by the Director to the Minister is in respect of approvals or registration or an amendment to prior approval or registration under the Water Act. The project proponent must apply for appropriate approvals, registration and licence or amendments before project development begins.[337] Approvals may be issued or granted subject to terms can condition by the Director. Such approval or refusal may also be granted in consideration of applicable written decision from or evidence before Alberta Utilities Commission, the Alberta Energy Regulator, or the Board, as defined by the Agricultural Operations Act under Part 2 of that Act or the Natural Resources Conservation Board on subject matters of registration or approvals.[338]

Where the Minister deems a project activity should not proceed because it is not in the interest of the public with regards to intent and purposes of the EPEA, the project developers will be informed by notice with a copy to the Director not to

[333] Section 51 of the Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000 Cap E- 12, Province of Alberta.
[334] Section 52 of the Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000 Cap E- 12, Province of Alberta.
[335] Section 53(b)(c) of the Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000 Cap E- 12, Province of Alberta.
[336] Section 53(a) of the Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000 Cap E- 12, Province of Alberta.
[337] Section 54(1) and 61 of the Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000 Cap E- 12, Province of Alberta.
[338] Section 68 (1-4) of the Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000 Cap E- 12, Province of Alberta.

issue or approve of the project.[339] Also, environmental impact assessments must be had in a situation where the proposed activities are inter-provincial or between Alberta and the Government of Canada. Under section 57 of the EPEA 2000, where an enactment of another province/territory or of Canada contains provisions that substantially operate for a similar purpose as those of Alberta, the Minister may, with respect to the proposed project that is governed in part by laws of Alberta and laws of the province involved or of the Government of Canada, enter an arrangement with a province/territory or with any Minister or Agency of Canadian Government to:

(a) Determine aspect(s) of the proposed activity governed by the laws of both jurisdictions;

(b) Jointly undertake EIA process or any aspect of it, or decide provisions that substantially serves the interest of both parties or

(c) Adopt an EIA or review process of one or both parties, including the adoption of similar documents and reports prepared by or under laws of one jurisdiction as part of the EIA or review process.[340]

On the other, whereas the Alberta EIA process for most projects remains thorough and supports environmental protection for its comprehensive scope, openness and public inputs in the decision-making process, it must be pointed that such prolonged procedures may disinterest prospective project developers or even investors in capital intensive ventures like oil and gas activity. Although while there is now a new law in Alberta- the Red Tape Reduction Act, which was received royal assent on 28 June 2019, aimed at cutting unnecessary regulations, reducing red tape by one-third and enhancing the ease of doing business as well make access to government services easier,[341] as at the time of writing, it is not how this law will affect the EIA process within and around the Province of Alberta.

[339] Section 64 of the Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000 Cap E- 12, Province of Alberta.
[340] Section 57(a-c) of the Environmental Protection and Enhancement Act, Revised Statutes of Alberta 2000 Cap E- 12, Province of Alberta.
[341] Government of Alberta, 'Red Tape Reduction Act' (2019). Available at https://www.alberta.ca/red-tape-reduction-act.aspx accessed September 28, 2019; The Preamble to the Red Tape Reduction Act, 2019, Alberta Canada.

### 3.2.5. Norway and the United Kingdom: Secured Network of Gas Pipelines

Owing to the ubiquitous nature of the energy delivery system[342] for which pipelines remain a critical national asset, any form of vandalism, attack(s) or explosion on pipelines will always result in the loss of millions in economic revenue, harm the environment and put the lives of citizens at risk.[343] As the cheapest, safest, and reliable means of transporting large quantities of liquid cargo and other media to distant locations,[344] notwithstanding any weather conditions, pipelines can ensure 24-hour transmission of products without disruption. They also would not produce emissions if constructed according to specification. They also take limited ground occupancy and often require less labour than other means of transporting petroleum products.[345] However, pipelines have increasingly become soft targets for terror and insurgent attacks in recent times, especially in most oil and gas-dependent economies. In the same manner, strategies to secure pipeline networks have continued to evolve, ranging from combining the traditional prescriptive approach coordinated by all levels of government[346] to engaging automated monitoring systems that allow risks to pipeline interferences to be easily detected.[347]

In Nigeria, although the Environmental Guideline and Standards for the Petroleum Industry in Nigeria specifically directed licensees and operators to adopt a combination of monthly on-foot and vehicular patrols including the installation of digital sensors on pipelines to enhance surveillance of transmission lines, the frequency with which pollution, vandalism, and disruptions occur on the facilities tends to two conclusions.[348] Firstly, licensees and operators are not complying with

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[342] Joseph R. Dancy and Victoria R. Dancy, 'Terrorism and Oil and Gas Pipeline Infrastructure: Vulnerability and Potential Liability for Cybersecurity Attacks' (2017) Vol. 2, Number 6, OGNREJ, 579-619 at 583
[343] Ibid, 581
[344] Omonbude E, 'The Transit Oil and Gas Pipeline and the Role of Bargaining: A Nontechnical Discussion' (2007) Vol. 35 Issue 12, Energy Policy, 6188–6194.
[345] Bogusz Wisnicki and others, 'The Concept of Effective Distribution Channels Illustrated by Oil and Natural Gas Mine Barnowko' (2015), The Proceedings of the International Scientific Conference for PhD. Students and Young Scientists, 331-338 at 336.
[346] Regulation 25, 26 of the Pipelines Safety Regulations 1996, United Kingdom.
[347] n312 [336].
[348] Part 5.D.1.1. of the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria 1992 (Revised 2002)

the guidelines and standards, secondly, the regulatory agencies responsible for monitoring and enforcing compliance with the guidelines are not enforcing the protocols. For instance, while naturally occurring accidents and human errors are inevitable in oil and gas operations, the frequency with which avoidable and foreseeable accidents occur in the Nigerian petroleum industry has given cause for further scrutiny of the enforcement of health, Safety and Environmental compliance and monitoring in the Nigerian oil and gas sector. The Government did acknowledge that 'the current system regarding maintenance, health and safety in the Nigerian petroleum sector is not acceptable. According to her, major safety incidents even go without proper investigation and without sufficient responsibilities being apportioned.'[349] For instance, according to the NNPC, between 2001 and 2019 a total of 45,347 incidents involving fatal losses were recorded in the midstream and downstream segments of the industry.[350] Placing a such number of incidents side by side with NNPC's position that Guidelines in the sector were formulated in line with the industry's best practices and standards does suggest the following outcomes:

(1) That it is one thing to have guidelines to control accidents in the sector, and yet another to ensure that the enforcement and monitoring of compliance with issued guidelines across the sector are efficient. A record of more than 45,000 accidents over 18 years simply lends itself to a poor compliance and monitoring regime in the sector;[351]

[349] Ministry of Petroleum Resources, Nigeria, 'National Petroleum Policy' (2017)
[350] Fakoyejo Olalekan, 'Pipeline Explosion: Over 45,000 Incidents Recorded in 18 Years- NNPC' (January 21, 2020). Available at https://nairametrics.com/2020/01/21/pipeline-explosion-over-45000-incidents-recorded-in-years-nnpc/ accessed February 28, 2021.
[351] Udeme Akpan, Sebastian Obasi, Olasunkanmi Akoni, Bose Adelaja, Ediri Ejoh, Esther Onyegbula, Prince Okafor and Joseph Oso, 'Five Killed as Pipeline Fire Razes Homes, Vehicles in Lagos: Security Agencies, Communities are Accomplices- NNPC' (Vanguard, January 21, 2020). Available at https://www.vanguardngr.com/2020/01/individuals-households-count-losses-as-5-get-killed-in-abule-egba-pipeline-explosion/ accessed March 31, 2021.

(2) A proper safety management system to drive enforcement and compliance with guidelines in the industry is also lacking in the sector;[352] and

(3) That it is only a sector whose punitive measures do not go far enough allows culpable parties to go scot-free and still no reasonable care is taken to avert or minimise foreseeable accidents. The result of poor accountability for oil and gas accidents[353] and the failure of the guidelines to provide for a *financial strict liability* against culpable licensees as obtainable in Norway[354] means that strict compliance with guidelines in Nigeria is often compromised.

In Norway and the United Kingdom, pipeline security is coordinated between regulators and licensed operators to enable a high level of safety that is maintained and further improved according to technological development.[355] Accordingly, an operator with a license to exploit and produce natural gas in Norway must 'initiate and maintain security measures that contribute to the avoidance of deliberate attacks against facilities and shall at all times have contingency plans in place to deal with such attacks on facilities. Also, such facilities, including pipelines[356] 'shall be placed at the disposal of public authorities for drills which the operators shall participate in, to the extent this is necessary,' with the Ministry of Petroleum and Energy, of course, ordering the implementation

[352] Uzoma Nnadi and others, 2014 (n261) 4, 5.
[353] E. O. Omodanisi, A. O. Eludoyin and A. T. Salami, ' A Multi-perspective View of a Pipeline Explosion in Nigeria' (2014) Vol. 7, International Journal of Disaster Risk Reduction, 68-77 at 76.
[354] Chapter 8-3 of the Act 29, November 1996 No. 72 Relating to Petroleum Activities in Norway.
[355] Chapter 9, Section 9-1 of the Act 29, November 1996 No. 72 Relating to Petroleum Activities in Norway.
[356] Chapter 1, Section 1-6 (D) of the Act 29, November 1996 No. 72 Relating to Petroleum Activities in Norway.

of these measures.[357] Also, upon a licence being granted, under section 10-7 of chapter 10 of the Act relating to Petroleum Activities in Norway, the licensee may be compelled by the Petroleum Ministry to provide security such as approved by the Ministry for the fulfilment of obligation undertaken under the licence. That is, where it is pertinent to secure pipelines to fulfil obligations under an operators' licence, the Ministry could demand that the licensee takes appropriate steps to secure pipelines so the objectives under the license can be achieved.

Also, in the United Kingdom, the pipeline network is well secured because the process of enforcing protection and monitoring of the safety of pipelines is undertaken by a well-coordinated regulatory regime involving central and local regulators. Licensed operators also have a role in ensuring that pipelines are secured and safe.[358] The use of digital sensors to monitor pipelines is also enforced. Although ownership of oil and gas in the UK is in the British Crown, with her Majesty's Government and Departments (Oil and Gas Authority/Department for Business, Energy and Industrial Strategy) administering the sector from London, however, pipeline security is coordinated between the central (London) and local authorities. This is particularly important, especially with most receiving and transmission facilities located in areas farther from the central authorities.

Under section 25 subsection 6 of the U.K. Pipelines Safety Regulations 1996, where a pipeline passes through the areas of two or more local authorities, the duties under the Pipeline Safety Regulation may be discharged by the local authorities traversed. And where they have been informed by the Health Safety Executive (Executive) that there is an accident or will be a major accident hazard pipeline in its areas, the local authorities affected together must prepare a single plan detailing how an emergency relating to a possible major accident in its area will be dealt with.[359] While preparing the emergency response plan, the local authority shall consult with the operator of the pipeline, the Executive and any other person considered by the Oil and Gas Authority (Authority) as appropriate.

[357] Chapter 9, Section 9-3 of the Act 29, November 1996 No. 72 Relating to Petroleum Activities in Norway.
[358] The Pipelines Safety Regulations 1996, United Kingdom.
[359] Section 25 subsection 1 of the Pipelines Safety Regulations 1996, United Kingdom

As often as right, this plan shall be reviewed every three years. Also, any local authority whose area a pipeline traverses must be furnished promptly with every helpful information they will need to prepare a plan.[360] The local authority may also charge a fee from the operator for preparing, reviewing, and revising a plan pursuant to the execution of an emergency plan in case of major accidents.

Under section 15 of the PSR 1996, individuals are prohibited from causing damages to pipelines as this could endanger persons. Under section 13, 'the operator shall ensure that a pipeline is maintained in an efficient state, in efficient working order and good repair.' Under section 10 of the PSR, 'the operator shall ensure that modification, maintenance or other work on a pipeline is carried out in such a way that its soundness and fitness for the purpose for which it has been designed will not be prejudiced.' Also, where different operators are using each section of a pipeline, the operators shall co-operate with one another if necessary to enable them to comply with the pipeline safety regulation.[361] And whoever contravenes the provision of the PSR may be charged and prosecuted in a court but not without the opportunity to defend their action or where the defaulting actor honestly believe that he had exercised due diligence regardless of contravening the PSR.[362]

### 3.2.6. The United States and the United Kingdom: An Independent Regulatory and Institutional Authority

In order to maximise natural gas resources in a manner that does not impact the environment negatively, Baldwin and others believe that it is not only enough to have good institutions and regulatory authorities in place, but they also argue that a sound regulatory regime must be independent, seen to be fair in dealings, efficient, transparent, and accountable with legislative authority. [363] Conflict of interests in oil and gas management and operation remains one of the most critical challenges driving ineffective regulation and weak enforcement of laws, poor

[360] Section 25 subsection 2-4 of the Pipelines Safety Regulations 1996, United Kingdom
[361] Section 17 of the Pipeline Safety Regulation 1996, United Kingdom.
[362] Section 28 of the Pipelines Safety Regulation 1996, United Kingdom.
[363] Baldwin, Cave and Lodge, 'Understanding Regulation: Theory, Strategy and Practice' (OUP, 2nd edn, 2012) 27

management of resources, and opacity in sector governance that eventually leaves the sector unattractive for potential investors.

In Nigeria for example, the regulation of the downstream and upstream segment of the oil and gas industry was carried out by the Department of Petroleum Resources (now replaced by the new Upstream Regulatory Commissions and the Downstream/Midstream Regulatory Authority).[364] However, the DPR had numerous responsibilities that compromised its regulatory efficacy thus leaving the environmental impact of oil and gas operation poorly controlled. For example, while on one hand the DPR was responsible for maximising revenue from oil and gas operation on behalf of the Government, on the other hand, the department must ensure that the environment is protected from oil and gas pollution.[365] However, combining both economic and environmental functions always draw a conflict of interest as the government's priority in the sector is to ensure that it makes as much revenue from oil and gas operation at the instance of safe environmental operation in the oil and gas sector.

As for the U.S. the 2010 Macondo disaster in the Gulf of Mexico revealed how an agency with the tasks of maximising profit from the sector's operations and regulating how the operations of the sector impact the environment compromised the health and safety of workers and the Gulf environment.[366] This, in fact, was the main conclusion from findings into the causes of the 2010 oil disaster that resulted in the death of 11 persons on board a drilling facility on the US Gulf of Mexico.[367]

The US Minerals Management Services (MMS), which was the regulatory agency in charge of the management of offshore operations, was found to be complicit with oil and gas companies and accused of being in bed with operating companies,

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[364] Oge Udegbunam, 'Nigeria Scraps DPR, PPPRA, PEF as New Oil Agencies take Off' (Premium Times, October 19, 2021).
[365] Nigerian Upstream Petroleum Regulatory Commission, 'Roles of the DPR-Upstream' (2022). Available at https://www.nuprc.gov.ng/upstream accessed August 23, 2022.
[366] Jacqueline Weever, 'Offshore Safety in the Wake of the Macondo Disaster: Role of the Regulator' (2014) 38 HJIL 379, at 381
[367] Peter Jan Honigsberg, 'Conflict of Interest that Led to the Gulf Oil Disaster' (2011) 41 Environmental Law Institute, 10414-10418, at 10414.

thereby prioritising revenue generation from the companies over its safety and compliance oversight responsibilities. By doing this, the MMS relaxed its rules and practically conceded its oversight control and monitoring operations of the sector to operating companies.[368]

The recommendation from findings of the bipartisan Commission on how to avoid and mitigate future disaster led to the 2011 breakup of the MMS into three independent institutions, namely (1) the Bureau of Ocean Energy Management (BOEM) in charge of managing offshore resource development;[369] (2) the Office of Natural Resources Revenue (ONRR) responsible for collecting onshore/offshore revenue, verifying and disbursing same on behalf of American people;[370] and (3) the Bureau of Safety and Environmental Enforcement (BSEE) saddled with enforcement of safety and environmental regulations.[371] The unbundling of regulatory powers of the MMS has since enhanced independent oversights and improved the safety of operations in the oil and natural gas industry in the US.

In addition to this, the BSEE adopted fresh Safety and Environmental Management Systems (SEMS) rules believed to be the most comprehensive in the history of US Offshore to protect the health, safety and environmental risk often associated with the industry.[372] The new rules require an operating company on the US offshore to install a safety management system like the safety-case-type practice used in the UK and Norway and adjudged as having considerably minimised accidents and improved health, safety and environment in their sectors. Under the safety case regimes, expert regulators will have to confirm whether an operator has an accepted safety case in place and whether the companies are implementing their safety case to reduce risk to the barest minimum.[373] The Bureau now has an investigation and review unit that respond promptly to allegations or evidence of

[368] Jaqueline Weever 2014 (n366) 381.
[369] Bureau of Ocean Energy Management (BOEM), 'Regulatory Reforms' https://www.boem.gov/Regulatory-Reform/ accessed August 8, 2019.
[370] Jaqueline Weever 2014 (n366) 402.
[371] Bureau of Ocean Energy Management (BOEM) 2019 (n369).
[372] Jaqueline Weever 2014 (n366) 387.
[373] Jaqueline Weever 2014 (n366) 402.

misconduct and unethical behaviour by the Bureau employees, pursue allegation of misconduct by oil and gas companies involved in offshore energy projects.[374]

Although the United Kingdom has not experienced any major accidents from its oil and gas sector for the past 20 years, to optimise production and maximise economic recovery from its Continental Shelf (UKCS), the government broke up the powers of the UK's former principal oil and gas regulator- the Department of Energy and Climate Change (DECC), now the Department for Business, Energy and Industrial Strategy (BEIS).[375] Before now, the Secretary of the DECC was responsible for regulating the UK's oil and natural resources development.[376]

But after many years of record investments, it was found that discoveries on the UKCS were becoming smaller yet expensive and that some existing assets had been in operation for more than 30 years beyond their target life span. Also, production fell by 38 per cent from 2010 to 2013, meaning that production from the UKCS stood around 500 million barrels of oil equivalent and declined by 360 million barrels over the period and costing the Home Office Treasury 6 million pounds in tax losses. A further decline in exploration activities was also found to have resulted in less than 150 million barrels in the last two years before 2014.[377]

This, among other things, led to the UKCS Maximising Recovery Review (popularly referred to as the Sir Ian Wood Review) that recommend the creation of a new independent regulator in charge of operational regulation of the UKCS, supervise licensing process, and maximise economic recovery of UK's oil and gas reserves in the short, medium and long term.[378] Upon recommendation, the Oil and Gas Authority (OGA) was first created as an agency under the DECC (now BEIS). But in 2016, the Energy Act established the OGA fully as an independent regulatory body in the form of a government incorporated company.[379] The Energy Act also

[374] Caroline Hacquet, 'Macondo: The Disaster that Changed the Rules (SCOR: Global Pand C, April 2014).
[375] The Ian Wood Review, 'UKCS Maximising Recovery Review: Final Report' (February 24, 2014) 1.
[376] Philip Thomson and Julia Derrick, 'United Kingdom: Oil and Gas Regulation 2019' (Oil and Gas Laws and Regulation) 1
[377] The Ian Wood Review 2014 (n375) 5.
[378] ibid 6.
[379] Philip Thomson and Julia Derrick 2019 (n376) 2.

amended the UK Petroleum Act and other associated legislation to formally and officially vest in OGA powers and functions initially exercised by the Secretary of State, ranging from the imposition of a wide range of sanctions allowing the OGA to enforce a new regulatory regime as it were. Other powers of the OGA include collecting data and samples, dispute resolution and attendance of OGA at operational committee meetings.[380]

A framework document between the OGA and BEIS also governs OGA's government relationship. Furthermore, the Secretary of the BEIS continues to oversee general policy and legislative framework guiding the operations of the OGA, as well as imposition of financial sanctions of more than 1 million pounds which is outside the remit of the OGA. The BEIS also retains its enforcement powers over the offshore environmental regime and decommissioning and implements the UK's health and safety regime through the Health and Safety Executive (HSE).[381]

### 3.2.7. Norway: Constitutional Right to Environmental Protection

Norway, like Nigeria, has different framework laws for environmental protection.[382] Some of which are the Pollution Act, Nature Diversity Act, Greenhouse Gas Emission Trading Act, Product Control Act, Environmental Information Act etc.[383] But regardless of these environmental regulatory regimes, Norway understands the critical contributions citizens can make to drive robust environmental protection in Norway. That is why under Article 112 of the Norwegian Constitution it is provided that:

> *"Every person has the right to an environment that is conducive to health and to a natural environment whose productivity and diversity are maintained. Natural Resources shall be managed on the basis of*

[380] Ibid 2,3.
[381] Philip Thomson and Julia Derrick 2019 (n376) 3.
[382] Article 112 of the Norway Constitution of 1814 with Amendments through 2014.
[383] Government of Norway, 'Acts and Regulations' (2021). Available at https://www.regjeringen.no/en/find-document/acts-and-regulations/id438754/?ownerid=668&documenttype=loverogregler/forskrift&term= accessed March 7, 2021.

*comprehensive long-term considerations which will safeguard this right for future generations as well.*

*In order to safeguard their right in accordance with the foregoing paragraph, citizens are entitled to information on the State of natural environment and on the effects of any encroachment on nature that is planned or carried out.*

*The authorities of the State shall take measures for the implementation of these principles."*

While the first and third paragraph of the provision guarantees Norwegians the right to a healthy environment and oblige the State to ensure that a healthy environment is feasible, the second paragraph of the Article places a constitutional duty on the State to ensure that Norwegians have access to information on their environment. This includes such information about any activity that is planned or being carried out that could affect their natural environment. Although in many jurisdictions, like Norway, access to official environmental information can still be accessed by any citizen who can judiciously invoke the freedom of information act,[384] however, to have this provision as a constitutionally guaranteed right shows the importance that Norway places on public participation in environmental health and safety. This is further exemplified by its Environment Information Act, whose purpose "is to ensure public access to environmental information thereby making it even easier for individuals to contribute to the protection of the environment. And to also help Norwegians protect themselves against injury to health and environmental damage, as well as have the citizens influence both public and private decision-makers in environmental matters."[385]

The Environmental Information Act also requires explicitly administrative agencies to make public participation in the preparation of legislation, programmes and plans concerning the environment. And this must be done at stages and within

[384] Section 1-2 of Norway Freedom of Information Act 1970 No. 69 (as amended by Act of 20, June 2003 No. 45)
[385] Section 1 of Norway Environmental Freedom of Information Act of 9th May 2003 No. 31

the time frames that give the citizens actual opportunities to make contributions or influence any decision that has been made. To this end, the administrative agencies must also provide the public with all relevant information.[386] Also, during the preparation of legislation, or programmes and plans that may significantly impact the environment, a public hearing must be held prior to when a final decision is taken. And the account of the environmental impact of the proposal shall be available at the hearing.[387]

In Nigeria, citizens right to a healthy and safe environment is not clearly guaranteed by the constitution or any other applicable law. Although section 20 of the 1999 Constitution requires the government to protect and safeguard the environment for the good of Nigerian citizens, this duty, however, is not enforceable by interested parties desiring to protect their environmental rights.[388] Where the government fails to save or take reasonable steps to protect the environment and, by extension, the overall public interest, private citizens or groups cannot successfully raise an action to bind the government to its obligation under section 20 of the constitution. This is because section 6 subsection 6 paragraph C of the Nigerian Constitution makes the right to environmental protection non-justiciable in any court in Nigeria. This also means that a private citizen cannot even demand enforcement of environmental rights without first establishing that he has locus in the cause he sought to be had. And that is by showing that there is a direct injury caused to the applicant or his property because of a dangerous environmental activity.[389]

In terms of impacts from greenhouse gas emission, according to Friends of the Earth Nigeria, no activities in Nigeria contributes more emissions than oil and gas activities. The sector is responsible for contributing about 75 per cent of emissions

[386] Section 20 of Norway Environmental Freedom of Information Act of 9th May 2003 No. 31
[387] Section 20 of Norway Environmental Freedom of Information Act of 9th May 2003 No. 31
[388] Godwin Uyi Ojo and Nosa Tokunbor, 'Access to Environmental Justice in Nigeria: The Case of Global Environmental Court of Justice' (ERA and FOE, October 2016) 4.
[389] *Oronto Douglas v. Shell Development Company Limited and 5 Others*, Unreported Suit No. FHC/2CS/573/93. Ruling was delivered February 17, 1997.

from associated gas in Nigeria.[390] But regardless of the nature of the impact of these activities on people, communities and vegetation of the Niger Delta region, the 1999 Constitution of Nigeria and Nigeria 2007 Environmental Law that is intended to protect and secure the nation's environment are legally unenforceable against damaging oil and gas activities.[391] As a result, both the primary environmental protection agency and private citizens are precluded from taking any action to protect the environment or themselves from the effects of oil and gas. With over 70 per cent of greenhouse gases emitted in the country emanating from oil and gas operations, the inability of the citizens to successfully seek redress in the courts of law to protect themselves and safeguard the integrity of the environment remains deeply troubling.

### 3.2.8. Effective Regulatory Regime of Carbon Disclosures Practices

The rise in voluntary carbon disclosure,[392] according to Pinkse and others, followed the growth in voluntary carbon trading due to pressures from several environmental groups that firms begin to track and report their emissions.[393] Also, after command and control and market-based instruments that were the traditional measures for regulating environmental pollution, disclosure of environmental or emission information became viewed and described as the *'third wave for pollution control.'*[394]

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[390] Osuoka Asume and Roderick P, 'Gas Flaring in Nigeria: A Human Rights, Environmental and Economic Monstrosity (Environmental Rights Action (ERA) and Friends of the Earth International (FoE), 2005) 36.

[391] Section 6(6)(c) of the Constitution of Nigeria, 1999 (as amended)

[392] The idea that necessitated its adoption for this study has already been offered by several authors under related concepts such as are not limited to 'environmental information reporting,' 'greenhouse gas protocol,' 'emission inventory,' 'sustainability disclosure and reporting,' or 'corporate responsibility reporting.'

[393] Ans Kolk, David Levy and Jonathan Pinkse, 'Corporate Responses in An Emerging Climate Change Regime: The Institutionalisation and Commensuration of Carbon Disclosure' (2008) 17(4) EAR, 719-745 at 725.

[394] CHING Tak-Yan, 'Environmental Information Disclosure: An Effective Tool for Pollution Control in China' (Centre for Environmental Policy, Imperial College London, 2009/2010) 1. Also available at https://workspace.imperial.ac.uk/environmentalpolicy/Public/Executive%20Summaries%202009-2010/Pollution%20Management%20Option/Ching_10_Exec%20Summary.pdf

In another analysis, Dasgupta and others stated that the practice of governmental emission disclosures began in the United States as a 'niche' activity, holding a spot that conventional regulators could not claim for technical and institutional reasons. By the late 1980s, the emergence of the 'right-to-know' laws envisaged that those exposed to pollutants had the right to be aware of the risks they were exposed to. And joining the consensus from regulators and politicians that conventional regulatory instruments could not apply to numerous toxic pollutants whose dangerous impacts were already documented, the call for disclosures increased.[395]

Therefore, with public welfare threatened, the Toxic Release Inventory (TRI) which mandated thousands of polluting facilities to report on their emissions publicly was enacted by the US government. Accordingly, other countries began endorsing similar policies that focused on reporting emission volumes. For instance, in 1992, Canada initiated its National Pollutant Release Inventory. Then, there was South Korea's Pollutant Release and Transfer Register in 1999 and 2000. Next, Australia and Europe sanctioned the National Pollutant Inventory and Pollutant Emission Register. Finally, in 2001, Japan and Mexico followed Japan's Pollutant Release and Transfer Register and Mexico's 'Registro de Emissions y Transferencia de Contaminantes.'[396]

While noting that the practice is new to environmental protection and climate action, Guo described it as the practice of making information about the environment open to the public.[397] Agreeing with Guo, Professor Kolk observed that disclosure is beginning to attract huge compliance from corporate investments in recent times. From a study conducted by the Institute for Environmental Management and KPMG in 2000, 35% out of the 250 biggest corporations in the world had issued environmental reports.[398]

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[395] Susmita Dasgupta and others, 'Disclosure Strategies for Pollution Control' in 'Tom Tietenberg and Hank Folmer (eds), 'The International Yearbook of Environmental and Resource Economics (Edward Elgar Publishing Limited, 2006/2007) 94, 95

[396] ibid

[397] Xiaomei Guo, 'On Disclosure of Environmental Information' (2010) Scientific Research, 1166-1169 at 1166

[398] Ans Kolk, 'Green Reporting' (January-February Issue of Harvard Business Review, 2000). Available at https://hbr.org/2000/01/green-reporting accessed February 26, 2018.

More than a decade thereafter, with further pressures mounting from regulators, stock exchanges, investors, rating agencies, civil societies and consumers demanding companies to increase measurement and disclosures of their environmental performance in an unprecedented manner,[399] it is clear the practice has come to stay. And as the 2013 'Survey of Corporate Responsibility Reporting' by KPMG International confirms, "Almost all of the world's largest 250 companies report on Corporate Responsibility."[400] Accordingly, "Reporting is now the norm across all these sectors, with at least 62% of companies in every sector producing a (CR) report."[401]

Being recognised for public disclosures of greenhouse information can strengthen a company's relationship with different stakeholders, including their customers and the public.[402] Also, the companies themselves stand to understand their environmental performance better and act towards improving their practice and operations.[403] On the other hand, reporting and disclosures also bring about compulsion that woke companies to pay attention to environmental concerns. For companies that have good environmental practices, it gives them a competitive edge.[404]

Also, other than inducing or inciting corporate self-regulation, information disclosures empower civil society organisations in monitoring the activities of polluters themselves and following up on environmental agencies of government.[405] According to Guo, the practice could 'serve as the foundation for

[399] Global Reporting Initiative, 'Sustainability and Reporting trends in 2025: Preparing for the Future' (2015) 4. Also available at https://www.globalreporting.org/resourcelibrary/Sustainability-and-Reporting-Trends-in-2025-1.pdf accessed February 26, 2018.
[400] The KPMG International, 'The KPMG Survey of Corporate Responsibility Reporting' (KPMG Global Centre of Excellence for Climate Change and Sustainability, 2013) 10.
[401] ibid 27.
[402] World Resources Institute and World Business Council for Sustainable Development, 'Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard' (Revised Edition 2004) 12.
[403] CHING Tak-Yan 2009/2010 (n394).
[404] Xiaomei Guo, 2010 (n397).
[405] CHING Tak-Yan 2009/2010 (n394).

public participation in pollution control.' With the information in the public domain, a form of pressure and incentive is put on the environmental management of businesses, thereby enhancing the efficiency of management of a business and lowering the cost of pollution control by the government.[406]

On the other hand, while it is believed that disclosures may reward a company in capital markets and products and improve its relationship with regulators, Gupta and others argue otherwise. They stated that, in effect, companies could end up paying more penalties to regulators and communities because of a rise in the price of emission following disclosures.[407]

Apart from the difficulty with the availability of activity data and their accuracy from companies and investments, regulating and maintaining a disclosure system is criticised for being highly capital intensive.[408] Some countries' political and legal barriers may also prevent them from adopting and implementing a disclosure framework.[409] For instance, in places like Nigeria, Russia, China and Brazil, where the government: (1) holds majority stake and active participation in oil and gas activities;[410] and (2) prioritises revenue generation over environmental protection from the oil and gas pollution; or (3) prefers protecting its reputation, it may be difficult for these countries to regulate or maintain a standard reporting and disclosure system for their oil and gas industry.[411] Interestingly, in 2018, Nigeria issued the Flare Gas (Prevention of Waste and Pollution) Regulation to prohibit flaring. This shall be discussed in further detail in subsequent chapter.

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[406] Xiaomei Guo, 2010 (n397).
[407] Susmita Dasgupta and others 2006/2007 (n395) 97.
[408] The IBRD/The World Bank Group, 'Getting to Green: A Sourcebook of Pollution Management Policy Tools for Growth and Competitiveness (2012) 122.
[409] ibid
[410] The NNPC Group, 'Joint Operating Agreement' (2021) https://nnpcgroup.com/NNPC-Business/Upstream-Ventures/Pages/Joint-Operating-Agreement.aspx accessed December 2, 2021.
[411] Sections 7 and 8, National Environmental Standard Regulatory Agency Act 2007, Nigeria.

### 3.2.9. Mitigating Emission-Impact through Cooperative Arrangements under the Paris Climate Agreement 2015

In order to mitigate climate change and support the most vulnerable nations to adapt to its associated impacts, delegates in Paris in December 2015 adopted the new climate change agreement that entered into force on November 4th 2016.[412] Under that Agreement, parties resolved for the first time to submit their ambitious plan of action that will help reduce global temperatures[413] below 2 degrees Celsius pre-industrial levels and ensure efforts to limit the temperature increase to 1.5 degrees Celsius is pursued to minimise threats and impacts of climate change considerably.[414]

In order to achieve this objective, the agreement allows parties to cooperate voluntarily with one another in carrying out their country-specific planned actions towards successfully meeting their 'nationally determined contributions (NDCs).[415] That is, notwithstanding that each party must formulate domestic plans and pursue same them according to individual capabilities,[416] delegates also thought that given the disparity in national circumstances where some have stronger capabilities than others, carbon reductions pursued through cooperation by parties could equally drive the success of the agreement. Parties, therefore, agreed and established cooperative arrangements to voluntarily rely on alternative solutions for increased climate ambitions, environmental integrity, and sustainable development.[417]

The three approaches that parties can cooperate on include internationally transferred mitigation outcomes (ITMOs);[418] a mechanism that supports GHG

[412] Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 'Carbon Mechanisms: The Paris Agreement and Article 6' (Last Modified December 30, 2016) 1. Available at https://www.carbon-mechanisms.de/en/introduction/paris-agreemen-and article-6/ accessed August 9, 2019.
[413] Article 3 Paris Agreement 2015.
[414] Article 2 (1A) Paris Agreement 2015.
[415] Article 6 Paris Agreement 2015.
[416] Article 4 (2) Paris Agreement 2015.
[417] Article 6 (1) Paris Agreement 2015.
[418] Article 6 (2) Paris Agreement 2015.

mitigation and sustainable development;[419] and Non-market-based approaches.[420] Their objectives are to:

(a) Promote mitigation of GHG emissions while promoting sustainable development;
(b) Incentivise and facilitate public and private entities' participation in mitigation of GHG emissions as authorised by a party;
(c) Contribute to the reduction of emission levels in a host country, which benefits from mitigation activities that result in emission reductions that another party can use to meet its NDC; and
(d) Deliver overall global emission mitigation.[421]

Although project participation with respect to any of the cooperative approaches remains voluntary,[422] it must be said these cannot replace ambitious domestic actions that parties to the agreement agree to pursue individually.[423] In any case, it is important to state that extending participation to both public and private entities on the authorisation of their respective national governments[424] could be one route that bodes well for developing economies, particularly those whose natural gases are more flared than used. Furthermore, bilateral cooperation on project activity that minimises flare emissions can be pursued in an arrangement under ITMOs. This is because, of the three cooperative arrangements introduced by the Paris Agreement, ITMOs represent the most direct bilateral approach in which a GHG reduction project can be implemented in country A and the resulting credits from emission reductions achieved from that project transferred to country B and counted as part of the latter's NDCs implementation.[425] The credit transfers are then facilitated in a transparent manner that complies with accounting guidelines acceptable to the Conference of the Parties (COP) used for calculating avoided emissions achieved under a project to avoid double counting.[426]

[419] Article 6 (4) Paris Agreement 2015.
[420] Article 6 (8) Paris Agreement 2015.
[421] Article 6 (4) (a-d) Paris Agreement 2015.
[422] Article 6 (1) Paris Agreement 2015.
[423] n369
[424] Article 6 (3) Paris Agreement 2015.
[425] n369
[426] Article 6 (2) Paris Agreement 2015.

In essence, developing countries like Nigeria that continues to struggle to minimise flaring from its oil and gas sector can secure a bilateral project agreement with another government or a foreign private entity to develop infrastructures that reinject or redirect its flared gas using ITMOs in accordance with Article 6 paragraph 4 of the Paris Agreement. And in line with the rules and procedures yet to be adopted under the new Paris Rulebook for implementing the agreement, hopefully sometime in December 2019 at the 25th Conference of the Parties (COP 25) meeting in Santiago, Chile in December 2019.[427] Under the proposed Rulebook, parties have a set of responsibilities to fulfil to benefit from the use of ITMOs towards NDCs.[428] Under the 23rd to the 27th Katowice Draft Text of 2018, the party participating in the use of ITMOs will, among other things, submit information on how the cooperative approach it partakes in:

(a) Supports GHG mitigation and its NDC implementation;
(b) Ensures environmental integrity without increasing GHG emissions via robust, transparent governance and quality of mitigation outcomes, and under stringent reference levels and baselines set conservatively and below business-as-usual emission projections;
(c) Avoids measures that are unilateral and practices that are discriminatory in cooperative approaches;
(d) Do not cause environmental harm;
(e) Avoid causing negative economic or social impacts to any party; and
(f) Ensure that where mitigation outcome is measured and transferred in metric other than CO2 equivalent that the participating parties determine, that this is consistent with the NDCs of the participating parties etc.[429]

But as the first implementation period of the agreement scheduled for 2020 approaches, and the treaty already received 197 signatories and 185 ratifications

[427] UNFCCC, 'Santiago Climate Change Conference- December 2019.' Available at https://unfccc.int/Santiago accessed September 17, 2019.
[428] UNFCCC, 'The Katowice Texts: Proposal by the President' (2018) 36. Available at https://unfccc.int/sites/default/files/resource/Katowice%20text%2C%2014%20Dec2018_1015AM.pdf accessed September 16, 2019.
[429] Ibid, 36, 37

as of August 9th, 2019,[430] it could be recalled since 2015 in Paris where delegates set for themselves a three-year deadline to complete all negotiation on a fair and transparent guideline before 2020,[431] that process is still ongoing. Although some progress has been made, until the Katowice Draft Text, whose draft modalities underpins the implementation of the entire Paris Agreement, including its article 6(4) adopted by COP 25 in December 2019 becomes binding, uncertainties will continue to impede willingness among parties to cooperate on emission reduction projects using ITMOs for implementing NDCs. Most recently at the Conference of the Parties (COP26) meeting in Glasgow in December 2021, parties recommit their willingness to cooperate for emissions reduction followed by the adoption of a rulebook for implementing the agreement, new indications still suggest poor cooperation for emission reduction between parties.

### 3.3. Conclusion

Although no oil and gas sector have the perfect regulatory or governance structure for managing and efficiently utilising natural gas resources, this chapter has attempted to investigate specific practices deployed in Alberta, Canada, the U.K, the U.S., and Norway to support gas administration and resource maximisation. As analysis has shown, no oil and gas-dependent economy can effectively manage its oil and natural gas resources without transparency in its regulatory and governance processes driven by an independent regulatory authority with clear functions devoid of conflict of interest. Neither can they fully maximise and utilise these resources without an incentivised private sector, effective monitoring and security of infrastructure, effective enforcement of EIA that actively ensures public engagement in the process.

Also, without implementing a robust workplace health and safety culture, and coordinating effective oversight control between the different levels of government, it is always difficult that the centre can go it alone in terms effective

[430] UNFCCC, 'Paris Agreement- Status of Ratification' https://unfccc.int/process/the-paris-agreement/status-of-ratification

[431] UNFCCC, 'The Katowice Climate Package: Making the Paris Agreement Work For All' https://unfccc.int/process-and-meetings/the-paris-agreement/katowice-climate-package#eq-10

regulatory process. Therefore, it is critical that all levels of government authority are engaged in the coordinating oil and gas operation to avoid accidents, and continuous gas emission without immediate response. Nigeria can draw useful lessons from how the local and provincial authorities participate in controlling the impact of oil and gas operations in their locality by complementing the work of the central authority without a conflict arising. In addition, to provide further guidance for a new legal framework that could drive gas utilisation, the study also finds that the economic sector struggling to cut its carbon capacity can leverage the cooperative approaches under Article 6 of the Paris Agreement 2015 to attract technology or funding to the emission reduction programme. However, among other things, this would depend on the right bilateral conditions agreed between two or more State parties or between a State and a private entity.

## CHAPTER 4: LAW AND POLICIES FOR NATURAL GAS UTILISATION AND EMISSION-IMPACT MITIGATION IN NIGERIA: AN APPRAISAL

### 4.1 Introduction

According to the Department of Petroleum Resources (DPR), factors responsible for flaring emissions in Nigeria include ageing infrastructures, underdeveloped domestic gas market, insecurity and vandalism, low flare fines, overdependence on oil and poor funding of joint venture projects.[432] In 2010, Nigeria's annual emission estimate was approximately 90 million metric tons of carbon dioxide equivalent per year, out of which gas flaring is the leading source.[433] Although gas flaring is a unique component of carbon emission that contributes to global warming, it can be defined as the controlled burning of natural gas that is mixed with crude oil during the production of oil from the ground.[434] This chapter recognises that the Nigerian oil and gas sector is traditionally one of the major sources of carbon emissions due to its consistent flaring of gas. This chapter looks at how flaring emission from oil and gas production in Nigeria has been or is being regulated. It will also look at what policies are being put in place to minimise waste and improve domestic use of natural and associated gases produced in the country.

### 4.2 Natural Gas Utilisation in Nigeria: Policies and Criticisms

#### 4.2.1 The Nigerian Gas Master Plan 2008

According to Ingwe, those who described the Nigerian Gas Master Plan (GMP) 'as representing a renaissance for socio-economic and environmental development did so from an informed study and understanding of the Master Plan's mission, vision, and commitment of its engineers and architects.'[435] Following what was

[432] Department of Petroleum Resources (DPR) 'New Framework for National Gas Flare Commercialisation Program (Nigeria Gas Competence Seminar, Abuja. December 13, 2016).
[433] Cervigni, Rogers and Henrion (eds), 'Low-Carbon Development: Opportunities for Nigeria' (The World Bank, 2013) 59.
[434] Justice in Nigeria, 'Gas Flaring in Nigeria: An Overview' in Dennis Otiotio, 'Gas Flaring Regulation in the Oil and Gas Industry: A Comparative Analysis of Nigeria and Texas Regulation (University of Tulsa College of Law 2013) 10.
[435] Richard Ingwe, 2014 (n45).

considered an explosion in gas demand in Nigeria in 2005, and with global gas demand exceeding 20 billion cubic feet per day, the Nigerian Government decided on the Gas Master Plan for the Nigerian gas sector in 2008.[436] The GMP, according to the Nigerian National Petroleum Corporation (NNPC), was a solid framework for the Nigerian gas sector aimed at expanding infrastructures within the domestic gas market, as well as helping the country become a significant global actor in the international gas market.[437] According to Nwaoha and Wood, the GMP is 'targeted at achieving a gas-driven economic growth with a strong focus on gas to power projects.'[438] Accordingly, it was approved on 13th February 2008 to serve as the guide for commercial gas exploitation and management of the gas sector in Nigeria.[439]

In line with the ambition to develop the economy through gas, under the GMP, three objectives were set out:

(1) To ensure long-term guarantee of energy security in Nigeria;
(2) To stimulate the multiplier effect of gas in the domestic gas market; and
(3) Reposition the country competitively in the international gas market.[440]

To further these objectives to address the challenges bedevilling the sector and leverage gas production to grow the economy, the Government proceeded on a roadshow to sensitize stakeholders about the investment opportunities inherent in the GMP. Further, bids were invited from firms and consortiums interested in investing in the development process of the gas infrastructure blueprint.[441]

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[436] ibid
[437] The Nigerian National Petroleum Corporation (NNPC), 'Nigerian Gas Master Plan.' Available at https://www.nnpcgroup.com/NNPC-Business/Midstream-Ventures/Pages/Nigerian-Gas-Master-Plan.aspx accessed August 29, 2019.
[438] Chikezie Nwaoha and David A. Wood, 'A Review of the Utilisation and Monetisation of Nigeria's Natural Gas Resources: Current Realities' (2014) Vol. 18, JNGSE, 412-432 at 413.
[439] The Nigerian National Petroleum Corporation (NNPC) 2019 (n437)
[440] ibid
[441] Bukki Oyinlola, 'Is the Gas Master Plan a Master Plan?' (Published in the BusinessDay Newspaper on Thursday 27, 2008).

On the other hand, a lack of proper legal, regulatory and essential policy framework proved to be the stumbling block in meeting the objectives of the GMP.[442] For example, at the time, two critical bills- 'the Downstream Gas Bill and the Gas Fiscal Reform Bill' that could have enhanced the success of the master plan eventually did not become law, therefore, leaving the master plan without a corresponding regulatory governance regime.[443] It was later thought that the Petroleum Industry Bill (PIB) would address these issues in the Nigerian gas sector as the subject matters of the bills and other regulatory enforcement issues were captured in the then-proposed law.[444] However, following the prolonged absence of this new governing legislation (PIA) and a lack of an independent decision-making body in place, most decision-making obligations were compromised, thus increasing the risk and uncertainty in the gas market.[445]

Also, according to the 2017 Nigeria National Gas Policy, the GMP that was designed to ensure that the domestic gas market develops full-blown by 2015 could not deliver all its set targets as Nigeria continue to lack critical gas infrastructure and still falls short of domestic supply obligations.[446] For example, the planned expansions of Escravos-Lagos Pipeline System (ELPS) 2, Obiafu-Obrikom-Oben (OB3) link pipeline, and proposed LNG Trains 7 could not be completed. Also, the planned 18-20 per cent annual supply growth rate needed to service domestic demands were not met; there was also a failure to achieve the projected 15GW generating capacity from gas to power by 2018 as is presently observable in the country's electricity sector.[447] Other identifiable shortcomings that the GMP could not address include reduced sales in liquefied natural gas, Compressed natural gas (CNG) and gas to liquids (GTL). Also, exploration and production companies

[442] Emeka Onyegbule, 'An Overview of the Nigerian Downstream Gas Market' (Market Competition and Rates Division, NERC Abuja, November 27, 2012). Available at https://pubs.naruc.org/pub.cfm?id=5385E110-2354-D714-512F-1FED305A7575 accessed August 30, 2019.
[443] Bukki Onyinlola 2008 (441)
[444] Olaniwun Ajayi LP, 'Nation Gas Policy- Series I: Governance and Industry Structure' (OALP Oil and Gas Newsletter, July 3, 2017.) 2. Available at https://olaniwunajayi.net/wp-content/uploads/2017/07/Oil-Gas-Newsletter-NATIONAL-GAS-POLICY-SERIES-I.pdf accessed August 29, 2019.
[445] Emeka Onyegbule, 2012 (n442).
[446] Ministry of Petroleum Resources Nigeria, 'Nigeria National Gas Policy: Nigerian Government Policy and Actions' (2017) 13.
[447] Olaniwun Ajayi LP 2017 (n444) 1.

were still unable to meet their daily sales outstanding (DSO) benchmark, notwithstanding levels of DSO being lowered.[448] There was also the contention that successive governments of Nigeria often pay low prices to suppliers of feed gas which end up being insufficient to attract or secure the kind of investments required to develop the gas sector.[449]

### 4.2.2 Examining the 2016 National Gas Flare Commercialisation Programme (NGFCP)

Having understood that harnessing flared gas using commonly accessible state-of-the-art technologies could stimulate investment, provide jobs for the citizens and drive economic growth, the Minister of State for Petroleum Resources launched the Nigerian Gas Flare Commercialisation Programme (NGFCP) on December 13, 2016, after official approval was had from the federal cabinet.[450] The objective of the NGFCP is to eliminate flaring of gas using technically and commercially sustainable gas utilisation projects that are developed by third-party investors who must be competent and invited to partake in transparent but competitive bid processes.[451]

According to the Department of Petroleum Resources (DPR), the NGFCP is a well-thought-out intervention from technical, commercial, legal, and developmental standpoints. It provides the opportunity to attract considerable investment in economically viable gas flare capture projects that could permanently address a 60-year environmental problem in Nigeria. Furthermore, through the programme, Government will provide gas for sale via competitive and transparent bid processes. And to ensure the programme is a success, a structure that will provide 'project bankability' for buyers of flared gas has been devised.[452] The buyers who must be successful licence bidders will also be required to set up facilities through

[448] ibid
[449] Chikezie Nwaoha and David A. Wood (n438)
[450] The Department of Petroleum Resources, 'Nigerian Gas Flare Commercialisation Programme' (2019). Available at http://www.ngfcp.gov.ng/ accessed August 24, 2019.
[451] ibid.
[452] The Department of Petroleum Resources 2019 (n450).

technology with which they can receive and deliver gas from points of flare to points of processing and eventual end-users.

On the other hand, some of the concerns raised around the NGFCP include the absence of regulations and guidelines around the bid processes, which some analysts believe could inhibit transparency of the commercial process and impact the confidence of prospective investors.[453]

### 4.2.3 Prospects of the 2017 National Gas Policy of Nigeria

To accelerate the gas revolution, on the 28th of June 2017, the Federal Executive Council of Nigeria approved the National Gas Policy (NGP) that articulates the strategies, set goals and an implementation plan that will put in place the right institutional, regulatory, legal and commercial framework for the Nigerian gas sector.[454] The policy's mission is to move Nigeria from a 'crude oil export-based economy and reposition the country as an attractive gas-based industrial economy that prioritises local demands for gas while also developing a significant presence on the global market.[455] In order to succeed with the mission and vision, the policy plan will eliminate every barrier limiting investment and development of the gas sector,[456] including the provision of access to infrastructure and a clearly articulated pricing path while strengthening its institutional capacities.[457]

In other words, the NGP fundamentally builds on what the Petroleum Minister referred to as the "7 Big Wins to Grow the Oil and Gas Sector," which was launched earlier in October 2016.[458] The 7 Big Wins represents a set of 7 policy roadmaps developed to stabilise and provide an enabling environment for maximising

[453] Thisday, 'Ending the Menace of Gas Flaring' (Thisday, August 14, 2018 2:41 am). Available at https://www.thisdaylive.com/index.php/2018/08/14/ending-the-menace-of-gas-flaring/ accessed August 30, 2019.
[454] Ministry of Petroleum Resources Nigeria 2017 (446) 13.
[455] ibid 14
[456] Ministry of Petroleum Resources Nigeria 2017 (446) 13.
[457] Templars, 'The National Gas Policy 2017' (July 2017) 1. Available at https://www.templars-law.com/wp-content/uploads/2017/07/THE-NATIONAL-GAS-POLICY2c-2017.pdf accessed August 25, 2019.
[458] Ministry of Petroleum Resources Nigeria 2017 (446) 13.

investment opportunities in the oil and gas sector and expanding the growth of the Nigerian economy.[459] Under the roadmap, the government plans to develop a robust regulatory and legislative framework to remedy existing regulatory challenges and failures in the sector.[460]

To achieve that regulatory robustness for the sector, the government broke down its proposed Petroleum Industry Bill (PIB) before parliament into four different parts (host community, governance, legal and fiscal regimes) to ensure a less cumbersome legislative deliberation and passage into law.[461] Secondly, the government planned to create a business environment and a level playing field that drives investment to raise income from the industry's upstream, midstream, and downstream sectors. And to achieve this, it planned on reviewing all present joint venture agreements in the industry to maximise wealth across the segment of the sector, encourage investment in associated gas schemes, and implement long-term maintenance initiatives.[462]

Furthermore, given Nigeria's capacity as the ninth-largest natural gas reserve holder globally, the third strategy under the new NGP is to reposition the country on the path to a gas revolution. That is, to transition the economy from an oil-based one to a gas-based economy.[463] At the same time, the fourth win and gas policy is to increase local refining capacity to ensure the adequacy of supply and distribution of products throughout Nigeria and to the African sub-region.[464] The fifth policy ambition is to stabilise the main oil and gas producing region and minimise insecurity and threats to production facilities. Or put simply, 'to win peace and progress through diplomacy and deployment of the dividends of oil wealth to impact the lives of those that suffer the collateral damage of oil exploration and exploitation.'[465] The sixth roadmap focuses on ensuring a tradition of transparency and industry efficiency, streamlining operations of the sector in

[459] Forbes Africa, 'Seven Big Wins: Repositioning Nigeria's Oil and Gas Sector' (Penresa, 2017 Edition) 3.
[460] Ministry of Petroleum Resources Nigeria 2017 (446) 14.
[461] Forbes Africa, 'Seven Big Wins: 2017 (n459).
[462] Forbes Africa, 'Seven Big Wins: 2017 (n459) 4.
[463] Ministry of Petroleum Resources Nigeria 2017 (446) 14.
[464] Forbes Africa, 'Seven Big Wins: 2017 (n459) 4.
[465] ibid

line with global best practices, and strategically reforming every segment of the industry. Lastly, the government will strive to eliminate production obstacles that will make Nigeria visible globally by engaging in stakeholder management and international coordination.[466] And to show its preparedness to ease existing bottlenecks, it is stated that businesses can now be registered online at any time of the day, thereby exiting paperwork and problems previously faced in that regard.[467]

But only recently, a unilateral decision by the Government to revoke oil licenses before expiration deadlines has raised serious questions concerning Government's sincerity towards pursing the fundamental objectives of the NGP. In 2017, a few months after approving the new NGP, the government moved ahead to revoke all existing oil licenses unilaterally. A step that analysts have described as is a breach of contract for all intent and purposes. A deprivation of licensed operators' rights and benefit accruing from their operations and one that has now increased licensee's exposure to investment risk in the oil and gas sector.[468]

Although under the principal Petroleum Act, the Minister of Petroleum is entitled to revoke licenses where in his opinion he believes that an affected licensee or stakeholder has failed to abide by the governing petroleum law[469] or did not keep to his obligations under Paragraph 24 of the Act or failed to pay up his royalties even if not demanded by the Minister. Whereas the government may argue its action follows the Petroleum Act, Olujobi and Owyewunmi still contend that the decision contravenes the 'due process principle and the doctrine of natural justice' as enshrined under sections 36(5) and 44(1) of the Nigerian Constitution of 1999 as amended. Those provisions respectfully provide for a fair hearing on civil rights and obligations of individuals and frown against compulsory acquisition of private property unless it accords with the law.[470]

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[466] Forbes Africa, 'Seven Big Wins: 2017 (n459) 4.
[467] ibid
[468] Olusola Joshua Olujobi and Olabode Adeleke Oyewunmi, 'Annulment of Oil Licences in Nigeria's Upstream Petroleum Sector: A Legal Critique of the Costs and Benefits' (2017) Vol.7 Issue 3, IJEEP, 364-369 at 366.
[469] Paragraph 23 (1) (a) of the 1st Schedule to the Nigerian Petroleum Act of 1969.
[470] Olusola Joshua Olujobi and Olabode Adeleke Oyewunmi 2017 (n468) 367.

A similar shortcoming that needs to be mitigated but was not addressed under the NGP relates to the President's unilateral powers[471] This, in the opinion of this study, could lead to a conflict of interest, unfair advantage, and disincentivises prospective investors in the sector. It is interesting to note that the Petroleum Industry Bill 2012 was primarily considered as the 'beacon of hope' for the success of the current 2017 NGP. However, on the one hand, the policy, while looking to ensure transparency in operations and a bidding system that gives every investor equal opportunity, on the other hand, did not contemplate the effect of decorating the President which such unilateral decision-making power nor what the effects of such officialdom could be on the confidence of investors in or towards the sector.[472]

Under section 191 of the Petroleum Industry Bill, it is stated that the President of Nigeria 'notwithstanding the provisions of subsection 3 of section 190 or any other provision of this Act, shall have the power to grant a license or lease under this act.' However, as it currently stands, that provision could become law if not changed, thereby raising further concern among potential investors. More particularly, given the recent enactment of the Nigerian Content Policy into the Nigerian Oil and Gas Industry Content Development Act, which provides for prime consideration to be given to indigenous operators in the award of licenses, contracts, and for home-made goods,[473] the likelihood of favourable treatment from the President when awarding such licenses unilaterally to indigenous operators could certainly be flavoured with political considerations. Should this become the case, it might negatively impact the sector's growth.

### 4.2.4 Revisiting the West African Gas Pipeline (WAGP) Project

The West African Gas Pipeline (WAGP)[474] is owned and operated by the West African Gas Pipeline Company Limited (WAPCo) - a limited liability company whose

[471] Section 191 of the Nigerian Petroleum Industry Bill 2012.
[472] George Etomi, Ivie Ehanmo, Samson Ozah and Diana Abasi Okop, 'Gas Regulation: Nigeria' (March 2019) ** Available at https://gettingthedealthrough.com/area/15/jurisdication/18/gas-regulation-nigeria/# accessed August 28, 2019.
[473] ibid
[474] The West African Gas pipeline, owned and operated by WAPCo, is a project that delivers natural gas for industrial activities and power generation to consumers

equity is controlled by Chevron West African Gas Pipeline Limited (36.9%), the Nigerian National Petroleum Corporation (24.9%), Shell Overseas Holdings Limited (17.9%), Takoradi Power Company Limited (16.3%) Societe Togolaise de Gaz (2%), and Societe BenGaz S.A (2%).[475] The pipeline project was intended to encourage investments in Nigeria's vast natural gas resources, contribute to flare reductions, and provide cheaper and affordable energy sources in a region that highly needs electricity.[476] And remarkably so, it is a first-time energy development project across the West African Sub-region (between Nigeria, Benin, Togo and Ghana) and is widely regarded as the 'needed catalyst to kick-start the region's economic revival.'[477]

The pipeline is 678-kilometre long, linking an existing Escravos-Lagos pipeline at the Itoki Natural Gas Export Terminal of the Nigerian Gas Company to a beachhead in Lagos. And from there, proceeds offshore to Takoradi in Ghana with delivery laterals on the mainline branching into Cotonou in the Benin Republic, Lome in Togo and Tema in Ghana.[478] The diameter of the main pipeline is 20 inches, while the laterals extending into Cotonou and Lome are 8 inches each and 18 inches en route Tema. The final limb terminating at Aboadzi Takoradi is part of the main pipeline. In terms of capacity, although the Escravos-Lagos pipeline has a capacity for 800 million standard cubic feet (MMscf) of gas per day, originally, the WAPCo system would carry a volume of 170 MMscf per day and peak over time by 460 MMscf each day.[479]

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across Nigeria, Benin, Togo and Ghana. The pipeline is believed to possess to possess the capacity to transport 170 million cubic feet of natural gas per day. See Chevron Nigeria. Available at https://www.chevron.com/worldwide/nigeria accessed March 12, 2018.

[475] West African Gas Pipeline Company Limited, 'Company Profile.' Available at http://www.wagpco.com/about-wapco accessed August 12, 2019.

[476] William Wallis, 'West African Gas Pipeline Stops Short of Expectations: Cost of Moving Gas Supply is a Thorny Issue' (May 14, 2014). Available at https://www.ft.com/content/5b049efc-bb14-11e3-948c-00144feabdc0 accessed January 25, 2018.

[477] George Akpan and Emma S. Ukpanah, 'The West African Gas Pipeline Project: Problems and Prospects' (OGEL, 2004) 1-2

[478] West African Gas Pipeline, 'About the Pipeline.' http://www.wagpco.com/the-project/wapco-pipeline?lang=en accessed August 12, 2019.

[479] Ibid; See also, William Wallis, 2014 (n476)

However, whereas on the one hand, the operating company WAPCo have maintained that the pipeline 'transports purified natural gas free of heavy hydrocarbons, liquids and water which they insist is ideal and suited as fuel for power plants and industrial application,'[480] since it commenced operations in 2009, it has been criticized for the shortage of product supplies to member states.[481] According to Wallis, it has struggled to meet the consumption demands of partners since it came on stream in 2009.[482] This challenge is believed to stem from the fact that before products Escravos enters Benin, its first destination is Lagos- 'a city that contributes about 12% of Nigeria's GDP,' and 'whose economy alone is almost twice that of Ghana,' thus, after supplying to Lagos, not much of gas is left for the other countries.[483] Other reasons attributed for gas supply shortages to customers is said to range from policy to politics, security and vandalism, funding, poor infrastructure and associated shut-ins.[484] In August 2012, damage caused by a ship on Togolese waters to the pipeline led to the WAGP being shut down, and force majeure declared. It took eleven months before deliveries were resumed after the force majeure was lifted on July 11, 2013.[485]

### 4.2.5 The Future of Trans-Saharan Gas Pipeline (TSGP) Project

The Trans-Saharan Gas Pipeline (TSGP) was initiated between the Nigerian Ministry of Energy and the then Algerian Energy and Mining Minister Mr Chekib Kehlil,[486] with a memorandum of understanding (MOU) to jointly develop the

[480] ibid
[481] Ministry of Petroleum Ghana, 'Gas Master Plan' (June 2016) 59.
[482] William Wallis, 2014 (n476)
[483] ibid.
[484] Adedayo Ojo, 'Nigeria's Unending Gas Dilemma' (Africa Oil + Gas Report, February 25, 2013). Available at http://africaoilgasreport.com/2013/02/opinion/nigerias-unending-dilemma-by-adedayo-ojo/ accessed August 12, 2019.
[485] Bala-Gbogbo Elisha, 'West Afrcian Gas Pipeline Company Resumes Deliveries After Repairs' (July 18, 2013). Available at http://mobile.bloomberg.com/news/2013-07-18/west-african-gas-pipeline-co-resumes-deliveries-after-repairs.html accessed August 12, 2019.
[486] European Union, 'Trans-Saharan Gas Pipeline Conference: Future Possibilities for Diversification of EU Energy Supply' (IP/07/1037, 9 July 2007).

project between Nigeria and Algeria signed on January 14th, 2002.[487] The project, described as the first of its kind in South-South integration with the potential to strengthen the role of energy in closing the gap between Africa and Europe, will run from its departure terminal in Brass (Niger Delta, Nigeria) and arrive at either El Kala or Beni Saf terminal in Algeria.[488]

With a yearly capacity of 30 billion cubic meters or 1,059 billion cubic feet of natural gas,[489] the project objectives include:

(1) Diversifying export route for the marketability of Nigerian natural gas;
(2) Strengthening regional cooperation;
(3) Enhancing sub-regional economic integration in line with NEPAD objectives;
(4) Creating wealth and alleviating poverty through the expansion of economic opportunities in the sub-region;
(5) Boosting domestic gas supply in the countries;
(6) Boosting GDP and improving the standard of living in the sub-region; and
(7) Assisting in the fight to reduce desertification through a reliable and sustainable gas supply.[490]

In continuation of actions that will facilitate project objectives, the national oil companies of both countries went on to execute a preliminary study agreement in March 2003 before concluding a feasibility study which the sponsors accepted in September 2006. Further to this, in February 2008, Niger Republic was admitted as a third co-sponsor of the project, culminating in an Intergovernmental Agreement (IGA) signed on 3rd July 2009 in Abuja, Nigeria, among the three countries.[491] And as part of its first direct activity to launch gas into the project pipeline, in 2013, Nigeria set aside 400 million dollars to construct the Calabar-

[487] Nigeria-Algeria Pipeline, page 3. Available at http://addisababa.mfr.air/uploads/Nigeria_-_Algeria_Pipeline_19959.pdf accessed August 12, 2019.
[488] ibid
[489] NEPAD, 'Nigeria-Algeria Gas Pipeline Project.' See http://www.nepad.org/content/gas-pipeline-%E2%80%93-nigeria-algeria-gas-pipeline-project accessed February 1, 2018
[490] Nigeria-Algeria Pipeline 2019 (n487) 3-4.
[491] ibid 3.

Ajaokuta-Kano pipeline.[492] And went further to announce an additional 450 million dollars raised through Eurobonds in 2014 for the project, which it says will be completed by 2020.[493]

However, while the project's long-term goal is to deliver natural gas from Nigeria to Europe,[494] one of the pertinent issues facing project completion is land acquisition and compensation claims due to the project's proximity covering 4,300 kilometres.[495] Others are security challenges along the pipeline route, cost implication of the project and continued political and regulatory uncertainties in Nigeria.[496] In terms of the project's cost, as at the time of launching the project in 2001, Algeria and Nigeria estimated project construction cost to be 7 billion dollars. But with delayed progress, this has changed as the cost of service companies has also increased, meaning that final cost has equally gone up and thus impacted the project's pace of progress.[497] As of 2010, the estimated project cost was valued at around ten and even up to twenty-one billion dollars.[498]

As of 2012, the North African Post stated that depending on the diameter of the pipeline, around 10 to over 13 billion dollar-worth of investments was needed for the project. And that a pipeline diameter of 48 cm and 58 cm will cost 10 billion and 13.7 billion dollars respectively, while the gas gathering centres will take up another 3 billion dollars.[499] Unfortunately, notwithstanding the push for lowered

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[492] UNECA and NEPAD, '16 Infrastructure Projects for African Integration' (2018) 17.
[493] Anayo Ezugu, 'The Long Awaited Trans-Saharan Gas Pipeline Project is to be Completed by 2020' (April 10, 2017 at 01:00 GMT). https://realnewsmagazine.net/oil-gas/trans-saharan-gas-pipeline-completed-2020/ accessed August 1, 2019.
[494] NNPC Group, 'Trans-Saharan Gas Pipeline Project, Viable- GMD.' Available at http://www.nnpcgroup.com/PublicRelations/NNPCinthenews/tabid/92/articleType/ArticleView/articleId/172/TRANS-SAHARA-GAS-PIPELINE-PROJECT-viable--GMD.aspx accessed March 12, 2018.
[495] Nigeria-Algeria Pipeline 2019 (n487)
[496] Forbes Africa, 'Seven Big Wins: 2017 (n459) 4.
[497] Benjamin Auge, 'The Trans-Saharan Gas Pipeline: An Illusion or a Real Prospect?' (French Institute of Foreign Relations, June 2010) 4.
[498] ibid 20.
[499] The North Africa Post, 'Trans-Saharan Gas Pipeline Operational if Obstacles are Overcome' (2012). Available at http://northafricapost.com/1510-trans-saharan-gas-pipeline-operational-by2015-if-obstacles-overcome.html accessed August 1, 2019.

payments in the sector, it is almost impossible that figures will return to what they used to be in the early 2000s.[500]

There is also insecurity and geopolitical threat to the future of the project. Security challenges exist in Southern Algeria, Niger Republic and Northern Nigeria, particularly along the proposed routes of the project. Those routes remain very volatile, especially with terror groups taking advantage of open borders, attacking pipelines and vandalizing gas installations.[501] In Algeria, the former Salafist Group for Preaching and Combat (GSPC), which transformed into Al Qaeda in the Islamic Maghreb (AQIM), pose a significant threat along the pipeline route in Niger. There is also, the Touaregs which continue to fight the Nigerien Government and expel any presence of government in the Agadez region and mainly their base north of Niger and where the pipeline has to pass.[502] Similarly, there exist in Northern Nigeria Boko Haram terrorists disturbing the daily peace, while in Nigeria's energy hub, that is the Niger Delta region, militia groups seeking control of their resources, hence constant disruption and pipeline vandalism.[503]

Another threat to the future of the TSGP project comes from the recent agreement signed between Nigeria and Morocco to build an offshore pipeline called the 'African Atlantic Gas Pipeline.' Given reports which indicate that Algeria's domestic gas consumption is increasing amidst a falling production for export capacity, it has been argued that supplies from Algeria will not be reliably absolute. Hence, the Nigerian-Moroccan pipeline will be a suitable alternative route to Europe.[504] And whereas Morocco is reported to have secured funding from international bodies and sovereign funds for the proposed project, prevailing corruption within Algeria's primary revenue source- its national oil and gas company- Sonatrach is said to be why Algeria is abandoning the TSGP project.[505] The Algerians have also

[500] Benjamin Auge 2010 (n497).
[501] The North African Post, 'Moroccan-Nigerian Pipeline Puts Final Nail in Algeria's Trans-Saharan Gas Pipeline' (May 24, 2017). Available at http://northafricapost.com/17999-moroccan-nigerian-pipeline-puts-final-nail-algerias-trans-saharan-gas-project.html accessed August 3, 2019.
[502] Benjamin Auge 2010 (n497) 12.
[503] The Oxford Institute for Energy Studies, 'Africa's Oil and Gas Scene After the Boom: What Lies Ahead' (January 2019) Issue 117, OEF, 1-31 at 11.
[504] The North African Post 2017 (n501).
[505] Nigeria-Algeria Pipeline 2019 (n487) 3.

been accused of not showing sincerity on the project. They are unwilling to see its principal client- Europe has other alternative suppliers, nor prepared to let go of its ambition of becoming 'Russia's Europe to the South.'[506]

### 4.2.6 Evaluating Nigeria's Commitment to the Global Gas Flare Reduction Programme (GGFR)

The Global Gas Flaring Reduction (GGFR) is a public-private initiative of the World Bank Group involving national and international oil and gas companies, international institutions, and national and regional governments.[507] The objective of the GGFR partnership is to facilitate and support national efforts to use gases that are currently flared by promoting effective regulatory frameworks and tackle the constraints on utilisation which ranges from insufficient infrastructures to poor access to domestic and international markets, especially in developing country areas.[508] To increase utilisation of associated natural gas, the GGFR participants will have to work together to lessen or eliminate, where necessary, all technical and regulatory barriers towards gas flare reduction across the world. The programme also supports relevant research that enhances its objectives, disseminates global best practices, and develops country-specific gas flare reduction projects. Other strategies of the programme include boosting prosperity and eliminating poverty.[509] And to finance these objectives of the GGFR, the sum of 600,000 dollars was provided by both the International Bank for Reconstruction and Development, the International Development Association and the Comision Nacional de Hydrocarbons under an agreement concerning the Global Gas Flaring Reduction Partnership Multi-Donor Trust Fund. Other donors were expected to

[506] The North African Post 2017 (n501).
[507] The World Bank Group, 'Global Gas Flaring Reduction Partnership (GGFR)' (2019). Available at https://www.worldbank.org/en/programs/gasflaringreduction#1 accessed August 1, 2019.
[508] The World Bank, 'Global Gas Flaring Reduction Partnership at a Glance' (World Bank Issue Brief/GGFR, 2006) 1.
[509] The World Bank Group 2019 (n507)

equally contribute to the Trust Fund on terms and conditions stipulated in the Agreement.[510]

Since launching in August 2002 at the World Sustainable Development Summit, the GGFR partnership has been able to bring tons of multinationals and state-owned corporations and representatives of governments from oil-rich nations to the table to implement country-specific programmes and efforts that would put an end to gas flaring.[511] As of August 31st, 2019, the GGFR partnership now has 32 partners, comprising 16 oil-producing governments, 13 multinational companies and three global institutions. And Nigeria is a member.[512] After joining the GGFR in 2015, Nigeria went further to set up its own 'zero flaring deadline by 2020, suggesting its readiness or willingness to end gas flaring. The country further commits to forbidding new oil and gas wells from flaring of natural gas,[513] to which the GGFR indicated its readiness to support the government and others meet their flare-out deadlines. The GGFR also developed a unique web-based tool for reporting vented and flared gas data in countries with Nigeria as one of the select partner countries to be implemented.[514]

But despite Nigeria's commitments to the GGFR partnership vis-a-vis support from GGFR's flare reduction sponsored projects and her domestic response strategies that include new regulations that, among other reasons from poor infrastructures, also include increasing its oil production supply while hoping to continue to pursue gradual flare out policies.[515] On the other hand, to show it is on track to meet its 2020 flare out deadline, the Nigerian Gas Flare Commercialisation Programme (NGFCP) and a corresponding 'Flare Gas (Prevention of Waste and Pollution)

[510] Administration Agreement Between the Comision Nacional de Hidrocarburos and … http://documents.worldbank.org/curated/en/310371503433424803/pdf/ITK465641-2017221620.pdf accessed August 31, 2019.
[511] The World Bank 2006, GGFR at a Glance (n508) 2.
[512] The World Bank Group, 2019 (n507).
[513] Onome Amawhe, 'Nigeria is a Natural Gas Nation' (The Vanguard on January 30, 2018 4:31 AM). Available at https://www.vanguardngr.com/2018/01/nigeria-natural-gas-nation/ accessed August 31, 2019.
[514] The World Bank 2006, GGFR at a Glance (n508) 2.
[515] Jude C. Okafor and Ernest Toochi Aniche, 'Nigeria and World Bank Global Gas Flaring Reduction (GGFR) Partnership: The Tragedy of the Commons' (2016) Vol.6, No.12 Developing Country Studies, 44-57 at 50.

Regulations 2018 had been initiated to drive gas flare commercialisation, howbeit, the NGFCP Manager has insisted that Nigeria will still require a 3.5 billion dollar-worth of domestic investments to meet the 2020 target. And by current realities on the ground, the required investments are yet on the floor.[516]

## 4.3 A Critique of Legislations Governing Natural Gas Utilisation in Nigeria

With the country producing about 5000 barrels of crude oil per day in 1958 in what was considered low production, associated gas mixed and made with oil at the time, however small, was therefore, also considered an inconsequential threat. Save for the quantity used in running production equipment and facilities, most of the gas produced at the time where mainly flared. But by the turn of 1960, when output increased rapidly, production of natural gas also came in large amounts, and thus, became concerning to Government.[517] Therefore, to minimise gas flaring in Nigeria, the Government enacted several laws and regulations to tackle the menace. We shall now discuss them.

### 4.3.1 The Petroleum Act Of 1969

The Petroleum Industry Act is the primary legislation governing the petroleum industry and regulating the exploration and production of oil and gas operations.[518] Although the Act has no specific provision(s) on utilisation or reinjection of gas, according to Jamil, it is the foundation on which all other laws and policies on gas

[516] Thisday, 'Ending the Menace of Gas Flaring' (Thisday Newspapers, August 14, 2018 2:41 am). Available at https://www.thisdaylive.com/index.php/2018/08/14/ending-the-menace-of-gas-flaring/ accessed August 30, 2019.
[517] Abiodun Ibikunle, 'Reducing Greenhouse Gas Emission- The Nigerian Approach' (Being a Presentation from the Honourable Minister of State Petroleum Resources, Abuja Nigeria, at the OPEC- EU CDM Conference in Riyadh, Kingdom of Saudi Arabia, September 2006). Available at http://www.opec.org/opec_web/static_files_project/media/downloads/press_room/Abiodun_Ibikunle_-_Presentation.pdf accessed October 26, 2017.
[518] Laws of the Federation of Nigeria 1990, Chapter 350 (LFN 1990 Cap 350)

flaring were made in Nigeria.[519] In what could be considered a positive, though vague move towards regulation of environmental pollution in the sector, section 9 subsection 1 of the Petroleum Act empowered the Minister of Petroleum Resources to make regulations to that effect. The rules to be made by the Minister must generally provide for matters relating to licenses and leases granted under the Act and operations carried out thereunder, as well as the prevention of pollution of waters courses 'and the atmosphere.'[520] Whether the mention of prevention of atmospheric pollution is interpreted as having no impact on gas flaring, it cannot be denied the provision does set the tone for future gas regulations. And in keeping with that ministerial mandate to make regulations for the prevention of atmospheric pollution, the 'Petroleum (Drilling and Production) Regulation of 1969' was made.

### 4.3.2 The Petroleum (Drilling and Production) Regulation 1969

Unlike the principal Petroleum Act, the Petroleum (Drilling and Production) Regulation made provision for the utilisation of gas in Nigeria. Under Regulation 42, licensed operators were required to submit to the Minister any feasibility study, programme or proposals that they may have for the utilisation of any natural gas, be it associated gas or not found in the relevant site. The gas utilisation programme is expected to be submitted at least not later than five years upon commencement of oil and gas production from the appropriate area.[521]

Although regulation 42 could be credited as implying a form of proactiveness on the government to weigh in on the attitude of licensees or lessees towards gas utilisation, a careful look at its wordings indicates a lack of urgency from those who formulated the provision. For instance, five years term for licensees or lessees to submit to the Minister feasibility study or proposed gas utilisation plan could not have been burdensome on any operator. Instead, what is critical and concerning is that the requirement comes without any measure discouraging

[519] Jamil Ibn Mohammed, 'Comparing Nigeria's Legal framework for Combating Gas Flaring with that of Norway- Lessons for Nigeria' (2016) Vol 2 No.9, IJIR 1252-1261 at 1253.
[520] Section 9 (1) paras (B) iii of Petroleum Act 1969.
[521] Regulation 42 of Petroleum (Drilling and Production) Regulation Nigeria.

flaring emission before or after the feasibility study or plan for utilisation is submitted.

Gbite Adeniji, a Senior Technical Adviser to current Nigeria's Minister of State Petroleum, once described Regulation 42 'as an express permission of oil companies to flare associated gas for those periods of five years without any scrutiny.'[522] Also, according to Garba Malumfashi- a former Principal Legal Officer in the Federal Ministry of Environment, no official record exists to suggest Regulation 42 was ever implemented by operators nor enforced by the Government. The regulation is inherently flawed for lack of punitive provision over non-compliance.[523] And to meet up with global developments in the sector, he suggested a complete review and update of Regulation 42 and the 1969 Petroleum Act, which requires zero flare obligation, social and environmental responsibility from IOCs and the host government too.[524]

Under Regulation 52 (d) (e) and (f), the licensee was required to keep a complete and accurate account of the quantity and price of natural gas sold in respect of a given site and, in a manner, approved by the Minister**.** But recall that the 1969 Petroleum (Drilling and Production) Regulations had no penalty provisions and were not compelling, it will be safe to say that Regulation 52 was also not successfully implemented. In this circumstance, the opinion that the Associated Gas Reinjection Act of 1979[525] was made to strengthen the provisions of Petroleum (Drilling and Production) Regulations of 1969 concerning gas utilisation and reinjection may be founded.

### 4.3.3 The Associated Gas Reinjection Act Of 1979

[522] Gbite Adeniji, 'Approaches to Gas Flaring Reduction in Nigeria' (A Paper Presented at the Global Forum for Gas Flare Reduction, London, October 25, 2012)
[523] Garba I. Malumfashi, 'Phase-out of Gas Flaring in Nigeria by 2008: The Prospects of a Multi-Win Project' (Federal Ministry of Environment, Housing and Urban Development, Abuja, 2005) 15.
[524] ibid
[525] Associated Gas Reinjection Act, Cap 26, Laws of the Federation of Nigeria 1990.

According to Ekperigin, the Associated Gas Reinjection Act, which was formerly promulgated in 1979, then later amended by Decree Nos.7 of 1985, represents the only significant piece of legislation on gas flaring.[526] The Act was intended to compel every company producing oil and gas in Nigeria to submit preliminary programmes for gas reinjection and detailed plans for implementation of gas re-injection.[527]

The Act in section 1 expressly provided thus: "Notwithstanding the provision of regulation 42 of the Petroleum (Drilling and Production) Regulations made under the Petroleum Act, every company producing oil and gas in Nigeria, shall not later than 1st April 1980 submit to the Minister a preliminary programme for (a) schemes for the viable utilisation of all associated gas produced from a field or groups of fields; (b) project or projects to re-inject all gas produced in association with oil but not utilised in an industrial project." While the foregoing section requires companies to submit a preliminary plan of action, section 2 of the Act further places a duty on companies to submit a detailed plan for utilisation and reinjection of gas on or before October 1, 1980.[528] It went further to say the fact that some of the gas produced in association with oil has been earmarked for some alternative utilisation shall not exempt compliance with section 1 of the Act and subsection 1 of section 2.[529]

The Act also provides that no company engaged in production of oil and gas in Nigeria shall flare associated gas without approval from the Minister of Petroleum Resources after January 1, 1984.[530] Although in Section 3 subsection (2) of the Act, it states that where the Minister is satisfied after this flare-out date that utilisation and reinjection of produced gas is not feasible or appropriate in a given field or fields, he may issue a certificate to that effect to the company involved to continue to flare. The certificate granting permission to continue to flare in a certain field will follow (1) such terms and conditions as the Minister deems appropriate, and (2) where the company involved pays such amount which the

[526] Eyimoyowa O. Ekperigin, 'Environmental Human Rights and the Petroleum Industry: The Nigerian Perspective' (2009) Vol.3 OGEL 23.
[527] Preamble to the Associated Gas Reinjection Act 1979, Nigeria.
[528] Subsection 1 paras (a) and (b)
[529] Section 2 subsection 2 of AGRA 1979.
[530] Section 3 subsection 1 of the AGRA 1979.

Minister would imposes from time to time for every 28.317 standard cubic metre of gas that is flared.[531]

Another interesting provision of the Associated Gas Reinjection Act is the penalty provision under section 4(1) which says, 'where any person commits an offence under section 3 of this Act, the person concerned shall forfeit the concessions granted to him in the particular field or fields in relation to which the offence was committed.' Further to this, the Minister may also order forfeiture of any part or all the privileges of an offending party with respect to cost of completing or implementing the needed reinjection plan, or towards the restoration of any field reservoir in line with good oil-field practice.[532]

Those novel provisions setting out prohibition of gas flaring and penalties for offenders made the Associated Gas Reinjection Act a significant improvement on previous legislations. The Act may not have completely stopped flaring in the industry but if government had stuck by those provision, success from that Act would have flickered to this day. But quite unfortunately, the January 1, 1984 flare-out date was relaxed for some disputed reasons. On one hand, Akaakar believed that (a) government was convinced it was impracticable for oil companies to meet the deadline due to inadequate financing of reinjection process which often involved huge financial resources; (b) relevant infrastructure for the process was lacking; and (c) government itself was unable to meet its financial obligations under the various joint ventures.[533] But on the other hand, Ekperigin argued that, it was due to government's economic interest in oil production that the decision to end gas flaring on January 1, 1984 was relaxed through a hurried passage of the Associated Gas Reinjection (Continuing Flaring of Gas) Regulations of 1984.[534]

Whatever the motivation for relaxing the deadline, be it impracticability, lack of gas infrastructures or government's economic interest in oil production, the decision to extend the deadline would have been logical if it was for the short term. But allowing it to continue for much longer periods for same reasons

[531] Section 3 subsection 2, paras (a) and (b) AGRA 1979.
[532] Section 4 subsection (2) AGRA 1979.
[533] n39 [201-210].
[534] n483 [23].

adduced by Akaakar which necessitated the shift from January 1, 1984, simply raise further doubts about the intent of the precursors of the 1979 Act on ending gas flaring. For instance, given how extremely flexible it was for the Minister to make regulation under the Act,[535] and the rapidity and dispatch with which the flaring continuing regulation came into effect, further gives validation to the conclusion that government was hardly intent on ending gas flaring in Nigeria. Akpan G.S. puts it this way, 'it stands to reason, that a state policy that authorises release of gas flares into the environment of the host communities is hardly intended for the protection of the environment and the host populations.'[536]

### 4.3.4 Associated Gas Reinjection (Continuing Flaring Of Gas) Regulation 1984

Subject to Sections 3(2) and 5 of the Associated Gas Reinjection Act 1979, the Associated Gas Reinjection (Continuing Flaring of Gas) Regulation of 1984 substantially altered the 1979 Act, granting exemptions for continuous gas flaring if certain conditions are met. Those conditions include: (1) an operator who produces gas and successfully utilise or conserve 75 per cent of it can flare the remainder; (b) if the gas produced carries over 15 per cent impurities like nitrogen, hydrogen sulphide and carbon dioxide and renders the gas not suitable for industrial use, it can be burnt off; (c) in the event of a rare occurrence of systemic failure during utilisation process, gas can be flared, and (d) where the amount of gas produced a day to the closest gas line distance or utilisation area is less than 500 standard cubic feet per kilometre, and the amount to oil is less than 3,500 standard cubic feet per barrel, and technically not advisable to reinject in that field, it can be flared.[537]

Omoregbe, while describing the implication of these exemptions, observed that it excluded 86 of the 155 oil fields from flaring prohibition, subjecting the remaining fields to meagre penalty sums that made flaring a convenient thing to do rather

[535] Section 5.
[536] G. S. Akpan, 'The Failure of Environmental Governance and the Implications for Foreign Investors and the Host State - A study of the Niger Delta Region of Nigeria, (October 2005) vol 3, issue 3, OGEL, 1-31 at 17.
[537] Regulation 1 (a)(b)(c)(d)

than utilise or reinject gas.[538] With the above exemptions and lack of stringent action penalising non-compliant companies for flares outside the scope of Associated Gas Reinjection (Continuing Flaring of Gas) Regulation, both the 1979 Act and 1984 Regulations could not be successfully implemented. As gas flaring continued, this prompted the government again to amend the Associated Gas Reinjection Act of 1979 introducing an economic instrument of fines for enforcement.[539]

Although the Associated Gas Reinjection (Amendment) Act provided for a fixed fine of 2 kobo (0.0009 dollars as at 1985) against oil companies for every 1000 standard cubic feet of gas flared,[540] between 1984 to 1988, the fine increased from 0.03 to 0.07 dollars per 1000 cubic feet. But this amount was still too small to deter oil and gas companies from flaring gas.[541] The companies in fact, saw it as strong motivation to flare because it was far too economical for them to pay than plan towards ending flaring. Under the Associated Gas Reinjection (Amendment) Regulation, in 1990 the fine was augmented to 50 kobo (about 0.50 dollars) for every 1000 standard cubic feet of flare.[542]

Following the proclamation of the Petroleum (Drilling and Production) Regulations (Amendment) Decree of 1998, flaring fine was increased to 10 naira (around 0.12 dollars) per 1000 standard cubic feet flare.[543] There was also the Associated Gas Reinjection (Amendment) Act of 2004 which placed a directive on operators in the oil and gas sector in Nigeria to submit a comprehensive action plan for natural gas utilisation. The 2004 Act prohibited gas flaring but allows same where permission is sought and obtained from the Minister. The fines were raised to 3.5 dollars in

[538] Yinka Omorogbe, 'Oil and Gas Law in Nigeria: Simplified' (Malthouse Press, 1st edn. 2003) 59.
[539] Dennis Otiotio 2013 (n434) 27.
[540] The Associated Gas Reinjection (Amendment) Decree No.7 1985.
[541] Ladeinde Olaoluwa and Laniran Joseph, 'The Impact of Fines on the volume of Gas Flared in Nigeria' (Centre for Petroleum, Energy Economics and Law CPEEL, 2015) 5.
[542] Sharif and others, 'Gas Flaring: When will Nigeria Decarbonise its Oil and Gas Industry' (2016) vol.1. Issue 3 IJEE 40-54 at 45.
[543] ibid

2008, for every 1000 standard cubic feet flare,[544] but it has not influenced attitude of operators towards flaring in Nigeria.

### 4.3.5 The Associated Gas Framework Agreement (AGFA) Of 1992

In 1992, the Associated Gas Framework Agreement was part of the fiscal policies introduced by the government to incentivise the utilisation of natural gas. As part of the oil field development programme, a three-year tax holiday was guaranteed any investment that separates oil and gas from reserves in appropriate production. But as flaring continued, in 1998 government introduced additional incentives for investments in the economic utilisation of flared gas.[545] These incentives include 30 per cent reduced taxes for gas projects instead of a tax on oil projects as high as 80 per cent. It also includes increased tax holidays up from 3 years to range between 5 to 7 years, tax-free dividends during tax holidays, and exemption of gas-related development equipment from custom duties and value-added tax. Other incentives are tax deductions on interest, a 15 per cent allowance on investment capital that shall not devalue the asset, and speedy capital allowance after a tax-free period up to 90 per cent, with 10 per cent retention on the books for investment in plant and machinery.[546] Anyways, as a framework agreement, this has not influenced the attitude of operators towards gas flaring in Nigeria.

### 4.3.6 The Nigeria Liquefied Natural Gas (NLNG) Act Of 2004

As a policy move to limit significant wastage of vast natural gas resources of the country, the government incorporated the Nigerian Liquefied Gas Company Limited (from now on the 'Company') in 1989. The Company exploit and utilise these vast natural gas resources and produces liquefied natural gas and natural gas liquids for export purposes.[547] The Nigerian Liquefied Natural Gas (fiscal

[544] Dennis Otiotio 2013 (n434) 27
[545] Sharif and others 2016 (n.542)
[546] ibid 45.
[547] Nigerian LNG Limited: Profile. Available at http://nlng.com/Our-Company/Pages/Profile.aspx accessed November 4, 2017.

incentives, guarantees and assurances) Act, also known as the NLNG Act, is the principal law regulating the operations of the Company.[548] Although the Company is a joint venture between the Nigerian Government and three oil majors- Shell, Total LNG Nigerian Limited, and Eni, with the state-owned NNPC- as the major shareholder in the Company. The NNPC owns 49% of shares in the Company, against Shell's 25.6%, Total LNG Nigeria Limited 15% and Eni's 10.4%.[549]

Through the enabling Act of the company, the Nigerian government provided leverages and incentives for the Company to promote utilisation of natural gas resources in the country. Those incentives range from tax allowances, pioneer status, to certain exemptions from customs duties and other levies.[550] Under Section 2 of the Act, the Company is guaranteed tax holidays of a period of ten years beginning from its inception. The company and its contractors and subcontractors are also exempted from payments of import duties, taxes and other duties. The exemptions also includes exclusion from paying levies, charges and imports duties of such nature concerning importation of plants, machinery, materials and goods required for the construction of, or to be included in the plant, jetties, shipping, transmission facilities and additional works in the business of the company.[551] There are also levies or duties exemption on spare parts imported to be used in case of a breakdown of plant, as long as the importation order is made within two years of the commissioning of that part of the plant.[552]

Another key provision is the status of the company as dollar-denominated establishment.[553] Under the section 4, the share capital of the company including its company's book and records when drawn up, irrespective of any other law, shall be valued in United States dollars and not in the Nigerian official currency-

[548] Now the Nigerian LNG (Fiscal Incentives, Guarantee and Assurances) Act of 2004 (Chapter 87, Laws of the Federation of Nigeria)
[549] Nigerian LNG Limited 2017 (n.547)
[550] Preamble to the NLNG Act, Cap N87, 1990 (2004)
[551] Section 7, NLNG Act 2004.
[552] Section 7, NLNG Act 2004.
[553] Section 4, NLNG Act 2004.

the Naira.[554] This provision, as an incentive was intended to protect NLNG and its shareholders against the usual flip-flop of the Nigerian naira.[555]

Although there is no section of the LNG Act that specifically obliges the company to eliminate gas flaring in or through its operation, the vision of the company is to 'help put out flares through processing, shipping and efficient and profitable marketing of Nigeria's gas resources. And by so doing, diversify the economy and minimise the environmental impact of its operations and products.[556] In line with that vision, the company has maintained that other than jobs and huge revenue which it contributed to Nigeria between 1999 and 2013[557] it has successfully converted approximately 119 billion standard cubic meters (equivalent to 4.2 trillion cubic feet) of associated gas as exported LNG and natural gas liquids. The company insist that this volume of gas would have been automatically flared but converting it has helped to reduce flaring by upstream companies from 60 percent to less than 25 percent.[558]

With the guarantees and incentives given to the Company driving huge economic contributions to Nigeria, the NLNG Act is regarded by many as useful enabling law towards the monetisation of Nigeria's LNG potentials. Yet, the contributions notwithstanding, the Act is silent on remedies the Company should adopt where its operations harmfully impact the environment, neither does it require the Company to undertake an impact assessment (EIA) of its operation, in time or after. This lack of guidance or direction on environmental decency in the Company's operation, could be attributed as part of what triggered legal action from the Niger Delta Development Commission (NDDC or Commission hereafter) against the Company in 2005.

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[554] Section 4 subsection 1, NLNG Act 2004.
[555] Ejiofor Alike, 'Unending Controversy Over NLNG Act Amendment' (August 27, 2017). Available at https://www.thisdaylive.com/index.php/2017/08/27/unending-controversy-over-nlng-act-amendment/ accessed November 6, 2017.
[556] Nigerian LNG Limited, 'Facts and Figures on NLNG 2014.' Page 6
[557] ibid 32.
[558] Nigerian LNG Limited 2014 (n556) 25.

As an institution tasked with accelerating even and rapid sustainable development of the Niger region,[559] the NDDC has since 2005 accused the Company of circumventing the provisions of section 14 subsection 2(b) of the NDDC Establishment Act 2000. That section requires all oil companies, including gas processing companies operating in the Niger Delta region to pay 3 percent of its yearly budget into the Commission's fund.[560] That fund is expected to aid the Commission actualise its functions, which among other sustainable development objectives, includes, addressing ecological and environmental pollution and gas flaring problems arising from the activities of oil and gas companies in the region.[561]

As a gas processing company operating in the Niger Delta region, the NLNG is covered under section 14(2)(b) of the NDDC Act. But the Company have continually maintained that notwithstanding the provision of the NNDC Act, it remains excused from payments to the Commission by virtue of Paragraph 3 of the Second Schedule of its own enabling NLNG Act of 2004. Paragraph 3 of second schedule to the NLNG Act, provides that 'without prejudice to any other provision of the Act, the Company and its shareholders shall not be subject to new laws, regulations, taxes, duties, imports or charges which are not generally applicable to all companies incorporated in Nigeria.'[562] For a new rule or monetary obligation to apply to the company, such changes would have first been agreed, written and signed by all stakeholders of the company- the Government, the company itself, and each shareholder.'[563]

Therefore, with the Company failing to comply with the Commission, in 2005, the latter approached the Federal High Court to enforce its demand seeking three reliefs:

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[559] Niger Delta Development Commission (NDDC), 'About Us' (2017 Updated). Available at http://www.nddc.gov.ng/about%20us.html accessed November 2, 2017; section 7 Niger Delta Development Commission (Establishment) Act 2000.
[560] Section 14 subsection 2(B) NDDC Act 2000.
[561] Section 7 subsection 1(h) of NDDC Act 2000.
[562] Now the Nigerian LNG (Fiscal Incentives, Guarantee and Assurances) Act of 2004, Cap 84, Laws of the Federation of Nigeria, and particularly Second Schedule, Paragraph 3 of the NLNG Act 2004.
[563] Second Schedule, Paragraph 2 to the NLNG Act 2004.

(1) A declaration that the Company is a gas processing company operating in the region within the meaning and intendment of Section 14 (b) of the NDDC Act;

(2) A declaration that the Commission is entitled to the statutory sum of 3 percent of the annual budgets of the Company for the years- 2000, 2001, 2002, 2003 and 2004 and subsequent years thereafter; and

(3) An order directing the Company to pay the Commission the accrued sums forthwith for the years pending and continue every subsequent year thereafter pursuant to section 14(2) (b) of the NDDC Act.[564]

In its defence, the Company maintained that the NDDC Act cannot have retrospective effect on the fiscal regime of the Company neither is it superior to its own enabling law which is not only earliest in time to the NDDC Act, but equally excludes the Company from such payment to the Commission. In effect, the Company's defence was mainly built around the premise of the 'umbrella clause' provision of second schedule paragraph 3 of the NLNG Act, which cannot be circumvented without a prior written agreement between all its stakeholders.[565] The Commission notwithstanding, prayed the court to declare the covering clause as ultra vires and void, perhaps left an opening for the learned trial judge to arrive at a conclusion not favourable to the Commission. In the ruling, although the judge frowned at the provision of the second schedule of the NLNG Act excluding new laws from applying to the Company, the court still found for the Company, maintaining that it cannot grant a relief not sought by the Commission. In the concluding remarks of findings of court, Nwodo J. held thus

> "…Furthermore, there is no relief sought by the Plaintiff from this court to declare the second schedule paragraph 3 of the Nigerian LNG Act unconstitutional in which case the effect will be obvious. In as much as I hold the strong view that it conflicts with the NDDC Act as regards

[564] *Niger Delta Development Commission v. Nigeria Liquefied Natural Gas Limited* (2010); LPELR-CA/PH/520/2007. Available at http://www.lawpavilionpersonal.com accessed November 5, 2017.
[565] Second Schedule, Paragraph 2 to the NLNG Act 2004.

> section 14(2)(b) and the provision excluding new laws under that paragraph is wrong, I cannot grant a relief not sought. In the circumstance, the defence under paragraph 3 of schedule II, I find in favour of the defendant…"[566]

Also, before reaching that conclusion, Nwodo J. had posited that even though the NDDC Act came into effect much later, it does not imply it can repeal the NLNG Act. Both legislations according to him are special Acts, any repeal must be done expressly. And the Commission being a federal institution, is also bound by the section of the NLNG Act which exempts the Company from levies, taxes or duties that is not applicable generally to every company in Nigeria.[567] To support this reasoning, he further held:

> "…there is no doubt that the Act was founded on agreement between the Defendant and the Federal Government as evidenced in the preamble to the second schedule to the Nigeria LNG Act… However, that fact… does not make the Act any less… that the Assurances are contained under the schedule does not make it any less important. It forms part of the Act and enjoys the legal status of legislation… it is a special Act with legal force… and remains an Act of National Assembly notwithstanding that it is founded on contract…"[568]

In the circumstance, the court dismissed reliefs 2 and 3 sought by the Plaintiff and agreed with relief 1 that the Defendant is a gas processing company, but parties were dissatisfied and proceeded on appeal and cross appeal respectively in 2007, and up to the Supreme Court. Both Appellate and Supreme courts still found for the Company exempting her from paying any 3 percent of its annual budget to the NDDC.[569]

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[566] *Niger Delta Development Commission v. Nigeria Liquefied Natural Gas Limited* (2010); LPELR-CA/PH/520/2007, pages 399-400. Available at http://www.lawpavilionpersonal.com accessed November 5, 2017.
[567] Afolabi Elebiju, 'NDDC v Nigerian LNG: Echoes and Lessons' (ThisDay Lawyer, March 20, 2012) 7. Available at http://lelawlegal.com/pdf/NDDC-v-NLNG-Echoes-Lessons.pdf accessed November 7, 2017.
[568] NDDC v NLNG (2011) 4 TLRN 1; (2009) 1 TLRN 25 at pages 54-57.
[569] ibid

The final decision by the Supreme Court in 2011 which should have put the matter to rest, only but set the stage for the Commission's last resort- 'to move the National Assembly to amend the NLNG Act of 2004.' As expected, the ongoing amendment process was greeted by numerous criticisms and further controversies from interest group and stakeholders within the industry.[570] Presently, the bill seeking to amend the NLNG Act has been passed by House of Representatives, awaiting similar response from the Senate. The amendments will statutorily compel the company to contribute 3 percent of its total annual budget to the NDDC,[571] as well as remove the company's status as dollar-denominated; and compel NLNG's subsidiaries to start paying tax in Nigeria. The parent company also, will begin to pay 3 percent of its gross freight on international outbound and inbound cargo to the Nigerian Maritime Administration and Safety Agency (NIMASA).[572]

Stressing on the implications of the amendment, Dr Ibe Kachikwu (the former Minister State Petroleum) and Dr Maikanti Baru (former Group Managing Director of Nigeria's oil company) believe that any unilateral amendment will send the wrong signal that Nigeria is not a dependable country for investment.[573] Mr Victor Eremosele, who chairs the Mentor Energy Consulting Limited noted that the idea of having LNG project in Nigeria had been on the table for 30 years before the NLNG agreed to finally take the risk, hence, the agreement between the Federal Government and NLNG should be allowed to stand.[574] Professor Bath Nnaji, a former Minister of Power also said that, 'a country's yes must always be yes, it cannot say yes at one point and no at another, such unpredictability 'kills investments and investors' appetite to invest.' Nigeria must be a country that honours the sanctity of agreements.'[575]

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[570] Ejiofor Alike, Unending Controversy 2017 (n555).
[571] Prince Okafor, 'Disagreement Over Amendment of NLNG Act Deepens' (August 29, 2017). Available at https://www.vanguardngr.com/2017/08/disagreement-amendment-nlng-act-deepens/ accessed November 7, 2017.
[572] Ejiofor Alike, Unending Controversy 2017 (n555).
[573] ibid
[574] Ugwuanyi and others, 'Planned NLNG Act's Amendment Causes Stir' (August 24, 2017). Available at http://thenationonlineng.net/planned-nlng-acts-amendment-causes-stir/ accessed November 7, 2017.
[575] Ibid

Mr Dolapo Oni who leads energy research at Eco Bank, thinks the timing for the amendment is wrong as it puts the NNPC on the defensive in the ongoing negotiation with different investors for NLNG Trains 7 and 8. With Trains 7 and 8 projected to provide 18000 jobs, Mr Dolapo advised that rather than jeopardise future investments and accompanying jobs over remittance of 3 percent of NLNG's yearly budget to NDDC, Nigeria should look at the bigger picture by focusing on monetising its gas, which is achievable through the NLNG vehicle.[576] According to Mr Babs Omotowa, the LNG plant production capacity expansion programme involving Train 7 and 8 in Bonny, will possibly attract 25 billion dollars, produce 30,000 construction jobs, additionally reduce gas flaring and generate a further 1 to 2 billion dollars in taxes and dividends to Nigeria.[577] He recalled that the company's Trains 2 to 6 attracted 15 billion in foreign investment, helped minimise flaring from 65 percent to less than 20 percent, and contributed 33 billion dollars to Nigeria from an initial investment of 2.5 billion dollars.[578] Without the assurances and guarantees under the NLNG Act, investors would not commit 6 billion dollars to build the plant, any action to the contrary according to Babs, will scale back investors, whose inherent doubt in putting huge money in Nigeria delayed the NLNG project for over 30 years.[579] Furthermore, if the assurances and guarantees under the Act are removed, it will violate bilateral agreements had with foreign investors, cost the country more than 25 billion dollars in foreign direct investments and billions of fines at international tribunals.[580]

But despite the criticisms that reviewing the NLNG Act will be a disincentive towards investment in gas utilisation, Simon Yakubu Arabo, has assured concerned groups that the review by the National Assembly will not drive away investors but is only intended to make the company comply with the laws of the

[576] Ejiofor Alike, Unending Controversy 2017 (n555).
[577] Femi Asu, 'Nigeria Will Lose 25 Billion Dollars to NLNG Act Amendment' (August 18, 2016). Available at https://www.paxnigerian.com/nigeria-will-lose-25bn-to-nlng-act-amendment-omotowa-latest-news/ accessed November 16, 2017; https://guardian.ng/business-services/nigeria-may-lose-over-25b-to-nlng-act-amendment/ accessed October 17, 2017.
[578] ibid
[579] Ugwuanyi and others 2017 (n574).
[580] Femi Asu 2016 (n577)

land.[581] According to him, the National Assembly is empowered by section 4 of the 1999 Constitution (as amended) to legislate on any matter touching on the corporate existence of Nigeria.[582] He insisted that the assurances and guarantees provided under the NLNG Act were not given in perpetuity, and that laws everywhere are subject to amendments which cannot be different with the NLNG Act. And particularly, not when such agreements appear to short-change the people's common patrimony. To him, the NLNG having enjoyed tax holidays for over 16 years,[583] and other incentives for over 27 years cannot continue to tie the hands of Nigeria forever and so, should stop complaining.[584]

The House Minority Leader, Leo Ogor argued that the bill is intended to address the injustices from environmental degradation in oil producing region whose ecosystem continues to suffer depletion for years. He decried the health and environmental impact of flaring on the people of Niger Delta, noting that, it was for this reason the NDDC Act 2000 was enacted to cater for the sustainable development of the region and rejuvenate its environment.[585] To solve this problem according to him would require bringing relevant amendments to the NLNG Act and in line with Section 14 (2)(b) of the NDDC Act. In concluding he stated that under Corporate Social Responsibility (CSR), companies ought to impact positively and rejuvenate the environment where they operate. Hon. Muhammed Sani Abdul also shared similar optimism on the amendment process, noted that if polluting operations of oil and gas companies are not checked because of commercial gains, every inhabitable space would be degraded, leaving no place to call home.[586]

Responding to allegations by Hon. Simon Arabo that the NLNG continues to enjoy more than 16 years of undisturbed tax allowances and 27 years of incentives, Dr Kudo Eresia-Eke, the General Manager, NLNG's External Relations, recanted that

[581] Ugwuanyi and others 2017 (n574).
[582] Ibid
[583] Ejiofor Alike, Unending Controversy 2017 n555
[584] Ugwuanyi and others 2017 (n574).
[585] Alfred Akuki, 'NLNG Act: Reps Back Enforcement of 3% Contribution to NDDC' (March 21, 2016) 1. Available on https://independent.ng/nlng-act-reps-back-enforcement-3-contribution-nddc/ accessed November 8, 2017.
[586] ibid

for the past 6 years, the company has been paying taxes.[587] In acknowledging the powers of the National Assembly to make and amend laws, he pressed on the lawmakers to exercise restraint on the issue, reminding them that the revenue generated by the company for Nigeria every year is huge and next to crude oil earnings of the country.[588] The amendments which was passed by the House of Representatives on May 9, 2017, has a new section 7(b) which says that 'notwithstanding section 7 or any other provision of this act (that is NLNG Act), the Nigerian Liquefied Natural Gas Limited shall pay 3 percent of its total annual budget to the Niger Delta Development Commission Fund as required by section 14 (1) and (2) (b) of the NDDC Act Establishment Act, 2000.' With this amended section in place, the bill has been transmitted to the upper legislative chamber for concurrence.[589]

### 4.3.7 The Environmental Guidelines and Standards for The Petroleum Industry (EGASPIN), Revised Edition 2002

The concentration of commercial and regulatory functions in the Department of Petroleum Resources (DPR hereafter), a department in the Ministry of Petroleum Resources (MPR), has left the Nigerian oil and gas sector administration poorly regulated as a result of conflicting interest.[590] The conflicts arising from DPR's role in managing oil revenue functions and regulating environmental pollution from oil and gas operations is based on the premise that the government, through NNPC's joint venture with multinational companies, contributes to the commercial activities depleting the environment.[591] As a result, the credibility of the DPR- as the regulatory organ of the Federal Ministry of Petroleum Resources remains perpetually undermined and consistently viewed as the incompetent, dependent and non-transparent regulator.[592]

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[587] Ejiofor Alike, Unending Controversy 2017 (n555)
[588] Ugwuanyi and others 2017 (n574).
[589] Ejiofor Alike, 'Dire Implications of Contentious NLNG Bill' (May 16, 2017). Available at https://www.thisdaylive.com/index.php/2017/05/16/dire-implications-of-contentious-nlng-bill/ accessed November 9, 2017.
[590] Fagbohun Olanrewaju, 'The Oil Industry and its Impact on the Environment: A Comparative Review' (Odade Publishers, 2010) 351.
[591] Ken Ifesinachi and Raymond Adibe 2014 (n36) 5.
[592] Ibid

According to Professor Olarenwaju, leaving the responsibility of developing petroleum resources, protecting Nigerian investments in the sector and enforcing environmental compliance in a single body, will only set clear path to conflict of duties. And because oil is the mainstay of the Nigerian economy, therefore, in carrying out its functions, the DPR will from time to time sacrifice environmental quality for commercial interest.[593] Being responsible for ensuring compliance with petroleum laws, regulations and guidelines in the sector, in 1991, the DPR developed the 'Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN hereafter) in 1991, revised and updated in 2002,'[594] to successfully carry those functions and enhance safe operations and respond to pollution from the sector.

Although EGASPIN relates more to managing environmental and health safety in oil related activities, very limited mention on measures of minimising flaring of gas during oil exploration and production is provided for. For instance, under Part II, Guideline 3.8.8, gas flaring is prohibited. But in what looked to be an obvious invitation to flare gas, it went on to say 'however, should the licensee/operator be constrained to flare gas, the following conditions shall be met: (i) An appropriate waiver and a permit to flare the gas shall be issued by the Director of Petroleum Resources, (ii) The flared gas shall attract appropriate fine for every standard cubic meter flared, in accordance with existing laws.'[595]

On his part, Wifa argued that EGASPIN contains more detailed measures aimed at protecting the environment, yet what he did not avert his mind to is that the 'supposed' detailed prescriptions of the EGASPIN largely tilts towards the prevention and remediation of oil pollution. Wifa, in any case, agree that implementation of those measures has been inhibited because many (including

[593] Fagbohun Olanrewaju 2011 (590).
[594] Richard Steiner, 'Double Standard: Shell Practices in Nigeria Compared with International Standards to Prevent and Control Oil Spills and the Deepwater Horizon Oil Spill' (2011) 17. Available at https://milieudefensie.nl/publicaties/rapporten/double-standard accessed November 13, 2017.
[595] Part II, 3.8.8.1 (i) and (ii) EGASPIN Revised 2002.

operators) see it as mere guidelines without legislative backing, hence, carries very little weight to inform compliance.[596]

Another analysis which suggests that a lack of political will due to self-gratification also led to weak compliance with environmental regulation in the petroleum industry was given by Amaechi and Ojukwu-Ogba. They pointed out that the reluctance by authorities to enforce or adopt proactive regulations in the petroleum industry stems from the revenue they get from the degrading operations of these companies. According to them, this situation is largely pronounced where the activities that pollute the environment is integral to the economy of the concerned country.[597] With the level of environmental pollution from the petroleum industry that has gone on and still goes in Nigeria without any serious prosecution in the oil sector, calling the failure of EGASPIN will be restating the obvious.

### 4.3.8 National Environmental Standards and Regulatory Enforcement Agency (NESREA) 2007

In 2007 the Federal Environmental Protection Agency Act 1992 (FEPA) was repealed by the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007 (NESREA),[598] making NESREA (hereafter Agency) Nigeria's principal environmental body with almost similar objectives as those of FEPA[599]. The objective of the Agency is 'to protect and develop the

[596] Eddy Wifa Lenusira, 'The Role of Environmental Impact Assessment (EIA) in the Nigerian Oil and Gas Industry using the United Nation's Environmental Programme EIA on Ogoni as a case study- Lessons from some good International Practices' (2014) IELR 111, 114

[597] Emeka Polycarp Amaechi, 'Poverty, Socio-Political Factors and Degradation of the Environment in Sub-Saharan Africa: The Need for a Holistic Approach to the Protection of the Environment and Realisation of the Right to Environment' (2009) vol.5/2 LEDJ, 109-128 at 117; Nelson E. Ojukwu-Ogba, 'Legal and Regulatory Instruments on Environmental Pollution in Nigeria: Much Talk, Less Teeth' (2006) vol.8/9 IELTR 201, at 206.

[598] Section 36 of NESREA Act 2007 <http://faolex.fao.org/docs/pdf/nig120569.pdf> accessed 12 June 2019.

[599] Section 5 of FEPA Act 1992 <http://www.placng.org/new/laws/F10.pdf> accessed 12 June 2019.

environment, biodiversity conservation and sustainable development of Nigeria's natural resources in general and environmental technology, including coordination and liaison with relevant stakeholders within and outside Nigeria on matters of enforcement of environmental standards, regulations, rules, laws, policies and guidelines.'[600]

In addition, the Agency can develop and enforce subsidiary regulations to protect the environment and meet the challenges of inadequate regulations[601] pursuant to section 34 of NESREA Act which empowers the Minister of Environment to make such additional regulations. In fulfilling this mandate, the Agency has so far introduced 24 regulations- 11 subsidiary legislation in 2009 and a further 13 in 2011.[602] However, unlike FEPA, NESREA lacks the competence to address oil and gas pollution in Nigeria because the establishing act says it cannot enforce regulatory compliance in the oil and gas sector.[603] Under section 7(g), it is provided for 'the Agency to enforce compliance with regulations on the importation, exportation, production, distribution, storage, sale, use, handling and disposal of hazardous chemicals and waste other than in the oil and gas sector.'

The act also requires the Agency to "enforce through compliance monitoring, environmental regulations and standards on noise, air, land, seas, oceans, and other water bodies except in the oil and gas sector"[604] as well as to conduct an environmental audit, establish data bank on regulatory and enforcement mechanism of environmental standards excluding the oil and gas sector.[605] Unfortunately, no activity has caused more pollution to the environment than oil and gas operations in Nigeria. To enhance or encourage public participation in environmental protection, the agency must create public awareness, educate on sustainable environmental management, and promote private sector compliance with regulations.[606] And must also publish scientific or other data resulting from

[600] Section 2 of NESREA Act 2007
[601] <http://www.nesrea.gov.ng/regulations/index.php> accessed 24 June, 2019
[602] ibid<http://www.nesrea.gov.ng/regulations/index.php> accessed 24 June, 2019
[603] Section 7 and 8 of NESREA Act 2007.
[604] Section 7(h) of NESREA Act 2007.
[605] Section 7(k) of NESREA Act 2007
[606] Section 7(l) Section of NESREA Act 2007

the performance of its functions, but these cannot extend to the oil and gas sector.[607]

Although not so much has been achieved in this area of public engagements, the advantages of publicising and educating people about environmental activities across sectors cannot be over-emphasised. By it, the gap between regulators and communities can be closed, and general mass attitude towards safeguarding the environment will improve. However, it cannot be holistic with the oil and gas sector excluded from such public scrutiny and interaction even if that is to happen.

While it remains disheartening that the agency is incapable of extending oversight to environmental compliance within the oil and gas sector, its ability to act as a competent regulator of the environment is also weakened in other areas. For instance, even though the agency is a body corporate with perpetual succession and common seal to sue and be sued in its corporate name,'[608] the agency, however, exist as a mere legal person whose capacity to act and be responsible for its actions are not independently driven. This is because most of its powers have been ceded to the Minister of Environment, who is neither a member of the Agency[609] nor possess requisite experience and expertise in the smooth functioning of the Agency. This act is capable of potentially undermining its legitimate aspiration. Under section 3(1) (a) of the NESREA Act, the Minister must recommend a candidate to the President to appoint as Chairman of the Agency's Governing Council but personally appoint three other members to represent public interests.[610] If he is dissatisfied with any governing council member, he can remove him[611] subject to the President's approval. The reason for such removal depends on if he considers that member's presence not 'in the interest of the agency' but the act is silent as to what constitutes 'interest of the agency.' This means the Minister can take arbitrary action since he possesses such enormous powers that are not affected by section 5(2), where he has to conduct enquiry

[607] Section 7(l) Section of NESREA Act 2007
[608] Section 1 Subsection 2(b) and (c)) of NESREA Act 2007
[609] Sections 3-6 of the NESREA Act 2007.
[610] Section 3(1) (e) of NESREA Act 2007
[611] Section 5(b) of NESREA Act 2007

whenever the governing council recommend to him the removal of any of its member who misconducted or is unable to perform the functions of his office.

The agency must also obtain its approval to collaborate with other relevant agencies to establish programs and set environmental protection standards.[612] Where it lacks finance for its programs and functions, it can only borrow such sums of money it may require if the Minister approves of it.[613] The probability of the Minister not being favourably disposed to proposed programs of the agency is present because the Minister of Environment, being a political appointee, may not possess relevant expertise to appreciate the agency's functions, hence could stifle or withhold assent to borrowing money to implement projects. He may equally be easily susceptible to external influences that are opposed to the proposed programs of the agency.

## 4.4 Conclusion

Nigeria continues to sit on an abundant reserve of natural gas. However, the country has failed to fully maximise its gas resources for several decades because of inadequate gas infrastructure to receive and transmit processed gas for domestic consumption. Instead, it has consistently flared most of the associated gases produced with crude oil. Furthermore, even though regulations prohibiting gas flaring exist, with sufficient gas infrastructure still lacking, these laws and regulations have not influenced the behaviour of operators to seek alternatives to flaring. Also, the government's primary focus through the NNPC has been to maximise revenue from crude oil production and not gas from the beginning. Therefore, even though the law prohibits flaring, the practice has simply continued.

Also, although Nigeria’s global gas flaring rating seems to have improved in recent times, this work finds that such presumption cannot be supported by what is presently on the ground. For instance, the government in 2017 acknowledged that it still lacked gas infrastructure and needed to develop its domestic gas market, both of which are critical elements for gas utilisation and minimising gas flaring in

[612] Section 8(O) of NESREA Act 2007
[613] Section 8(1) of NESREA Act 2007.

the country. Until those vital infrastructures and the local gas market is developed, gas wastages and flaring will continue. Also, even though the PIA 2021 requires operators to install metering equipment to report flared gas from their facilities, without a sufficient infrastructure to take gas from flare points, transmit it to processing facilities and the domestic market, associated gas waste will continue in Nigeria. From the nature of the joint ventures or production sharing contracts that the NNPC and the oil majors in which the former controls majority interest in oil and gas operations, the responsibility to end gas flaring falls to the state and not necessarily the IOCs.

The LNG projects in Nigeria have made considerable strides economically and in human empowerment. Accordingly, caution must be had regarding the controversy surrounding the planned amendment of the NLNG Act so that the completion of Trains 7 and 8 is not derailed. Without a doubt, LNG Trains 7 and 8 will create more jobs and contribute to flare reductions the same way Trains 2 to 6 has. Therefore, is it suggested that the process of amendment stipulated under the second schedule of the NLNG Act, which accommodates the interest of every party involved in the NLNG joint venture, should be strictly followed. The current method of an amendment adopted by the National Assembly should not be; it is not only unilateral and could have a long term negative impact on gas projects and the economy.

## CHAPTER 5: AN ASSESSMENT OF NATURAL GAS UTILISATION IN NIGERIA- POOR RESOURCE MAXIMISATION AND MANAGEMENT.

### 5.1. Introduction

Whereas the previous chapter examines the laws and policies introduced by government since the inception of the Nigerian petroleum industry, this chapter focuses mainly on the current state of natural gas utilization in Nigeria. Are enough gas being produced and where does the level of domestic as consumption stand now especially since the National Gas Policy was introduced in by the Government in 2017. And by the current state of utilisation, the chapter attempts to expose whether there has been an improvement in the utilisation of gas in Nigeria. Upon the understanding that no significant progress has been made in terms of gas produce and consumption, the chapter proceeded to ascertain why this failure has lingered even after a robust gas policy was designed to support the growth in production and increase in domestic utilisation. Thereafter, the chapter further reassess how current threats from climate activists and corona virus affects could impact the development of the gas sector and use of Nigerian gas for the long term.

### 5.2. The State of Natural Gas Utilisation in Nigeria

Over the last decade, natural gas reserves in Nigeria have been on a consistent year on year increase, rising from 180,331.17 billion cubic feet (BCF) of gas in 2010 to 203,449.26 BCF by the end of 2019.[614] This, of course, places Nigeria as the current holder of the largest natural gas reserves on the African continent.[615] According to Xu and Bell, by the end of 2019, the country was estimated to hold a proven 200.4 trillion cubic feet (TCF) of natural gas reserves.[616] But like the crude oil sector, the gas sector in Nigeria is heavily impacted by regulatory and security challenges, affecting the routine output. In addition, a continuing lack of sufficient pipelines and processing plants to receive gas from oil fields also means

[614] NNPC, '2019 Annual Statistical Bulletin' (1st Edition 2019). Available at https://nnpcgroup.com/NNPCDocuments/Annual%20Statistics%20Bulletin%E2%80%8B/2019%20ASB.pdf accessed December 13, 2020.
[615] Natural Gas, BP Statistical Review of World Energy 2020, 69th Edition, page 32.
[616] Coglin Xu and Laura Bell, 'Worldwide Oil and Gas Reserves Edge Up, Production Down' (Oil and Gas Journal, December 7th, 2020).

that only a limited volume of gas is allocated for domestic consumption in Nigeria.[617] On the other hand, most products are allocated for export sales than channelled to meet growing domestic demands in Nigeria.[618]

For example, over ten years from 2006 - 2015, out of 27,352 billion standard cubic feet (BSCF) of gas produced in Nigeria, only 3,339 BSCF of this gas was utilised in Nigeria.[619] At the same time, about 9,500 and 9004 BSCF of gas were exported through the Nigerian Liquified Natural Gas (NLNG) company and others. Also, over the same period, about 5,496 BSCF of the gas was wasted through flaring from the total volume of gas produced.[620] From 2016 - 2018 Nigeria accounted for nearly 4,670 BSCF of global marketed gas production. Out of this, gas volumes allocated for export sales accounted for a total of 3,047 BSCF of gas and at a time when domestic gas demands in Nigeria stood at around 1,473 BSCF.[621]

Out of this, a total of 2,864.93 billion cubic feet (BCF) of natural gas was produced in 2019, representing a percentage point increase from the 2018 output that stood at 2,836.66 BCF.[622] Also, out of the quantities produced in 2019, dry natural gas alone accounted for 1.6 TCF of marketed production in 2019.[623] The NNPC, in its 2019 Annual Statistical Bulletin, stated that out of the total amount of gas produced in the year, Nigeria utilised a total of 2,620.58 BCF approximating to 91.47 per cent while a total of 244.35 BCF, which is about 8.53 per cent was flared. Also, a total of 788.69 BSC was reportedly reinjected over the year under review.[624]

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[617] U.S.EIA, 'Country Analysis Executive Summary: Nigeria' (Last Updated June 25, 2020) 5.
[618] OPEC, 'Annual Statistical Bulletin, 1965-2019' (OPEC, 54th Edition, 2019) 116, 117.
[619] Ministry of Petroleum Resources Nigeria 2017 (n446) 19.
[620] Ibid
[621] OPEC, Annual Statistical Bulletin, 1965-2019' (OPEC, 54th Edition, (2019) 116, 117 and 121
[622] NNPC, '2019 Annual Statistical Bulletin' (1st Edition 2019). Available at https://nnpcgroup.com/NNPCDocuments/Annual%20Statistics%20Bulletin%E2%80%8B/2019%20ASB.pdf accessed December 13, 2020.
[623] U.S.EIA, 'Country Analysis Executive Summary: Nigeria' 2020 (n217) 5.
[624] NNPC, '2019 Annual Statistical Bulletin' 2020 (n622)

Between January 2020 and January 2021, Nigeria produced 2,973.01 BCF of gas, representing a daily output of 7,585.78 million standard cubic feet of gas produced every day for the period under review. Production contributions from joint ventures operation, production sharing contracts and from the Nigerian Petroleum Development Company accounted for 65.20, 19.97 and 14.83 per cents of the national gas output respectively.[625] Out of the total produce between January 2020-January 2021, 3,189.64 BCF of this gas was supplied for export and domestic utilisation purposes. The volume of gas for export sales amounted to 1,468.21 BCF while only 526.67 BCF was supplied to the domestic market with 58.87 per cent and 41.13 per cent were supplied to gas-fired power plants and other industries, respectively.[626]

Over the same period, an average of 3,033.15 million standard cubic feet of gas representing 87.91 per cent was sent to Nigerian LNG as export gas.[627] Out of this annual produce, a total of 1,194.76 BCF of gas was reinjected and flared.[628] According to Nigeria's flare tracker hosted by the National Oil Spill Detection Response Agency (NOSDRA), Nigeria committed a total of 19 million tonnes of carbon emissions into the atmosphere through gas flaring, a significant gas waste valued at 1.24 billion dollars. Such an amount of waste gas could have provided 35.4 thousand gigawatt-hours of electricity for an estimated 804 million Nigerians in a year.[629] However, this is still due to insufficient gas capture, processing, and pipeline infrastructure. While the gas sector is still undergoing significant reforms to boost investments in critical infrastructures that will increase gas utilisation in the domestic market, most of the projects planned by the government face limited funding challenges made worse by the current global pandemic. In addition, poor policy coordination and delay in implementing proposed regulatory changes in the sector also contribute to poor domestic gas utilisation.

[625] NNPC, 'Monthly Financial and Operations Report December 2020' (January 2021) 10.
[626] ibid 15, 16.
[627] NNPC, 'Monthly Financial and Operations 2021 (n625)17.
[628] Ibid, 15.
[629] NOSDRA, 'Nigeria Gas Flare Tracker' (2021). Available at https://nosdra.gasflaretracker.ng/gasflaretracker.html accessed April 30, 2021.

## 5.3. Challenges Currently Affecting Natural Gas Utilisation in Nigeria

### 5.3.1. Lack of Independence of the Gas Sector

Some challenges were flagged under the previous section, but now, these are drawn together and examined in detail. The current structure of managing natural resources, which sees the gas sector as a subcategory of the oil sector since the inception of the petroleum industry in Nigeria, continues to contribute to the poor utilisation of gas in the country.[630] Before now, natural gas as a by-product of crude oil production was considered to lack or have very little economic value to warrant its development and management as a sector independent of the oil industry.[631] This, of course, informed the degree of attention paid by most Governments to the management of gas resources and poor reliance on it to drive the economy. Consequently, in the 1960s and 1970s, when most oil facilities were built in Nigeria, given that natural gas was not a popular energy commodity around the world in the recent past, the Nigerian Government did not see the need to develop gas gathering facilities.[632]

The continued reluctance to commercialise gas resources is equally reflected in the regime of operating licenses issued by the Petroleum Ministry through the Department of Petroleum Resources (DPR) to operating companies. The licences often executed under joint venture (JV) arrangements were accordingly formulated mainly for the exploration and production of crude oil.[633] Obaseki, in his overview of gas development in Nigeria, also affirmed that the multinationals that dominated the Nigerian oil and gas sector from the early years of petroleum operation preferred only crude oil production.[634] In addition, since the NNPC (on

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[630] S. O. Aghalino, 'Gas Flaring, Environmental Pollution and Abatement Measures in Nigeria, 1969-2001' (2009) Vol. 11, No. 4, JSDA, 219-235 at 226.
[631] Philip E. Agbonifo, 'Opportunities, Challenges and Obstacles to Economic Growth and Sustainable Development through Natural Gas in Nigeria' (2015) Vol. 17, No. 5, JSDA, 99-114 at 102.
[632] S. O. Aghalino (2009) (n630) 226.
[633] Section 2 of the Petroleum Act of 1969, Nigeria; L.A. Atsegbua, 'Oil and Gas Law in Nigeria: Theory and Practice' (Fifers Lane Publishers, Benin, Nigeria, 3rd edn, 2012) 42.
[634] J.E. Gaius-Obaseki, 'Gas Development in Nigeria: An Overview' (Petroleum Training Institute, Warri, 1996) in Philip E. Agbonifo, 'Opportunities, Challenges and Obstacles to Economic Growth and Sustainable Development through Natural Gas in Nigeria' (2015) Vol. 17, No. 5, JSDA, 99-114 at 102.

behalf of the government) holds 55 per cent participatory interest in most JV operations with its multinational counterparts, the operating agreements were framed in ways that place the onus for the utilisation of gas associated with crude oil on the Government.[635] Sadly, with the government and NNPC mainly prioritising oil recovery to maximise revenue from oil, meant that associated gases arising from the JV production activities were flared.[636]

The consequences of focusing only on oil production meant that the management of Nigeria's abundant gas resources repeatedly lacked efficient coordination and could not propel investments in gas infrastructure that still affect domestic utilisation of gas till today.[637] In order to coordinate the development of the gas sector to meet the domestic energy needs of Nigerians and mitigate recurring waste of associated gas, the Nigeria Gas Company (NGC) was incorporated on June 25, 1981. However, the company could not begin active operation until 1988, when it was re-established as one of the 11 subsidiaries of the NNPC as a response to the changing conditions of the nation's economic environment.[638]

As a subsidiary of the NNPC- the national oil company, the powers of the NGC over gas development in Nigeria is limited to the extent that it cannot determine, direct, or participate in the exploration and production of gas in Nigeria.[639] While the NGC can oversee the efficient gathering, treatment, transmission and marketing of Nigeria's gas resources and its by-products to industries and utility gas distribution companies locally and regionally, only the NNPC in a joint operation with multinational operators is statutorily empowered to explore and

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[635] Oyewunmi Olabode A. and Oyewunmi Adebukola E, 'Managing Gas Flaring and Allied Issues in the Oil and Gas Industry: Reflections on Nigeria' (2016) Vol. 7, No. 4, MJSS, 643-649 at 646.
[636] ibid 646.
[637] Cyril I. Obi, 'Oil Extraction, Dispossession, Resistance and Conflict in Nigeria's Oil-Rich Niger Delta' (2010) Vol. 30, No. 1-2, CJDS, 219-236 at 225; Philip E. Agbonifo, 'Opportunities, Challenges and Obstacles to Economic Growth and Sustainable Development through Natural Gas in Nigeria' (2015) Vol. 17, No. 5, JSDA, 99-114 at 103.
[638] Bureau of Public Enterprises, 'Nigeria Gas Company Limited (NGC)' (2018). Available at https://bpe.gov.ng/nigeria-gas-company-limited-ngc/ accessed April 1, 2021.
[639] NNPC Group, 'Nigerian Gas Company Limited (NGC)' (2020) https://nnpcgroup.com/NNPC-Business/Subsidiaries/Pages/NGC.aspx accessed January 1, 2021.

produce gas in Nigeria.[640] With NGC as Nigeria's gas company statutorily incapable of participating or overseeing gas exploration and production where the focus of the parent company (NNPC) has been to maximise recovery and revenue from oil, it is easier to contextualise the poor development of the gas sector.

Although in 2016, efforts to reposition NNPC led to the reorganization of the NGC and the creation of new commercial gas entities- the Nigerian Gas and Marketing Company (NGMC); the Nigerian Gas Processing and Transmission Company (NGTP); and the Gas and Power Investment Company (GPIC),[641] however, this does not suggest that the gas sector is free of the control by the NNPC and a few major actors with a strong bias for oil revenue.[642] Under section 163 of the 2012 Petroleum Industry Bill in Nigeria, the unbundling of the gas sector from the oil sector was proposed to allow for independent management, regulation, and liberalised gas operations. But this proposal has now been abandoned under the final bill that became law in 2021.

### 5.3.2. An Undeveloped Domestic Gas Market

According to the NNPC, the development of the Nigerian domestic gas market is primarily dependent on the availability of critical gas infrastructure, mainly pipelines and processing plant facilities.[643] Although the development of gas pipelines in Nigeria began as far back as the early 1960s, the sector is still nowhere close to sufficient provision of gas infrastructure due to the government's focus

[640] Ahmed, Bello, and Idris, 'Natural Gas Utilization and the Nigerian Gas-to-Liquid Project: An Opportunity to End Gas Flaring' (2012) Vol. 2, Issue 2, IJETED, 240-256 at 245; The NNPC, 'Nigerian Gas Company' (2020). Available at https://ngc.nnpcgroup.com/Pages/Home.aspx accessed December 23, 2020.
[641] The Nigerian National Petroleum Corporation (NNPC), 'Corporate Information' (2020). Available at https://nnpcgroup.com/About-NNPC/Pages/Corporate-Information.aspx accessed December 30, 2020.
[642] NLNG Obtains Financing for Eight New LNG Carriers (2003), Oil and Gas journal; Nigeria LNG Limited, 'Shareholders' (2020). Available at https://www.nigerialng.com/the-company/Pages/Shareholders.aspx accessed December 12, 2020.
[643] The Nigerian National Petroleum Corporation (NNPC), 'Corporate Information 2020 (n641).

on oil production.[644] Currently, around 2000 kilometres (KM) of gas pipeline networks exist in Nigeria. While there are ongoing efforts to build more pipelines across the country to improve the domestic utilisation of gas, Obiose posits that Nigeria will need to complete additional 5000-kilometre gas pipelines to support the maximisation of gas.[645] Furthermore, in terms of meeting supplies for gas to power, Nigeria currently has about 1000 kilometre gas pipelines but will need up to 10,000-kilometre pipelines infrastructure to transport and distribute gas to power to upset current growing electricity demands in Nigeria.[646]

To facilitate improvement in electricity generation, in July 2020, the NNPC commenced the construction of the Ajaokuta-Kaduna-Kano (AKK) gas pipeline project to support gas connectivity between the East, West, and Northern parts of Nigeria.[647] The midstream project valued at 2.8 billion dollars in construction cost will cover 614 kilometres and is expected to deliver 3.5 BSCF of gas per day. It is the first of three phases of the 1,300kilometre-long Trans-Nigeria Gas Pipeline (TNGP) Project, reputed to be the most extensive gas pipeline project to be developed in the history of Nigeria.[648] The project is being developed as a build-own-operate-transfer (BOOT) model under a public-private partnership (PPP) to be supervised by the Infrastructure Concession Regulatory Commission (ICRC).[649]

The project will get support from Fidelity Bank Nigeria and funding from the Bank of China and Sinosure. The project is scheduled to commence operation in 2022. The first phase of construction will originate from Ajaokuta in Kogi State and

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[644] Philip E Agbonifo, 'Natural Gas Distribution Infrastructure and the Quest for Environmental Sustainability in the Niger Delta: The Prospect of Natural Gas Utilisation in Nigeria' (2016) Vol. 6, Nos. 3, IJEEP, 442-448 at 447, 448.
[645] Henry Biose, 'Gas Pipelines in Nigeria: Sine Qua Non for Economic Development' (2019) Vol. 6, Issue 4, IJETMR 18-33 at 22.
[646] ibid.
[647] Wasilat Azeez, 'AKK Gas Pipeline Project: NNPC Begins Transportation of Line Pipes by Rail' (The Cable, April 10, 2021, 18:44PM). Available at https://www.thecable.ng/akk-gas-pipeline-project-nnpc-begins-transportation-of-line-pipes-by-rail accessed April 12, 2021.
[648] Global Data, 'AKK Natural Gas Pipeline Project' (Hydrocarbon Technology, 2021). Available at https://www.hydrocarbons-technology.com/projects/akk-natural-gas-pipeline-project/ accessed April 20,2021.
[649] ICRC Nigeria, 'NNPC Delivers 96 $2.8BN AKK Project Pipes by Rail to Itakpe' (2021). Available at https://www.icrc.gov.ng/nnpc-delivers-96-2-8bn-akk-project-pipes-by-rail-to-itake/ accessed April 2, 2021.

covers a 200-kilometre-long section of the Ajaokuta and Abuja Terminal Gas Station and is estimated to cost 855 million dollars. Phase 2 construction covers a 193-kilometre-long segment from Abuja to Kaduna, also at the cost of 835 million dollars. In contrast, the last phase of construction covers a 221-kilometre-long segment between the Kaduna terminal gas station and Kano terminal gas station to be completed at the cost of 1.2 billion dollars.[650]

The construction phase of the Kaduna-Kano axis of the AKK project is already facing legal battles and a temporary suspension after the Kano Federal High Court granted an interim order to that effect.[651] This follows an ex parte application by the Plaintiffs- Mr Abdullahi Adamu and 38 others. They argued that the farmlands and plots of land acquired in Dawakin-Kudu Council Area of Kano State for the project route was illegally acquired and did not follow the lawful process of land acquisition.[652] With the court order restraining both the NNPC and the Government, including their contractors and two others from construction activities connected with the AKK project depending on the determination of the substantive motion on April 15th 2021.[653] While the matter remains sub-judice, the Government of Kano State proceeded to sign a memorandum of understanding with the NNPC on the AKK Gas Pipeline Project for gas utilisation within the Kano metropolis.[654] And regardless of the outcome of this matter, the delay currently experienced in construction could further prolong the completion date.

The upstream segment of the industry where most associated gases are flared also lacks connecting pipeline and gas processing infrastructure to receive,

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[650] Ahmed, Bello, and Idris 2012 (n640) 245.
[651] Murtala Adewale, 'Court Orders Suspension of AKK Gas Pipeline Project' (The Guardian, February 22, 2021, 3:35 AM). Available at https://guardian.ng/news/court-orders-suspension-of-akk-gas-pipeline-project/ accessed April 23, 2021.
[652] Habibu Umar Aminu, 'Kano Community Drags FG, NNPC to Court Over AKK Gas Pipeline' (Daily Trust, February 22, 2021). Available at https://dailytrust.com/kano-community-drags-fg-nnpc-to-court-over-akk-gas-pipeline accessed April 23, 2021.
[653] Ibid.
[654] Abubakar Dundu, 'Kano, NNPC Signs MOU on AKK Gas Pipeline Project' (Kano Statement Government, July 3, 2021). Available at https://www.kanostate.gov.ng/?q=kanonnpc-signs-mou-akk-gas-pipeline-project accessed July 25, 2021.

process and supply gases produced from such site to the domestic market. As a result, most stranded gases that could not make it to the market are either reinjected or flared.[655] The U.S. EIA also confirmed this, noting that a significant level of Nigeria's gross national gas production is either flared or reinjected because most oil fields in Nigeria do not have the necessary infrastructure to capture the associated gases produced with crude oil.[656]

To bridge the infrastructure deficit in the gas sector and increase the supply of gas consumed from 1.3 BSCF per day to 5 BSCF per day in Nigeria, the NNPC in 2017 identified 7 Critical Gas Development Projects (7CGDP) to boost power generation.[657] They include:

(1) The Assa North-Ohaji South Field Development (ANOH) project has a capacity of 4.3 trillion cubic feet (TCF) of gas.[658] Along with the entire field development project, a gas processing plant and a 16-kilometre (km) gas pipeline will also be constructed to transmit dry gas from Assa North in Imo State to the Obiafu-Obrikom-Oben (OB3) gas pipeline that runs from Omoku area in Rivers State to Oben node in Edo State. OB3 itself is expected to commence gas transmission in 2021. The ANOH project, if completed, will deliver around 500-600 million SCF of gas daily;[659]

(2) The joint development of Oil Mining Lease (OML) 24 (NNPC/NewCross) and OML 18 (NNPC/Eroton) on the top 100 million SCF of gas per day

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[655] PricewaterhouseCoopers, 'PwC's Annual Power and Utilities Roundtable: The Challenges with Transforming the Nigerian Power Landscape' (2016) 14. Available at https://www.pwc.com/ng/en/assets/pdf/power-rountable-2016.pdf accessed December 23, 2020.
[656] U.S.EIA, Country Analysis Executive Summary: Nigeria, 2020 (n217) 5.
[657] Okechukwu Nnodim, 'NNPC, Partners to Increase Gas Consumption by 285%' (Punch, May 10, 2017). Available at https://punchng.com/nnpc-partners-to-increase-gas-consumption-by-285/?amp accessed February 25, 2021.
[658] Robert Brelsford, 'Funding Secured for Nigeria's ANOH Gas Processing Plant' (Oil and Journal, February 4, 2021). Available at https://www.ogj.com/refining-processing/gas-processing/article/14196827/funding-secured-for-nigerias-anoh-gas-processing-plant accessed March 12, 2021.
[659] Maikanti Baru, 'Investing in the Extractives' (A Presentation by the Nigerian National Petroleum Corporation at the UK-Nigeria Trade and Investment Forum, London, April 2018) 15.

already delivered by Alakiri Gas Plant.[660] In addition to the joint field developments, a 12 km gas pipeline will be constructed to transport Ekulama gas in Kula Akuku Toru Local Government to Awoba (Bille) in Degema Local Government Area, Rivers State. The existing 12 inches by 30 km pipeline from Awoba to Cawthorne Channel in Bonny River will also be expanded, while the segment of the Trans Nigeria Gas Pipeline from Cawthorne Channel/Alakiri (Okrika/Onne) to Obigbo Node in Rivers State will be developed. The project is expected to deliver around 250-300 MSCF per day to the power sector;[661]

(3) The development of 4 Shell Petroleum Development Company (SPDC) Joint Venture/Nigeria Agip Oil Company (NAOC)Joint Venture Unitised Gas Fields (Sambari-Biseni, Akri-Oguta, Ubie-Oshi and Afuo-Ogbainbiri). Together with the whole field development of the 4-unit area gas fields, a gas gathering pipeline from the unitised fields will be constructed to take gas to the central hub at the Assa North Central Processing Facility for processing before being evacuated via the OB3 pipeline to the domestic market. The project is expected to deliver around 500-600 million SCF of gas every day for local use;[662]

(4) There is also the cluster development of Nigeria Petroleum Development Company's (NPDC) OML 26, 30, 42 with a capacity of 7 TCF of gas.[663] The joint development of OML 26, 30 and 42 will be accompanied by pipeline construction from both OML26 and 30 to Utorogu gas plant in Warri, Delta State, where gas will be processed and evacuated to the domestic market through the Escravos-Lagos-Pipeline-System (ELPS). On this project, there will also be the construction of a gas pipeline from Odidi (OML 42) in Delta State to the WEND Central Processing Facility.

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[660] NNPC, 'NNPC Fast-tracks Seven Critical Gas Projects to Boost Power Generation' (March 2, 2018). Available at https://www.facebook.com/NNPCgroup/posts/2039902949600214 accessed February 25, 2021.
[661] Maikanti Baru, 2018 (n659).
[662] ibid 15
[663] NNPC, 'NNPC Fast-tracks Seven Critical Gas Projects 2018 (n660).

The project is also expected to deliver about 500-600 million SCF of gas per day;[664]

(5) The development of the SPDC JV Gas Supply to Brass Fertilizer Company with a 2.2 TCF of gas capacity is also planned.[665] Apart from full field development of OML 33 with 2P reserves of 2.2 TCF of gas, the project will also unlock other satellite fields less than 60 km from Brass in Bayelsa State. A Pre-Treatment Facility and also, eight gas gathering pipelines will be constructed from identified supply sources to Brass Fertilizer The project will supply around 270 million SCF of gas per day;

(6) The cluster gas development of OML 13 will support the expansion of the Seven Energy Uquo Gas Plant and supply around 400 million SCF of gas every day. In addition to this, the existing Seven Energy Gas Plant will be enhanced, while the Trans-Nigeria Gas Pipeline will be developed to transmit processed gas to the domestic market from Ukanafun in Akwa Ibom State,[666] and

(7) The Cluster Development of Okpokunou/Tuomo West's OML 35 and 62 with a capacity of 10 TCF of gas.[667] Under this project plan, gas pipelines will also be constructed from Okpokunou and Tuomo West field (in Burutu Local Government) to Utorogu Gas Plant in Warri, Delta State. The project will support the domestic market with about 500-600 million SCF of gas every day.[668]

Although the initial proposal was for the 7CGDP to deliver about 3.4 BSCF of gas every day 'on an accelerated basis to bridge projected medium-term supply gap by 2020,'[669] due to financial constraints and pandemic which turned the screw on

[664] Maikanti Baru, 2018 (n659).
[665] NNPC, 'NNPC Fast-tracks Seven Critical Gas Projects 2018 (n660).
[666] Maikanti Baru, 2018 (n659).
[667] NNPC, 'NNPC Fast-tracks Seven Critical Gas Projects 2018 (n660).
[668] Maikanti Baru, 2018 (n659).
[669] NNPC, 'NNPC Fast-tracks Seven Critical Gas Projects 2018 (n660).

ambitious oil and gas projects, the 2020 targets were not met.[670] As of February 2021, only a few of the projects are in their construction phases, and others are yet to start due to financial drawbacks. The ANOH gas plant that was planned to begin gas operations in 2019 could not begin as additional 320 million dollars was needed for the final construction stage.[671] ANOH Gas Processing Company (AGPC) Limited was only able to secure 260 million dollars in February 2021 with the remaining 60 million dollars expected by the fourth quarter of 2021 when construction is expected to be completed.[672]

Some of the 7 Critical Gas Development Projects that are already in construction phases are now expected to commence operations from 2022 as part of the 100 oil and gas projects currently planned across the value chain of the Nigerian petroleum industry between 2021 and 2025.[673] Under the new project proposals, 28 petrochemical projects will be developed. But so far, out of 28 petrochemical projects, only the Brass Fertiliser and Petrochemical Brass Methanol Plant with 1.70 million tonnes annual capacity is expected to come on stream by 2025. The initial commencement year was 2019, but due to financial constraints, progress was delayed.[674]

Under the newly proposed 100 projects, 25 upstream projects will be developed. Out of this, only the Okpokunou Cluster Development project- an onshore conventional gas field project in Delta State is now at its feasibility stage and is expected to commence gas operations in 2024, having missed the 2020

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[670] 'Pandemic Turns the Screws on Ambitious Oil and Gas Projects, Producers Old and New' (Control Risk Group Holdings Limited, July 28, 2020). Available at https://www.controlrisks.com/our-thinking/insights/pandemic-turns-the-screws-on-ambitious-oil-and-gas-projects-producers-old-and-new accessed March 1, 2021.

[671] Robert Brelsford, 'Funding Secured for Nigeria's ANOH Gas Processing Plant' (Oil and Journal, February 4, 2021). Available at https://www.ogj.com/refining-processing/gas-processing/article/14196827/funding-secured-for-nigerias-anoh-gas-processing-plant accessed March 12, 2021.

[672] ibid

[673] Fox Jason and others, 'Nigerian Oil and Gas News Digest- July 2020 Round Up' (Bracewell LLP, August 5, 2020). Available at https://www.lexology.com/library/detail.aspx?g=65ddb1fa-03d0-42c3-b366-ee4895e03d3c accessed February 21, 2021.

[674] Global Data, 'Nigeria to Account for 23% of Upcoming Oil and Gas Projects in Africa by 2025, says GlobalData' (April 15, 2021) 1.

deadline.[675] Under the 100 assets currently planned, 23 midstream projects are expected to begin gas operation by 2025, and out of these, gas processing plants are to account for about 39 per cent of the midstream projects.[676] The ANOH project at Asaa North, Ohaji/Egbema that is jointly owned by Seplat (50%) and Nigerian Gs Company (50%)[677] was initially planned to come on stream in 2019 is one of such midstream gas plants that is expected to be in gas operations by 2022 if construction is completed by the last quarter of 2021.[678]

In terms of LNG facilities, 2 Liquefaction plants are also proposed, with one of them carrying a daily capacity of 7.60 million tonnes of LNG expected to begin operation by 2025. The project is estimated to cost 7 billion dollars and has been approved.[679] While the commencement period of 2021-2025 for the projects are futuristic, unless the required funding for these projects is secured, the domestic gas market in Nigeria will remain underdeveloped for a long time. According to Ojijiagwo, the difficulty with accessing funding for these projects is due to the magnitude of investments involved and because the oil and gas wells in the Niger Delta region are dispersed and in distant locations.[680]

For the transmission of oil and gas, five pipeline projects were also planned as part of the proposed 100 projects. However, whether these five pipeline projects will be sufficient to meet the growing domestic gas supply demands and contribute to the reduction in waste of gas remains uncertain. For example, the unavailability of sufficient gas pipelines, that many studies identify as the most critical infrastructure needed to drive the development of the domestic gas market, is hampered by a lack of project finance.[681] And In terms of gas processing facilities,

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[675] Maikanti Baru, 2018 (n659).
[676] Global Data 2021 (n674) 1, 2.
[677] Seplat, 'Seplat/NNPC ANOH Multi-billion Naira Gas Project Set to Transform Nigeria's Energy Landscape' (November 20, 2020). Available at https://seplatpetroleum.com/newsroom/seplatnnpc-anoh-multi-billion-naira-gas-project-set-to-transform-nigeria-s-energy-landscape/ accessed April 2, 2021.
[678] Maikanti Baru, 2018 (n659).
[679] Global Data 2021 (n674) 2.
[680] Emeka Nnanna Ojijiagwo, 'Development of a Sustainable Framework to Manage Flare Gas in an Oil and Gas Environment: A Case Study of Nigeria' (Being a Thesis Submitted in Partial Fulfilment of the Requirement of the University of Wolverhampton for the Degree of Doctor of Philosophy, July 2017) 42.
[681] ibid

nine projects are expected to be completed, and two additional LNG plants are being planned. However, these facilities can only achieve optimum output if sufficient gas pipelines transmit gas to the domestic market's processing facilities.

In summation, out of the 100 projects planned across the oil and gas sector, less than a quarter of these projects are dedicated to developing gas resources. The proposed gas projects include nine gas processing facilities, 2 LNG plants and five pipelines (undesignated) infrastructure, and they are expected to come on stream by 2025.[682] With about 202 trillion cubic feet of gas reserves to be tapped, delivering more pipelines infrastructure and additional LNG Trains is critical to the expansion of production capacity and improved domestic utilisation of Nigeria's abundant natural gas resources.[683] For instance, a new LNG Train 7 that is currently under construction is expected to create over 12000 direct jobs and as many as 40,000 indirect jobs to be created at this construction stage. When finished, the project will also increase Nigeria's LNG production capacity by 35 per cent from the current 22 million tonnes per year to 30 million tonnes every year.[684]

### 5.3.3. Climate Change and Divestment from Carbon Intensive Investments

Natural gas combustion carries much lower global warming potential than other fossil fuels like oil and coal.[685] However, given its environmental impact, attracting funding for major gas projects nowadays is becoming increasingly difficult due to opposition to carbon-intensive operations from climate justice and activist groups in recent times.[686] Also, with these right groups successfully challenging climate change policies based on national commitments to human rights treaties, this of

[682] Global Data 2021 (n674) 2.
[683] NLNG, 'NLNG Train 7: The Future is Gas' (June 2021). Available at https://www.nigerialng.com/Train7-Project/Pages/Background.aspx accessed July 29, 2021.
[684] ibid
[685] Union of Concerned Scientists, 'Environmental Impacts of Natural Gas' (June 19, 2014). Available at https://www.ucsusa.org/resources/environmental-impacts-natural-gas accessed April 2, 2021.
[686] Chelsie Hunt and others, 'A Comparative Analysis of the Anti-Apartheid and Fossil Fuel Divestment Campaigns' (2017) Vol. 7, Issue 1, JSFI, 64-81 at 67, 68.

course, will have far-reaching implications for future investments and development in major oil and gas projects.[687]

For instance, in December 2019, the Dutch Supreme Court in the *State of Netherlands v Urgenda* upheld the decision of two lower courts in favour of the respondent. The respondent, a climate sustainability group, contended that the failure of the State of Netherlands to take reasonable individual steps and suitable measures to mitigate the impacts of climate change is a breach of the country's sworn obligation to do so under the European Convention on Human Rights (ECHR).[688] The Supreme Court held that the government is legally accountable to reduce its GHG emissions by a minimum of 25 per cent by the end of 2020 compared to 1990 emission levels.[689] It further affirmed that Netherlands' planned 17 per cent GHG reduction target was not sufficient 'to meet its fair contribution to the United Nations objective of keeping global temperature increases within two degrees Celsius of preindustrial levels.'[690]

Similarly, in *Vereniging Milieudefensie and 17 Ors v Royal Dutch Shell PLC*, the applicants alleged that Shell's activities contribute dangerous climate change impacts.[691] In its defence, Shell maintained that the action compelling it to contribute to the objectives of the Paris Agreement lacks merit as the company is already escalating efforts to achieve a net-zero emission from the use of its products by 2050.[692] Given the growing focus on emission cuts to meet the objectives of the Paris Agreement 2015, the applicants argued that Shell is not

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[687] Margaretha Wewerinke-Singh and Ashleigh McCoach, '*The State of the Netherlands v Urgenda Foundation*: Distilling Best Practice and Lessons Learnt for Future Rights-based Climate Litigation' (2021) RECIEL, 1-9.
[688] *State of the Netherlands v Urgenda Foundation* ECLI:NL:HR: 2019:2007. Available at https://doi.org/10.1017/ajil.2020.52 accessed February 5, 2021.
[689] Margaretha Wewerinke-Singh and Ashleigh McCoach 2021 (n687) 1-9.
[690] *Urgenda Foundation v State of the Netherlands* [2015] HA ZA C/09/00456689 (June 24, 2015) Paragraph 4.84 and 4.93, ECLI:NL: RBDHA:2015:7196. Available at https://elaw.org/nl.urgenda.15 accessed February 5, 2021; *The State of the Netherlands v Urgenda Foundation* ECLI:NL: GHDHA: 2018:2610.
[691] [2021] C/09//571932/HA ZA 19-379 (May 26, 2021); ECLI:NL: RBDHA:2021:5337. Available at https://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:RBDHA:2021:5339 accessed May 26, 2021.
[692] Shell: Netherlands Court Orders Oil Giant to Cut Emissions' (May 26, 2021).

doing enough to contribute to meeting the Agreement's objectives[693] and sought to hold the company accountable to increase emission reduction from its operations. Shell, however, unsuccessfully argued that 'it is the government and not the company that is responsible for meeting the objective of the Paris Agreement 2015.[694] But the Hague District Court ordered Shell to cut carbon emissions from its operations by about 45 per cent within ten years, that is, between now and 2030 relative to its 2019 emission levels.[695]

With oil and gas producers increasingly facing stricter standards of climate diligence and responsibility, such as seen from these recent Hague court decisions, the transition to cleaner energy investments and production will continue to dominate the investment focus of multinational corporations. Recent dips in profits have seen major companies like ExxonMobil, Royal Dutch Shell, Eni and Total cut their spending costs for oil and gas projects and shift their resources to renewable fuels while equally paying attention to only cost-effective markets.[696]

### 5.3.4. Effect of the Delayed Passage of the New Petroleum Industry Act

From the conception of the Petroleum Industry Bill (PIB) in 2008 to when it was first introduced in parliament as an executive bill in 2012, it took over a decade before the new legal regime which was proposed to drive the development of gas infrastructure in Nigeria was passed into law in July 2021.[697] The reasons for the delay in the passage of the bill into law includes the insistence of lawmakers to

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[693] *Vereniging Milieudefensie and 17 Ors v Royal Dutch Shell PLC* [2021] C/09//571932/HA ZA 19-379 (May 26, 2021); ECLI:NL: RBDHA:2021:5337. Available at https://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:RBDHA:2021:5339 accessed May 26, 2021.

[694] Oil Giant Shell Ordered to Halve Greenhouse Gas Emissions' (May 26, 2021). Available also at https://youtu.be/pZt0BVnyr88 accessed May 26, 2021.

[695] *Vereniging Milieudefensie and 17 Ors v Royal Dutch Shell PLC* 2021 (n693)

[696] Libby George, 'Nigeria Negotiates Terms with Big Oil to Keep Investments' (Reuters, Friday 5, 2021 8:41 AM EST). Available at https://mobile.reuters.com/article/amp/idUSKBN2A51MC?_twitter_impression=true accessed February 6, 2021.

[697] Clara Nwachukwu, 'PIB: Legacy Legislation Begging for Passage' (Vanguard, January 8, 2014 10:00 AM). Available at https://www.vanguardngr.com/2014/01/pib-legacy-legislation-begging-passage/ accessed January 17, 2021.

carefully put together what will be a legacy document that will not only restructure the industry or attract investments to the sector but also reposition the petroleum industry in Nigeria as a pacemaker for others.[698] Other reasons for the delays are the multiple changes made to the original document by successive parliaments and what analysts put down to the bill's voluminous nature, making the proposed law complex for efficient pre-legislative scrutiny.[699]

Accordingly, dividing the bill into four separate parts was considered a step that could ease quick passage of the bill into law. However, since 2018 when the PIB was split into four parts, no single part of the bill became law alone.[700] The consequences of the delay in passing the bill into law at the time, according to the Nigeria Extractive Industries Transparency Initiative (NEITI) was responsible for the loss of around 200 billion dollars.[701] In fact, out of the four separate parts of the bill that includes the Petroleum Industry Governance Bill (PIGB); the Petroleum Host and Impacted Communities Development Bill (PHCB); the Upstream and Midstream Administration Bill (UMAB) and the Petroleum Industry Fiscal Bill (PIFB), only the PIGB was passed by the House of Representatives and the Senate but denied assent by the President.[702]

A new draft version of PIB was then resubmitted to the National Assembly in September 2020 as an executive bill with full deliberations and public hearings proceeding smoothly through the first quarter of 2021 and proceeding to become law.[703] However, even though both houses of the National Assembly have now passed the bill into law until full implementation begins in 2022, the industry might

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[698] Energy Week, 'National Interest to Guide Final Decision on PIB- Abe' (National Mirror, Wednesday February 13, 2013) 38. Available at www.national.mirroronline.net accessed January 1, 2021.
[699] ibid.
[700] The Nigerian Petroleum Industry Bill 2020. Available at http://www.petroleumindustrybill.com Accessed January 26, 2021.
[701] Kingsley Jeremiah, 'NASS' Delay of PIB Stirs Anger' (The Guardian, October 8, 2020 04:32 am). Available at https://guardian.ng/news/nass-delay-of-pib-stirs-anger/ accessed January 7, 2021.
[702] Budgit, 'Analyis of the Petroleum Industry Governance Bill' (2017). Available at https://yourbudgit.com/wp-content/uploads/2017/05/Petroleum-Industry-Governance-Bill-INFOGRAPHICS.pdf accessed January 14, 2021.
[703] Stakeholder Democracy Network, 'The Draft Nigerian Petroleum Industry Bill 2020: An Analysis of Environmental and Host Community Matters' (SDN Policy Brief, December 2020) 1.

continue to operate the old Petroleum Act of 1969 that barely improved developments in the gas sector. And because full implementation is yet to commence, the regulatory uncertainty which predates the discussions about reforms in the sector for over a decade, and dampened investor's confidence could continue to stunt infrastructure in the gas sector.[704] The uncertainty in sector reforms due to prolonged delay in passing the PIB is also believed to be part of why the Nigerian oil and gas industry faced a paucity of new investments and cases of capital flight from the sector over the past decade.[705]

### 5.3.5. Economic Volatility of the Global Energy Market

The efforts to improve the maximisation of gas resources in Nigeria are now worsened by a combination of instability in the global energy market since the fall in oil prices in 2014 and the current economic crisis caused by the global pandemic since 2020.[706] This will be further explained in detail. Firstly, between 2014 and 2019, the energy market remained suppressed. In Nigeria, the result of that sustained period of economic uncertainty in the global market left the government and industry with a weak financial portfolio that could not support planned gas infrastructure development to improve gas utilisation.[707] Furthermore, that slow pace of recovery also means that existing projects under construction were either abandoned or would now take more than the projected completion time before coming on stream.[708]

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[704] The Nigerian Petroleum Industry Act 2021. Available at http://www.petroleumindustrybill.com accessed January 26, 2021.
[705] Opeoluwani Akintayo, 'Experts Canvass Urgent PIA Implementation to Drive Investments' (Punch, September 3, 2022). Available at https://punchng.com/experts-canvass-urgent-pia-implementation-to-drive-investments/ accessed September 3, 2022; Michael Eboh, 'Investments Drying Up Over Delay in PIB Passage- Experts' (Vanguard, July 20, 2020 10:04 AM). Available at https://www.vanguardngr.com/2020/07/investments-drying-up-over-delay-in-pib-passage-%E2%80%95-experts/ accessed April 1, 2021.
[706] KPMG Advisory Services, 'Nigerian Oil and Gas Industry Update' (KPMG Quarterly Newsletter, Q2 & Q3, November 2020) 2, 5.
[707] O.N. Ogochukwu, 'The Oil Price Fall and the Impact on the Nigerian Economy: A Call for Diversification' (2016) Vol. 48, JLPG, 84-93.
[708] Ibid

Secondly, there has been an excess supply of gas in the global market compared to gas demands[709] due to expanding oil and gas production among non-OPEC member States. In addition, the impact of substantial changes in OPEC policies, such as its decision to abandon price targets while increasing production quotas among member States, contribute to setting up more uncertainties in the market.[710] Economic uncertainties in any market usually prompt investors and operators to take prudent investment decisions that usually involves postponement or project abandonment plans. These unexpected uncertainties now aggravated by COVID-19 contribute to derailing the efficient management of gas resources in Nigeria. With critical gas infrastructure integral to the administration of gas in Nigeria, this, among other things, now depends on global recovery from the pandemic and the recovery of the global economy.[711]

Thirdly, the disruption of the energy market due to the rise in unconventional fuel discoveries over the years, such as the growing production of shale oil and gas in the United States, has led to poor investments in gas utilisation in Nigeria. There is also the unwinding of some geopolitical risks, and lastly, the appreciation of the U.S. dollar.[712] In terms of increases in unconventional fuel production, as far as the United States continue to flood and dominate the global market with shale gas, the existing market for natural gas sales from countries like Nigeria is likely to continue to contract compared to the pre-shale gas revolution in 2009.[713] This shrinking export market for Nigerian gas does not only impact gas revenue. It also means that other importing countries increasingly consider Nigerian gas to be less

[709] Dave Mead and Porsche Stiger, 'The 2014 Plunge in Import Petroleum Prices: What Happened?' (May 2015) Vol. 4, No, 9, U.S. Bureau of Labour Statistics, 1-7 at 4.
[710] John Baffes and others, 'The Great Plunge in Oil Prices: Causes, Consequences, and Policy Responses' (Development Economics, World Bank Group, March 2015) 4, 9-10.
[711] Engin Esen, 'Trans-Anatolian Natural Gas Pipeline (TANAP) Carrying Gas in Full Capacity: CEO' (Daily News, January 15, 2021 07:00:00). Available at https://www.hurriyetdailynews.com/tanap-carrying-gas-in-full-capacity-ceo-161643 accessed January 16, 2021.
[712] Baffes and others, 2015 (710)
[713] Fatih Macit and Holly Rehm, 'The U.S. Shale Gas Revolution and Some Perspectives for LNG Exports' (Centre on Energy and Economy, Caspian Strategy Institute, 2014) Issue 8, Caspian Report, 1-15 at 1, 15.

attractive. This, in turn, can discourage potential investors in the development of the sector.

For example, since the U.S., formerly a significant importer of oil and gas from Nigeria, increased its shale gas production, it no longer imports gas from Nigeria. After its gas imports from Nigeria peaked at 57 BSCF in 2006, subsequent purchases have been sporadic or drastically reduced.[714] In 2011, the U.S. only imported just 2 BSCF of Nigerian gas, and since 1999 when LNG export sales began in Nigeria, for the very first time in 2012, the country did not import LNG from Nigeria. It imported 2.5 BSCF of gas from Nigeria in 2013 but did not import gas from Nigeria in 2014 and 2015.[715] After that and up to date, U.S. gas imports from Nigeria remained minimal and irregular.[716]

Europe, which used to be the largest gas importing region from Nigeria, is now increasingly seeing shale gas production from the U.S. as a viable alternative to Nigeria, thus raising more uncertainty for gas development in Nigeria. As of 2010, Europe was responsible for importing 67 per cent of total LNG exports from Nigeria. However, by 2014, gas volumes imported by Europe from Nigeria dropped to 23 per cent.[717] Over the same period, Japan, followed by South Korea, were the two countries from the Asian pacific region purchasing the most LNG from Nigeria.[718] But as is the case with the European market, the U.S. shale gas is also making an incursion into the Asia market and already threatening energy trade relations between these countries and Nigeria.[719] This, of course, does not bode well for Nigeria's plans to develop the sector.

Also, growing investment and promoting less-carbon intensive energy sources like renewables, particularly in Europe and China, contributes to weaker global demands for petroleum products and threatens new oil and gas projects.[720]

[714] U.S. EIA, 'Country Analysis Brief: Nigeria' 2016 (n44) 16.
[715] Ibid
[716] U.S. EIA, 'Background Reference: Nigeria' (Last Updated: January 12, 2021) 8.
[717] U.S. EIA, 'Country Analysis Brief: Nigeria' 2016 (n44) 16.
[718] Ibid
[719] Fatih Macit and Holly Rehm 2014 (n713).
[720] Dave Mead and Porsche Stiger 2015 (n709) 4.

However, it could be argued that natural gas consumption in recent years increased regardless of the competition from renewables. This, of course, is because natural gas is considered a less energy-intensive petroleum fossil fuel, but does not take away from the fact that demands for petroleum products are no longer where they used to be in 2007 when consumption of petroleum products was at its peak.[721] Moreover, this shift from carbon-intensive energy projects to investments in alternative sources contributes to the frequency of volatility in the global market because investors and operating companies are now more hesitant to invest in oil and gas infrastructure.

### 5.3.6. Lack of Domestic Gas Pricing System

A gas pricing template that encourages the affordability of gas by domestic consumers and guarantees a return on investment for gas suppliers will lead to improved utilisation of gas in Nigeria.[722] But this has been difficult to set due to three main factors. Firstly, the underdeveloped nature of the domestic gas market from a lack of insufficient infrastructure to supply gas to the market. Secondly, the continuous allocation of more gas for export because it is economically favourable for export prices compared to domestic purchases.[723] And thirdly, the divergent interests of shareholders in the gas sectors, from gas producers to transport and distribution companies, as well as government and consumers,[724] make it even more challenging to establish a pricing template suitable for all.[725]

Having recognised that an asymmetrical pricing regime does not support economic growth and supply availability, in 2008, the Government issued the Domestic Gas Supply Obligation to companies producing gas in Nigeria. This was specifically to

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[721] ibid
[722] Tade Oyewunmi and Akin Iwayemi, 'Gas to Power Markets in Nigeria: A Regulatory and Economic Assessment' (Being a paper presented at the 9th NAFE/IAEE International Conference, Abuja, Nigeria, 24-26th April 2016)
[723] Africa's Oil and Gas Report, 'Nigeria's National Domestic Gas Supply and Pricing Policy' (April 18, 2008). Available at https://africaoilgasreport.com/2008/04/gas/-monetization/nigerias-national-domestic-gas-supply-and-pricing-policy/ accessed April 23, 2021.
[724] Olusegun A. Omisakin and others, 'Domestic Natural Gas Pricing: Issues and Policy Options for Nigeria' (2011) Vol. 12, Nos.2, TPJST, 181-189 at 186.
[725] ibid

remedy the shortfall in gas supply made available for domestic consumption.[726] The policy which was issued under the National Domestic Gas Supply and Pricing Policy and Regulation oblige all licensed gas producers to (1) set aside a specific volume of gas to meet the demands of strategic sectors in the economy. The strategic sectors include power; industries that utilise gas as feedstock in production; and commercial sectors that use gas as fuel, and (2) deliver them to purchasers according to a given procedure.[727]

According to Elias and Ogiemudia, each of these three strategic sectors has a dedicated pricing regime that sets out a clear structure for resolving floor prices for gas supplied to them. The floor prices are determined on a cost-of-supply basis that uses a quasi-regulated pricing regime that establishes the lowest supply cost that will guarantee a 15 per cent rate of return on investment for a supplier. The forecast average of prices to be paid to all gas suppliers by the three strategic sectors was then described as Aggregate Domestic Gas Price. The aim was that while suppliers supply gas at a fixed rate, those who buy pay for it at the sector price.[728]

But as gas demands increased in Nigeria, domestic consumers struggled to pay up for gas supplied; this further dip in return on investment meant that supply availability was also affected.[729] To resolve this and ensure the availability of supplies for domestic consumption, Government must adopt a sector-based pricing strategy that domestic consumers can afford while also delivering a fair return on investment for both gas producers and suppliers.[730] A gas pricing strategy that is cost-reflective and not subject to state subsidies is often considered more attractive to drive investments and development of the domestic gas market. This is because investors and gas producers generally favour markets

[726] A Review of the Nigerian Gas Pricing and Supply Framework (Oil and Gas Update January 2009). Available at http://pppra.gov.ng/wp-content/uploads/2014/11/Nigerian-Gas-Supply-Framework.pdf accessed December 17, 2019.
[727] Folake Elias Adebowale and Ozofu Olatunde Ogiemudia, 'Domestic Gas supply and Pricing Reform' (Udo-Udoma and Bello-Osagie, International Law Office, June 15, 2009) 2.
[728] ibid
[729] U.S. EIA, Country Analysis Brief: Nigeria 2016 (n44) 16.
[730] Tade Oyewunmi and Akin Iwayemi, 2016 (n722).

where traded prices are influenced by supply and demand factors instead of where commodities consistently face political interference.[731] Unfortunately, in the Nigerian gas sector, where the government maintains a controlling interest in oil and gas since nearly 70 per cent of the gas supplied for domestic sales are used to generate power, the government still determine gas prices.[732]

### 5.3.7. Lack of Funding and Investment Bottlenecks

The development of the gas sector in Nigeria is affected by poor funding of the joint venture agreed projects between the government and the multinational companies.[733] For instance, the production sharing contracts lacked commercial terms for natural or associated gas because the most market preference was for oil than gas. Also, the joint venture agreements and production sharing contracts for the oil and gas sector did not have clear and standard commercial/fiscal terms.[734] Also, due to insecurities and inconsistent policies, the gas sector could not attract sufficient external funding. Consequently, vast reserves of the nation's gas resources remained unexploited. Further to this, in the gas market, the security of revenue and counterpart equality was limited to projects that lenders and investors consider as bankable rather than creating an environment where the proper cost-reflective pricing structure supports investments.[735]

### 5.3.8. Security of Gas Pipeline

According to Lawal and Ese, oil and gas pipelines' poor security and vandalism is rooted in a long history of marginalisation, neglect, and repression of the Niger Delta region.[736] Although Udoh's analysis did not draw a direct connection between marginalisation and economic neglect of the region with vandalism of pipelines, most participants in his study identified those reasons as probable causes of the

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[731] Folake Elias Adebowale and Ozofu Otunde Ogiemudia 2009 (n727) 2.
[732]Federal Government of Nigeria, 'Official Gazette: Government Notice No.31' (Lagos, February 19, 2008) 7-14.
[733] Philip E Agbonifo 2015 (n631) 109.
[734] Africa's Oil and Gas Report 2008 (n723).
[735] ibid
[736] M.O. Lawal and T.C. Ese, 'Environmental Impact of Pipeline Vandalization on the Nigerian Landscape: The Case of the Niger Delta Region' (2012) Vol. 39 Issue 1, JHE 73-84 at 74-74.

frequent damage to pipelines in Nigeria.[737] Other reasons specified in the study include: (1) the divide and rule politics of oil and gas companies within host communities; (2) the inadequate representation of youths in job opportunities; (3) poor infrastructure development in host communities; (4) diversion of contracts; (5) corruption and embezzlement of community support funds; and (6) operator's influences in communal and youth group politics etc. as possible reasons for conflict in the region.[738]

According to the NNPC Annual Statistical Bulletin 2019, for a decade, between 2009 and 2018, approximately 22,884 pipeline breaks were recorded on the Nigerian Pipeline and Storage Company Limited (NPSC) pipelines. [739] The NPSC operates Nigeria's national oil company' downstream pipelines, deposits and jetty infrastructures for efficient storage and transportation of products across the country.[740] Out of pipeline breaks, 22,500 of those were because of vandalism, while 384 of those incidents were due to system deterioration like a rupture.[741]

In 2019 alone, a further 1,406 pipeline breakages were recorded on the NPSC pipelines. Out of these, 1,387 were from activities of vandals, while 19 of the incidents occurred due to pipeline deterioration like ruptures. The consequences of these destructions and pipeline wear and tear resulted in the loss of 308,824 billion barrels of petroleum products. In comparison, 233,076 barrels of crude oil, which are considered a positive variance in 2019, were gained.[742] According to the NNPC, in January 2020, 27 pipeline points were vandalised in Nigeria. This, of course, represented a 37.21 per cent reduction in vandalisms compared to December 2020 that recorded vandalisms on 43 pipeline points. In January 2021, about 74 per cent of vandalised points were reported from the Mosimi Area in

[737] Isidore Udoh, 'Oil Production, Environmental Pressures and Other Sources of Violent Conflict in Nigeria' (2020) Vol. 47, No. 164, RAPE, 199-219 at 209-211, 219.
[738] ibid 219.
[739] NNPC, Annual Statistical Bulletin 2019 (n622).
[740] Nigerian Pipelines and Storage Company Limited (NPSC). Available at https://nnpcgroup.com/Downstream/pages/npsc.aspx accessed December 17, 2020.
[741] NNPC, Annual Statistical Bulletin 2019 (n622).
[742] Wasilat Azeez 2021 (n647)

Ogun State, while Kaduna and Port Harcourt areas also recorded 22 per cent and 4 per cent of vandalised pipeline points, respectively.[743]

Apart from the failure to speedily execute ongoing infrastructure projects from processing plants to transportation pipelines and distribution networks to solve gas supply challenges, if pipeline vandalism continues at its current level, Nigeria cannot achieve optimal performance from its gas sector. Moreover, these challenges that continue to undermine product maximisation in the sector also have a doubling effect on the nation's power generation capacity, which requires consistent gas supplies.[744]

### 5.4. Conclusion.

Although utilisation of natural gas in Nigeria improved relatively since LNG exports began in 1999, this has not necessarily driven increases in domestic gas consumption in Nigeria to date. With internal and nationwide transmission lines still insufficient to move output to the local market, only a reduced percentage of the product is supplied to the power sector and to local industries that can afford to pay for the gas supplies. Simply put, most gas produced in Nigeria is still allocated as LNG for export sales. Apart from poor infrastructure in the gas sector, domestic consumption of gas in Nigeria is affected by several factors, including poor purchasing power of local consumers and a lack of independent administration of gas in Nigeria. Gas operation in Nigeria is controlled by the NNPC whose primary focus has been to maximise crude oil revenue while paying little to no serious attention to the development of the gas sector over the years in Nigeria.

The government's pricing policy also affects domestic gas consumption in Nigeria. Setting gas prices under an asymmetrical template disincentivises gas production and supply investment. Rather than allow gas prices to be influenced by supply and demand forces, as is often the case under a liberalised sector where many

[743] NNPC, 'Monthly Financial and Operations Report December 2020' (January 2021) 6.
[744] PricewaterhouseCoopers, 'PwC's Annual Power and Utilities Roundtable: The Challenges with Transforming the Nigerian Power Landscape' (2016) 6. Available at https://www.pwc.com/ng/en/assets/pdf/power-rountable-2016.pdf accessed December 23, 2020.

buyers and sellers of gas participate with little or no interference by public authorities, this is not so in Nigeria. As a result, most gas producers are unwilling to invest in domestic gas supply since they are unsure of returns on investment. In addition to this, undue delay in the passage of the PIA 2021 left the gas sector unattractive for investment and funding of domestic gas supplies, poor host community relations between operators and host communities, and pipeline vandalism also contributed to the poor utilisation of gas in Nigeria.

## CHAPTER 6: AN ASSESSMENT OF THE IMPACT OF CARBON EMISSION FROM NATURAL GAS PRODUCTION IN NIGERIA

### 6.1. Introduction

Nigeria has a lot of gas, currently standing at over 200 trillion cubic feet in reserve deposits. If these reserves are adequately explored, Nigeria can meet its energy needs for many decades. Unfortunately, the nation's priority for oil production, inadequate gas infrastructure and a domestic gas market that needs to be developed, most gas produced with crude oil is routinely burnt off. Although the burning of natural gas generates fewer emissions than other fossil fuels, gas production and utilization has been known to come with many environmental, public health, and economic challenges. This chapter will critically assess how flaring emissions from natural gas production impact Nigeria's economy, public health, the environment, food security etc. Finally, it concludes by suggesting that political will to address the infrastructural gap and that bold legislative reforms will be needed to mitigate the impact of gas emissions in Nigeria.

### 6.2. How Waste of Natural Gas through Flaring Affects Nigeria

#### 6.2.1. Waste of Economic Resource

According to the World Bank, billions of cubic meters of natural gas are flared annually at oil and gas production sites worldwide, representing a massive waste of valuable energy resources that could be used to support a nation's economic progress and vital development goals.[745] Although companies consider gas flaring as the cheapest and easiest process of separating and purifying crude oil,[746] the practice though affordable in the short run, does have a long-term effect that has proven to be more costly and comes at the human and environmental expense.[747] In Nigeria, gas flaring has remained an ongoing practice since the inception of its

[745] World Bank Group, 'Global Gas Flaring Reduction Partnership (GGFR)' (2021). Available at https://www.worldbank.org/en/programs/gasflaringreduction accessed January 6, 2021.
[746] C. D. Elvide and others, 'A Fifteen Year Record of Global Natural Gas Flaring Derived from Satellite Data' (2009) Vol. 2, Energies, 595-622.
[747] Agaptus Nwozor and others, 'The Political economy of Hydrocarbon Pollution: Assessing Socio-Ecological Sustainability of Nigeria's Niger Delta Region' (2019) Vol. 9, Issue 1, IJEEP 7-14 at 10.

petroleum industry. Yet, its power sector lacks sufficient feed gas to power homes and improve energy access to about 73 million Nigerians without electricity.[748]

According to Yusuf in his report of the national deficit due to gas flaring, the forecast shows that a total of 633.6 billion Nigeria Naira is wasted from about 178 flare sites across the Niger Delta Region of Nigeria where 755 to 800 million standard cubic feet of gas flare occur every day.[749] Therefore, a significant investment in gas capture, processing, and transmission lines will be required to boost the electricity supply. And this will help plug about 7 and 8 billion cubic meters of gas flared by oil and gas producers every year from production sites across the Niger Delta Region.[750]

In 1998, before the country started exporting liquified natural gas (LNG), a total of 20,002 and 11,747 million cubic meters of natural and associated gases, respectively, were produced. Out of these, 4200 million cubic meters were reinjected, and 5900 million cubic meters of gas were supplied to the domestic gas market. Similarly, a total of 750 million cubic meters of gas in output was lost to shrinkage. Shrinkages are gas lost from the gas transportation network code. Although gas lost to shrinkage may be minimal, it is important to point out that more than half of the combined share of gases (natural and associated) produced in 1998, amounting to 20,900 million cubic meters, were lost to flaring.[751]

Before 2013, Nigeria was the second most flaring country globally, emitting around 1.8 billion dollars worth of gas every year.[752] While most gas data from Nigeria is underreported, it is believed that between 1999 to 2009, Nigeria wasted an estimated 457 million metric tons of valuable economic gas.[753] Fast forward to

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[748] Sanusi Ohiare, 'Expanding Electricity Access to All in Nigeria: A Spatial Planning and Cost Analysis' (2015) Vol. 5, No. 8, ESS, 1-18 at 5.
[749] Yusuf A, 'Gas Flaring: Deficit Forecast hits N633.6BN' in Agaptus Nwozor, Jacob Audu and Joseph Ibrahim Adama, 'The Political economy of Hydrocarbon Pollution: Assessing Socio-Ecological Sustainability of Nigeria's Niger Delta Region' (2019) Vol. 9, Issue 1, IJEEP 7-14 at 10.
[750] World Bank Group, 'Global Gas Flaring Tracker Report' (Global Gas Flaring Reduction Partnership (GGFR) Multi-Donor Trust Fund, July 2020) 8.
[751] NNPC, 'Nigerian LNG Limited, Pioneering the Nation's Gas Exports'/OPEC 2003
[752] Aminu H and Reza K, 'Gas Flaring in Nigeria: Analysis of Changes in its Consequent Carbon Emission and Reporting' (2013) Vol. 37, Issue 2, JAF, 124-134.
[753] Anomohanran O, 'Determination of Greenhouse Gas Emission Resulting from Gas Flaring Activities in Nigeria' (2012) Vol. 45, Issue 1, JEP 666-670 at 666.

2013, while producing 2.5 million barrels of oil per day, Nigeria was also flaring about 1.4 billion cubic feet of gas daily. According to the Department of Petroleum Resources (DPR), the consequence of this huge waste translates to the Sub-Saharan nation losing more than 735 million Naira (over 4.9 million USD) in revenue every day to gas flaring.[754] In 2014, as the second most flaring country in the world after Russia, Nliam stated that gas flaring in Nigeria contributed the most GHG emissions compared to all other sources of carbon emissions put together in sub-Saharan Africa. According to him, at least up to 2014, about 75 per cent of the gas produced in Nigeria was flared.[755] In addition to this, under its Strategic Gas Plan for Nigeria, the UNDP and the World Bank puts the country's flaring estimate at about 2.5 billion daily cubic feet of wasted gas, which was over 70 million cubic metres per day, amounting to about 70 million tons of emissions annually.[756]

In 2014, Nigeria earned about 87 billion dollars in oil and natural gas exports and 52 billion dollars fewer export earnings in 2015, which is 35 billion dollars less than it earned in 2014.[757] In 2016, Nigeria foreign earnings from oil and natural gas sales slipped to 32 billion dollars. Still, they saw a further rebound of 55 billion dollars too in 2018, a net addition of 23 billion dollars from 2016 in export sales with the reductions in monetary gains mainly due to global price fall and changes between 2014 and 2018.[758] The economic effects of flaring gas are quantified in terms of the amount of revenue that could have been generated if the volumes of gas flared were utilised.[759] Between 2013 and 2017, Nigeria wasted a total of 40,379 million cubic meters (MCM) through flaring.[760]

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[754] Nigeria Loses Over N735m Daily to Gas Flaring- Official (Vanguard July 9, 2013 5:37 PM). https://www.vanguardngr.com/2020/03/nigeria-lost-n522bn-in-2019-as-oil-firms-flare-475bn-scf-of-gas/ accessed January 3, 2021.

[755] Sylvester O N, 'International Oil and Gas Environmental Legal Framework and The Precautionary Principle: The Implications for the Niger Delta' (2014) 22 AJICL 22, 25

[756] Strategic Gas Plan for Nigeria, Joint UNDP/World Bank Energy Sector Management Assistance Programme (ESMAP) 2004, paras 2.5

[757] U.S. EIA Country Analysis Brief: Nigeria 2016 (n44) 2.

[758] U.S. EIA, Country Analysis Summary 2020 (n217) 1.

[759] PricewaterhouseCoopers, 'Assessing the Impact of Gas Flaring on the Nigerian Economy' (2019) 11.

[760] NOAA/GGFR, 'Upstream Gas Flaring' (2018). Available at http://dataviz.worldbank.org/views/GGFRDashword07_13_2018/GasFlaring?iframeSized accessed November 21, 2020.

In 2014, for example, Nigeria accounted for 8 per cent of the total amount of gases flared globally, contributing a total of 379 billion cubic meters to the flare total in 2014.[761] If that template is used against the global pricing index at the time, the country was estimated to have lost a whopping 301 billion Naira (984m USD) to flaring in 2014. Flaring also resulted in a further loss of 243 billion Nairas (794m USD) in revenue waste in 2015. And in 2016, it also cost the economy the sum of 229 billion Nairas (751m USD), which increased by about 267 million Nairas (875m USD) in 2017.[762]

In 2018, while gas flaring cost the global economy an estimated 20 billion dollars, the Nigerian economy contributed an estimated loss of 233 billion Nigerian Naira, which is about 761.6 million dollars amounting to 3.8 per cent of cumulative global costs of gas flared that year.[763] From 2015 to 2019, Nigeria flared 37.89 billion cubic meters of gas after consistently emitting more than 7 billion cubic meters annually.[764] In terms of economic loss for 2019, data obtained from the National Oil Spill Detection and Response Agency revealed that Nigeria lost an estimated 521.9 billion naira (1.7 Billion USD) as oil and gas companies flared 475.3 billion standard cubic feet of gas. According to that report, the 475.3 billion SCF of gas flared in 2019 represented the emission of 25.2 million tonnes of carbon dioxide, which can generate 47,500 gigawatts of electricity every hour.[765]

To minimise gas flaring among operators, in 2018, the Nigerian President issued a new Flare Regulation that places a fine of 2 dollars each on every 1000 standard cubic feet of flared gas where 10,000 or more barrels of oil is produced daily. And 0.50 dollars to be charged for every 1000 standard cubic flared where less than 10,000 barrels of oil is produced in a day.[766] However, while the Regulation also requires oil and gas companies to keep flaring data,[767] up to the time of writing

[761] U.S. EIA Country Analysis Brief: Nigeria 2016 (n44) 13.
[762] PricewaterhouseCoopers, 'Assessing the Impact of Gas Flaring 2019 (n759) 11.
[763] ibid 3.
[764] World Bank Group, 'Global Gas Flaring Tracker Report' (July 2020) 5.
[765] Michael Eboh, 'Nigeria Lost N522bn in 2019, as Oil Firms Flare 475bn SCF of Gas (Vanguard, March 17, 2020 7:59 AM). Available at https://www.vanguardngr.com/2020/03/nigeria-lost-n522bn-in-2019-as-oil-firms-flare-475bn-scf-of-gas/ accessed January 21, 2021.
[766] Regulation 13 (1 and 2) of the Flare Gas (Prevention of Waste and Pollution) Regulation, 2018.
[767] Regulation 15 of the Flare Gas (Prevention of Waste and Pollution) Regulation, 2018.

this thesis, it is yet to be seen whether companies are complying with the provision that companies install metering equipment on their facilities to enhance the accuracy of flare data being reported. It is also unknown whether oil and gas companies are submitting reports of flare data within 21 days to the Department of Petroleum Resources (DPR) as required under the 2018 Regulation.[768] The Petroleum Industry Act (PIA) 2021 that also prohibits flaring and mandate oil and gas operators to install metering equipment on their facilities did not also prescribe an adequate punitive measure for economic waste of gas.[769] Instead, the PIA deferred the prescription of fines for flaring to the Nigerian Upstream Regulatory Commission or as prescribed under the Flare Gas (Prevention of Waste and Pollution) Regulation 2018.[770]

As Okenabirhe also pointed out in her work which examined the enforcement of the polluter pays principle in the Nigerian oil and gas industry, no viable legal means of allotting damages for gas flaring exist in Nigeria to encourage the use of associated gas.[771] The new Flare Regulation 2018 did adopt a less lenient approach against erring operators by imposing submission of flare reports, fines for inaccurate data or failure to provide flare data and increased general flare fines. In addition, the DPR also introduced the Gas Flare Commercialisation Programme in 2019, allowing the Government to take flare gas directly from source and auction them to private bidders in an open, transparent bid process that will drive commercialisation of often flared gases in Nigeria.[772]

On the other hand, out of more than 4 billion standard cubic feet of gas generated every day during the daily production of 1,999,885 billion barrels of oil, the government insist that 80 per cent of these gases are utilised, thus suggesting that about 700 million standard cubic feet of gas are still being wasted through flaring at approximately 180 flare locations in Nigeria.[773] While the Gas Flare

[768] ibid
[769] Section 104, 106 Nigeria's Petroleum Industry Act, 2021.
[770] Section 104, 105 of Nigeria's Petroleum Industry Act, 2021.
[771] Theresa O. Okenabirhe, 'Polluter Pays Principle in the Nigerian Oil and Gas Industry: Rhetoric or Reality (2008/2009) Vol 13 CEMPLR Annual Review (CAR) 15,
[772] Fluenta, 'Flaring Regulations Series: Nigeria 2019' (July 25, 2019). Available at https://www.fluenta.com/flaring-regulations-series-2019-nigeria/ accessed March 30, 2021.
[773] ibid

Commercialisation Programme is estimated to generate 3.5 billion dollars in revenue, producing and refining facilities in Nigeria still lack the necessary infrastructure to gather and process gases,[774] with gas transmission lines as the sector's major infrastructure deficit.[775]

### 6.2.2. Impacts on Human Health

Gas flaring produces nitrogen dioxide that, when inhaled, affects the lungs and respiratory channels, further aggravating asthma symptoms.[776] Also, if people are exposed to a high density of nitrogen dioxide released from flaring, it can cause meta-haemoglobins that prevent oxygen absorption by the blood.[777] If the exposure is to low density hydrogen sulphide releases, this can cause a sensitive reaction in the eyes and nose, leading to insomnia and headache.[778] Particulate matters that come from incomplete combustion of gas is also believed to cause cancer and even heart attack.[779] Alkane gases, which include propane, ethane, and methane when released in low densities, can also lead to swelling, itching, and inflammation. Still, when emitted in high densities, they can cause eczema breakouts on the skin and make the lungs swell.[780] Other alkenes such as propylene and ethylene from flared gases also cause body weakness, nausea, and vomiting. At the same time, aromatics like benzene, xylene and toluene can be poisonous and carcinogenic too. If produced in low quantities, it can cause blood

[774] Afolabi Elebiju and Daniel Odupe, 'Cessations and Destinations: Issues in Gas Flare Commercialisation in Nigeria' (February 8, 2021). Available at https://www.lexology.com/library/detail.aspx?g.=b8e83c4a-4acd-4636-b888-4868e2800da1 accessed March 31, 2021.
[775] ibid
[776] Environmental Rights Action/Friends of the Earth, 'Gas Flaring in Nigeria: A Human Rights Environmental and Economic Monstrosity' (Amsterdam, 2005) 10-12.
[777] AndalibMoghadam S. H, 'First Professional Iranian Environmental Conference' in Eman A. Emam, 'Gas Flaring in Industry: An Overview' (2015) Vol. 57, Issue 5, Petroleum and Coal, 532-555 at 535.
[778] ibid
[779] World Health Organisation, 'Health Effects of Particulate Matter: Policy Implications for Countries in Eastern Europe, Caucasus and Central Asia' (WHO Regional Office for Europe, Copenhagen, 2013) 6.
[780] Eman A. Emam 2015 (n25) 532.

abnormalities, stimulate the skin, impact the nerve system, and drive depression etc.[781]

In Nigeria, the absence of mandatory flaring inventory for over 50 years of petroleum exploration coupled with a lack of detailed study on the impact of flaring on the health of the citizens, especially in the Niger Delta,[782] means that the true extent of the health challenges arising from flaring in the region remains unknown. According to Oyetunji and others, a lack of strong will on the part of elected officials to address gas flaring is responsible for the absence of a yearly pool of pollution data that will guide the understanding of the extent of the health challenges arising from gas flaring in Nigeria as well as assist in the formulation of national policy.[783] Nonetheless, a few studies that investigated the connection between flaring emissions and human health problems found a greater prevalence of eye/skin irritation and many respiratory diseases in places where flaring exists than in areas without a flaring history.[784]

Gobo and others carried out a comparative investigation of the prevalent health conditions among the residents of Igwuruta, Umuechem and Ayama communities, respectively, in Ikwerre, Etche, and Abua Odual Local Government Areas (LGAs) of Rivers State Nigeria to ascertain the connection between gas flaring and people's health. The analysis relied on information drawn from medical clinics conducted by the researchers that provided them with insight into the epidemiological background of the communities. Health information was also drawn from 500 questionnaires given out to inhabitants of these communities, including data from 4 years of medical records obtained from the primary health centres in all three communities.[785] It is important also to point out that between Eneka and Igwuruta communities in Ikwerre LGA, Shell Petroleum Development Company (SPDC) Nigeria has an oil and gas Flow Station called Agbada II Flow

[781] ibid
[782] Clifford C and David S, 'Air Pollution Due to Gas Flaring in the Niger Delta: A Review of Current State of Knowledge' (Greenpeace Research Laboratories Technical Report (Review), University of Exeter, 2017) 5.
[783] Okerede B. and others, 'Drivers of Anthropogenic Air Emissions in Nigeria- A Review' (Elsevier Limited, 2021) Vol. 7, Heliyon, 1-13 at 1, 2.
[784] Clifford C and David S, 2017 (n782) 5.
[785] A.E. Gobo and others, 'Health Impact of Gas Flares on Igwuruta/Umuechem Communities in Rivers State' (2009) Vol. 13, No. 3, JASEM, 27-33 at 28.

Station[786] with three flare points- two vertical and one horizontal flare point. Igwuruta is bounded by the Umuechem community in Etche Local Government Area of Rivers State. In Igwuruta and Umuechem, respiratory conditions, cough and eyes/skin irritation was more prevalent due to the history of flaring in that environment. But this was not the case in the Ayama community in Abua Odua Local Government Area, where the history of gas flaring never existed.[787]

Although medical records in Ayama community health centre did show that lower feverish conditions were reported than observed in Igwuruta/Umuechem medical centres, more diarrhoea/dysentery, catarrh and cold incidents were reported however reported in Ayama Abua medical records. On the other hand, asthma, breathing difficulty, cough, dizziness, and eye irritation which are commonly linked to air pollution,[788] were found to occur more frequently in Igwuruta and Umuechem communities where flaring history existed. And on a percentage scale, the health challenges that were commonly associated with air pollution accounted for 22.4 per cent of all the cases recorded in Igwuruta/Umuechem health centres and quadrupled similar cases obtained from records available in the Ayama community that only accounted for 5.9 per cent of air-pollution related cases.[789]

In 2016, the World Bank estimated that 4.2 million people died from diseases connected to ambient air pollution, with 91 per cent of those losses occurring in low and middle-income economies, including Nigeria.[790] In Nigeria, the impact of gas flaring in the Niger Delta Region is as old as the country's inception of oil and gas exploration.[791] During oil and gas production, the incomplete combustion of

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[786] S.M.O. Akhionbare, and others, 'Comparative Assessment of Air Quality in Igwuruta and Aluu, Rivers State, Nigeria' (2020) Vol. 24, No. 4, JASEM, 607-614 at 608.
[787] n818 [31, 32]
[788] World Health Organisation, 'Review of Evidence on Health Aspects of Air Pollution- REVIHAAP Project: Final Technical Report' (WHO Regional Office for Europe, 2013) 82-86
[789] A.E Gobo 2009 (n785) 32.
[790] World Bank Group, 'Mortality and Burden of Disease from Ambient Air Pollution' (2016). Available at http://www.who.int/gho/phe/outdoor_air_pollution/burden/en accessed January 28, 2021.
[791] Brandt A. R, 'Accuracy of Satellite-derived Estimates of Flaring Volume for Offshore Oil and Gas Operations in Nine Countries' (2020) Vol. 2, Issue 5, JERC, 51006.

associated gas from crude oil often results in the emission of black carbon.[792] Black carbon emission does not only lead to premature deaths; they are also responsible for various respiratory problems affecting many children in Niger Delta. The New York Times describes the consequences of exposure to black carbon as follows:

> Particulate matter emissions (soot and fly ash) are a concern because they can contribute to long-term respiratory problems. Many of these particles are extremely small of the order of 10 micrometre or less, and they are thus suspended in the air we breathe. After inhaling them, they get trapped in the very thin air passages inside the lungs. Over a period of years this reduces the air capacity of the lungs. Reduced air capacity leads in turn to severe breathing and respiratory problems. Chronic asthma or emphysema can result, as well as increased general susceptibility to respiratory diseases. To make things worse, these particles may carry along small amounts of hazardous trace elements or potentially carcinogenic organic molecules.[793]

Carcinogenic organic molecules are gaseous properties that possess the potentials to cause cancer in people who are usually exposed to black soot emissions. Sadly, those most vulnerable to this live in impoverished communities mainly situated around flare locations whose only subsistence occupation is fishing and farming.[794] For example, it was confirmed that in a period of 3 years from 1997-2000, a total of 362 cases of cancer diseases were reported at the University of Port Harcourt Teaching Hospital alone in Rivers State. And according to Nwankwoala and Georgewill, these cases or incident reports correlate with the activities of Shell

[792] M.S. Forbes and others, 'Formation, Transformation and Transport of Black Carbon (Charcoal) in Terrestrial and Aquatic Ecosystems' (2006) Vol. 370, STE, 190-206.
[793] The New York Times, 'U.S. Emissions of NOx' in Fossil Fuels: Environmental Effects (2015) Available at https://personal.ems.psu.edu/~radovic/Chapter11.pdf accessed February 1, 2021.
[794] Adebayo O and Jemina D, 'Effects of Gas Flaring on Blood Parameters and Respiratory System of Laboratory Mice, *Mus Musculus*' (2010) Vol. 30, Environmentalist, 340-346 at 340, 341.

Petroleum Development Company (SPDC) in communities where the patients in question live.[795]

Also, drinking water in communities that are negatively impacted also carries a lot of other health implications. For example, the people of Nisisioken Ogale in Eleme Rivers State Nigeria have been drinking water from wells that were contaminated with benzene, a popular carcinogen whose concentration levels are more than 900 times the level prescribed by World Health Organisation (W.H.O) guidelines.[796] As a toxic chemical from oil and gas flaring, benzene is associated with adverse impacts on human health and has a specific harmful effect on the blood and bone marrow. It also increases the risk of developing leukaemia, chromosomal aberrations, lymphoma, and pancytopenia.[797]

Exposure to benzene is volatile. As a hydrocarbon that is a natural part of crude oil, exposure to benzene at very high levels could result in irregular heartbeats and even death.[798] According to the W.H.O., human exposure to benzene is linked to a range of acute and long-term adverse health impacts and diseases such as cancer and aplastic anaemia. Acute effects of exposure to Benzene also lead to narcoses such as dizziness, drowsiness, headache, tremors, confusion, and loss of consciousness.[799] Also, alcohol use when one is exposed to benzene could be very toxic. According to the International Agency for Research on Cancer, benzene is classed as carcinogenic to humans, capable of causing cancer in terms of chronic exposure to benzene.[800] In the Niger Delta Region of Nigeria which host about 180 flare sites,[801] with 65 per cent of the flaring taking place at onshore flare

[795] R.N.P. Nwankwoala and O. A. Georgewill, 'Analysis of the Occurrence of Cancer and other Tumors in Rivers and Bayelsa States, Nigeria from December 1997-December 2000' (2006) Vol. 8, AJAZEB, 48-53.
[796] United Nations Environment Programme, 'Environment Assessment of Ogoniland' (UNEP Report, 2011) 11.
[797] Mark A. D'Andrea, and G. Kesava Reddy, 'Health Effects of Benzene Exposure Among Children Following a Flaring Incident at the British Petroleum Refinery in Texas City' (2014) Vol. 31 No. 1, JPHO, 1-10 at 1 and 2.
[798] U.S. Centre for Disease Control and Prevention, 'Facts about Benzene' (2021) 2. Available at https://emergency.cdc.gov/agent/benzene/basics/facts.asp accessed March 21, 2021.
[799] World Health Organisation, 'Preventing Disease Through Healthy Environment' (2010) 2
[800] ibid
[801] Fluenta, Flaring Regulation 2019 (n772).

locations,[802] the impact of flaring has been attributed to increases in the risk of abortion and stillbirth in women[803] as well as shortened lifespan in most vulnerable and impacted communities in the region.[804]

Also, the UNEP Report 2011 states that out of 28 wells investigated in 10 communities close to most contaminated sites, in 7 of the 28 wells, the concentration level of benzene found in the water samples stood at least at a thousand times more than the standard of 3 micrograms per level (pg/l).[805] Worrying as this is, these communities being aware of the pollution in their communities and the dangers of drinking, cooking, washing and taking a bath with the contaminated water in these areas, insist they do so because there is no other alternative. Benzene was also found in all air samples at a concentration level ranging from 0.155 to 48.2 micrograms per cubic meter. And approximately ten per cent of benzene concentrations in Ogoniland were also reportedly higher than the concentration levels the U.S. Environmental Protection Agency (USEPA) and the World Bank believe are equivalent to 1 in 10,000 risks of cancer.[806]

According to Nwozor and others, the dangers from oil production such as oil spillage, gas flaring, and toxic pollutants have equally had a combined damaging effect on the Niger Delta region. These activities have distorted the ecosystem of the Niger Delta. The distortions range from polluted creeks to polluted mangroves, rivers, and streams. Others include ravaged swamps and scorched farmlands.[807] Other environmental impacts from gas flaring include reducing bacterial and fungal effects on the ecosystem. The coexistence and physical interaction of bacteria and fungi is a naturally occurring interdependence that creates consortia whose properties results in changes in pathogens or nutritional influence of either

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[802] Ed Reed, 'Nigeria Shortlists Gas Flare Companies' (February 18, 2020: 3:23 PM). Available at https://www.energyvoice.com/oilandgas/africa/225003/nigeria-shortlists-gas-flare-companies/ accessed April 1, 2021.
[803] Waldner C L and others, 'Associations between Oil and Gas-Well Sites, Processing Facilities, Flaring, and Beef Cattle Reproduction and Calf Mortality in Western Canada' (2001) Vol. 50, JPVM, 1-17.
[804] Sampson A, 'Gas Flaring: Nigerian Government Under Pressure (2008)' in Kan Huang and Joshua S. Fu, 'A Global Gas Flaring Black Carbon Emission Rate Dataset from 1994 to 2012' (2016) Vol. 3, Scientific Data, 1-11 at 2.
[805] United Nations Environment Programme 2011 (n796).
[806] ibid
[807] Agaptus Nwozor and others, 'The Political economy of Hydrocarbon Pollution: Assessing Socio-Ecological Sustainability of Nigeria's Niger Delta Region' (2019) Vol. 9, Issue 1, IJEEP 7-14 at 7.

or both organisms towards plants and animals, including humans.[808] Acidification of land and water bodies is continuing damage occurring in streams, lakes, and vegetation of the Niger Delta. Acid rain is also responsible for corroding roofs, especially in oil-producing communities.[809] It is usually caused by the emissions of chemical compounds like sulphur dioxide and nitrous oxides from flaring that, when combined with atmospheric moistures produce sulphuric and nitric acid that affects soil nutrients and affects crop yields;[810] Damage to economically valuable species of plant is also prominent;[811] Flaring also has and continues to alter the behaviour of birds that migrate at night, and is linked to deaths of domestic animals in the region.[812]

Another study conducted by Brisibe and Ordinioha, while confirming ongoing destruction to a wide range of natural life in the region, stated that oil and gas pollution in the region reduces soil fertility. It also covers economic trees and food crops, limiting their yields or outright killing them.[813] According to Cornell-Radimer's scale on Prevalence of Household Food Security, oil and gas pollution is responsible for about 60 per cent reduction in food security among households.[814] It also reduces the quality of food crops. For example, it reduces cassava's crude protein content by 40 per cent and leads to around 36 per cent reduction in the ascorbic acid (Vitamin C) content of vegetables like waterleaf.[815] Many pieces of

[808] Frey-Klett P and others, 'Bacterial-Fungal Interactions: Hyphens Between Agricultural, Clinical, Environmental, and Food Microbiologists' (2011) Vol. 75, Nos. 4, MMBR, 583-609

[809] Ajugwo O. Anslem, 'Negative Effects of Gas Flaring: The Nigerian Experience' (2013) Vol. 1, Issue 1, EPHH, 6-8.

[810] ibid

[811] Nii Nelson, 'National Energy Policy and Gas Flaring in Nigeria' (2015) Vol. 5, Nos. 14, JEES, 58-64 at 59.

[812] Ibid; Hans-Christian Schaefer and others, 'Impact of Climate Change on Migratory Birds: Community Reassembly Versus Adaptation' (2008) Vol. 17, GEB, 38-49 at 39, 47.

[813] Edema N. E and others, 'Eco-phytochemical Studies of Plants in a Crude Oil Polluted Terrestrial Habitat Located at Iwhrekan, Ugheli North Local Government Area of Delta State' (2009) Vol 7, National Science, 49-52.

[814] Best O and Sawyer B, 'Food Insecurity, Malnutrition and Crude oil Spillage in a Rural Community in Bayelsa State, South-south Nigeria' (2008) Vol. 7, NJM,304-309.

[815] Nwaoguikpe R. N, 'The Effect of Crude Oil Spill on the Ascorbic Acid Content of Some Selected Vegetable Species: Spinach Oleracea, Solanum Melongena and Talinum Triangulare in an Oil Polluted Soil' (2011) Vol 10 PJN, 274-281.

evidence have posited that ascorbic acid or vitamin C 'protects against respiratory tract infections and reduces the risks of cardiovascular diseases and some cancers.'[816]

The consumption of these produces and food crops is now believed to be responsible for a 24 per cent increase in rising malnutrition among children in the region.[817] Furthermore, animals that encounter surfaces polluted with crude oil, for instance, become hemotoxic, that is, have their red blood cells destroyed in the process. They could also become hepatotoxic, causing liver damage and suffering from cancer and infertility from being exposed to polluted sites.[818]

### 6.2.3. Environmental Hazards and Soil Degradation

Apart from the health conditions like asthma, cancers, blood disorders, and chronic bronchitis from prolonged exposure to gas flaring,[819] in addition to oil spills, gas flaring is also blamed for the dangerous contamination of water bodies, harmful air qualities and decline in soil fertility in the Niger Delta Region. It is also responsible for the growing loss of arable lands and reduces fish stock in the Niger Delta.[820] Furthermore, while consistent flaring releases significant GHG into the atmosphere and contributes to global warming effects that also affect the economy of the Niger Delta,[821] the impact of gas flaring is also believed to exacerbate tensions between impacted communities and multinational companies in the region.[822]

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[816] Amanda K. S and Carol S. J, 'Vitamin C: Overview and Update' (2011) Vol. 16, Issue 1, JECAM, 49-57 at 49.
[817] Best O and Seiyefa B, 'The Human Health Implications of Crude Oil Spills in the Niger Delta, Nigeria: An Interpretation of Published Studies' (2013) Vol 54, Issue 1, NMJ, 10-16 at 10.
[818] ibid
[819] Nwankwo C. N and Ogagarue D. O., 'Effects of Gas Flaring on the Surface and Ground Waters in Delta State Nigeria' (2011) Vol. 3, Issue 5, JGMR, 131-136; Nordell B., 'Thermal Pollution Causes Global Warming' (2003) Vol. 38, Issue 1, JGPC, 305-312.
[820] U.S. EIA, Country Analysis Brief: Nigeria 2016 (n44) 2.
[821] Nwankwo C. N and Ogagarue D. O., 2011 (n819); Shu Y, Lam N. S. N, and Reams M, 'A New Method for Estimating Carbon Dioxide Emissions (2010)
[822] U.S. EIA, Country Analysis Brief: Nigeria 2016 (n44) 2.

According to the United Nations Environment Programme (UNEP) report that assessed the extent of environmental contamination of Ogoniland in Niger Delta, while there is currently no active production taking place in Ogoniland, after fifty years of prior production activities, the people still suffer from the hazards of oil and gas operation in their environment.[823] The impact on the environment ranges from groundwater contamination to high levels of hydrocarbons found in the creeks of Ogoni and neighbouring Andoni communities. Others include destruction of mangroves, conversion of channels to arid lands, poisoning of agricultural lands, and availability of benzenes in all air samples.[824] Given the extent of impact from spills and flaring emissions, it is not surprising that the report concluded that it could take up to 25 to 30 years to remediate the damages caused to the environment by many years of consistently high levels of pollution.[825]

Gas Flaring is a leading source of black soot or black carbon (BC),[826] which occurs in falling particulate matter (PM) that carries the potential to directly warm the atmosphere or absorb the sunlight and reduce albedo when it falls on ice and snow covers.[827] When it collects on rooftops and is washed down during rainfall, it contaminates the soil/land and makes it unproductive for cultivation.[828] In Port Harcourt and other parts of Rivers State in Nigeria, since the summer of 2016 to date, residents have been exposed to frequent particles of soot inside and outside their homes and offices.[829] As the energy hub of the Niger Delta Region, many oil

[823] United Nations Environment Programme 2011 (n796) 8, 12.
[824] ibid 9-11.
[825] United Nations Environment Programme 2011 (n796) 8, 12.
[826] U.S. Environmental Protection Agency, 2012
[827] McEwen J D N, and Johnson M R, 'Black Carbon Particulate Matter Emission Factors for Buoyancy-Driven Associated Gas Flares' (2012) Vol. 62, JAWM, 307-321.
[828] Michiko Ishisone, 'Gas Flaring in the Niger Delta: The Potential Benefits of its Reduction on the Local Economy and Environment' (2014) in Nii Nelson, 'National Energy Policy and Gas Flaring in Nigeria' (2015) Vol. 5, Nos. 14, JEES, 58-64 at 59.
[829] Okhumode H. Yakubu, 'Particle (Soot) Pollution in Port Harcourt Rivers State, Nigeria-Double Air Pollution Burden? Understanding and Tackling Potential Environmental Public Health Impacts' (2018) Vol 5, Issue 2, Environment 1-22 at 10; Chris Giles, 'Port Harcourt: Why is this Nigerian City Covered in a Strange Black Soot?' (CNN, April 26, 2018, 15:20 GMT). Available at https://edition.cnn.com/2018/04/26/africa/nigeria-portharcourt-soot/index.html accessed January 12, 2021.

and gas activities go on around Port Harcourt, but until 2016, Rivers people did not see an unprecedented level of black soot from petroleum activities that currently threatens the environment.[830] In addition to increases in soil degradation, petrochemical smog and poor ambient air quality, black soot emission also affects aquatic life. The farm produces, drinking and bathing water in and around Port Harcourt and is also affecting the ease of doing business in the State. This is because residents are now terrified to go out, work, and do their businesses to avoid being exposed to black soot as they live in palpable fear of the long-term effects of over four years of exposure to black soot emissions on their skin, liver, and lungs.[831]

According to preliminary test samples of the particulate matters obtained by the Environment Ministry, the black soot emission is caused by a combination of factors, including incomplete combustion of hydrocarbons by operators, illegal artisanal refineries, and activities of asphalt processing companies.[832] In their findings which concludes that the soot in Port Harcourt is petroleum-based and emanate from petrochemical companies and the activities of illegal refineries, Nrior and Thompson also observed that emissions from the burning of tyres by people who want to access coppers for sale also contribute to the gravity of the impact.[833] To arrive at this conclusion, Nrior and Thompson obtained and examined soot particles from the Abuloma town area and Odili road axis of Port Harcourt between midnight to 6 am, and from 6 am – 8 am. According to them, since the soot particles in the area mostly fall during the stated hours, they

[830] Mina W and others, 'Residents' Perception of the Effects of Soot Pollution in Rivers State, Nigeria' (2020) Vol. 14, No. 12, AJEST, 422-430 at 423, 424, 427.
[831] Yomi Kazeem, 'A Mystery Soot Has Set Off an Air Pollution in Nigeria's Oil Hub City' (Quartz Africa, February 18, 2017). Available at https://qz.com/africa/912374/nigerian-city-of-port-harcourt-is-dealing-with-with-a-mystery-soot-air-pollution-panic/ accessed February 6th, 2021; Ede P. N and Edokpa D. O., 'Satellite Determination of Particulate Load Over Port Harcourt during Black Soot Incidents' (2017) Vol. 5, No. 2, JAP 55-61 at 55-57.
[832] Ede P. N and Edokpa D. O, 'Satellite Determination of Particulate Load Over Port Harcourt during Black Soot Incidents' (2017) Vol. 5, No. 2, JAP 55-61 at 55; n864.
[833] Renner R N and Esther T T, 'Black Soot: Percentage Source and Aeromicrobiology' (2018) Vol. 7, Issue 6 IJSR 991-996 at 992.

assumed that those times represented when most operations generating black soot emissions in and around the city are carried out.[834]

Under the Rivers State Environmental Protection and Management Act of 2019, the State Ministry of Environment could easily sanction indiscriminate burning of tyres or even seal off any asphalt company for "aggravated air pollution and breach of environmental laws'' in the State,[835] but it cannot do this where the emissions are petroleum-related.[836] This is because the constitutional competence to legislate "oil and gas activities or regulate pollution arising from it" are exclusive to the Federal Government.[837] However, the federal government has taken no concerted measure to help the citizens who have been breathing bad air for over four years. Instead, while black soot emission continues, both the State and federal governments continue to blame each other over whose responsibility it is to take stringent policy action to address the situation.[838]

According to Itode, residents of Buguma town in Asari-Toru Local Government Area of Rivers State noted that the impact of soot in their environment has worsened an already bad ecological situation in the area and increases vulnerabilities to lungs infection.[839] A resident, Diepriye Joe, summed up her experience of about four years of the impacts of black soot emissions in Buguma this way:

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[834] Ibid, 992-994
[835] Rivers State Environmental Protection and Management Act of 2019, Nigeria.
[836] Ihesinachi A. Kalagbor and others, ''Exposure to Heavy Metals in Soot Samples and Cancer Risk Assessment in Port Harcourt, Nigeria' (2019) Vol. 9, No. 24, JHP, 1-12 at 2.
[837] Section 4(5)(7); 43 and Part II of the Schedule of the 1999 Nigerian Constitution (as amended).
[838] Pollution: Soot Still Casts Toxic Shadows Over Rivers State (June 16, 2018). Available at http://saharareporters.com/2018/06/16/pollution-soot-still-casts-toxic-shadows-over-rivers-state accessed January 29, 2021.
[839] Sampson Itode, 'Heavy Air Pollution Heightens Fear of Lung Diseases in Rivers' (PUNCH, February 7, 2021). Available at https://punchng.com/heavy-air-pollution-heightens-fear-of-lung-diseases-in-rivers/ accessed February 10, 2021.

*The soot is enormous here. We have been managing water pollution for a long time in this area. We no longer drink well water because of the petrol-like substance in it and now the air too is polluted. Where are we going to live with our children? I don't know which part of the state that is safe now. "I treat cough and catarrh every week. My children are always developing coughs even in the heat. A doctor told me to always close my door and window at night. How can that work when I don't have an air-conditioner. That is why I am begging the state government to do something before soot kills us. We have been told that the effects on our health could give us lung diseases, but we are helpless.*

On his part, Fegalo Nsuke, the President of the Movement for the Survival of Ogoni People (MOSOP) attributed the failure to end pollution in Niger Delta to 'stakeholders sabotage and poor government response to the plight of people.' He maintained that environmental pollution in the region has simply continued not out of disregard by operators to follow operational guidelines but because violators are not sanctioned.[840] The non-governmental group-The Extra Step Initiative (TESI) that led a peaceful protest in Port Harcourt to draw global attention to the plights of Rivers people opined that the government is more interested in the revenues that accrue from flared gases than the impacts on people's health and environment. Eugene Abels, who leads TESI, observed that nobody between the State and Federal Government is putting their feet on the ground to address or stop the air pollution.[841] To address the environmental threats from black soot emission in Rivers State, applicants in the case of *The Extra Step Initiative and Eugene Abels v The Federal Government of Nigeria and others (2019)*, are seeking an order of the Federal High Court to direct:

1. The Federal Ministry of Environment of Nigeria (FME) and the National Environmental Standards and Regulations Enforcement Agency (NESREA)

[840] Ikuru Lizzy, 'MOSOP President Decries Negative Impact of Gas Flaring, Oil Spillage' (Wednesday 10, 2021). Available at https://www.environewsnigeria.com/mosop-president-decries-negative-impact-of-gas-flaring-oil-spillage/ accessed February 10, 2021.
[841] Sampson Itode, 2021 (n839)

to take urgent and reasonable steps to trace all sources of the soot and stop the pollution into Rivers environs;

2. The Commander Joint Military Task Force (Operation DELTA SAFE) stops the environmentally unfriendly practices of burning petroleum products confiscated from illegal oil and gas operators. This also contributes to black soot emission into the atmosphere in Port Harcourt.[842]

The grounds for the reliefs sought in the application follow the government and relevant agencies' failure to stop the black soot, which negatively impacts citizens' health. According to the applicants, the continuing failure of the government to prioritise the health and sanctity of life of citizens contravenes their constitutional right to life as provided under section 33 of the Constitution of Nigeria 1999 (as amended). Also, by abandoning its oath to protect and defend the rights of people to live in an environment free from pollution, the respondents contravene the African Charter on Human and Peoples Rights (Ratification and Enforcement) Act (Cap.A9) Laws of the Federation of Nigeria (LFN) 2004. Article 4 of the Charter provides that "Human beings are inviolable. Every human shall be entitled to respect for his life ... No one may be deprived of this right."

Furthermore, article 24 of the charter was even more specific to the point. It provides that "All peoples shall have the right to a general satisfactory environment favourable to their environment." Unfortunately, after about a year, this case will finally be mentioned at the end of April 2021 because of several adjournments as respondents evaded service of the writ and the State's Attorneys failed to show up in court on several occasions.

### 6.2.4. Threat of Migration and Rising National Insecurity

Since joining the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 and ratifying the Convention's Kyoto Protocol in 2004, Nigeria has been an active participant in global climate negotiations to date.[843] However, the country remains one of the developing nations least prepared to tackle the

[842] The Extra Step Initiative and Eugene Abels v The Federal Government of Nigeria and others, Suit No. FHC/PH/FHR/140/19

[843] UNFCCC, 'Nigeria's Intended Nationally Determined Contribution' (2015) 1.

growing impact of climate change on its economy, environment, and citizens.[844] Moreover, over the past five years and more recently, Nigeria's national security and foundational unity has come under intense threat following a non-stop farmer-herder crisis in different parts of the country resulting in the loss of thousands of lives and the displacement of many from their ancestral lands.[845] According to Chime, between 2016 and 2018 alone, the wave of 'tit-for-tat violence' between farmers and herders in Nigeria claimed about 3,600 lives, displacing hundreds of thousands of people from their homes and costing Nigeria 13.7 billion dollars in revenue loss every year.[846]

There are many triggers of these conflicts. For example, the unlawful invasion of communal lands by herders without due permission from title owners; the indiscriminate destruction of farm crops by the herds guided by herders; open defecation and contamination of major streams used for rural consumption by the herds/herdsmen; cattle rustling by criminal elements; overgrazing of fallow lands leaving it less fertile for future cultivation; and sexual harassment of vulnerable women by nomads etc.,[847] are among the drivers of farmer-herder crisis in Nigeria. However, these factors are precipitated by diminishing natural resources due to drought and desertification, which undercuts the availability of natural water bodies and pastures essential to the survival of livestock in Northern Nigeria's

[844] O.A. Olaniyi and others, 'Review of Climate Change Effect on Nigeria Ecosystem' (2013) Vol. 1, IJAAS, 57-65 at 60.
[845] Vivian Chime, 'From Nigeria's Farmer-Herder Clashes to the Sahel Crisis- is Climate Change Worsening Conflicts in Africa?' (The Cable, April 19, 2021 10:56 AM). Available at https://www.thecable.ng/from-nigerias-farmer-herder-clashes-to-thesahel-crisis-is-climate-change-worsening-conflicts-in-africa accessed April 19, 2021.
[846] ibid
[847] Philip Olayoku, 'Trends and Patterns of Cattle Grazing and Rural Violence in Nigeria (2006-2014)' in Marc Antoine Perouse De Montclos (eds), 'Violence in Nigeria: A Qualitative and Quantitative Analysis' (Nigeria Watch Project, IFRA-Nigeria Working Papers Series No. 34, November 28, 2014) 2; Abubakar Shehu, 'Newspaper Coverage of Herders/Farmers Conflict in Nigeria' (2017) Vol. IJCS, 213-225 at 214; Kubiat Umana, 'Farmers-Herdsmen Conflicts in Nigeria: causes, Effects' (January 3, 2019). Available at https://researchcyber.com/farmers-herdsmen-conflicts-nigeria-causes-effects/ accessed January 12, 2021.

Sahel region where herders are found.[848] Consequently, to provide greener pastures and water for livestock, herdsmen will have to move from arid locations in Northern Nigeria to the Southern part of the country where they believe grazing opportunities and water for their livestock still exist.[849]

Although no direct links exist between the flaring of gas in Nigeria and the recurring farmer-herder crisis, to mitigate future threats to peace and sustainability due to global warming as seen with desertification and drought in Northern Nigeria, adaptation policies must be mainstreamed into target measures to minimise gas flaring in Nigeria. Although it could be argued that the GHG contribution from Nigeria, when compared to the U.S. and China, is inconsequential[850] to fuel a conflict, following available data which shows that the largest GHG contribution to global warming is from the energy sector, it makes a compelling case to treat gas flaring as a potential threat to peace and security in Nigeria. The energy sector (comprising of oil and gas, transport, power, buildings, industrial and manufacturing, etc.) contributes about 73.2 per cent of current global emissions that drive temperature increases and environmental disasters around the world and worse still in developing economies.[851] Out of this, the process of removing oil and gas from the ground to final consumers contributes about 15 per cent of global energy emissions.[852]

In Nigeria, oil and gas production is closely tied to the economy. It is currently responsible for 10 per cent of the nation's gross domestic products and accounts

[848] Nsemba E. L and others, 'Desertification, Migration, and Herder-Farmer Conflicts in Nigeria: Rethinking the Ungoverned Spaces Thesis' (2021) Vol. 4, No. 1, JOPS, 136-146 at 138.
[849] ibid
[850] Hannah Ritchie, 'Who has Contributed Most to Global CO2 Emissions' (Global Change Data Lab, Oxford University, October 1, 2019). Available at https://ourworldindata.org/contributed-most-global-co2 accessed January 20, 2021.
[851] Johannes F and others, 'This Interactive Chart Shows Changes in the World's Top 10 Emitters' (Climate Watch, and World Resources Institute, December 10, 2020). Available at https://www.wri.org/insights/interactive-chart-shows-changes-worlds-top-10-emitters accessed March 29, 2021.
[852] IEA, 'The Oil and Gas Industry in Energy Transitions: Insights from IEA Analysis' (World Energy Outlook Special Report, January 2020) 32.

for 86 per cent in export revenue[853] and 65 per cent of the budgetary allocation.[854] However, due to pollution and continuous flaring of gas from its operation, the sector is also connected with environmental disasters and steep societal inequalities. As of 2015, Nigeria was the 17th largest GHG emitter globally and the second-largest emitting country after South Africa on the African continent.[855] It became the 3rd most emitting country in Africa after South Africa and Zambia and was responsible for 0.97 per cent of all CO2 emissions in the world in 2016. The limited emission reduction observed in 2016 has since been reversed as carbon emissions in Nigeria have been on an upward trend since 2018[856] and could be attributed to increases in gas flaring. Although the amount of gas (10%) flared from the total gas output in 2018 is lower than the gas (53%) flared from volumes produced in 2002,[857] according to Hassan, the fall in percentage flare from the total volumes of gas produced at any time may not necessarily imply that gas flaring is declining in Nigeria.[858] In addition to this, Nigeria currently ranks 7th among the 30 most flaring economies globally, placing her second behind Algeria in Africa after burning off 7.44 billion cubic meters (BCM) of gas from its upstream production and LNG liquefaction plants in 2018.[859]

In 2019, flaring from Nigeria's upstream oil and gas facilities and LNG plants accounted for 7.83 BCM of wasted gas, a further emission increase by a little under

[853] OPEC, 'Nigeria Facts and Figures' (OPEC, 2021). Available at https://www.opec.org/opec_web/en/about_us/167.htm accessed April 1, 2021.
[854] Omosivie Maduka and Charles Tobin-West, 'Is Living in a Gas-Flaring Host Community Associated with being Hypertensive? Evidence from the Niger Delta Region of Nigeria' (2017) BMJ Global Health, 1-8 at 1.
[855] Daisy Dunne, 'The Carbon Brief Profile: Nigeria' (Carbon Brief, August 21, 2020). Available at https://www.carbonbrief.org/the-carbon-brief-profile-nigeria accessed February 23, 2021.
[856] Peter Hansen, 'Nigeria Has Experienced a 271% Increase in Greenhouse Gas Emissions Since 1990' (Climate Scorecard, December 20, 2020) Available at https://www.climatescorecard.org/2020/12/nigeria-has-experienced-a-271-increase-in-greenhouse-gas-emissions-since-1990/ accessed April1, 2021.
[857] Department of Petroleum Resources, 'Annual Oil and Gas Report' (2018) in PricewaterhouseCoopers, 'Assessing the Impact of Flaring on the Nigerian Economy' (2019) 4.
[858] Aminu Hassan, 'Dealing with Vulnerability to Carbon Emission from Gas Flaring: The Roles of Transparency and Utilisation Policies in Nigeria' (2020) OPEC Energy Review, 369-403 at 374, 375.
[859] World Bank Group/Global Gas Flaring Reduction Partnership, 'Global Gas Flaring Tracker Report' (July 2020) 5.

half a billion cubic flares (0.38 BCM) from 2018.[860] The flare increases from 2018, equivalent to a 104.27 million tonnes of carbon dioxide (MtCO2e) in gas waste, which means that Nigeria has experienced a 271.6 per cent increase in GHG emissions from its 1990 levels.[861] And while 'carbon dioxide' make up 61.74% of total emissions reported since 1990 from all the sectors of the economy, releases of methane gas (27.82%), nitrous oxides (7.77%) and fluorinated gases (2.66%) into the Nigerian environment during flaring over the same period is known to account for nearly half the total emissions in Nigeria.[862] The adverse impacts from these increases are already telling on the well-being of people. In the last 12 years, for instance, Nigerians have witnessed scorching temperatures and heatwaves, forcing many health problems like heat stress, stroke, meningitis, measles, rashes, and dehydration. Studies also suggest that severe heat and relatively high humidity are responsible for attracting mosquitoes that spread malaria parasites.[863] When taken holistically, with many still without access to electricity and unavailable air conditioners to cushion the effects of extreme heat and her largely rain-fed agriculture sector currently threatened by changes in precipitation, under a business-as-usual emission scenario which contributes and warmer climatic conditions could fuel more conflicts in Nigeria.[864]

To mitigate growing emission impacts, in 2015, the government has insisted it will no longer be business as usual, especially for economic sectors like the oil and gas industry that contributes significant emissions and pledged a 20 per cent reduction in emissions across these sectors by 2030. Also, with help from international support, that commitment will see up to 45 per cent reductions in emission by 2030.[865] Although 2030 is a decade away, recent increases in flaring and venting emissions from oil and gas operations since 2018 do not suggest that Nigeria is

[860] ibid.
[861] Peter Hansen 2020 (n856).
[862] ibid
[863] Opeyemi Salau, 'Lagos State is likely to get Hotter and More Humid, Leading to Greater Health Risks' (The Conversation Trust, U.K., June 23, 2020 3:11 pm BST). Available at https://theconversation.com/lagos-state-is-likely-to-get-hotter-and-more-humid-leading-to-greater-health-risks-140327 accessed January 28, 2021.
[864] Daisy Dunne 2020 (n855).
[865] UNFCCC, 'Nigeria's Intended Nationally Determined Commitment (November 26, 2015) 9.

on track to meet this commitment. Under its third National Communication to the UNFCCC in March 2020 that details steps it plans to take to mitigate emission impacts in the future, Nigeria intends to reduce if not eliminate flaring of associated gas and fugitive emissions in Nigeria by 2035.[866] It did, however, tie this new flare-out target of 2035 to a conviction that by the end of the 2017/2018 legislative year, the Petroleum Industry Bill would have become law. And as a result, by the end of 2018/2019, the funds needed to develop the Nigerian Gas Master Plan (GMP) would have been appropriated by the National Assembly. In addition, by the end of 2019, the infrastructure needed to run the GMP would have been commissioned.[867] Unfortunately, both legislative and infrastructure programmes are still not in place at the time of writing, meaning that flaring emissions from oil and gas could continue to aggravate emissions-impact on the environment, people's health and food security in Nigeria.

Although developed countries are associated with historical CO2 contributions, mitigation efforts must count for something if Nigeria is to maintain internal peace. And as the European Commission warns, climate change can be expected to continue to significantly impact natural resources, human health, and the global economy. It will also lead to temperature increases, sea-level rise, and intensifying the frequency of extreme weather, flooding, and drought.[868] In Nigeria, these impacts may not have directly aggravated conflict such as the farmer-herder clashes, but you can be confident that it will drive a socioeconomic crisis in Nigeria that is already challenged by insecurity and low income. This makes it more pertinent to consider the continuous flaring of gas a threat to security requiring urgent mitigation action.

[866] Federal Ministry of Environment, Nigeria, 'Third National Communication (TNC) of the Federal Republic of Nigeria, Under the United Nations Framework Convention on Climate Change' (Abuja, 2020) 147, 151, 155.
[867] Ibid, 147.
[868] European Commission, 'Greenhouse Gases Emissions and Climate' (EDGAR-Emission Database for Global Atmospheric Research, 2021). Available at https://edgar.jrc.ec.europa.eu/climate_change accessed February 3, 2021.

### 6.2.5. Declining Agricultural Productivity and Food Security

The Niger Delta Region that houses Nigeria's oil and gas wealth is home to more than 1,500 communities,[869] 185 Local Government Areas and an estimated 113,329 settlements. Although Fishing and agriculture are the predominant occupations of the people of Niger Delta, local inhabitants in the area now live below the poverty line[870] due to the significant damage that oil and gas exploration has caused to the occupation and living conditions of the people.[871] While oil is the mainstay of Nigeria's economy, oil and gas activities and pollution in the environment is no longer seen to be responsible for poor agricultural productivity, but it is now viewed as threatening food security in Niger Delta, especially in usually poor communities where these operations take place.[872] According to the 2011 UNEP Report, the effect of gas emission on Niger Delta vegetation makes root crops such as cassava in areas directly impacted by oil and gas pollution unstable. Consequently, when cultivation re-commences, the plants usually show signs of stress, and their yields have been reported to be much lower when compared to those from areas not impacted by pollution.[873] A few examples will offer a more relatable picture of the impact of flaring on agriculture and food security in the region.

In Edo, Esit-Eket Local Government Area (LGA) of Akwa Ibom State South-south Nigeria, observable changes in the ecosystem alongside poor agricultural yields has been attributed to flaring emissions from oil and gas operation in the area.[874] The testimony of the residents of the Edo community in Esit-Eket LGA of Akwa

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[869] Nigerian National Population Commission, '2006 Population and Housing Census of the Federal Republic of Nigeria' in Josephine Adekola, Moira Fischbacher-Smith, and Denis Fischbacher-Smith' Health Risks from Environmental Degradation in the Niger Delta, Nigeria' (Sage, 2017) Vol. 35, No. 2, Environment and Planning C: Politics and Space, 334-354 at 337.

[870] United Nations Development Programme, 'Niger Delta Human Development Report' (Lagos Nigeria, 2006). 1-3.

[871] Best O and Seiyefa B, 'The Human Health Implications of Crude Oil Spills in the Niger Delta, Nigeria: An Interpretation of Published Studies' (2013) Vol 54, Issue 1, NMJ, 10-16 at 11.

[872] United Nations Development Programme 2011 (n796) [10]

[873] ibid

[874] S. A. Nta and others, 'Impact of Gas Flaring on Agricultural Production of Edo Esit Eket Local Government Area, Akwa Ibom State, Nigeria' (2017) Vol. 4, Issue 12, IJRAF, 1-6 at 1.

Ibom State represents a prevailing challenge facing most communities hosting oil and gas operations in Niger Delta Region. According to Nta and others, prior to the discovery of oil in the region, the people of the area lived and depended on the resources from their natural environment. Agricultural produces from farms in Edo, Esit-Eket LGA also flourished its rural economy at the time. But today, the farm produces are low compared to over 20 years ago. This is also having a significant impact on rural farmers who now struggle to cultivate food as many of them are already out of business without any other means of livelihood.[875]

In Okpai kingdom in Ndokwa East Local Government Area of Delta State, constant exposure of plantations to artificial heat from flared gas every day is responsible for preventing flowering and crops fruition. Stunted growth of plantations such as cassava, yams and palm trees were also observed in the areas just the same way flaring heat hovers around plantations in Edo, Esit-Eket LGA of Akwa Ibom State.[876] In another analysis of the effects of flaring on agriculture, Alakpodia affirms that constant emission from flaring sites contributes to hardening the soil and makes farmlands adjacent to areas hosting oil and gas installations very unproductive.[877]

In Izombe Community, a town hosting oil and gas flow stations in Ohaji/Egbema/Oguta Local Government Area of Imo State, a study that examined the impact of flaring on growth, productivity, and yield of certain crops found that gas flaring in the areas resulted in a loss in food crop yields.[878] For crops that were cultivated 200 meters away from the flow stations anyways, a complete 100 per cent loss was observed, while those planted 600 meters away resulted in a 45 per

[875] Ibid, 3.
[876] Otunkor O. O and Ohwovorione P. A, 'The Effect of Gas Flaring on Agricultural Production of Okpai, Ndokwa East Local Government Area, Delta State' (2015) Vol. 3, No. 9, SSRE 266-272 at 267.
[877] I. J. Alakpodia, 'Soil Characteristics under Gas Flare in Niger Delta, Southern Nigeria' (Geo-Studies Forum, 2000) Vol.1, IJEPI, 1-10.
[878] D. Ukegbu and A. O. Okeke, 'Flaring of Associated Gas in Oil and Gas Industry: Impact on Growth, Productivity and Yield of Selected Farm Crops in Petroleum Industry and Nigeria Environment' in Otunkor O. O and Ohwovorione P. A, 'The Effect of Gas Flaring on Agricultural Production of Okpai, Ndokwa East Local Government Area, Delta State' (2015) Vol. 3, No. 9, SSRE 266-272 at 267.

cent loss in yield. In addition, a 10 per cent loss in yield was recorded in food crops cultivated 1000 meters away from flaring sites. In effect, the closer a flare location is to farmlands, the more losses were recorded in food crops in the area.[879] In their study that analysed the impact of flaring on the environment, Dosunmu and Amadi noted a depression in growing, flowering and germination of maize that were planted in areas with proximity to or in the direction of the flares. A substantial reduction in soybeans yield was also observed from sites that were a bit distant from flaring locations.[880]

Apart from the impact of flaring on the marine vegetation and produces,[881] seismic noises from exploration of oil and gas and heat from flare sites in Iko town in Akwa Ibom State and Ikuru town in Andoni Rivers State is believed to contribute to a huge migration of elephants that once occupied the thick, chilly forest in these communities.[882] Wildlife contributes greatly to enhancing the quality of human life. They serve as a source of games and can be used as research species. They can also be used for hides and skin by leather-making companies, and their attraction also boosts the tourism industry.[883] The thick and large forest in Ikuru town, in Andoni Local Government Area of Rivers State, was known to host several herds of elephants and towers of giraffes and other wildlife. Historically, Andoni LGA possessed a high level of environmental immunity because of its water and herbivorous terrain and sea fishing- the traditional occupation of the people, which made it easy for wildlife from other parts of Akwa Ibom, Okrika and Bonny to emigrate to the Andoni barrier Island. However, seismic noises from oil and gas

[879] Ibid.
[880] A. Dosumu and B.C. Amadi, 'Evaluation of the Effect of Gas Flares on the Environment' (Proceedings of the Twentieth Annual International Conference, Society of Petroleum Engineers, Nigeria Council, 1996) 45-49 in Michael and others, 'Oil Exploration and Exploitation in Nigeria and the Challenges of Sustainable Development: An Assessment of the Niger Delta' (2019) Vol. 9, Issue 4, IJEEP, 371.
[881] J. H. Ememugwem, 'Oil Pollution and Eastern Obolo Human Ecology, 1957-2007' (2009) Vol. 3, No.1, ARR, 136-151 at 136-137.
[882] F.U. Nte, 'Oil and Gas Exploitation Impact on Wildlife (The Physicist Viewpoint) Case Study: OML 11 and OML 52 Ikurundes Study Zone' (2018) Vol. 7, Issue 3, IJIRD, 20-26 at 20.
[883] ibid.

operations, including flaring impacts, have now been associated with the extinction of the wildlife of Andoni Rivers State.[884]

Iko town in Eastern Obolo in Akwa Ibom State, though a traditional Andoni community with inhabitants who speak Andoni language but are geographically separated by map for governance purposes, is host to Otapiti Flow Station from where 18 Eastern Bulk Trunk Pipeline delivers over 200,000 barrels of crude oil to Bonny terminal. The impact from the burning flare stacks that heats the environment,[885] seismic noises, and the pipelines running from Iko-town (Eastern Andoni) through Western Andoni to Bonny terminal is believed to expose the wildlife and manhunt further drives wildlife migration from Ikuru territory in Andoni LGA.[886]

### 6.3. Conclusion

Nigeria is still heavily impacted by continuous gas flaring. Perhaps this is why gas flaring in Nigeria is seen as old as the oil industry, going back to 1958, when oil sales in commercial quantities began in Nigeria. Then, flaring was not considered a severe environmental threat or regarded as a severe public health issue. Flaring in the Niger Delta is responsible for serious health-related diseases and environmental degradation in the region. From skin irritation to cancerous and respiratory illnesses, the impact of flaring is still not properly documented as there are communities in the region heavily impacted by gas flaring but have rarely been identified or named in many existing literature. Other impacts of gas flaring in communities in the region include low farm produces, black soot emissions, acid rain that also affects blood cells etc.

With the country already a temperate region, a continuing heating of its environment will continue to trigger frequent mosquitoes that transmit malaria parasites and diseases most especially under warmer conditions. Also, even though no direct link between gas flaring and desertification has been established,

[884] F.U. Nte (2018) (n882) 21.
[885] J. H. Ememugwem 2009 (n881) 136-137.
[886] F.U. Nte (2018) (n882) 21

the understanding that warmer climate due to GHG emission in the atmosphere results in dry water bodies and desertification which then fuels farmer-herder conflicts in Nigeria, should awaken regulators and lawmakers to take decisive action that will curb gas flaring and improve gas utilisation in Nigeria. Lastly, there is a lot of gains Nigeria can take from expanding gas utilisation projects, but the political will to fund gas projects and implement steep fines against polluters will be required.

## CHAPTER 7: THE NEW PETROLEUM INDUSTRY ACT 2021 AND GAS SECTOR DEVELOPMENT IN NIGERIA

### 7.1. Introduction

With growing concerns over lack of accountability, transparency and widespread corruption, the need to attain a far-reaching restructuring of the Nigerian oil and gas industry led to the inauguration of the Oil and Gas Sector Reform Implementation Committee (OGIC hereafter) on April 24, 2000.[887] That committee chaired by then Presidential Adviser on Petroleum and Energy- Dr Rilwanu Lukman, recommended the restructuring the oil and gas sector, and the separation of the regulatory functions of the industry from its commercial institutions.[888] But after introducing the National Oil and Gas Policy in 2007, the Federal Government reconstituted the OGIC to submit further recommendations for creating a new Institutional Framework for the industry; new National Directorate; new National Oil Company; and new Regulatory Institutions for robust policy design for the industry. The new recommendations made in 'the Lukman Report of 2008' by the reconstituted committee formed the basis for the Petroleum Industry Act 2021 (PIA hereafter), which first came to the Senate as an executive bill in December 2008.[889]

Although from a 2017 Guardian Editorial, it was suggested that the original petroleum industry bill was first presented to the National Assembly and passed by National Assembly during the presidency of Olusegun Obasanjo in 2003, the President declined to assent the bill.[890] As a result, another version of the bill was re-presented to the seventh National Assembly by President Goodluck Jonathan

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[887] Wumi Iledare, 'An Appraisal of Oil and Gas Industry Reform and Institutional Restructuring in Nigeria' (2008) IAEE, 24-26 at 24.

[888] Babatunde Fagbohunlu and Chukwuka Ikwuazom, 'Overview of the Nigerian Petroleum Industry Bill, p.1. Available at http://www.hoganlovellsafrica.com/_uploads/Publications/Africa_September_2012_newsletter_-_Nigerian_Petroleum_Industry_Bill.pdf accessed November 16, 2017.

[889] Ibid [1]

[890] Guardian Editorial Board, 'Passage of the Petroleum Industry Governance Bill' (The Guardian, 23rd June 2017: 4:00am). Available at https://guardian.ng/opinion/passage-of-the-petroleum-industry-governance-bill/ accessed November 21, 2017.

on July 18th, 2012.[891] Still, attempts to pass the bill into law also failed in 2018, paving the way for what became a final version resubmitted to the National Assembly in September 2020 which finally became law through the second-quarter of 2021.[892] This chapter will examine whether the new PIA 2021 followed these recommendations in the Lukman report or legislated other viable paths to enhance efficient utilisation of gas and development of the sector in Nigeria.

### 7.2. How the Petroleum Industry Act 2021 Could Impact the Gas Sector

Regardless of several iterations to the bill over the years, the new act does have novel provisions that could enhance significant investments in natural gas and drive the development of the domestic gas market as well as emission reduction from oil and gas operations in Nigeria.[893] This work will not discuss all the act's provisions on gas development. Still, it will consider those provisions relevant to utilisation of natural gas and reduction of flare emissions in the oil and gas sector. In terms of regulatory authority, before the passage of the PIA 2021, the DPR held primary regulatory powers and oversight over technical, operational, and commercial activities across the entire value chain of the Nigerian petroleum sector.[894] These responsibilities will now be performed by two new bodies set up to regulate upstream operations on the one hand[895] and the midstream/downstream segment on the other hand.[896]

The Nigerian Upstream Regulatory Commission ('the Commission') will regulate the technical and commercial operations of the upstream segment of the industry.[897] In contrast, the Nigerian Midstream and Downstream Petroleum

[891] Babatunde Fagbohunlu and Chukwuka Ikwuazom 2012 (n888).
[892] KPMG, 'Petroleum Industry Bill (PIB) 2020- A Game Changer?' (KPMG Advisory Services, June 2021) 2.
[893] Section 104-110 of the PIA 2021; Oladipo Maiye and Temitope Kalode, 'Petroleum Industry Act 2021: Opportunities for Key Industry Players' (Andersen LP, August 24, 2021). Available at https://www.mondaq.com/nigeria/oil-gas-electricity/1104754/petroleum-industry-act-2021-opportunities-for-key-inustry-players# accessed August 29, 2021.
[894] DPR, 'Functions- Department of Petroleum Resources' (2020). Available at https://www.dpr.gov.ng/functions-of-dpr/ accessed July 29, 2021.
[895] Section 10 of the PIA 2021
[896] Section 31 of the PIA 2021
[897] Section 4 Subsection 3 of the PIA 2021

Authority ('the Authority'), in a similar manner, will regulate the technical and commercial operations across the midstream and downstream segments of the industry.[898] While expressing dissatisfaction with the new entities, the Oil Producing Trade Section (OPTS) on behalf of the oil majors argued that this 'imposed segregation along the upstream and midstream for existing assets could jeopardise the integrity of past investments for assets that were technically and commercially designed to operate on an integrated basis.'[899] According to them, the PIA 'does not clearly preserve the terms of existing investments.' Also, while the government reserves the right to change laws, OPTS maintains that to win investors' confidence, the PIA should have been explicit in preserving base businesses and rights for existing petroleum sharing contracts and joint venture licenses and leases that form.[900]

Given that the DPR regulated the technical and commercial functions of the sector, the establishment of the Commission and the Authority to perform these roles means they replace the DPR. Also, with the regulatory powers now shared between the Commission and the Authority, the enormous burden borne by the DPR, which directly or indirectly imperilled its regulatory oversight over the sector, is expected to become minimal and enhance regulatory efficiency. On the other hand, the capacity of the Commission/Authority to make independent decisions without the interference or approval of the Minister is still limited in some respect. For instance, in terms of renewal or suspension of licences or leases, even where such a decision follows the provision of the law, the Commission cannot proceed without the approval of the Minister.[901] Moreover, the above requirement in section 10 (G) conflicts with section 217 subsection 5 of the same PIA 2021, which provides that the Commission or the Authority may suspend or revoke the lease, licence or permit of a holder who contravenes the conditions of a lease, licence or permit.

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[898] Section 29 subsection 3 of the PIA 2021

[899] Esther Iroanusi, 'Oil Majors, Others Raise Concerns as National Assembly Begins Hearing on PIB' (Premium Times, January 25, 2021). Available at https://www.premiumtimesng.com/news/headlines/438669-oil-majors-others-raise-concerns-as-national-assembly-begins-hearing-on-pib.html#.YQyM9PPVR80.whatsapp accessed July 26, 2021.

[900] ibid

[901] Section 10 (G) of the PIA 2021

Another laudable provision of the new law is for the Commission or the Authority to publicly make available a register of all issued, suspended, or revoked licences, permits and authorisations. The public record will also include licenses, permits or leases surrendered, withdrawn, modified or exemptions granted in respect of each of these instruments according to the PIA 2021.[902] The register will also be had in electronic format and shall carry the date of issuance of any licence, lease, permit, or authorisation and shall have the said date inscribed on the instrument(s).[903] While the public register and the electronic version of licences, leases and permits could advance transparency in the licensing regime, failure to expressly provide the name of licensees or anyone holding an interest in oil blocs for which a licence is awarded could still derail accountability.

To avoid a repeat of similar oilfield scandals such as the case involving Nigeria's Oil Prospecting Licence (OPL) 245 awarded to Malabu Oil and Gas- a company co-owned by the then Petroleum Minister when the Government sanctioned the licence.[904] The scandal involved the transfer of 1.3 billion dollars from the sale of OPL 245 oil field to undisclosed private individual accounts rather than coffers of the Nigerian government. This also resulted in several protracted legal battles between 2001 and 2021, affecting production from the embattled oil field.[905] To boost public and investor confidence in oil and gas operations, it is imperative that the identities of licence awardees and interests and titles held in oil field operations be published in the register accessible to the public. This will help both operators and regulators to avoid situations where proceeds of the sale of oilfields end up in the accounts of companies whose owners have questionable identities rather than the government.[906]

[902] Section 219 subsection 1 of the PIA 2021.
[903] Section 220 subsection 2 and Section 221 subsection 2 of the PIA 2021
[904] Energy Venture Partners Limited v Malabu Oil and Gas Limited [2013] EWHC 2118 (Comm)
[905] ibid
[906] 'Shell and Eni's Misadventures in Nigeria: Shell and Eni at Risk of Losing Enormous Oil Block Acquired in Corrupt Deal' (Global Witness, November 2015) 3.

In terms of funding of the Commission and the Authority, the bill provides, among other sources, for each Board to accept a donation of gifts and aids to meet its budgetary obligations, operating cost, and payment of salaries.[907] However, the bill did not prescribe or preclude any source where gifts or aids cannot be received. It thus raises the possibility that facilities or aids can be obtained from donors with interest in the work of the Commission or the Authority, thereby setting the stage for potential conflict of interest in the transparent workings of these regulatory agencies and can, of course, induce corruption. Also, while the PIA also took steps towards a much-needed reform of the sector, ranging from realigning governance structures to host community remediation in the event of damages arising from oil and gas operations, the law did not contemplate the long and short-term impact of climate change. Nor did lawmakers show recourse to the growing call for the energy transition.[908] Even though the Act did provide for the Commission to set, define and enforce approved standards and regulations for eliminating natural gas flaring and venting,[909] the Act did not specifically embrace the notion of energy transition as the Nigerian economy remains dependent on oil and gas.[910]

Under section 102, it provides for a licensee or lessee involved in upstream and midstream oil and gas operations to submit for approval a plan for managing the environment in respect of projects requiring environmental impact assessment (EIA) to the Commission or the Authority. The plan must be submitted within a year, beginning from the date the bill becomes law or within six months after a licence or lease is granted.[911] This, in other words, suggests that no environmental management plan is required within the first six months if activities commence immediately after a license was issued. Six months before submitting an environmental management plan is enough time for any damaging operations to

[907] Section 24 subsection 2(F) and 47 subsection 2(F) of the PIA 2021.
[908] Solina Kennedy, Martin Dietrich Brauch, Perrine Toledano and Tehtena Mebratu-Tsegaye, 'Nigeria's Petroleum Industry Bill: A Missed Opportunity to Prepare for the Zero-Carbon Future' (Columbia Centre on Sustainable Investment, January 2021) 1-4.
[909] Section 7 (E)(IV) of the PIA 2021.
[910] National Bureau of Statistics, 'The Nigerian Economy: Past, Present and Future' (Abuja, 2016) 6; Elijah Oluwagbemiga, 'International Trade and Nigeria's Mono-product Oil-based Economy. A Study of the African Catfish Aquaculture Industry' (2016).
[911] Section 102 subsection 1 (A and B) of the PIA 2021.

take place on the environment. An environmental plan should be required and obtained prior to the beginning of any operation to create a definitive expectation of the care that must be taken as they embark on an oil and gas operation or project.

Under section 53 of the PIA 2021, the Minister of Petroleum is directed within six months of PIB becoming law to incorporate the Nigerian National Petroleum Corporation Limited (NNPC Ltd) at the Corporate Affairs Commission (CAC) as a Limited Liability Company. Upon incorporation as a limited company, the NNPC Limited will automatically become a legal person independent of external influences in decision-making and can sue and be sued.[912] These features are usually characteristic of most incorporated entities. They are a clear departure from the previous organisation of the NNPC. Prior to the PIA, NNPC decisions were susceptible to political forces given the unilateral powers of the President to grant or revoke operators' licenses.[913] Although the PIA did not expressly attempt to limit the direct participation of the President in the running of the sector, NNPC Limited shall carry out petroleum operations on a commercial basis. This also includes, and at the request of the Nigerian Upstream Regulatory Commission ('the Commission'), the lifting and selling of royalty oil and profit oil for a commercial fee paid for by the Government and at the request of the Commission, and the corresponding revenue sales paid to designated accounts.[914]

Under section 64 (D), NNPC Limited is also vested with the rights to natural gas under the production sharing contracts entered prior to the effective commencement date of the PIA 2021. NNPC Limited also have a responsibility to promote domestic use of natural gas by developing and operating large-scale gas utilisation industries.[915] NNPC shall cease to exist after all remaining assets, interest, and liabilities other than those already transferred to the NNPC Limited or its subsidiaries has been extinguished or transferred to the Government.[916] And

[912] Nicholas Grier, 'Commercial Law' in Christina Ashton and others (eds), 'Understanding Scots Law: An Introduction of Scots Law, Procedure and Legal Skills' (Thomson Reuters, 3rd edn, 2018) 406.
[913] Section 191 of the PIB 2012.
[914] Section 64 (A and B) of the PIA 2021.
[915] Section 64 (H) of the PIA 2021
[916] Section 54 subsection 3 of the PIA 2021

the petroleum minister is also responsible for determining which assets, interests, and liabilities could be transferred to NNPC Limited or its subsidiary under subsection 1 of section 54. Assets that have not yet been assigned to NNPC Limited will remain with the NNPC until they have been determined or transferred to the Government.[917]

To enhance protection of the environment from oil and gas activities, the new PIA regime also provided for a contributory environmental remediation fund that will be applied by the Commission/Authority to remedy corporate environmental liability.[918] It is equally plausible that this duty to protect the environment may rank poorly in terms of oversights from the Commission or Authority. This is because both the Commission and Authority also have a duty to maximises revenue from the operations of licensees and lessees.[919] Although it is not a given that conflict of interests that often arise from the combined economic functions and environmental safety under the Department of Petroleum Resources could reoccur under the Commission or Authority, it is important that these new institutions find an adequate balance between these combined roles going forward. Under section 102 subsection 3-6, the Commission or Authority may approve, request more information, and even call for adjustments in environmental management plans submitted to it by operators but regardless of any argument to the contrary, the duty to ensure prompt economic returns and the challenges of balancing both tasks cannot be underplayed. Prior experiences of the frequency with which oil and gas operations impact the environment speak to a renewed concern that depending on the attractiveness of a licensee's portfolio before the Commission or the Authority, an environmental management plan could be poorly enforced without ancillary oversight.[920]

Other relevant provisions set out in the new law that are worth noting are the provisions on gas flaring and flaring elimination plans:

[917] Section 54 subsection 2 of the PIA 2021
[918] Section 103 of the PIA 2021.
[919] Section 7, 31, and 32 (B) of the PIA 2021.
[920] Philip Agbonifo, 'Risk Management and Regulatory Failure in the Oil and Gas Industry in Nigeria: Reflections on the Impact of Environmental Degradation in the Niger Delta Region' (2016) Vol. 9, No. 4, JSD, 1-10 at 8.

(1) While the law provides that a licensee, lessee, or operator that flares gas commits an offence and shall be liable to a prescribed fine by the Commission under the act, the law did not directly outlaw the practice of gas flaring. Instead, it permits the flaring of gas in the case of an emergency, where an exemption is granted by the Commission to the operator to flare, or where it is an acceptable safety practice under an established regulation. [921] According to section 107, the Commission or the Authority may grant permission to licensees or lessees for flaring or venting of natural gas where it is required for (i) start-up of a facility; and (ii) for strategic, operational reasons, including testing. Other than testing purposes, the law did not specify what other strategic reasons could trigger permission for gas flaring. Such broad provision could be subject to exploitation by permitting Authorities who, for personal reasons, could excuse enforcement of penalties or restrictions against gas flaring.

(2) Mandatorily requiring operators before commencing production to install metering equipment for measurement of gases flared.[922] Under the PIA 2021, gas flared or vented will be measured by metering equipment that each licensee and lessee must install on their facilities where gas is flared or vented. The installation must be done according to specifications prescribed by the Commission or Authority in a regulation.[923] This requirement is commendable and indeed novel to Nigerian laws. In what will become the principal legislation for the oil and gas industry, this metering requirement will strengthen efforts to mitigate gas waste in Nigeria. Moreover, if successfully implemented in the petroleum industry, it could have a spiralling effect on emission control in other sectors of the economy. On the other hand, unlike the petroleum bill of 2012, which proposed a 3-month window for licensees and lessees have to install metering equipment on every gas-emitting facility,[924] the PIA 2021 is,

[921] Section 104 subsection 1 of the PIA 2021.
[922] Section 106 PIB 2020
[923] Section 106 subsection 1 of the PIB 2020.
[924] Section 279(1)(2) PIB 2012

however, silent on how long licensees or lessees must install metering equipment on every facility in its operation.[925]

(3) Under section 108 of PIA 2021, licensees and lessees that produce natural gas are required to submit a natural gas flare elimination and monetisation plan to the Commission. This plan must be submitted within the 12 months of the PIB coming into effect and must be prepared under regulations made by the Commission pursuant to the Act. Before the final version of the PIA 2021, the bill initially considered by the legislature provided that a comprehensive programme for gas utilisation and reinjection must first be submitted and approved before a potential licensee or lessee can be awarded a production licence for oil and gas operation.[926]

Although previous regulations required operators to submit a comprehensive plan for utilisation or reinjection of gas, this requirement has never been made a precondition for granting licences or leases for oil and gas exploration in Nigeria under any law. Requiring operators to meet this condition before licences can be awarded could imply that operators will prioritise ways to monetise Nigerian gas. But under the PIA 2021, that opportunity may have been lost as submission of plans for gas monetisation is not directly provided for as a precondition for award of licences.[927] Although a reading of section 111 subsection 3 paragraph (D), which says that 'the Authority shall only grant a licence for midstream or downstream petroleum operations where among other things, it provides for the elimination of routine natural gas flaring.' This may be construed as a condition precedent for an award of the licence. However, such interpretation still falls short of the requirement for a comprehensive plan not only for avoiding gas flaring but also for how captured gases can be monetised, which will invariably include optimum utilisation of the gases.

(4) Another commendable provision of the new regime that could significantly enhance the development of the gas sector is the introduction of a no-

[925] Section 106 subsection 2 of PIB 2020
[926] Section 278 (a) PIB 2012
[927] Section 108 of PIA 2021

hydrocarbon tax chargeable on associated and non-associated natural gas produced by operators.[928] Although income tax shall apply to natural gas liquids produced from associated gas[929] and, on liquid petroleum gases derived from natural gas,[930] tax exemptions generally attract new investments to any sector. It also incentivises existing investment and boosts the productive capacity of the industry.[931] With more than 200 trillion cubic feet of gas untapped, this strategy is particularly crucial for developing the gas sector in Nigeria that badly needs resource maximisation, economic diversification, and energy transition.

Also, licensees and lessees involved in midstream oil and gas operation, including companies involved with large-scale gas utilisation, are expected to benefit from the gas utilisation incentive provided under section 39 of the Companies Income Tax Act (CITA) 1991.[932] Under section 39 of the CITA, it is provided that:

> 'where a company engaged in a trade or business of gas utilisation in downstream operations, the company shall, in respect of that trade or business, be granted the following incentives:
>
> (a) An initial tax-free period of 3 years which may, subject to the satisfactory performance of the company, be renewed for an additional two years;
>
> (b) As an alternative to the initial tax-free period guaranteed under (a), an additional investment allowance of 35 per cent shall not reduce the asset value. But however, a company claims the incentives provided under this paragraph, it shall not be entitled to claim the incentive provided under paragraph (c) (ii) of the subsection. Under paragraph (c) (ii), companies

[928] Section 260 subsection 1 of the PIA 2021.
[929] Section 260 subsection 2 of the PIA 2021.
[930] Section 302 subsection 7 of the PIA 2021.
[931] Laura Abramovsky and others, 'Are Corporate Tax Incentives for Investment Fit for Purpose? Revisiting Economic Principles and Evidence from Low-and Middle-Income Countries' (The Institute for Fiscal Studies, London, 2018) 39, 40.
[932] Section 302 subsection 6 of the PIA 2021

> involved in downstream gas utilisation shall not have access to 15 per cent additional investment allowance which shall not reduce the asset's value.'

Also, for investors involved in the construction of gas pipelines, apart from the initial tax-free period of 5 years proposed under section 39 of the Company Income Tax Act, they will also benefit from an additional 5-year tax holiday.[933] This means those interested in developing critical gas infrastructure can be certain of a 10-year tax-free period on returns on investment. This second limb of section 302 subsection 6 of the PIA 2021 draws from a similar approach taken by the government to incentivise the maximisation of Nigeria's liquefied natural gas[934] , which saw considerable economic success.[935] Accordingly, it can be projected that a 10-year tax-free period is a much-needed strategy to drive investments in critical gas infrastructure and improve domestic gas utilisation.

The PIA 2021 has, however, elicited fresh concern around sector transparency, administrative competence, and efficient implementation of the law. Firstly, under section 9 subsection 5, it is proposed that NNPC Limited shall transfer 30 per cent of profit oil and profit gas into a Frontier Exploration Fund. This escrow account will be dedicated to the development of frontier acreages. Although this money is proposed to come from production sharing, profit sharing and risk service contracts[936] and will be subject to appropriation by the National Assembly,[937] the act did not define areas on land that are acreages. It instead left this to what will be described as a frontier acreage in a regulation to be issued by the Commission when the latter commences operation as the regulator of upstream petroleum sector.[938] The Act also identified the Anambra basin, Sokoto basin, Mid-

[933] Section 302 subsection 6 of the PIA 2021.
[934] Section 2 of the Nigerian LNG (Fiscal Incentives, Guarantees and Assurances) Act 1990, LFN 2004.
[935] NLNG, Who We Are' (2021) Available at https://www.nigerialng.com/the-company/Pages/Who-We-Are.aspx accessed July 21, 2021.
[936] Section 9 subsection 4; 64 (C) of the PIA 2021.
[937] Section 9 subsection 5 of the PIA 2021.
[938] Section 318 of the PIA 2021

Niger (Bida) basin, the South-eastern part of the Chad (Dahomey) basin, and the Lower, Middle and Upper Benue trough as frontier basins that should also be explored in addition to areas to be defined as frontier acreages.[939]

Other than the contention generated by the false equivalence between percentage contribution to the Host Community Fund and the Exploration Fund, the transparent use of the 30 per cent profit gas and profit oil for frontier exploration has continued to court controversy. For example, before the PIA was passed into law, oversight for frontier exploration was within the orbit of the NNPC for about 33 years. And over that period, the amount committed and expended to a queue of drilling prospects was mostly unappropriated and unaccounted for. Therefore, it is reasonable that critics of the new regime could not wish away the fear that this money may not be adequately accounted for either.[940]

Furthermore, while the provision setting aside 30 per cent profit oil and profit gas for new frontier exploration shows a sustained interest in carbon-intensive petroleum projects, this contrasts with the government's climate objective to transition to a low-carbon future.[941] For instance, under section 64 of PIA 2021, among other pursuits of energy investments, NNPC Limited is equally mandated to pursue and engage in the business of renewable energy.[942] In addition to the efforts to minimise greenhouse emissions from the operations of the sector, the Act also creates a Midstream and Downstream Gas Infrastructure Fund, which shall be put to reduce and

[939] Section 318 of the PIA 2021; Aderemi Ojekunle, 'Explainer: What's the Big Deal About this Frontier Basin Exploration?' (The Cable, July 7, 2021, 8:35 AM). Available at https://www.thecable.ng/explainer-whats-the-big-deal-about-this-frontier-basin-exploration accessed July 23, 2021.
[940] Toyin Akinosho, 'PIB: Why the Frontier Exploration Fund Feels Like Slush Money' (Africa Oil and Gas Report, July 23, 2021). Available at https://africaoilgasreport.com/2021/07/in-the-news/pib-is-the-frontier-exploration-fund-proposed-as-slush-money/ accessed August 25, 2021.
[941] Solina Kennedy, Martin Dietrich Brauch, Perrine Toledano and Tehtena Mebratu-Tsegaye, 'Nigeria's Petroleum Industry Bill: A Missed Opportunity to Prepare for the Zero-Carbon Future' (Columbia Centre on Sustainable Investment, January 2021) 1-4.
[942] Section 64 subsection (H) PIA 2021

eliminate gas flares.[943] Likewise, money received from flare fines and penalties under section 104 subsection 4 of the Act will be put to environmental remediation.[944] It, therefore, beggars belief that the same Act could provide for a percentage amount of money to be set aside for more hydrocarbon exploration of frontline basins and acreages,[945] which in itself are highly carbon-intensive ventures. Until full implementation of the PIA begins, no one can truly affirm that it will drive significant changes and lead to maximisation of gas resources which Nigeria has been wasting for almost half a century during crude oil production.

### 7.3. Conclusion

The Petroleum Industry Act 2021, the much-anticipated legal regime that is projected as the game changer for the oil and gas sector has finally been passed into law. As at the time of writing, a complete implementation and enforcement of the PIA is yet to begin. Accordingly, no practical progress can be touted or projected in terms of gas sector development. It can however be said that the PIA is the first piece of legislation whose regulatory framework has clear and deliberate provisions for gas development and which if adequately implemented could lead to efficient gas management, reduction in gas flaring and improvement in gas utilisation in Nigeria.

To avoid a conflict of interest in the environmental and revenue functions of regulators under the regime, a clear separation of both functions will be necessary to ensure that no one area suffers from poor regulatory control. The combination of these functions in a single regulator has been known to undermine environmental protection because priority attention has often been paid to oil revenue generation on behalf of the government. In addition, the failure to create a new and separate National Gas Company to focus specifically on gas exploration and production remains one of the critical challenges that has undermined the growth of the gas sector since the beginning of the Nigerian Petroleum Industry where focus has been to maximise crude oil revenue compared to gas.

[943] Section 52 subsection 10 paras (C) PIA 2021.
[944] Section 52 subsection 7 paras (D) PIA 2021.
[945] Section 9 subsections 4 and 5 PIA 2021.

The PIA also, did not afford the public a right to judicial remedy in the event of damaging oil and gas operation. Under the Constitution of Nigeria, except a private individual can prove personal injury to himself or his property, otherwise, by section 6 subsection 6(C) of the 1999 Constitution, no private individual can seek judicial remedy to the environment if impacted by oil and gas pollution. And regardless of the optimism that many analysts have expressed following the passage of the law to overhaul the regulatory and governance structure of the oil and gas industry, efficient enforcement of the law will depend to a greater degree on the competence and independence of the regulators. For example, an appointment into the new NNPC Limited, and the regulatory institutions must not be based on political considerations but on merit and technical expertise. For efficient management of the gas sector, it is imperative that the leadership of the petroleum ministry be run by a competent oil and gas expert with corporate industry experience who will be appointed on merit without any political favours. The idea that the President who is already saddled with the task of running an entire federation will appoint himself to lead a tough sector like oil and gas could undermine the smooth running of the sector. The job of the presidency is a handful already, adding the leadership of the oil and gas sector to it, means that the development of the sector could be slow as competing interest at the presidency from other national issues could impede efficient gas sector administration.

## CHAPTER 8: NEW LEGAL FRAMEWORK FOR NATURAL GAS UTILISATION: WHAT TO CONSIDER

### 8.1. Introduction

Natural gas is a valuable economic commodity that can generate significant revenue for Nigeria if adequately exploited and utilised the same way it is done in Canada, the United Kingdom, and Norway. When captured, gases can be sold to meet energy needs or reinjected into reservoirs to maintain pressure and ease crude oil recovery.[946] Apart from availability of critical gas infrastructure in these areas, the existence of a viable regulatory regime that governs the operation of the gas sector in these jurisdictions contributes to significant reduction in gas waste while also driving maximum utilisation of gas resources. But before this can happen there are legal framework issues that are currently lacking and thus continue to undermine sufficient utilisation of gas resources and development of the domestic gas market in Nigeria. These issues range from a lack of transparency in sector governance to lack of independent regulatory authority for the gas sector, poor security and monitoring of gas pipelines, and an absence of comprehensive health, safety, and environment (HSE) rules. Others are inadequate public participation in the environmental impact assessment (EIA) process, a vibrant/incentivised private sector investment, etc. From considering these framework issues, this chapter would have provided such considerations and concluding proposals by which a new regulatory framework could be developed by Nigeria to improve and enhance the utilisation of its abundant gas resources.

### 8.2. A Conceptual Overview of an Effective Legal Framework for Gas Utilisation

The core functions of regulatory institutions are not limited to issuing a set of rules and guidelines to drive the operations of any economic sector. They also award and revoke licences and review and assess compliance with prescribed regulatory practices. Others include taking corrective actions, performing operational

[946] Robert D. Bott, 'Flaring: Questions Plus Answers' (Canadian Centre for Energy Information, 2nd edn, 2007) 1, 5.

inspections, and carrying out routine but strict law enforcement.[947] But regardless of these functions, no regulatory body can achieve its planned objectives if its existing legal framework does not engender transparency in its day-to-day functioning and dealings with corporations and activities to be regulated. [948]

Transparency in regulatory enforcement does three things. Firstly, when a legal framework encourages transparency, this helps establish legitimacy for the decision-makers.[949] Secondly, it sustains the public's confidence, and those established rules apply to or cover.[950] Finally, when the legal framework drives transparency in the operation of any sector, this automatically fosters a culture of accountability.[951] For instance, in every oil and gas sector where corruption is an endemic challenge, transparency in the sector's regulation will boost accountability and cut inefficiency. In addition, the transparent management of the sector will strengthen the relationship between stakeholders as trust between the government, society and operating companies is improved, thus reducing misconceptions and avoiding local tensions. And from the perspective of investors, transparent regulation of most sectors help improve the business climate there[952].

Any legal framework that will drive effectiveness in its enforcement processes must indicate the need for those responsible for leading the process to be independent while carrying out their regulatory functions.[953] That is, the regulator must ensure that regulatory functions undertaken are without external influence from political or economic actors. And neither should a decision or the omission to act be down to favouritism or an undue advantage from solicitation or compromise

[947] International Atomic Energy Agency, 'Quality Assurance within Regulatory Bodies' (IAEA Vienna Austria, June 1999) 2.
[948] European Commission, 'Good Regulatory Practices (GRPs) in Transatlantic Trade and Investment Partnership: An Introduction to the EUs Revised Proposal' (March 20016) 2; Stavros B. Thomadakis, 'What Makes Good Regulation' (IFAC Council Seminar, Mexico City November 14, 2007) 6-9.
[949] Department for Business, Innovation and Skills, 'Principles for Economic Regulation' (Crown Copyright, London, 2011) 9.
[950] Stavros B. Thomadakis, 'What Makes Good Regulation' (IFAC Council Seminar, Mexico City November 14, 2007) 7.
[951] n923 [9]
[952] Carole Nakhle, 'Transparency in the Oil and Gas Sector: Much Talk but Limited Action' (Lebanese Centre for Policy Studies, December 16, 2016) 1-3.
[953] OECD, 'Independence of Regulators and Protection against Undue Influence' in OECD, 'Being an Independent Regulator' (OECD Publishing, 2016) 22.

with a group and individuals or corporations that the regulators are meant to scrutinise.[954]

Being biased in decision-making leads to a conflict of interest that weakens oversight control and could make regulators pay favourable attention to one area over others that may seriously require a more critical look. Decision-making in any sector should be based on the principle of regulatory neutrality.[955] And as serious as this is, an efficient legal framework must put mechanisms for checks and balances in place to discourage unfair treatment among regulated entities. This is also where accountability in the regulatory process is critical. Accountability from regulators usually involves explaining decision-making and exposing the same to explicit scrutiny while guaranteeing the public's rights and parties affected the capacity to challenge regulators' decisions.[956]

The duties of regulatory authorities under a functional legal framework must be clearly and carefully defined.[957] Conflicts of interest can be avoided when there is clarity of functions in the regulatory process.[958] For example, roles performed by the government and regulators must be shared in a way that only the institution with the legitimacy, capability, and expertise to make decisions can make them. And this must be done within a remit that preserves commercial confidentiality and transparency subject to appropriate checks and balances.[959] Also, regulators should not have to bear excessive responsibilities, so while paying fuller attention to one area of economic interest, they do not struggle to cater to other sector interests under their watch.

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[954] U.K. Crown Copyright, 'Striking the Balance: Upholding the Seven Principles of Public Life in Regulation' Report' (16th Report of the Committee on Standards in Public Life, Chaired by Lord Paul Bew, September 2016) 29, 30.
[955] ibid
[956] Department for Business, Innovation and Skills, 'Principles for Economic Regulation' (Crown Copyright, London, 2011) 9.
[957] Robert Eric Borgstrom, 'Characteristics of Effective Regulators' (The Institute for Public-Private Partnership (IP3), Public-Private Partnership White Paper Series, 2017) 1-2.
[958] OECD, 'Independence of Regulators' 2016 (n953) 11, 12, 18]
[959] Nida Boughton, 'Rationale for Regulating Markets' (Scrutiny Unit, UK Parliament, 2011) 6, 11. Available at https://www.parliament.uk/globalassets/documents/commons/Scrutiny/Rationale-for-regulating-markets.pdf accessed July 3, 2021.

Furthermore, duties such as regulating environmental impacts of oil and gas often requiring direct oversight should not be delegable to avoid poor inspection and weak compliance enforcement.[960] Where a combination of responsibilities could result in a conflict of interest, an excellent legal framework always looks out for such conflicting roles to place them in separate enforcement organs for efficient execution and oversight. A clear separation of conflicting duties will also avoid favourable treatment in the regulatory process and limit the temptation of regulators becoming compromised and weakening official duties' implementation.[961]

Also, to attract investment into any sector where large-scale infrastructure projects are lacking, an excellent legal framework must steer the industry and its fiscal policies away from activities that undermine much-needed investment and sector stability.[962] Private companies, for instance, will be able to contribute to sector development objectives where the investment climate is non-discriminatory but is fair and incentivised.[963] When planning or proposing strategies to improve the investment climate, a good legal framework usually takes cognisance of the business conditions of all participating operators to avoid selective support for certain companies, whether through barriers to market access or tax break.[964] Furthermore, where specific rules/provisions unnecessarily impede the growth of a sector, to remove such hindrances so the sector can grow, a progressive legal framework must create room for flexibility in the legislative review process. This means the framework must encourage an amendment process that makes it easy to introduce necessary changes for the sector's growth.[965]

Another critical element of an effective legal framework is the elimination of opacity by encouraging sufficient information to the public to keep the latter

[960] Hannah J. Wiseman, 'Delegation and Dysfunction' (2017) Yale Law, 1-60 at 22-26.
[961] UK Government, 'Offshore Oil and Gas in the UK: An Independent Review of the Regulatory Regime' (December 2011) 84.
[962] Von Mitchell, and others, 'What Next for the Oil and Gas Industry?' (Chatham House, The Royal Institute of International Affairs, October 2012) 94.
[963] Claudia Skibbe, 'The Importance of the Business Environment for a Thriving Private Sector' (DEG Economic Analysis, Koln, Last Revised February 2018) 1-2.
[964] ibid, 2.
[965] Nida Boughton 2011 (n959) 5.

engaged in the regulatory process that affects them.[966] For instance, given the impact an economic activity like natural gas production could have on the environment, there may be that temptation for operators or authorities to falsify information on projects, especially where those directly affected may not challenge such falsification. Or even where it is plausible to seek remedies for damages suffered because of the project activity, the high cost of adjudicating this[967] or the judiciary's integrity could become a challenge. This is a challenge that most emerging markets undergoing political transitions usually face. An efficient legal framework will therefore ensure that people can access the courts and command public trust that the court system is impartial and independent in reaching its decisions based on law and facts presented before it. Where the government or any legislation attempts to displace the jurisdiction or powers of any court or tribunals, an excellent regulatory framework will ensure that the integrity of courts is protected and sustained.[968]

Safety practices are protocols put in place by regulators and corporate management to ensure that a workplace or environment is accident-free.[969] In order to maintain an accident-free economic activity, the regulatory process must adopt strategies that ensure that the enforcement of established safety guidelines is transparent and that the methods of monitoring operators' compliance with safety standards remain uncompromised.[970] In addition, to limit compromises in regulatory decisions, a good legal framework must entrench public participation[971] and justiciability of the regulatory process.[972]

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[966] F. A. Hayek, 'The Use of Knowledge in Society' (1945) Vol. 35, No. 4, The American Economic Review, 519-530.
[967] Robert Baldwin and others, 'Understanding Regulation: Theory, Strategy and Practice' (OUP, 2nd edn, 2012) 18.
[968] United Nations, 'Access to Justice: The Independence, Impartiality and Integrity of the Judiciary' (New York, 2006) 1-2, 5.
[969] Na'ankwat Lami Dabup, 'Health, Safety and Environmental Implications in Nigeria's Oil and Gas Industry' (A Thesis submitted to the School of Built Environment, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa, October 2012) 15.
[970] UK Offshore Oil and Gas Sector HSE Strategy 2014-2017 (March 2014) 15.
[971] United Nations Human Rights Office of the High Commissioner, 'Guidelines for States on the Effective Implementation of the Right to Participate in Public Affairs' (Office of the High Commissioner for Human Rights, Geneva, 2018) 14-16.
[972] Donghua Chen and others, 'Selective Enforcement of Regulation' (2011) Vol. 4, CJAR, 9-27 at 26.

A pragmatic legal framework must ensure that the regulatory process can adapt to changing critical situations without losing its predictable nature. That is, the regulatory climate must continue to ensure that business operations continue to flourish regardless of any change in regulation. That way, investing shareholders and operators can make investment decisions and maximise profit.[973] Furthermore, in terms of adaptability and flexibility, a productive legal framework must provide a situation where the requirements to review applicable regulations as a last resort to meeting new developments in an economic sector or resolve a lacuna in the law are not unwieldy or met with legislative bottlenecks. In other words, the framework should not restrain opportunities for enacting new regulations or make the process of amendments complex or challenging and deter necessary change that will drive the growth and development of a sector.[974] For example, suppose incentivising the ease of doing business will attract infrastructure development required to maximise natural gas; in that case, the law must be flexible enough to accommodate such regulatory adjustments to attract needed investment.

In terms of predictability, "the regulatory process must provide a reasonable level of certainty concerning the principles and rules that will be applicable within the overall regulatory framework.[975] In other words, while the possibility of amending the law is critical, mainly as new advances in technology and the industry occur, constantly changing the rules could create confusion and may destabilise investment decisions in any sector. That is why the stability of laws is also a critical feature of an effective legal framework. This is because consistency and certainty in the laws are required for the public and the industry to know the law and rely on it to support their legitimate business expectations.[976]

A good regulatory framework provides an enabling environment for developing and securing project infrastructure. Over the last decade, the quantity and range of critical infrastructure worldwide have increased significantly. Similarly,

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[973] William D. Eggers and others, 'The Future of Regulation: Principles for Regulating Emerging Technologies' (Deloitte Insights- A Report from the Delloite Center for Government Insights, June 19, 2018) 2
[974] Ibid, 9, 10.
[975] Robert Eric Borgstrom, 2017 (n957).
[976] Peter Howsam and Esther Gerlach, 'Regulatory Tools: Legal and Policy Framework' (Cranfield University and DFID, 2006) 14.

numerous threats and attacks on infrastructure across different economic sectors have also increased. As a result, safeguarding the uninterrupted operation of these assets has become a high priority for many subnational and national governments.[977] Other than the damages or disruption of infrastructure operations caused by natural disasters such as floods and earthquakes, human-induced disruptions arising from poor project designs and vandalism, terror attacks, theft or arson have become too frequent for response by synthetic intelligence.

Consequently, with the complexities of the attacks and how vulnerable infrastructures have become, the need for a constant alert from both government and operators now require that policies are updated, developed and implemented to protect critical infrastructure.[978] Therefore, among other things, an excellent regulatory framework will put in place procedures and processes for reporting, managing, and resolving security incidents.[979] Furthermore, within the context of this study where securing infrastructure is safeguarding gas pipelines, to properly manage and resolve pipeline incidents, an efficient legal framework will require, among others, that: (1) operators carry out regular surveillance physically and use of technological intelligence along pipeline routes to detect and monitor ongoing or unauthorised interference;[980] (2) the security of pipelines are not left to operators and national authorities but also involve coordination with local authorities to enhance robust protection, and (3) sector regulators initiate prosecutions in line with laid down requirements of the law against a duty holder, operator or third-party intruder whose omission and commission damages or disrupts pipelines operation. And where systems have broken down or individuals have acted improperly, the appropriate action is taken.[981]

[977] Dimtra Markopoulou and Vagelis Papakonstantinou, 'The Regulatory Framework for the Protection of Critical Infrastructures against Cyberthreats: Identifying Shortcomings and Addressing Future Challenges: The Case of the Health Sector in Particular' (2021) Vol. 41, CLSR 1-12 at 1.
[978] Ibid, 1, 2.
[979] UK Cabinet Office, 'HMG Security Policy Framework' (May 2018) 3.
[980] UK HSE, 'Onshore Gas and Pipelines Sector Strategy 2014-2017.'
[981] UK Cabinet Office (n979)

## 8.3. Existing Legal Framework for Gas Utilisation in Nigeria and Lessons from Best Practice Jurisdictions

### 8.3.1. Insufficient Gas Infrastructure for the Development of the Gas Market

Developing the domestic gas market and improving utilisation takes on a range of projects from production to distribution and marketing of gas. Therefore, significant investment in gas transmission and distribution pipelines, fertilizer plants, liquefied natural gas plants, power plants, and gas to liquid plants etc., is often required.[982] Although there are ongoing gas projects at different stages of completion in Nigeria now, the existing gas infrastructure remains insufficient to meet the demand for gas in the power sector, export purposes, and industrial and commercial end-users. There is thus a need to increase investment in new gas pipelines, gas gathering, processing, and storage facilities to improve domestic utilisation capacity.[983]

In 2017, the Federal Executive Council of Nigeria published a new National Gas Policy with plans to open the gas sector and attract required investment in gas gathering, collection and product transmission.[984] However, four years after, the infrastructure needed to plug gas deficits and grow the local gas market remained inadequate. This was worsened by the government's inability to fund critical gas infrastructure[985] and a lack of business-friendly legal framework that incentivises investment in gas projects for private sector participation.[986] In addition, the Petroleum Industry Bill that would have led this change could not be passed into law for over a decade after it was re-introduced in parliament as an executive bill in 2012.[987] This meant that for a long time, the Nigerian gas sector could not

[982] Oluseye Arowolo and Fatai Folarin, 'Is Gas Utilisation Incentive Still Necessary?' (Deloitte, 2015) 1.
[983] ibid
[984] Ministry of Petroleum Resources Nigeria 2017 (n349) 13-15.
[985] Emeka Duruigbo, 'The World Bank, Multinational Oil Corporations, and the Resource Curse in Africa' (2005) Vol. 26, No. 1, UPJIEL, 1-68 at 66-67.
[986] Agaptus Nwozor and others, 'Reform in a Limbo: The Politics and Politicisation of Reforms in Nigeria's Petroleum Sector' (2020) Vol. 10, No. 4, IJEEP, 184-193.
[987] Enobong M. Akpambang and Aderonke A. Ojo, 'Grants of Upstream Petroleum Exploration Licences and Leases in Nigeria under the Petroleum Industry Bill 2012: An Overview' (2017) Vol. 59, JLPG, 9-20 at 9-11

attract significant investment in gas projects due to regulatory uncertainty, opaque operational structure, and harsh fiscal conditions.[988]

With the bill now finally passed and assented to by Nigeria's president in August 2021, it is reasonable to project with cautious optimism that the provision of tax breaks for new investment in gas infrastructure under the new law[989] will usher in project development that will deliver improvement in domestic gas utilisation capacity. On the other hand, while tax incentives to investors in pipelines, companies engaged in domestic midstream/downstream gas operations and large-scale gas utilisation industries is an attractive strategy to drive development in gas infrastructure,[990] the timing between expectation and reality could further detour the domestic gas development ambition. This is because, without a planned investment period for which infrastructure must be built, the gas sector may continue through a longer period of uncertainty while it awaits potential investors to activate the tax breaks under the PIA 2021.

Regulatory tax breaks in every sector, without doubt, represents a boost to investment drive. However, developing a legal strategy that provides part-funding from the government to project investors will be more viable to develop the desired infrastructure. And this should be done within a project time plan rather than wait for activation of a legal tax break that is an 'invitation to treat' in contractual terms. This funding support for projects could be conceived like "grants to attract investment in infrastructure" for the gas sector. The grants to attract investment in infrastructure is a 5 to 10-year strategy used by the Alberta Petrochemicals Incentive Programme (APIP) as a critical aspect of Alberta's Recovery Plan and Natural Gas Vision Strategy.[991] Under the scheme, the province of Alberta provides incentives in the form of a grant to companies to attract investment in new or expanded market-driven petrochemical facilities. Interested investors or companies who indicate an interest in constructing a petrochemical facility that uses natural gas are vetted by the APIP Committee from defined

[988] Ibid; Eromo Egbejule, 'Nigeria's Energy Infrastructure is not Keeping Pace with Needs' (The Africa Report, Wednesday 30 October 2019 11:38). Available at https://www.theafricareport.com/19490/nigerias-energy-infrastructure-is-not-keeping-pace-with-needs/amp/ accessed March 31, 2021.
[989] Section 302 subsection 6 of the PIA 2021, Nigeria.
[990] Section 302 subsection 6 of the PIA 2021, Nigeria.
[991] Government of Alberta, 'Alberta Petrochemicals Incentive Program 2020 (n236) 1-3.

eligibility criteria ranging from total project investment capital to the ability of the project to create full-time jobs in Alberta etc. The grant is calculated based on 12 per cent of the total estimated cost of the eligible project and paid in three instalments after the project is constructed and after it starts receiving feedstock for consumption.[992]

In addition to that, the Built-Own-Operate-Transfer (BOOT) is another project financing strategy that any Government can explore on a regional level to fund gas infrastructure. Under the BOOT infrastructure model, Government grants a concession to an entity to finance, design and construct a project under an agreed concession period.[993] In doing so, the developing entity owns and operate the project which in this case could either be a gas production facility, a processing plant or pipelines, including profits arising from project operation within the defined concession period before transferring ownership of the asset to the government.[994] Where the project in question is a regional pipeline facility like the West African Gas Pipeline project (WAGP), the BOOT pipeline model will also take gas from Nigeria to regional partners- public or private but under terms that the Nigerian Government could control. Although project longevity and viability could be an issue if the concession period is protracted,[995] adopting the BOOT infrastructure model is considered a Public-Private Project (PPP) option, which is particularly useful where public resources cannot meet the cost of developing a-much-desired infrastructure.[996] The government also holds the higher ground when negotiating the terms of the treaty, such as when the concession period ends, how much gas volume a private entity can produce or supply, and the status a facility must be in when it is finally returned to the public administration.[997]

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[992] ibid

[993] Energy Charter Secretariat, 'Bringing Gas to the Market- Gas Transit and Transmission Tariffs in Energy Charter Treaty Countries: Regulatory Aspects and Tariff Methodologies' (Energy Charter Secretariat, Brussels, Belgium, 2012) 13.

[994] Brian Donaghue, 'Statistical Treatment of Build-Own-Operate-Transfer' Schemes' (IMF Working Paper, 2002) 3, 4.

[995] ibid 5.

[996] Aditya P. Mehendale and others, 'Overview of PPP Projects in India' (2018) Vol. 2, Issue 1, IJARP, 6-11 at 6, 8.

[997] Raphael Henry Arndt, Is Build-Own-Operate-Transfer a Solution to Local Government's Infrastructure Funding Problems?' (2000) Vol. 42 ACET, 19-25.

Also, regardless of the primary destination where a private entity supplies gas, during the operation of BOOT infrastructure within a concession window, Government can still negotiate percentage gas volumes to the domestic gas market of the source country. But this, of course, will depend on the type of transit system adopted under the concession agreement.[998] And regardless of the ownership model adopted for any project, a transit pipeline that is owned by a private entity may equally be used to channel supplies into the country of the source while also sticking with the original plan to transmit gas between countries.[999] At the same time, a gas project that adopts a BOOT model may be similar to the West African Gas Pipeline (WAGP) projects in terms of gas transit from Nigeria to neighbouring African countries, in terms of the nature of treaty and concession awards, the ownership model for WAGP which is a Built-Own-Operate (BOO) project which makes the latter approaches different.[1000]

Under the WAGP project between the Nigerian Government- represented by the NNPC; and Societe BenGaz S.A; Chevron West African Gas Pipeline Limited; Shell Overseas Holdings Limited; Takoradi Power Company Limited; and Togolaise de Gaz,[1001] the West African Gas Pipeline Company (WAGPCo) which operates the pipeline is also the builder and owner of the project. Unlike a gas infrastructure with a BOOT ownership model, under a build-own-operate (BOO) approach, ownership does not transfer to the Government.[1002] The exclusive ownership and operating rights over the infrastructure, including all other assets intended to be used for construction or operation of the facility (WAGP) belongs to the WAGP Company Limited.[1003] Although countries under the WAGPCo have consistently faced shortages of gas supply from the WAGP,[1004] all things being equal, there has not been significant supplies to the Nigerian market under the project as offtakes from Escravos Nigeria has mainly serviced terminals in Benin, Togo and Tema

[998] Energy Charter Secretariat, Bringing Gas to the Market 2012 (n993) 9, 12.
[999] ibid 12.
[1000] Energy Charter Secretariat, Bringing Gas to the Market 2012 (n993).
[1001] Preamble, and Article 1 of the West African Gas Pipeline Treaty, 2003.
[1002] Daly Paulose, 'Risks and Strategies for a Build-Own-Operate International Airport in India' (2013) Vol. 2, No. 1, International Journal of Risk and Contingency Management 1-17 at 1, 2.
[1003] Article 9 of the West African Gas Pipeline Treaty, 2003.
[1004] U.S. EIA, 'Country Analysis Brief 2016 (n44) 17.

Ghana[1005] These challenges can be dealt with where the gas infrastructure is governed as a build-own-operate-transfer model. Under it, the government and the private entity that operates the infrastructure can still agree to percentage supplies to the source country during the concession period agreed between parties.

As part of its vision and strategy for natural gas, like Alberta that deploys all advanced, new, expanded, and circular ways to grow its gas sector,[1006] to build critical gas infrastructure, especially in a cash strap economy, a framework law must be developed to enhance flexibility to diverse approaches to developing infrastructure, hence the BOOT model.

### 8.3.2. Lack of Independent Gas Company for the Gas Development

The lack of an independent national gas company to focus on gas development, gas gathering, supplies and affordability in Nigeria also contribute to poor maximisation and utilisation of gas in Nigeria.[1007] Although the Nigerian Gas Company (NGC) was initially conceived to oversee the gathering, treatment and transmission of gas in Nigeria, being a subsidiary of the national oil company-Nigerian National Petroleum Corporation (NNPC), the NGC only focuses on the transmission, distribution and marketing of natural gas.[1008] Because the NGC was not created to participate in gas exploration and production, the NNPC that holds the statutory right to participate in exploration and production of 'oil and gas' only concentrate on making the most from crude oil extraction than natural gas. This, of course, has continued to undermine gas recovery and the development of the gas sector.[1009]

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[1005] E. O. Obanijesu and S. R. A. Macaulay, 'West African Gas Pipeline Project: Associated Problems and Possible Remedies' in Ernest K. Yanful (eds), 'Appropriate Technologies for Environmental Protection in the Developing World' (Selected Papers from ERTEP 2007, July 17, 2007, Ghana, Africa, Springer 2009) 103.

[1006] Government of Alberta, 'Natural Gas Vision and Strategy' 2020 (n226) 6.

[1007] Ministry of Petroleum Resources Nigeria 2017 (n446) 30-32.

[1008] Nigerian Gas Company, 'About Us' (2021). Available at http://ngc.nnpcgroup.com/pages/about-us.aspx accessed March 31, 2021.

[1009] U.S. EIA, Country Analysis Brief: Nigeria 2016 (n40) 2, 13, 14.

It took 30 years of commercial oil production before natural gas production began to attract attention, beginning fully with the incorporation of the Nigerian Liquefied Natural Gas Limited (NLNG) in 1989.[1010] Under the NLNG joint venture operation, some progress has been made in terms of revenue generation, job creation and supply of liquefied natural gas (LNG) through the company's rural electrification project that powers over 200,000 families and businesses on the Bonny Island of Rivers State.[1011] But with most LNG supplies sold as export, in terms of maximising dry natural gas to the local market, not much progress has been seen from the NNPC, which is legally responsible for the development of the gas sector as the national oil company is more focused on crude production. The 2012 Petroleum Industry Bill had proposed an independent gas company to be fully responsible for the gas sector, a commendable initiative that could have increased focus on gas development.[1012] But this provision was expunged from the eventual Petroleum Industry Act of 2021. With the PIA 2021 providing a new legislative framework for gas development,[1013] an independent company focused on managing gas recovery other than the NNPC, whose primary interest over the years had been to maximise crude oil profit, would have provided greater focus to gas operation.

The changes in the UK oil and gas sector in 2014 following the recommendations of the Ian Wood review offers useful insight on how creating a new independent authority to focus on specific sector operation can support an industry experiencing poor recovery and returns.[1014] Despite many years of record investment in the United Kingdom Continental Shelf (UKCS), it was found that discoveries on the UKCS were increasingly becoming reduced yet costly, and that existing asset had outlived their lifespan, and that production was declining and leading to 6 million pounds in loss to the government.[1015] To optimise production

[1010] ibid 15, 16; NLNG, 'NLNG- Nigeria LNG Limited: Who are We' (2021). Available at https://www.nigerialng.com/the-company/Pages/Who-We-Are.aspx; accessed March 30, 2021.
[1011] Shell, 'NLNG- Nigeria LNG Limited' (2021). Available at https://www.shell.com.ng/about-us/what-we-do/nlng.html accessed March 30, 2021.
[1012] Section 163 of the Petroleum Industry Bill 2012, Nigeria.
[1013] Section 125-173 of the Petroleum Industry Act 2021, Nigeria.
[1014] The Ian Wood Review 2014 (n375) 6.
[1015] ibid 5.

and maximise recovery from the UKCS, the government had to break up the numerous regulatory powers held by the Department of Energy and Climate Change (now the Department of Business, Energy and Industrial Strategy (BEIS)) under whose watch significant loss and poor recovery were recorded to allow for a linear but focused approach to operational regulation of the UK's oil and gas reserves.[1016] Although under the PIA 2021, the Nigerian National Petroleum Corporation will become an incorporated entity,[1017] how this corporate status refocuses the company's operational commitment to gas development cannot be realistically projected at the time of writing and barely three months after the PIA was signed to law. Therefore, to minimise the uncertainties around whether NNPC Limited can effectively combine oil and gas development functions, a new gas company to focus on gas investments specifically, production and sector development, should be established independent of the NNPC under law.

### 8.3.3. Conflict of Interest in Sector Regulation

Nearly 90 per cent of global oil and gas reserves are controlled by state-owned enterprises (SOEs). There are also other natural reserves, including a wide range of other industries owned and run by SOEs. This is because State and public institutions instead of private companies are often believed to be better positioned to manage public or national assets.[1018] According to Radon and Thaler, this belief ignores any government's absolute and conventional powers to make profits from its resources without necessarily getting involved with the operational management of those resources. For instance, the power to regulate and tax business operations in its vicinity, if properly used, can still deliver the same or even better results for the government than when it is directly involved in the operations of any sector.[1019]

Unfortunately, with most oil and gas-dependent economies, including Nigeria, where the government controls natural resources and double as an operator

[1016] Philip Thomson and Julia Derrick, 'United Kingdom: Oil and Gas Regulation 2019' (Oil and Gas Laws and Regulation) 2-3
[1017] Section 53 and 64 of the Petroleum Industry Act 2021, Nigeria.
[1018] Jenik Radon and Julius Thaler, 'Resolving Conflicts of Interest in State-owned Enterprises' (Blackwell Publishing, 2005) Vol. 57, No.1, ISSJ, 11-20 at 11.
[1019] ibid

through its national oil companies, studies show that the State's direct involvement in the sector's operations inevitably leads to a conflict of interest and regulatory capture.[1020] The conflict always arises from the government's inability to balance its economic priority with State environmental objectives. This failure to balance its priorities is because, on the one hand, the national oil company is an active participant in oil and gas exploration and production, which often leads to poor regulation of oil and gas pollution by the government.[1021] But, on the other hand, with the primary responsibility of any government in the sector being to maximise profit, to achieve that goal, other interests such as environmental protection suffer as strict regulatory oversight against operations that negatively impact the environment could obstruct the economic priority of the Government.[1022]

The 2010 Macondo disaster on the Gulf of Mexico occurred due to a combination of multiple functions by the Mineral Management Service (MMS) in the United States, and regulatory intervention that followed the incident offers a valuable lesson for Nigeria. The MMS was responsible for developing offshore resources and was also responsible for enforcing safe operations and generating revenue from offshore operations for the government.[1023] However, officials of the agency prioritised revenue generation from the sector by relaxing its safety rules for operators. This compromise eventually built up to the accident on the Gulf of Mexico that claimed lives and damaged the environment's ecology. To avoid regulatory capture, the MMS was broken up into three independent and separate institutions for onshore/offshore revenue, focused development of offshore resources, and effective implementation of safety and environmental

[1020] Honigsberg Peter Jan, 'Conflict of Interest Led to the Gulf Oil Disaster' (2011) Vol. 41, No. 10414, ELRNA, 1-9 at 4-7; University of San Francisco Law Research Paper No. 2011-03. Available at SSRN: https://ssrn.com/abstract=1743768 accessed March 31, 2021.
[1021] Eddy Wifa and others, 'Potential Conflict of Interest in the Dual Functions of the Nigerian Department of Petroleum Resources as Both Economic and Environmental Regulator' (2016) Vol. 34, Issue 7, IELR, 306-312 at 306-308.
[1022] Agbaitoro Godswill and others, 'Enforcement Challenges in the Protection of the Environment from Upstream Petroleum Operations in Nigeria: The Need for Judicial Independence' (2017) Vol. 3, IELR, 85-93 at 85-88.
[1023] Jacqueline Weever 2014 (n366) [381, 402]

regulation.[1024] This has deepened transparency, improved resource management and minimised accidents in the U.S. oil and gas sector ten years onwards.[1025]

In order to resolve similar conflict that undermines efficient regulation of the Nigerian petroleum industry, the responsibilities for gas development, optimisation of gas revenue, and environmental protection must not be retained in a single regulatory entity. A new legal framework must separate the revenue functions in the sector from environmental functions and hand these respectively to separate regulatory entities with distinct and non-conflicting responsibilities in the oil and gas operation.[1026] Although the new Petroleum Industry Act of 2021 creates the Upstream Regulatory Commission and the Downstream/Midstream Regulatory Authority to oversee offshore and midstream/downstream operations,[1027] it is not certain this move would limit conflict of interests in the administration of the gas sector. Among other things, these bodies will still perform both commercial and environmental functions in the sector.[1028] Therefore, to avoid the conflict of interest that could arise from combining these functions, a new legal framework cannot retain both functions in a single regulator.

### 8.3.4. Lack of Comprehensive Health, Safety and Environment (HSE) Rules for Gas Operation

The production and distribution of natural gas involve a lot of risks. Hence, extra care must be taken to ensure that licensed producers and conveyors of gas work in an environment where risks to their health, safety and critical infrastructure is controlled.[1029] Unfortunately, although operators have numerous rules and guidelines to follow as a regulatory protocol for gas operations, no single comprehensive health and safety law exists in the Nigerian petroleum industry to

[1024] ibid
[1025] Hana Vizcarra, 'Deepwater Horizon Ten Years Later: Reviewing Agency and Regulatory Reforms' (Harvard Law School, May 4, 2020) Environment and Energy Law Program, 1-13 at 3, 4, 12.
[1026] Chris Cragg, 'Joseph Croft and Inemo Samiama, 'Environmental Regulation and Pollution Control in the Global Oil Industry in Relation to Reform in Nigeria' (A Report prepared by the Social Democratic Network, 2014) 4, 19.
[1027] Section 4, 29 of the Petroleum Industry Act 2021 Nigeria.
[1028] Section 4(3), 6, 7, 8, 29(3), 31, 32 of the PIA 2021 Nigeria.
[1029] U.K. Health and Safety Executive, 'A Guide to Health and Safety Regulation in Great Britain' (Crown Copyright, February 2013) 12, 13.

protect workers, assets, and the environment from gas accidents.[1030] Instead, applicable safety provisions for the oil and gas sector are drawn from multiple legislations and guidelines issued by the Department of Petroleum Resources (DPR).[1031] Among these provisions and guidelines to improve safety in oil and gas operations are the Petroleum Act of 1969, the Minerals Oils (Safety) Regulations of 1963 (as amended), and the Environmental Impact Assessment Act of 1992. Others include the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) 2002; the Health, Safety and Environmental (HSE) Guidelines and Policies formulated by the Group Health, Safety and Environment Department (GHSED) of the NNPC;[1032] and the new Safety Case Guideline for Oil and Gas Facilities in Nigeria published by the DPR in 2020.[1033]

Although the *Petroleum Act of 1969* did not directly compel licensees to implement health and safety standards in their operation, it provided the basis on which subsequent guidelines were issued to ensure safe operations and environmental protection. Under section 9 of the Petroleum Act, the Petroleum Minister is required to make regulations for safe working conditions and pollution prevention. This also includes regulations on how petroleum products should be handled, stored, and distributed and for the investigation of causes of accidents in the sector.[1034] The *Mineral Oils (Safety) Regulation of 1963* equally mandates lessees and licensees to provide workers with sufficient safety equipment and protective gear. Licensees are also expected to provide adequate firefighting and first-aid equipment and are prohibited from drilling within 150 feet of any building that has fires or lights which are not flame-proof unless such premises are evacuated.[1035]

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[1030] Na'ankwat Lami Dabup, 'Health, Safety and Environmental Implications in Nigeria's Oil and Gas Industry' (A Thesis submitted to the School of Built Environment, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa, October 2012) 37.
[1031] DPR, 'Safety Guidelines' (2021). Available at https://www.dpr.gov.ng/safety-environment/ accessed March 5, 2021.
[1032] NNPC, 'Health, Safety and Environment' (2020). https://nnpcgroup.com/NNPC-Business/Business-Information/pages/health-and-safety.aspx accessed February 28, 2021.
[1033] Department of Petroleum Resources, Nigeria, 'Safety Case Guidelines for Oil and Gas Facilities in Nigeria' (2020, Last Updated: February 2021) 5.
[1034] Section 9 subsection 1 of the Petroleum Act, 1969, Nigeria.
[1035] Section 3 paragraphs C-G of the Mineral Oil (Safety) (Regulation 1963, Updated 2007).

The *Environment Impact Assessment Act of 1992* generally provides a prior impact assessment of any significant project on the environment before the project can commence, and this is without exception to oil and gas projects.[1036]

The *EGASPIN 2002,* in turn, lays out requirements for environmental management and pollution abatement at every stage of the oil and gas production process and require operators to submit an environmental impact assessment to the Department of Petroleum Resources (DPR) before they could be granted an operational licence.[1037] This report must include detailed information on all oil and gas activities, including atmospheric emissions under Part 8 of the Guideline. The *Safety Case Guidelines for Oil and Gas Facilities* 2020, on the other hand, provides guidance to operators and owners of oil and gas facilities with which they can prepare and submit a *Safety Case* at different stages of oil and gas activity, beginning from project designs to project operation and final decommissioning stage.[1038] According to the NNPC, *HSE Guidelines* for oil and gas operations in Nigeria is formulated in line with the industry's best practices to: (1) facilitate timely and comprehensive compliance with safety protocol while ensuring effective service delivery; (2) protect the environment, assets, and industry staff; and (3) ensure that HSE activities are conducted with utmost competence and in line with the oil and gas industry's professional standards.[1039]

But despite these numerous safety provisions and guidelines, environmental hazards and accidents is commonplace in Nigeria's oil and gas sector, thus suggestive of either of three things: (i) a non-compliance with safety procedures by operators in the sector; (ii) poor monitoring of compliance by the Department of Petroleum Resources is ineffective;[1040] and (iii) like most workplaces, excessive rulebooks often lead to a complicated compliance process as operators may

[1036] Section 1-3 of the Environmental Impact Assessment Act 1992, Nigeria.
[1037] Section 3.2.1 of the Environmental Guideline and Standards for the Petroleum Industry in Nigeria, 1991 (Revised 2002).
[1038] Department of Petroleum Resources, Nigeria, 'Safety Case Guidelines 2021 (n1033).
[1039] NNPC, Health, Safety and Environment 2020 (n1032)
[1040] Uzoma Nnadi and others 2014 (n261)1-10.

struggle to keep up with the requirements of many guidelines. Of course, regulations, guidelines, or legislations are suitable for every sector. Still, studies have shown that having them in piecemeal structures with several details and frequent changes always make regulatory procedures complex. Thus, it hinders economic activities and makes the regulation burdensome to businesses, individuals, and the sector it is meant for in general.[1041]

In the U.K., to prevent major accidents and impacts on the environment and people, compliance with safety protocols in gas operations is governed by the Control of Major Accident Hazard (COMAH) Regulation 2015 and the Gas Safety (Management) Regulations 1996. The effective enforcement of these regulations by the U.K. Health and Safety Executive (HSE)[1042] also offer very useful insight for achieving compliance with safety practices in gas operation in Nigeria. Both COMAH and GSMR require licensed operators to prepare and submit a safety case report that the HSE must accept before gas operation can commence in the U.K. While the safety case under COMAH applies to gas producers and suppliers,[1043] the GSMR's safety case, on the other hand, focuses on the implementation of safety protocols by parties responsible for gas conveyance to household users in the U.K.[1044]

Under COMAH, a gas producer or supplier must prioritise risk management by completing a robust COMAH Safety Report and Review Process. He must identify risk and put control measures at onshore sites before commencing a gas production activity.[1045] In the report, the operator must also demonstrate to the competent authority that he has taken all reasonable steps prescribed by the regulation and provide every assistance required by the regulator to allow the latter to investigate or access information to carry out his duties under COMAH.

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[1041] Office of the Parliamentary Counsel, 'When Laws Become Too Complex: A Review into the Causes of Complex Legislation' (The Cabinet Office, London, 2013) 1-2.
[1042] Offshore Gas and Pipeline Safety Strategy 2014-2017, United Kingdom.
[1043] Regulation 5, paras (1) of The Control of Major Accident Hazards Regulations 2015, United Kingdom.
[1044] Regulation 1, 3 paras 1 of the U.K. Gas Safety (Management) Regulations 1996
[1045] Regulation 5 of the COMAH Regulation 2015 United Kingdom.

Other information the report must contain include operator's name, location of the business, the position of the person in charge of the establishment, description of the business environment, factors likely to cause accidents, and nature of the business activity to be carried out by the planned project.

The Gas Safety (Management) Regulation (GSMR) 1996 is another robust piece of legislation that provides a framework for safety case assessment for those conveying natural gas through pipes to domestic users in the United Kingdom and other consumers.[1046] Under the GSMR regime, operators engaged in gas conveyance must prepare a safety case which the HSE must first approve before a gas conveyor can begin transporting gas to consumers.[1047] Under the safety case report required by the GMSR, the name and all relevant particulars connected to the business, the location, the name and the address of the duty holder must be provided.[1048]

The COMAH and GSMR regimes are detailed, straightforward and least complicated for operators to comply with. Also, compliance becomes easy to obtain since no operator can commence gas operation if the HSE rejects the safety case submitted. This means before a gas conveyor can convey gas from one point to another, he would have fulfilled all necessary steps to prevent major accidents as required by regulation. Reviewing or harmonising the numerous safety guidelines and provisions in Nigeria into one or two detailed, clear, and straightforward bodies of health and safety law will deepen safety in gas operations and limit accidents in the sector. A clear and effective regulation is essential for the good governance of any sector as minimal red tape helps companies save money, gives effect to policies, and turn ideological principles and specific rules into legal remedies. In addition, it is easier to reconcile conflicting

[1046] U.K. Health and Safety Executive, 'Gas Supply Legislation, Guidance and Submitting Gas Transporter Safety Cases.' Available at https://www.hse.gov.uk/gas/supply/legislation.htm accessed September 30, 2021; Regulation 1, 3 paras 1 of the U.K. Gas Safety (Management) Regulations 1996

[1047] Regulation 3 paras 1 of the U.K. Gas Safety (Management) Regulations 1996.

[1048] Schedule 1 paras (1-4) of U.K. Gas Safety (Management) Regulations 1996.

objectives or expectations and lawmakers' views under a single robust document that operators can always go to for guidance.[1049]

### 8.3.5. Poor Monitoring and Security of Pipelines

Although, under Part 5 (D) (1.1) of the Environmental Guidelines and Standards for the Petroleum Industry (EGASPIN) 2002, operators are required to:

> *take appropriate hazard assessment before laying pipelines; carefully inspect all pipeline materials for manufacturing defects;* ***carefully inspect and test all pipeline welded joints using visual, X-ray, or ultrasonic methods;*** *coat pipelines with asphaltic mixtures, coal-tar enamel, epoxy compounds to protect pipelines against internal/external corrosion, including carrying out cathodic protection; visually/electronically inspect the long length of the pipelines with helicopters, vehicles, foot and by divers to detect spillages and encroachment on the pipelines that might endanger them****; ensure that sensors and shut-off devices are installed for monitoring and controlling of pipeline operations****; erect warning signs or boards where pipelines cross navigable waterways; and use hydrostatic test, at a pressure above normal working pressures to detect wall cracks, thin holes, or other defect leakages.*

But regardless of this robust guideline provision, pipeline vandalism and breaks have remained two of the most critical challenges facing the development of the Nigerian oil and gas sector, especially in terms of the availability of product supplies. In 1999 alone, a total of 477 incidents of pipeline vandalism was recorded in Nigeria,[1050] while a further 2,787 breaks were reported on pipelines belonging to the Nigerian National Petroleum Corporation (NNPC) between 2010 and 2012. According to the National Oil Company, these line breaks resulted in the loss of petroleum products worth 12.53 billion Nigerian Naira.[1051] Over the

[1049] Office of the Parliamentary Counsel 2013 (n1041) 2-5.
[1050] Ogbeni O. O, 'Fuel Pipeline Vandalism in Nigeria' (2012) in Mmeje David Uchechukwu, Bello Ayuba and U. D. Mohammed, 'Investigation of Pipeline Vandalism and its Implications on Business Activities in Nigeria' (2017) Vol. 38, JRDM, 69-81 at 71.
[1051] NNPC, '2016 Annual Statistical Bulletin' (1st 2016) 24.

same period, the pipelines along the Gombe and Kaduna axis recorded 850 and 571 cases of vandalism, respectively. Those along the Warri axis suffered 548 incidents of vandalism, and the Lagos Mosimi system pipelines recorded 463 incidents while the Port Harcourt pipelines points were vandalised 336 times.[1052]

Whereas the Pipelines and Product Marketing Company (PPMC)- a business unit of the NNPC is responsible for monitoring and maintaining over 5,120 kilometres of pipelines networks that traverse the country,[1053] however, as a strategic business unit of the NNPC, the PPMC's mission has never really been focused on securing pipelines neither detecting nor deterring vandals. PPMC's focuses mainly on optimising product sales in the interest of the NNPC- its parent company.[1054] This is further evident in its mission statement that includes supplying petroleum products to the domestic market at cheaper operating costs; efficient transportation of petroleum products to refineries, moving finished products to the domestic market; and selling special products competitively in the international and domestic markets.[1055]

Consequently, going by recurring incidents of pipeline explosion and accidents caused by repeated sabotage from vandals and oil thieves, it is indicative that the management of pipelines has been problematic in Nigeria.[1056] This conclusion also aligns with the thinking of Nnadi and others, whose analysis posits that the absence of proper safety management systems is the reason behind the frequent pipeline accidents in Nigeria.[1057] According to them, even though vandalism and

[1052] ibid
[1053] NNPC, 'Pipelines and Products Marketing Company Limited (PPMC)' (2020). Available at https://www.nnpcgroup.com/NNPC-Business/Subsidiaries/Pages/PPMC.aspx#:~:text=PPMC%20was%20set%20up%20as%20a%20subsidiary%20and%E2%80%8B,parent%20corporation%20the%20Nigerian%20National%20Petroleum%20Corporation%20%28NNPC%29.%EF%BF%BD accessed February 26, 2021.
[1054] ibid
[1055] NNPC, Pipelines and Products Marketing Company Limited 2020 (n1053)
[1056] Fadebiyi I. O and others, 'Burns and Fire Disasters from Leaking Petroleum Pipes in Lagos, Nigeria: An 8-year Experience' (2011) Vol. 37, Burns 145-152.
[1057] Ministry of Petroleum Resources, '7 Big Wins: Activities and Landmark Achievements 2015-2019' (Abuja, Nigeria 2019) 1.

pipeline ruptures are the most common causes of pipeline damages, a lack of a robust safety management system remains one of the major reasons behind pipeline explosions. In other words, except for operational failures that operators and natural disasters do not wilfully cause, the lack of proper maintenance and absence of periodic inspection of pipelines is also identified as an underlining reason behind pipeline explosions and accidents.[1058]

The financial strict liability provision of chapter 2 of the Petroleum Act of Norway offers a range of support for environmental protection from the impact of natural gas accidents and help Nigeria improve its poor monitoring and security of gas pipelines as it ensures that licensees take appropriate steps to enhance safety practices. Under the Norwegian principle, regardless of who is at fault in the damage or loss caused through pollution such as discharge or effluent arising from a licensee's facility or operation, the licensed operator is also strictly liable financially for the cost of any measure adopted to avert or limit damage or a loss.[1059] A new legal framework to improve monitoring and security of pipelines must include a financial strict liability provision applicable to conveyors and distributors conveying natural gas through pipelines from one part of Nigeria to another. The introduction of this provision as the law will awaken operators and owners of pipelines to put robust measures in place or strengthen coordination to protect pipelines in Nigeria.

### 8.3.6. Poor Domestic Gas Supply and Affordability

Maximising oil or gas recovery is not dependent on production efficiency alone. The entire production process can only be complete if the output is supplied timeously to final consumers.[1060] In Nigeria, insufficient pipeline systems and recurring attacks limit the efficient supply of gas. Gas supply in Nigeria is also hampered by the poor purchasing power of domestic consumers. This explains why most Nigerians, especially in rural areas, still rely on traditional sources like

[1058] ibid 4.
[1059] Chapter 7-1 of the Act 29, November 1996 No. 72 Relating to Petroleum Activities in Norway.
[1060] The Ian Wood Review 2014 (n375) 12.

biomass for energy consumption, as it is undoubtedly a cheaper and affordable energy fuel when compared to oil and gas.[1061]

Nigeria currently has about 5,120 kilometres of pipeline network connected to 21 supply depots in terms of existing pipelines. As insufficient as the existing network is, the National Oil Company also recently confirmed that out of over 5,120km of the pipelines owned by the company, only about 38 per cent of the transmission lines are functioning.[1062] While investments in pipeline infrastructure are essential to supply availability,[1063] sustaining an uninterrupted supply to the domestic market would require that two mutually inclusive issues be resolved. First, the government must provide funding to develop production and transmission lines, which is the primary constraint to supply.[1064] Secondly, it must ensure that gas infrastructure would be safe and secure to move products without any supply disruption and return on investments.[1065] According to Ainouche and Hanouti, the geography, location and right of way for pipeline construction play a critical role in developing gas pipelines.[1066] It is true that if funding is available, projects can be constructed regardless of geographical location. However, a recurring attack on pipelines in Nigeria[1067] indicates that the National Oil Company that owns these facilities neither possess a functional contingency plan to prevent attacks nor does the DPR implement drills for pipeline safety as is applicable in Norway. Therefore, legislating the Norwegian approach in which a security measure protects pipelines must be initiated by the licensee, who must always have a contingency plan to deal with attacks on facilities that limit supply disruption.[1068]

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[1061] Juliet Ben-Iwo, Vasilije Manovic and Philip Longhurst, 'Biomass Resources and Biofuels Potential for the Production of Transportation Fuels in Nigeria' (2016) Vol. 63 RSER, 172-192 at 174.
[1062] Kingsley Jeremiah, 'Below 40% of 5,120km Pipeline Operational in Nigeria, Says NNPC' (The Guardian, 2020 4:36 am). Available at https://guardian.ng/news/below-40-of-5120km-pipeline-operational-in-nigeria-says-nnpc/ accessed September 20, 2021.
[1063] Ministry of Petroleum Resources Nigeria 2017 (n446) [30-32]
[1064] U.S. EIA, 'Country Analysis Brief: Nigeria 2016 (n44) 11, 14, 15.
[1065] David Wijeratne and others, 'Powering Nigeria for the Future' (PricewaterhouseCoopers, the Power Section in Nigeria, July 2016) 12.
[1066] Hanouti M and Ainouche A, 'Strategy of Energy Infrastructure Development: Case of Algeria' (18th World Congress, 2005).
[1067] Ministry of Petroleum Resources, '7 Big Wins 2019 (n1057) 23, 24; U.S. EIA, 'Country Analysis Brief: Nigeria 2016 (n44) 14.
[1068] Chapter 9, Section 9-3 of the Act 29, November 1996 No. 72 Relating to Petroleum Activities in Norway.

Also, for a population that is generally low on income and economic status of 2,671 dollars per capita GDP,[1069] gas supplies will continue to be affected by the poor purchasing power of consumers in the domestic market.[1070] Therefore, to cushion the effect of supply cost on delivery companies, it was thought that incentivising the purchasing power of domestic buyers would continue to make gas available and affordable.[1071] This led the Government to introduce the domestic gas obligation for all oil and gas companies under the 2008 Domestic Gas Master Plan. It eventually brought producing and delivery companies to the table to agree to a specific volume of gas to be delivered and prices to be paid for such deliveries.[1072] Upon this agreement being finalised in 2010, domestic gas prices were reduced compared to the international market prices. However, the effort to maintain a lower price at home than what is traded globally sometimes falls short of the true cost of supplies. The resulting impact was that producing and delivery companies sometimes could not meet up with their mandatory supply volumes.[1073] Consequently, to bridge this gap so that suppliers find the confidence to continue to meet their delivery obligations, a law should be put forward to govern budgetary support to cover domestic supply obligations and delivery costs where domestic purchases predictably fall short of the true cost of gas supplies.[1074]

Expanding budgetary subsidies to incentivise supply obligation has become critical due to the impact of a fall in gas prices due to the glut in the global market arising from increases in shale gas production by the U.S. over the last decade and a half.[1075] Usually, when products supplies flood the global market leading to a fall

[1069] World Bank Group, 'World Bank Data' (2017). Also available at https://data.worldbank.org/ accessed January 28, 2021.
[1070] U.S. EIA, 'Country Analysis Brief: Nigeria 2016 (n44) 2.
[1071] Occhiali Giovanni and Falchetta Giacomo, 'The Changing Role of Natural Gas in Nigeria: A Policy Outlook for Energy Security and Sustainable Development' (Working Paper of the Fondacio Eni Enrico Mattei, 2018) 24.
[1072] Henry Biose, 'Gas Production and Utilisation in Nigeria: A Long-term Perspective' (2019) Vol.6, Issue 5, IJETMR, 58-72 at 62,63.
[1073] Occhiali Giovanni and Falchetta Giacomo 2018) (n1071) 17.
[1074] U.S. EIA, 'Annual Energy Outlook 2020 with Projections to 2050' (January 29, 2020) 10, 46, 50.
[1075] ibid

in prices internationally, while this may be good for consumers, it is not the case for operators who have to meet their commercial objectives but are limited in their ability to make gas supplies available as much as they can under a business as usual scenario. The situation has, in fact, worsened since the 2020 global pandemic took its toll on the global economy.[1076] Under the current circumstances with the global pandemic, a possible contraction of returns on investment for gas producers and delivery companies is conceivable due to lockdowns and production shutdowns. But at the same time, it is not clear how a lowered gas price favours domestic consumers, many of whom will struggle to access cheap gas with growing job cuts and redundancies. Also, with most jobs being done from home, this leaves less demand for the use of gas-fired power generation sources in offices and places of work. This means that gas producing and delivery companies that are increasingly taking the hit from low demands because of the pandemic will require some sort of government support to sustain gas supplies to the domestic market.[1077]

Also, for purchases of gas as feedstock for nationwide power generation, the government must ensure that gases supplied by operating companies for power generation are timeously paid for to encourage operating companies to continue to focus on production efficiency as well as on their individual commercial objectives.[1078] Unfortunately, an already existing irregular pattern of payment for gases supplied to the government has been described as one of the major constraints to investments in the gas sector by gas producing companies.[1079] Therefore to phase out such disincentive to production supplies, the government's willingness to drive growth and investment in the sector must prioritise clearing

[1076] International Energy Association (IEA), 'Global Energy to Plunge this Year as a Result of the Biggest Shock Since Second World War' (April 30, 2020). Available at https://www.iea.org/news/global-energy-demand-to-plunge-this-year-as-a-result-of-the-biggest-shock-since-the-second-world-war ; Ira Joseph, 'Covid-19 Dents Demand for Gas and Undermines its Role as a Bridge Fuel in the Energy Transition' (S&P Global, 2021).
[1077] Ryan Dezember, 'The World Can't Take Much More Shale Gas' (The Wall Street Journal, Updated July 7, 2020 3:18 pm ET). Also available at https://www.wsj.com/amp/articles/the-world-cant-take-much-more-shale-gas-11594114202 accessed February 16, 2021.
[1078] The Ian Wood Review 2014 (n375) 5.
[1079] Ministry of Petroleum Resources Nigeria 2017 (n446) 30.

out its backlogs of debts for gases delivered to customers. Else, gas-producing and supplying companies may find it difficult to commit more money to invest in the future.[1080]

### 8.3.7. Poor Public Participation in Environmental Impact Assessment (EIA)

The impact of oil and gas operations in Nigeria is well-documented. From oil pollution to gas emissions and effluent discharges into the environment, years after these operations are carried out, the destructive effect remain visible on the land, air, and water bodies, especially in Niger Delta areas where oil and gas production takes place.[1081] In fact, in what he described as 'ecological warfare against Niger Delta,' Alkelegbe observed that over five decades of oil and gas production activities had left the Niger Delta environment severely degraded.[1082] This is because, in over four out of the five decades of oil and gas activities in Nigeria, no significant environmental impact assessment (EIA) of oil and gas projects were conducted. Neither do project developers engage directly with affected communities to ascertain how proposed projects could affect them.[1083]

To ensure that new gas project activities do not cause significant harm to the environment and living conditions of host communities, EIA should always be conducted, but the process can only be complete if communities that will be affected by the project are consulted for inputs right from the get-go.[1084] This is because public participation in the EIA process provides decision-makers with robust perspectives on how a given project would impact communities, as residents have an opportunity to share their experiences before, during and after

[1080] Occhiali Giovanni and Falchetta Giacomo 2018 (n1071) 24.
[1081] Allan Ingelson and Chilenye Nwapi, 'Environmental Impact Assessment Process for Oil, Gas and Mining Projects in Nigeria: A Critical Analysis' (2014) Vol. 10, No. 1, LEDJ, 35-56 at 39, 40.
[1082] Augustine Alkelegbe, 'Civil Society, Oil and Conflict in the Niger Delta: Ramifications of Civil Society for a Regional Resource Struggle' (2001) 39 JMAS 441 at 442.
[1083] Allan Ingelson and Chilenye Nwapi 2014 (n1081) 44.
[1084] Ejide Sodipo and others, 'Environmental Law and Practice in Nigeria: Overview' (Thompson Reuters Practical Law, January 02, 2017).

the project is constructed.[1085] In his paper on the problem with public participation in EIA in Sub-Saharan Africa, Kalonge submitted that analysis of major infrastructure development reveals that the EIA process is only effective if it involves rigorous and full participation of community representatives from diverse socioeconomic backgrounds who usually bring their local understanding and wealth of indigenous knowledge to help ensure appropriate project designs.[1086]

In Norway, public participation in the EIA process is beyond publicising environmental information for public input in decision-making. The Norwegian Environmental Information Act 2003 also requires administrative agencies to include the public in preparing legislation, programmes, and plans regarding environmental protection. It also mandates a public hearing to be had on legislation, plans and programmes that would have significant environmental impacts where public inputs must be had before final decisions are taken.[1087] According to the Act, this extent of publication of project information for the public, interest groups and expert opinions as well as drawing on their inputs in the proposed legislation, programmes and plans does not only show robustness in EIA consultation, it also brings transparency in Norway's environmental approval system.[1088]

The Nigerian EIA Act 1992 should be reviewed to extend citizens participation in environmental protection in Nigeria beyond access to environmental data to include participation in public hearings on the preparation of legislation, programmes and plans concerning the environment to strengthen regulatory protections for the Nigerian environment. Doing this will strengthen cooperation and coordination between the authorities and the people likely to be affected by

[1085] Stephen Jay and Christopher Wood, 'Environmental Impact Assessment: Retrospect and Prospect' (2007) Vol. 27, Issue 4, EIAR, 287-300.
[1086] John O. Kalonge, 'Problems with Public Participation in EIA Process: Examples from Sub-Saharan Africa' (1996) Vol. 14, No 3, Impact Assessment, 309-320 at 309, 310.
[1087] Section 20 of Norway Environmental Freedom of Information Act of 9th May 2003 No. 31
[1088] Section 1 and 20 of Norway Environmental Freedom of Information Act of 9th May 2003 No. 31

project activities from an environmental and public health perspective. This is even very critical following the introduction of a 10-year tax break for investors in new gas pipelines sure to drive an increase in gas utilisation activities. A bottom-up approach to public participation in EIA for gas sector projects must be pursued. This will provide robust interpretation of the likely project impact on host communities and guide project decisions and designs.

## 8.4. Conclusion

Gas flaring in Nigeria is as old as its petroleum industry. Apart from safety reasons, waste of valuable natural gas through flaring in Nigeria has continued because of pipeline infrastructure and an underdeveloped domestic gas market. Also, among other things, the lack of political will to enforce penalties for routine flaring due to conflict of interests in the functions of the DPR (now the Commission and the Authority) that regulated oil and gas operators continue to undermine the objective to maximise Nigeria's gas resources. To increase efficient use of natural gas and reduce gas waste in Nigeria, under a new legal framework for the sector:

(1) Commitment to transparency in the administration of the gas sector should be seriously promoted. A sincere commitment to transparency means that the rules do not simply allow the publication of licences and gas contracts but also sanction regulators who abdicate this responsibility. This is because opacity limits investors' confidence and fosters bias, kickbacks, and corruption. Corruption must be sanctioned in the open regardless of who is involved. In the same way, integrity and professionalism should be rewarded.

(2) Create a gas sector whose management is independent of the oil sector to ensure clarity of functions and focus on maximising natural gas resources. The independence of the regulatory bodies- the Commission and Authority should be guaranteed and protected under law to enable them to function effectively without fear or favour. The fidelity of sector regulators should be to the law and not subject to ministerial approvals.

(3) Establish a comprehensive HSE regime, strengthen safety protocols in the industry, and improve prompt monitoring of pipelines through regular

inspections and technical/digital/sensory detection equipment to contain sabotage and vandals.

(4) Incentivise the private sector and be flexible with the incentivisation programme until adequate investment in gas infrastructure is achieved. It is most likely the proposed 10-year tax break for investments in pipelines under the PIA 2021 will attract investment in gas infrastructure; the puzzle there is, how much of an investment can a struggling gas sector potentially attract for growth? Given the growing opposition to carbon-intensive assets and the pace of energy transition, a gas sector's attractiveness for investment in the future will depend on continuing flexibility in regulatory approaches combined with public grants/funding to incentivise or spur private interest in gas projects.

## CHAPTER 9: LEGAL FRAMEWORK CONSIDERATIONS FOR EMISSION-IMPACT MITIGATION FROM NATURAL GAS UTILISATION IN NIGERIA

### 9.1. Introduction

Most accounted GHG emission that continues to have a severe social and environmental impact in Nigeria comes from oil and gas operations taking place in communities across the Niger Delta region of the country.[1089] From over 100 flare sites spread across the region, approximately 23 billion cubic meters of gas is flared every year out of the volumes of associated gas produced with crude oil. According to Okafor and Aniche, this amount of gas waste constitutes more than 13 per cent of total gas flared around the world and is equivalent to 45 million tonnes of carbon out of about 400 million tonnes of carbon emission released into the atmosphere globally.[1090]

With yearly ongoing flare emissions, as of 2020, Nigeria became the 17th largest emitter of GHGs worldwide and the 2nd after South Africa on the African continent.[1091] And apart from the environmental warming effects and massive revenue lost to flaring, the impact of these burning flames in the Niger Delta is well known to range from skin diseases to respiratory and other health-related conditions prevalent among people. In addition, acidification of water bodies and soils are also dominant, thus affecting crop yields to date.[1092] As a result, the government has set several flare-out deadlines to prohibit flaring and cut down GHG emissions from oil and gas production that negatively impact Nigerian lives. Still, the practice has continued with little or no restraint from operating companies.

While legal provisions and fines exist to discourage and limit flaring emissions, these have yet to bring any significant change in the attitudes of polluting

[1089] Daisy Dunne, 2020 (n855).
[1090] Jude C Okafor and Ernest Tochie Aniche, 'Nigerian and World Bank Global Gas Flaring Reduction (GGFR) Partnership: The Tragedy of the Commons' (2016) Vol. 6, No.12 Developing Country Studies 44-57 at 44.
[1091] Daisy Dunne 2020 (n855)
[1092] Uwem Udok and Enobong Bassey Akpan, 'Gas Flaring in Nigeria: Problems and Prospects' (2017) Vol. 5, No. 1, GJPLR, 16-28 at 24.

companies towards sustainable environmental practice.[1093] Apart from most gas producers' inability to capture flared gas due to lack of infrastructure, weak enforcement of flare prohibition and operators' preference to pay flare fines have also been identified as key reasons the practice has continued to date in Nigeria. For the relevant federal regulators to practically enforce strict emission control and mitigate the impact in Nigeria's Niger Delta, among other framework issues, local regulators need to be empowered to contribute oversight in gas sector operations. Also, public access to environmental justice and judicial integrity, emission disclosure practice in oil and gas operations etc., must be present. From considering these framework issues, this chapter would have provided such considerations and propose steps by which a new regulatory framework could be developed by Nigeria to minimise gas waste and mitigate the impact of emissions.

## 9.2. A Conceptual Overview of an Effective Legal Framework for Mitigating Emission Impact from Natural Gas Utilisation

The processes involved in protecting the environment and preserving nature and human lives from toxic emissions require more than parliamentarians proposing laws, receiving legislative approvals and obtaining presidential assent to make a law official. However, putting the approved text into practice is another thing.[1094] A good legal framework understands that regulation in itself is not enough to compel compliance to established standards or bring about appropriate outcomes from polluting companies and gas consumers. History already indicates that desired changes in any economic sector will continue to be at risk without adequately coordinated supervision, followed by the credible threat of enforcement.[1095] This is because laws or regulations in themselves do not often include how a particular individual, a business, local or state government and operators might follow the law. Therefore, for rules and regulations to work daily, the environmental protection agency and certain government agencies are empowered to set specific requirements concerning what is legal and what is not

[1093] Eferiekose Ukala, 'Gas Flaring in Nigeria's Niger Delta: Failed Promises and Reviving Community Voices' (2011) Vol. 2, Issue 1, Washington and Lee University JECE, 97-126 at 104, 105.
[1094] U.S. EPA, 'The Basics of the Regulatory Process' (Last Updated on September 28, 2021).
[1095] Sheetal Radia, 'Effective Regulation' (Position Paper supported by the Chartered Financial Analyst (CFA), Kaplan UK, December 2011) 5.

permitted and then work to help the citizens comply with it and to enforce them.[1096]

In other words, no proper supervision of polluting activities and enforcement of compliance to emission standards can be carried out by a single regulatory institution, especially where the regulators reside in a very distant area that is not close to where the damaging operations occur. An excellent legal framework that will ensure a significant reduction of greenhouse gas emissions cannot rely exclusively on the federal enforcement of applicable laws.[1097] Among other things, multi-layered and decentralised enforcement of laws must be encouraged if GHG reduction and mitigation of emission impact will be successful. Furthermore, given that laws requiring emission reduction will apply to numerous emission sources, a substantial level of monitoring and reviewing of emissions data to ensure compliance with standards means that no single agency of government, federal or state has the resources to ensure compliance alone. A team approach must be used.[1098] In other words, a multi-layered system involving both federal and state/local regulators and agencies must have responsibility for enforcement divided among them, usually with overlapping yet complementary mandates. According to Bogoshagain and Ken, while regulating emission reduction through multiple enforcement might include some form of inefficiency and may frustrate regulated entities, overlapping jurisdiction tends to increase the likelihood of enforcement and compliance by increasing the amount of supervision and scrutiny in evaluating compliance.[1099]

An excellent legal framework establishes protocols that allow private citizens to pursue environmental justice. According to Demski, democratic ideals suggest that those most affected or are likely to be affected by a decision deserve to have the opportunity to influence it. Doing this strengthens accountability, drives transparency and openness.[1100] Unfortunately, given the economic interest and revenue accruing from carbon-intensive sectors like oil and gas, most

[1096] U.S. EPA, 'The Basics of the Regulatory Process, 2021 (n1094).
[1097] Matt Bogoshagain and Alex Ken, 'The Essential Role of State Enforcement in the Brave New World of Greenhouse Gas' (2009) Vol 27, Issue 2, UCLA JELP, 339-352 at 340.
[1098] Ibid,
[1099] Matt Bogoshagain and Alex Ken 2009 (n1097)
[1100] Christina Demski, 'Net Zero Public Engagement and Participation' (BEIS and Crown Copyright, March 2021) 13.

governments and regulators tend to undercut or become unwilling to sanction corporations whose operations cause significant harm to the environment.[1101] Fortunately, to address this willful neglect in regulatory enforcement, the judicial process has always remained the last resort for private individuals or non-governmental organisations to force governments and operators to fulfil the obligation to a clean and safe environment.[1102] Consequently, to minimise environmental risks from oil and gas ventures, a practical legal framework must step in to provide unfettered access to municipal courts where aggrieved citizens can challenge the breaches of environmental laws or compel strict regulation enforcement.[1103]

While access to justice systems represents a democratic ideal for citizens' engagement in environmental protection, this process is often confronted by procedural difficulty, high cost of litigation, under-compensation and systematic under-deterrence of polluters.[1104] Therefore, to ensure that access to justice is unhindered and that the judicial process is effective, firstly, the legal framework must ensure that citizens litigating environmental disputes are physically able to access the courts.

Secondly, where there are no courts close to polluted areas, to secure public health, an appropriate legal framework must pursue the establishment of local courts to bring access to justice to affected citizens. Thirdly, equip the courts and provide resources for the smooth running of the judicial process.[1105] Where it is costly for litigants to access the judicial system, the legal framework must also ensure the availability of efficient legal aid services.[1106] Furthermore, to guarantee the judicial system's integrity and impartiality of the judicial process, the legal

[1101] Amnesty International, 'Nigeria: Petroleum, Pollution and Poverty in the Niger Delta' (Amnesty International Publications, 2009) 8.
[1102] *Okpabi and Others v Royal Dutch Shell Plc and Another* [2021] UKSC 3. Heared on June 23, 2020, Judgement delivered on February 12, 2021; BBC, 'Shell in Nigeria: Polluted Communities 'Can Sue in English Courts'' (February 12, 2021). Available at https://www.bbc.co.uk/news/world-africa-56041189.amp accessed October 20, 2021.
[1103] Anais Berthier and others, 'Access to Justice in Environmental Law: A Legal Guide to Justice in Environmental Matters, 2021 Edition' (Client Earth, 2021) 13.
[1104] Daniel C. Esty, 'Environmental Protection in the Information Age' (2004) 79, NYULR, 115-211at 131
[1105] Nathy Rass-Masson and Virginie Rouas, 'Effective Access to Justice' (European Union Policy Department, Brussels, 2017) 10.
[1106] Ibid, 135, 136.

framework must provide facilities to support the continuing education of officials and staff of the court. And a timely public hearing by an independent judicial process that delivers and enforce judgment without delay must be guaranteed.[1107]

An efficient legal framework that would mitigate the impact of greenhouse gases in the economy must foster a culture of innovation and reform underpinned by flexibility and cost-effectiveness in its enforcement. Apart from the relevant expertise required for enforcing the law, the process must envision emission reduction beyond the command-and-control approach to innovative strategies to enhance compliance and support mitigation action.[1108] For example, suppose the domestication of treaties or adapting specific support from international agreement into municipal regulation will support ease of doing business and emission reduction in an economic sector; in that case, a legal framework should create permissible conditions for new rules to apply. The framework should not create barriers to innovation by increasing cost and uncertainty around the development process. It should not distort the choice of technologies that can be adopted or explored for the overall good.[1109]

Although the traditional form of regulating gas emissions remains unique for its predictability and dependability when adequately enforced. Studies have also indicated that this prescriptive approach to enforcing emission compliance could be very inflexible and inefficient.[1110] While regulations setting out emission standards are very much needed, designing the regulations or other instruments like market incentives and goal-based strategies in simpler, flexible, and more effective at lower cost will drive more compliance.[1111] Figuring these simpler approaches to achieve emission compliance is what a functional legal regime must

[1107] ibid 78.
[1108] Neil Gunningham, 'Regulatory Reform Beyond Command and Control' (Being a paper presented on 'Earth System Governance: Theories and Strategies for Sustainability' at the Amsterdam Conference on the Human Dimensions of Global Environmental Change, 24-26 May 2007, 2007) 6, 7.
[1109] OECD, 'Regulatory Reform and Innovation.' Page 10.
[1110] Neil Gunningham and Darren Sinclair, 'Designing Smart Regulation' (OECD, 2004) 3; Neil Gunningham and Darren Sinclair, 'Designing Smart Regulation' in Hutter M. Bridget (ed.), 'A Reader in Environmental Law' (OUP, 1999) 305-334 at 305-307.
[1111] OECD, 'Regulatory Reform: A Synthesis' (OECD, Paris, 1997) 11.

do. The social or self-regulatory approach that requires companies to contribute to GHG reduction by disclosing emissions portfolios of their business operations to consumers is now one of the most simpler, cost-effective and viable means of achieving emission reduction.[1112] The concept believes that requiring operators and corporate actors to disclose to customers and others information about harm or risks that could arise from a product or a business activity will potentially lead to behavioural changes in the way businesses are conducted.[1113]

Most traditional methods of enforcing regulatory compliance to minimise emissions have come by way of imposing standards and compelling corporations to adopt measures that will minimise the loss and impact of business activity on the environment. However, the challenge with this approach is that most corporations that engage in fossil fuel-related operations still consider the prospect of regulating GHG emissions as a significant threat to their business.[1114] Thus, the companies often prefer to pay emission fines rather than adopt measures to cut gas emissions from their operations. To them, fines bring lower costs to their businesses than compliance with regulatory standards would add.[1115]

Therefore, to enforce compliance with emission standards and mitigate emission impacts, the requirement that businesses report the emission portfolios of business operations to consumers and shareholders is now a backbone of compliance efforts.[1116] Most importantly, besides the immediate environmental damages gas emissions can cause, with the growing concerns around the effects of global warming, emission reporting now signifies the seriousness most

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[1112] The KPMG International, 'The KPMG Survey of Corporate Responsibility Reporting' (KPMG Global Centre of Excellence for Climate Change and Sustainability, 2013) 27.
[1113] Kalle Maatta, 'Regulatory Reform and Innovations: Whether to Trust the Invisible Hand or Use the Visible One? (Sitra Report Series 10, Helsinki, 2001) 25.
[1114] Yu He, Quingliang Tang and Kaitian Wang, 'Carbon Disclosure, Carbon Performance and Cost of Capital' (2013) Vol. 1, Nos. 3-4, CJAS, 190-220 at 190, 191.
[1115] Kasirim Nwuke, 'Nigeria's Petroleum Industry Act: Addressing Old Problems, Creating New Ones' (The Brookings Institution, November 24, 2021). Available at https://www.brookings.edu/blog/africa-in-focus/2021/11/24/nigerias-petroleum-industry-act-addressing-old-problems-creating-new-ones/ accessed November 30, 2021.
[1116] Matt Bogoshagain and Alex Ken, 'The Essential Role of State Enforcement in the Brave New World of Greenhouse Gas' (2009) Vol 27, Issue 2, UCLA JELP, 339-352 at 342.

governments attach to climate change response.[1117] Secondly, investors consider indiscriminate emission releases into the environment as a negative part of corporate equity. Accordingly, disclosures are critical to stakeholders who want to make informed decisions knowing how gas emissions from corporate activities affect the environment.[1118] Finally, with the environment and public health consistently under threat from toxic emissions, the proactive legal framework concerned about public safety must insist on polluting entities disclosing their carbon capacity publicly.

## 9.3. Existing Legal Framework for Mitigating Emissions in Nigeria and Lessons from Best Practice Jurisdictions

### 9.3.1. Devolution of Regulatory Powers to Local Authorities for Effective Compliance with Environment and Emission Standards

Local authorities play a significant role in ensuring compliance with environmental standards during project development or activity in many countries. From Alberta, Canada,[1119] to the United Kingdom and other parts of Europe, local authorities make significant contributions to environmental protection.[1120] For example, they provide information on the environment to residents and other relevant organisations that may require it. They also offer technical services like waste collection and treatment, supply of fresh water, energy, and treatment of sewages, and are responsible for transportation and road management.[1121]

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[1117] Yu He, Quingliang Tang and Kaitan Wang 'Carbon Disclosure, Carbon Performance and Cost of Captial' (2013) Vol. 1, Nos. 3-4 CJAS 190-220 at190, 191-194.

[1118] Paul A. Griffin and others, 'The Relevance to Investors of Greenhouse Gas Emission Disclosures' (2017) Vol. 34, Issue 2, CAR, 1265-1297

[1119] Alberta Energy Regulator, 'Manual 013: Compliance and Enforcement Program' (December 2020) 1,2.

[1120] European Environmental Agency, 'The European Environment: Countries and Regions' (2015). Available at https://www.eea.europa.eu/soer/2015/countries/soer.pdf.body accessed March 24, 2021.

[1121] Fredrik Burstrom, 'Environmental Management Systems and Co-operation in Municipalities' (2000) Vol.5, No.3, Local Environment: IJJS, 271-284 at 272-273.

However, in terms of oil and gas activities, the powers of local authorities are usually limited[1122] because the ownership of oil and gas resources in most countries reside in the national government. In any case, this is not to say they cannot exercise control over certain critical aspects of oil and gas operations. For example, in Alberta, Canada, the U.K. and other European countries, Local Authorities' control of emissions and their impacts from onshore oil and gas activities in its municipality or council area is not terminated by ownership of oil and gas resources by the federal government.[1123] In the United Kingdom, oil and gas resources found anywhere is a property of the Crown Estate (national government), but the processes of exploration and extraction of these resources are governed by a system of national regulation[1124] that recognises the indispensability of coordinating oversights with local administrators. For instance, if oil spills and other environmental disasters occur along the U.K. coastlines, the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED)[1125] and the Maritime and Coastguard Agency (MCA) will usually work closely with local authorities to ensure clean up and restoration of the environment.[1126]

Although the Secretary of State issues license for petroleum exploration and development while the Department for Business, Energy and Industrial Strategy (BEIS) regulates the sector, operators are encouraged to carry out pre-application consultation before commencing a licensed onshore operation with other relevant statutory authorities. These authorities are not just the Health, Safety and Environment (HSE) Executive, Environment Agency (EA), Minerals Planning Authority (MPA), but also include Local Planning Authorities etc.[1127] The

[1122] Nickie V and Chidinma T, 'Alberta's Approach to Local Governance in Oil and Gas Development' (2010) Vol.48, No.1, ALR 55-92 at 55, 79, 85.
[1123] Ute Collier, 'Local Authorities and Climate Protection in the European Union: Putting Subsidiarity into Practice?' (1997) Vol.2, No.1, Local Environment: IJJS 39-57 at 43.
[1124] John Witton and others, 'Shale Gas Governance in the United Kingdom and the United States: Opportunities for Public Participation and the Implications for Social Justice' (2017) Vol. 26, ERSS, 11-22 at 12.
[1125] OPRED and BEIS, 'Oil and Gas: Offshore Environmental Legislation' (Published 22 January 2013, Last Updated 18 March 2021). Available at https://www.gov.uk/guidance/oil-and-offshore-environmental-legislation accessed March 29, 2021.
[1126] UK Maritime and Coastguard Agency, 'Planning Marine Oil Spill Waste Processing Guide and Decision-making Tool Part 1' (2003) 10.
[1127] Department of Energy and Climate Change, 'Onshore Oil and Gas Exploration in the UK: Regulation and Best Practice' (Crown Copyright, 2015) 16-17.

consultations usually address environmental issues ranging from site access to ecology, noise, archaeology, and visual impacts. And also describe arrangements for permits from contacts made with appropriate regulatory authorities, including detailed consultative checks had with local water and power supplies.[1128] In other words, a project developer may meet all the requirements of the HSE, EA and other consultees and still not be able to proceed with the approved projects if the MPA believes that the impact of a proposed project may pose health and environmental risks to local people and the environment. Because MPAs are part of the Local Council, statutorily, they are a key regulator responsible for granting planning permissions for the location of onshore wells and well pads. They also impose conditions that ensure that the impact of a project on used lands are acceptable and protect the environment and residents.[1129]

In Alberta, Canada, the ownership of oil and gas resources is controlled by the subnational government where oil and gas are found and not by the central government.[1130] As a result, the competence to protect the environment from oil and gas pollution also resides in the regional government, where oil and gas are mostly explored. In Nigeria, regardless of where oil and gas resources are located, it belongs to the federal government. But apart from offshore oil and gas locations that are exclusive economic areas which is exclusive to federal jurisdiction of every country, even onshore oil and gas resources within the States are federally owned and deprive the States any oversight powers over the impact of oil and gas activities.[1131] The result of this has been that since the federal regulators are often not near where oil and gas operation takes place, it is difficult for them to

[1128] Ibid, 17.
[1129] Department for Communities and Local Government, 'Planning Practice Guidance for Onshore Oil and Gas' (Crown Copyright, July 2013) 6; United Kingdom Onshore Oil and Gas (UKOOG), 'Regulation' (UKOOG, 2017). Available at https://www.ukoog.org.uk/regulation accessed March 29, 2021.
[1130] Adeoye Adefulu, 'Ownership of Petroleum Under the Petroleum Industry Bill, 2020' (October 5, 2020). Available at https://www.petroleumindustrybill.com/2020/10/05/ownership-of-petroleum-under-the-petroleum-industry-bill-2020/#.YGADF1Mo9-E accessed March 29, 2021.
[1131] Section 43 of the Constitution of Nigeria 1999 (as amended)

efficiently control the damages done to the environment from the impacts of oil and gas flaring.[1132]

For example, in Alberta, Canada, municipal councils exercise oversight control through approvals for the use and development of lands in their locality. Although they also enforce compliance through statutory planning tools and land-use bylaws that set out how municipal authorities can grant permission for land use development or subdivision of lands, this power does not extend to oil and gas development in the municipalities.[1133] However, as Vlavianos and Thompson opined, where a public hearing concerning a proposed pipeline or well is being considered, in the interest of public safety and environmental protection, the Energy Resources Conservation Board (ERCB) of Alberta often consider not only the impacts of the project on the land but also the public interest plans of the municipal area.[1134] This, of course, further deepens local authorities' role and contribution in shaping environmental protection and compliance with regulatory standards.

Also, at the regional wide level, to ensure that oil and gas companies follow every applicable rule governing a project development from the beginning to the end of the project, the Alberta Energy Regulator (AER) makes sure that companies proactively identify, report and correct every wrong action when any requirement or rule is not obeyed. And where companies or an operator fails to comply with set rules or standard, more enforcement and compliance tools are deployed.[1135] If failure to comply with the laid down procedure or requirement is substantial, the AER would record such default and escalate penalties to severe levels. The compliance and enforcement tools usually begin as a notice of noncompliance issued to the company, followed up with a warning. Next, an order is given and followed by an administrative sanction, and after that, a fee fine is placed. After

[1132] David B. Spence, 'Federalism, Regulatory Lags, and the Political Economy of Production' (2013) Vol. 161, No. 2, UPLR, 431-508.
[1133] Section 618 and Part 17 of the Municipal Government Act of Alberta Canada
[1134] Nickie V and Chidinma T. 2010 (n1122) 79.
[1135] Alberta Energy Regulator, 'Compliance and Enforcement Tools' (2013-2021). Available at https://www.aer.ca/regulating-development/compliance/compliance-and-enforcement-tools accessed March 30, 2021.

that, an administrative penalty, then prosecution and formal publicity of the sanctioned individual or company is made.[1136]

While this situation is not different in the United States and the United Kingdom, local authorities in these countries still share a level of regulatory control with federal and local authorities over the different aspects of oil and gas operations.[1137] In Nigeria, local and State officials lack absolute control or oversight over oil and gas activities in their immediate environment. Such powers over oil and gas activities reside entirely in the federal government.[1138] Under the Nigerian Constitution 1999, it provides that 'notwithstanding the foregoing provisions of this section, the entire property in and control of minerals, mineral oils and natural gas in, under or upon any land in Nigeria or in, under or upon the territorial waters and Exclusive Economic Zone of Nigeria shall vest in the Government of the Federation and shall be managed in such manner as may be prescribed by the National Assembly.'[1139]

This exclusive power in the federal government also includes the power to make laws to control and manage natural resources and hydrocarbon operations for the common good and benefits of Nigerians.[1140] Although it could be argued that since section 1 of Nigeria's Land Use Act of 1979 gives States/Local authorities power to administer land in trust for the people, it should have included State's control over any mineral resource found within its jurisdiction, constitutionally, this is not the case in Nigeria. In effect, given the overriding power of the Constitution over any other law in Nigeria, which also places control over all mineral resources, including oil and gas in the federal government, the exercise and interpretation of

[1136] Ibid
[1137] Allison E. and Mandler B, 'U.S. Regulation of Oil and Gas Operations' (American Geosciences Institute, 2018) Part 21/24 Petroleum Environment 21-1-4 at 21-1; SLR Consulting Limited and The Maritime and Coastguard Agency, 'Planning the Processing of Waste Arising from a Marine Oil Spill: Part 1: Local Authority Guidance' (2010) 9,10.
[1138] Theodore Okonkwo, 'Ownership and Control of Natural Resources Under the Nigerian Constitution 1999 and its Implications for Environmental Law and Practice' (2017) Vol.6, No.1, ILR, 162-184 at 182.
[1139] Section 44 subsection 3 of the Constitution of Nigeria, 1999 (as amended).
[1140] Item 39 on the Exclusive Legislative List, Second Schedule of the Constitution of Nigeria, 1999 (as amended).

State or Local power over all lands in Nigeria does not extend to oil and gas and related operations.[1141]

Under section 1 subsection 3 of the Constitution of Nigeria, it provides that if any law is inconsistent with the provisions of the Constitution of Nigeria, that law shall be null and void of its inconsistency. According to Okonkwo, the implications are that where any oil and gas activities embarked upon by the federal government, its agencies or departments adversely impact the environment or create existential problems, the States or local authorities are constitutionally handicapped even when they experience the most impacts. Only the federal government can remedy it. This is precisely why environmental degradation in the Niger Delta has continued without end in sight. Those with authority to control the damaging effects of oil and gas operations are usually not close to local areas where these activities occur.[1142] Therefore, to ensure that the actions that impact the environment are efficiently regulated, local authorities and regulators closer to operations within their locality should be legally empowered to exercise control of the activities and their impacts on the immediate environment.[1143] A new regulation extending permitting powers over oil and gas activities taking place on onshore locations in local areas should be developed. In terms of coordinating response on offshore pollution, local authorities should equally be empowered to work hand in hand with both State and federal authorities for adequate control of environmental pollution. This is particularly important as it would enhance monitoring of pipelines, most of which run through remote locations and are closer to local authorities than federal regulators.

### 9.3.2. Citizens Right to Judicial Remedy for Environmental Violations

In many countries where a vast array of inviolable rights are provided as fundamental human rights, the right to a safe and healthy environment is also viewed as a constitutionally protected right that can be enforced in the court of

[1141] Section 1 subsection 1 and 3 of the Constitution of Nigeria, 1999 (as amended).
[1142] Francis E. Idachaba, 'Remote Operation in Oil and Gas Production Installations in Niger Delta' (2011) Vol. 1, Issue 3, ATE, 55-59.
[1143] Elizabeth W and Danax V, 'The Role of Local Government in Environmental Action in Slovakia' (2000) Vol. 5, Issue 3, Local Environment: IJJS, 255-269 at 261-262.

law by the citizens.[1144] And like the right to life and dignity, when the environment is damaged or threatened, private citizens and non-governmental organisations can seek redress in court for personal damages or restore the environment.[1145] In other words, in these jurisdictions, the court's hand is not constitutionally tied to hear environmental claims and decide on the merit for or against parties in dispute.[1146] The reverse, unfortunately, is the case in Nigeria.[1147]

Even in places where the constitution does not expressly provide for the justiciability of environmental rights, there are at least 40 countries with procedural mechanisms and tools with which affected individuals can access the courts to adjudicate environmental rights between a private individual and the Government or a corporate entity. Norway, Canada, the Netherlands, and others present relevant case studies of substantive and procedural instruments available to the citizens towards environmental rights and protection.[1148] Under the Norwegian Constitution, every citizen has a guaranteed right to an environment conducive to their health and to a natural environment whose productivity and diversity must be maintained. Furthermore, to safeguard this right, citizens are constitutionally entitled to information from the government on the state of their environment, including how an encroaching activity affect their environment.[1149] Norwegians can also appeal a refusal of access to information under the Environmental Information Act[1150] and under Section 1-2 of Norway's Freedom of Information Act of 1970 amended June 2003.

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[1144] David B and Marcos A O, 'Amicus Curiae Brief of the United Nations Special Rapporteur on Human Rights and the Environment and the United Nations Special Rapporteur on Toxic and Human Rights in Foreningen Greenpeace Norden and Natur og Ungdom v. The Government of Norway' Case No. 20-051052SIV-HRET (2020) 8.
[1145] The State of the Netherlands v. Urgenda Foundation, ECLI:NL:HR:2019:2007, Judgment (Supreme Court of the Netherlands, December 20, 2019) (Netherlands).
[1146] Michael J. Kane, 'Promoting Political Rights to Protect the Environment' (2006) Vol. 18, Issue 1, The YJIL, 389, 390.
[1147] Godwin U O and Nosa T, 'Access to Environmental Justice in Nigeria: The Case of Global Environmental Court of Justice' (ERA and FOE, October 2016) 4, 5.
[1148] Yaffa Epstein, 'Access to Justice: Remedies' (January 14, 2011) 39-40.
[1149] Article 112 of the Constitution of Norway 1814 with Amendments through 2014.
[1150] Section 15, 18, 19 of the Environmental Information Act of 9 May 2003 No.31, Norway.

In Nigeria, the window for citizens to legally defend and protect the environment is constitutionally deficient, but they are also procedurally planned to fail. For instance, while section 20 of the Nigerian Constitution 1999 (as amended) provides for the State to protect and improve the environment and safeguard Nigeria's water, air and land, forest and wildlife, this provision is nonjusticiable.[1151] This means that the right to a healthy environment in Nigeria in the event of damaging activities cannot be redressed by the citizens even if the government fails to safeguard the environment. This is because, under section 6 subsection 6 paragraph (C) of the Nigerian Constitution, it is provided that:

> The judicial powers vested in accordance with the foregoing provisions of this section (judiciary)- shall not except as otherwise provided by this Constitution extend to any issue or question as to whether any act or omission by any authority or person or as to whether any law or any judicial decision is in conformity with the Fundamental Objectives and Directive Principles of State Policy set out in Chapter 2 of this Constitution.

The Fundamental Objectives and Directive Principles of State Policy are a set of policy objectives of the Nigerian State provided in sections 14-24 of the Nigerian Constitution that the three arms of government shall conform to, observe and apply for the good of Nigerians.[1152] These objectives, which range from democracy and social justice to non-discrimination and national integration, also include ***the obligation of the State to use its resources and powers to protect and safeguard the Nigerian environment.***[1153] But notwithstanding the use of the word "shall" by section 13 of the Nigerian Constitution to convey an obligation on the government to pursue and enforce these policy objectives, the non-

[1151] Section 6 subsection 6 (c) of the Constitution of Nigeria, 1999 (as amended).
[1152] Section 13 of the Constitution of Nigeria, 1999 (as amended).
[1153] Sections 14, 15 and 20 of the Constitution of Nigeria, 1999 (as amended), (bold italics for emphasis)

justiciability of the policy objectives makes the Government unbothered about environmental protection.

On the part of the citizens, judicial attempts by private individuals to hold the government to account where it fails to protect the environment from damaging operations have been largely unsuccessful.[1154] In effect, citizens participation in environmental protection or decisions that affect their environment remains constitutionally suppressed under section 6 subsection 6 (C) of the 1999 Constitution. And until that section is repealed to allow private citizens access legal protection against activities that impact the environment or guarantee citizens' rights to hold the government to account for activities like gas pollution that negatively impacts the environment, flaring emissions will continue.[1155] This constitutional inability of the citizens to become active participants in environmental protection is worsened by the fact that Nigeria's primary environmental agency (NESREA) is precluded from regulating oil and gas pollution.[1156] A repeal of the NESREA Act 2007 to grant oversight into oil and gas pollution to NESREA will improve environmental protection, deter gas flaring, enhance the utilisation of often flared gas, and boost public confidence in the regulatory process in Nigeria.

### 9.3.3. Nationalise Emission Treaties for Domestic Enforcement

Emission treaties such as the United Nations Framework Convention on Climate Change 1992 and Paris Climate Agreement 2015, if efficiently implemented, can contribute to significant emission reduction in Nigeria. But for that to happen, the provisions of these treaties or counterpart legislation must be incorporated into the *domestic law*s of Nigeria as if they originated from Nigeria. In some countries such as France, when the government ratifies international agreements via a simple delivery of its instrument of ratification to the appropriate office,[1157] the treaty law automatically forms part of its national law and carries the same binding

[1154] Oronto Douglas v. Shell Development Company Company Limited, Unreported Suit No. FHC/2CS/573/93 (Ruling delivered February 17, 1997).
[1155] Godwin U O and Nosa T. 2016 (n1147) 4.
[1156] Section 7 and 8 of the NESREA Act 2007, Nigeria.
[1157] Article 16 of the Vienna Convention on the Law of Treaties 1969.

effect as any law made by the country's parliament.[1158] In other places, including Nigeria, a dual ratification process is required to domesticate a treaty before it can have a similar binding effect as laws made by the Nigerian National Assembly.[1159]

It is not debatable that the energy sector is responsible for around 53.6 GHG emission contribution and the largest of any GHG contributing sector in Nigeria. Out of this, the gas flaring subsector accounted for 40.3 per cent of the energy emissions and is closely followed by the transport sector at 18.4 per cent of the emissions.[1160] Combined GHG emissions from commercial, residential, agriculture, forestry and fishing activities amounted to 13.6 per cent of the emissions in Nigeria. In comparison, the manufacturing sector contributes 12.6 per cent of total emissions in Nigeria. Greenhouse gases from the energy industries, fugitive processes and refining operations contribute about 8.5, 4.4 and 2.1 per cent emissions, respectively.[1161]

To mitigate overall emission impacts from all these sectors, it is doubtful that the current regulatory framework in Nigeria can genuinely drive a percentage GHG reduction in the Nigerian economy. However, as a signatory to the 2015 Paris Agreement on Climate Change,[1162] that treaty offers Nigeria the opportunity to consciously pursue policy alternatives that help to minimise GHG emissions released into the environment, mainly from its major economic sectors.[1163] As a first step, under its Nationally Determined Contributions (NDCs) submitted to the

[1158] United Nations-DESA, 'Handbook for Parliamentarians on the Convention on the Rights of Persons with Disabilities' (United Nations Department of Economic and Social Affairs, New York, June 1, 2010)
[1159] Section 12 of the Constitution of Nigeria, 1999 (as amended); Article 11 of the Vienna Convention on Laws of Treaties 1969.
[1160] Federal Ministry of Environment Nigeria, 'Nigeria's Second National Communications under the United Nations Framework Convention on Climate Change' (Abuja, February 2014) 36-37.
[1161] Ibid, 36-37.
[1162] Nigeria signed the Paris Agreement on September 22, 2016 and ratified the Agreement on May 16, 2017. Available at UNFCCC Process, Nigeria at https://unfccc.int/node/61130 accessed March 1, 2021.
[1163] Mohamed Yahya, 'Nigeria must Lead on Climate Change' (UNDP, October 4, 2019). Available at https://www.undp.org/blogs/nigeria-must-lead-climate-change accessed March 1, 2021.

UNFCCC, Nigeria commits to 45 per cent conditional and 20 per cent unconditional mitigation contributions by 2030.[1164] Measures identified to meet this commitment which cuts across the energy, agriculture, industry, and transport sectors, include plans to decentralise renewable energy operations; improve energy efficiency; constructions of multi-cycle power stations; more use of natural gases than liquid fuels; and improving scalable power station of 20-50MW. Others include environment-friendly smart agriculture, investments in urban transit schemes, and a shift from air to highspeed rail transport services; upgrade of road networks and adoption of green technologies among industries etc.[1165]

For the oil and gas sector responsible for the most significant emission contribution in Nigeria, the Government plans to cut flare emissions in the industry by 64 million tonnes per year between 2015 and 2030 to end gas flaring by 2030.[1166] To meet this target, the Government also plans to boost enforcement of gas flaring restrictions in the oil and gas operations[1167] and has now introduced the new Flare Gas Regulation of 2018 with punitive measures and flare reporting obligations to drive compliance with standards that prohibits flaring and gas waste.[1168] The effect of which is still to be seen. The government also plans to develop microgrid gas-to-power plants at flare sites to absorb gases that ordinarily go to waste due to inadequate facilities for flare capture. The Government also plans the blending of 10 per cent volume of fuel-ethanol with gasoline and 20 per cent by volume of biodiesel with petroleum diesel for transportation fuels. It will also increase the use of natural gas over liquid fuels.[1169]

The Petroleum Industry Act 2021 could also attract low-carbon investment operations in the gas sector and improve gas utilisation but has yet to receive full implementation in oil and gas sector operation been recently passed into law after

[1164] UNFCCC, 'Nigeria's Intended Nationally Determined Contribution' (November 27, 2015) 9, 10.
[1165] Ibid, 11.
[1166] Ibid, 2, 13.
[1167] n1141 [9, 10]
[1168] Regulations 12, 15, 17, 22 of Nigeria's Flare Gas (Prevention of Waste and Pollution) Regulation 2018.
[1169] UNFCCC, 2015 (n1164) 11.

a long period of legislative roadblocks.[1170] Also, in addition to new flare regulations, achieving significant GHG emission cuts will come at a considerable cost in terms of availability of funding and accessibility to clean technologies to drive low-carbon projects with sustainable outcomes across different economic sectors. However, Nigeria does appreciate the enormity of the challenges ahead of meeting its emission targets and banks on international support to achieve a 45 per cent target GHG reduction contribution by 2030.[1171]

Interestingly, Article 4 paragraph 5 of the Paris Agreement provides an opportunity for enhanced economy-wide mitigation support and adaptation measures to developing economies pursuing their commitments for emission reduction under the UNFCCC.[1172] Article 6 paragraph 4 of the Paris Agreement also establishes a mechanism that will contribute and promote the mitigation of GHG emissions and support sustainable development. It shall also incentivise and facilitate participation between public and private entities in the mitigation of GHG emissions if a State party to the agreement authorises such partnership.[1173]

Nigeria can use this window for funding support and technology transfer to enhance its emission-impact mitigation in the oil and gas operations and other economic sectors. But regardless of any available funding or the mitigation and adaptation measures introduced, a successful economy-wide emission reduction cannot be sustained without the country domesticating the Paris Agreement and relevant GHG treaties. Although Nigeria's deposition of instruments of ratification of the treaty ascribes the status of a party willing to contribute to the treaty objectives, in reality, notwithstanding anything to the contrary, if the climate

[1170] Section 102-108 of the PIA 2021 Nigeria; Marc-Antoine Perouse De Montclos, 'The Politics and Crisis of the Petroleum Industry Bill in Nigeria' (CUP, 2014) Vol. 52, No.3 JMAS, 403-424 at 408.
[1171] n1141 [9]
[1172] Article 4 paragraph 5 of the Paris Agreement 2015.
[1173] Article 6 paragraph 4 of the Paris Agreement 2015.

treaty is not domesticated, enforcement of this treaty provisions cannot be legally compelled in Nigeria.[1174]

As a signatory to several international agreements, most of the treaties Nigeria is signed on to are neither enforceable nor recognised by Nigerian courts.[1175] This is because the constitutional power to incorporate global agreements into its law resides with the National Assembly and does not lapse with submitting an instrument of ratification to the UNFCCC Secretariat.[1176] Essentially, no executive order or presidential assent can guarantee a force of law to treaties between Nigeria and other countries. Moreover, under the Second Schedule to the Nigerian Constitution, the implementation of treaties relating to affairs or matters that originates outside Nigeria are exclusive to the Legislature.[1177]

Under section 12 of the Constitution of Nigeria 1999 (as amended), it is provided that 'no treaty between Nigeria and any other country shall have the force of law to the extent to which any such treaty has been enacted into law by the National Assembly.' In other words, even if the Government deposits an instrument of ratification of a treaty it signed to, until that treaty receives legislative approval from the National Assembly of Nigeria by enacting its provisions as if the law originates from Nigeria, attempt to apply it domestically will be void and of no effect throughout Nigeria.[1178] This position was also given judicial backing in the case of *Abacha v Fawehinmi* where the Supreme Court of Nigeria held that any

[1174] Kal Raustiala, 'The Domestication of International Commitments' (Working Paper-95-115, International Institute for Applied Systems Analysis, Laxenburg, Austria, 1995) 2-3.
[1175] Flora Onomrerhinor, 'A Re-Examination of the Requirement of Domestication of Treaties in Nigeria' (2016) NAUJILJ, 17-25 at 17, 18.
[1176] Section 12 of the Constitution of Nigeria, 1999 (as amended); Flora Onomrerhinor, 'A Re-Examination of the Requirement of Domestication of Treaties in Nigeria' (2016) NAUJILJ, 17-25 at 17, 18.
[1177] Items 31 and 26 of the Second Schedule to the Constitution of Nigeria, 1999 (as amended).
[1178] C.E. Okeke and M.I. Anushiem, 'Implementation of Treaties in Nigeria: Issues, Challenges and the Way Forward' (2018) Vol. 9, Nos. 2, NAUJIL, 216-229 at 216.

treaty that is not domesticated in Nigeria has no force of law whatsoever in Nigeria.[1179]

As a signatory to several international and continental treaties, studies show that the Nigerian National Assembly is largely uninterested in the idea of domesticating most treaties to which Nigeria is a party.[1180] According to Okeke and Anushiem, lawmakers hold a general view that the treaty-making process does not always take their inputs into the processes of couching international agreements. In addition, neither the Nigeria Constitution of 1999 nor the Treaty (Making Procedure etc.) Act of 2004 did stipulate any role for the lawmakers while treaties are negotiated, drafted, or acceded to.[1181] But regardless of who represents Nigeria's interest in treaty negotiations, treaties, whether in single or multiple instruments, have been a significant source of Nigerian law.[1182] They also affect institutions of State, sector operations, businesses, and private individuals. And suppose Nigeria is really interested in mitigating emission impacts and protecting its citizens from pollution from carbon-intensive sectors like the oil and gas sector. In that case, legal steps must be taken to nationalise emission reduction treaties like the Paris Agreement. Even where it is impracticable to domesticate the entirety of such an environmental treaty, provisions that encourage public-private partnership or regional cooperation arrangements for emission reduction can be domesticated as Nigerian laws.

### 9.3.4. Effective Emission Disclosure Practices in Nigeria

Due to the environmental and health impacts of growing GHG emissions, it has become increasingly pertinent for regulators to mandate oil and gas companies to disclose the extent of GHG emissions in their activities to motivate operators to contribute to emission reduction. According to Tilling and Lavington, this practice

[1179] Abacha v Fawehinmi (2000) FWLR (Pt. 4) 553 at 586
[1180] n1155 [216, 227]
[1181] Section 3 (3) of the Treaties (Making Procedure, Etc) Act, Cap T20, Laws of the Federation of Nigeria 2004.
[1182] N. C. Okeke, 'The use of International Law in the Domestic Courts of Ghana and Nigeria' (2015) Vol. 32, No. 2, AJICL, 371; Article 2 paragraph 1 (a) of the Vienna Convention of the Law of the Treaties 1969;

is a 'shine a light and change will happen' policy objective that is necessary to drive emission reduction from oil and gas operations and minimise the impact of emissions on people and the environment.[1183] Moreover, it does not only awaken operators to pay attention to the effects of their activities,[1184] but it also helps corporations gain better knowledge of their environmental performance with which they can act to improve their operations.[1185]

Although regulations that protect the environment from oil and gas activities exist, no specific legislation or guidelines imposes disclosure and reporting obligations on companies for GHG emissions coming from their facilities and operations in Nigeria.[1186] As a result, operators from different sectors of the economy freely emit gases without recourse to the impacts of GHG emissions on the environment and human health. But in July 2018, Nigeria gazetted the Flare Gas (Prevention of Waste and Pollution) Regulation, 2018 (Flare Gas Regulation)- making the disclosure and reporting of flared emissions a mandatory practice for the oil and gas companies operating in Nigeria.[1187] The Regulation that aims to minimise the environmental and social impact caused by natural gas flaring will also prevent the waste of natural gas resources and enhance social and economic benefits by capturing gases that are usually flared.[1188]

It also marks the first time Nigeria is criminalising cover-up or underreporting of flared gas by any oil and gas facility. The regulation issued according to section 9 of the Petroleum Act 1969 and Section 5 of the Associated Gas Reinjection Act

[1183] Department for Environment, Food and Rural Affairs (DEFRA U.K.), 'The Contribution that Reporting of Greenhouse Gas Emissions Makes to the UK Meeting its Climate Change Objectives: A Review of the Current Evidence' (November 2010) 10, 12, 15.
[1184] n354 [1166]
[1185] n351 [1]
[1186] Chiudo Ehirim, 'Nigeria: Leading Emission Reduction Challenges' in Lois Barber, Ben Carver and Ron Israel (eds), 'Leading Emission Reduction Challenges: Country Report Summary No.2' (Climate Scorecard, September 2016) 30, 31.
[1187] Israel Aye and Emmanuel Onyedi Wingate, 'Nigeria's Flare Gas (Prevention of Waste and Pollution) Regulations 2018' (2019) Vol. 21, Issue 2, ELR 119-127 at 120-121.
[1188] Regulation 1 of the Flare Gas (Prevention of Waste and Pollution) Regulations 2018, Nigeria.

1979[1189] also provides a legal framework for implementing Nigeria's Gas Flare Commercialisation Programme (NGFCP). The NGCP is a programme launched by the Government in 2016 for gas utilisation projects that third party investors develop.[1190]

Under regulation 4 sub-regulation 1, the Department of Petroleum Resources (DPR) (now the Upstream Regulatory Commission) may request an oil and gas producer to provide flare gas data. And under sub-regulation 2, where the flare data is requested pursuant to sub-regulation 1, the operator or producer must provide the required information to the DPR within 30 calendar days from the day the request was made. Under regulation 5, any person acting on behalf of a producer or operator but providing incomplete or inaccurate flare gas data to the DPR or any other authority empowered by law, the supplier of the incomplete information would have committed an offence. Upon conviction for the crime, the operator could be liable to a fine of 50,000 Nigerian Naira or imprisonment for a term, not more than six months or both.

On the other hand, prior experiences of fines and penalty for flare emissions shows that oil and gas companies often prefer to pay the fines. At the same time, they continue to flare gas because the fines are meagre such that operators could not be bothered financially.[1191] 50,000 naira fine or six months imprisonment or both under the new regulation for incomplete data or refusal to submit one upon request is not a significant threat to operators if the current market value for oil and gas products are considered. For example, unlike in Alberta, Canada, failure to provide or hinder access to GHG data from facilities attracts a fine not exceeding 500,000 Canadian dollars for a company. And a sum not exceeding 50,000 Canadian dollars for a private individual who fails to report emission

[1189] Section 9 of Nigeria's Petroleum Act 1969 and Section 5 of the Associated Gas Reinjection Act 1979 empowers the Petroleum Minister to make any regulation that will further the purposes of both legislations in the oil and gas sector in Nigeria.
[1190] Preamble to the Flare Gas (Prevention of Waste and Pollution) Regulations 2018, Nigeria.
[1191] Ladeinde O and Laniran J, 'The Impact of Fines on the Volume of Gas Flared in Nigeria' (Centre for Petroleum, Energy Economics and Law (CPEEL), 2015) 5.

information[1192] as imposed by the Albertan Oil and Gas Conservation Act 2000.[1193] The varying of the fines according to corporate or a private person's capacity and the legal enforcement of the Act has been helping Alberta Government able to minimise the flaring of gas in its province.

Gas producers are also required to maintain a daily log of the flaring and venting of natural gas produced in association with crude oil and shall submit the records to the DPR within 21 days following the end of each month.[1194] The logged-in flare data must be information retrieved from metering equipment installed by the permit holder on each facility. And the information about each flaring must include the date, duration, time, volumes, rate, and the source or type of gas flared.[1195] The logged-in data must conform with metering and data collecting standards set by the DPR, and each permit holder and producer must keep copies of the logs in safe custody for no less than 36 months.[1196] In addition, under Regulation 16, oil and gas producers must maintain a daily record of natural gas produced with crude oil from an oil mining lease or a marginal field. These data must be submitted to the DPR within 21 days after the end of each month. Also, an annual report must include flare gas data concerning each flare site in a format required by the DPR. This report must also list all flare sites that the producers have yet to execute a connection agreement.[1197]

Regulation 6 sub-regulation 1 provides that no person shall have access to flare gas data except such access is obtained pursuant to a Data Access Permit that is issued by the DPR on a non-exclusive basis. Under sub-regulation 2, access to

[1192] Section 110, 108 of the Oil and Gas Conservation Act (Revised Statutes of Alberta) 2000 (current as of June 15, 2020).
[1193] Section 96 (1) of the Oil and Gas Conservation Act (Revised Statutes of Alberta) 2000 (current as of June 15, 2020).
[1194] Regulation 15 sub-regulation 1 of Flare Gas (Prevention of Waste and Pollution) Regulations, 2018, Nigeria.
[1195] Regulation 15 sub-regulation 3 of Flare Gas (Prevention of Waste and Pollution) Regulations, 2018, Nigeria.
[1196] Regulation 15 sub-regulation 4 and 5 of Flare Gas (Prevention of Waste and Pollution) Regulations, 2018, Nigeria.
[1197] Regulation 17 sub-regulation 1 and 2 of Flare Gas (Prevention of Waste and Pollution) Regulations, 2018, Nigeria.

flare gas data can only be made to the DPR in the manner prescribed in the tender documentation that were issued for the bid process conducted in respect to a particular flare site as provided under Regulation 3 sub-regulation 1 of the 2018 Flare Gas Regulation. While access to environmental data is critical to any successful public engagement and contribution to environmental protection or mitigation actions, to make the retrieval of flare data dependent on obtaining Data Access Permit issued by the DPR could pose a significant setback to efforts to judicially challenge project emissions that have substantial health and environmental impacts. With the DPR as the regulatory and administrative arm of the national oil company (NNPC) that majority interest in oil and gas operations that contribute the most emissions in Nigeria, there is the potential for the DPR to stifle access to flare data, especially from public interest litigation perspectives.

Under this new regulation, flaring emissions may continue if the Petroleum Minister grants permission to an operator to flare by issuing a flaring certificate to that effect and also if the leave for flaring is in line with section 3 of the Associated Gas Reinjection Act of 1979.[1198] Section 3 of the Associated Gas Reinjection Act of 1979 requires permission for gas flaring to be granted where the Minister believes that utilisation or reinjection of gas is not feasible and where a producer meets set terms and conditions such as flare sums and having the flare emissions within fixed deadlines. Other than these exceptions, the 2018 Flare Gas Regulations prohibits all holders from engaging in routine flaring or venting of natural gas from any facilities they operate. The prohibition for gas flaring and venting also applies to permit holders operating facilities at greenfield locations.[1199]

The Flare Gas Regulation 2018 is a promising new piece of legislation which if efficiently implemented, could significantly minimise emissions and improve utilisation of gas resources in Nigeria. But this will, however, require political will and an independent regulatory implementation. However, prior experience

[1198] Regulation 12 sub-regulation 1 of the Flare Gas (Prevention of Waste and Pollution) Regulations 2018, Nigeria.
[1199] Regulation 12 sub-regulation 2 and 3 of Flare Gas (Prevention of Waste and Pollution) Regulations, 2018, Nigeria.

suggests that regulations or guidelines issued via executive action or by any Government Department without legislative backing in Nigeria often carry little impact in terms of enforcement.[1200] Although the Flare Gas Regulation 2018 was made pursuant to powers legally conferred on the Petroleum Minister,[1201] the DPR may already be showing a lack of readiness to enforce the Regulation. For instance, under Regulation 19, the Department is mandated to disclose annual data on gas flared and vented by producers as well as the total volume of flared gas as a percentage of every natural gas produced since the Regulation came into force in 2018. But it has been almost three years and no signs that the Department has received emission reports from oil and gas producers. Therefore, political will be required to enforce the Regulation among gas producing companies without fear or favour.

### 9.4. Conclusion

The oil and gas sector contributes more than half the total carbon capacity of Nigeria. Out of this, gas flaring accounts for more than half of the emissions that currently impact Nigerians' environment and health. At the same time, reports indicate a reduction in gas flaring in Nigeria compared to its carbon capacity before the last ten years. For instance, in 2000, Nigeria wasted more than 24 billion cubic meters of natural gas. Still, currently, that number stands at 7 billion cubic meters, making her the seventh most flaring nation on earth. Whichever way one looks at this, a consistent annual flare of 7 BCM of gas from 2016 to 2020 means that a valuable and significant amount of GHG continues to be emitted into the Nigerian environment.

Therefore, to minimise the emission effects of this huge waste of natural gas resources on the environment, human health, and global warming, a new legal framework must:

(1) devolve oversight powers to local authorities closer to the locations where oil and gas exploration and production activities mainly occur. Also, oversight into environmental pollution from oil and gas activities should be extended to NESREA to complement the Regulatory Commission and the Regulatory Authority;

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[1200] n553 [113, 114]

[1201] Section 9 of Nigeria's Petroleum 1969; Section 5 of the Associated Gas Reinjection Act 1979.

(2) improve citizens engagement in environmental democracy to limit emission by making environmental rights judicially enforceable. Repeal or expunge the non-justiciability provision of section 6 subsection 6 (C) of the Nigerian Constitution to allow private citizens to hold the State accountable judicially for environmental protection;

(3) impose emission disclosures to encourage self-regulation among corporations and make gas flaring subject to criminal prosecution.

Finally, (4) domesticate Article 6 of the Paris Agreement, which provides financial and technical support where two or more States may collaborate or engage in a public-private partnership to cut emissions in carbon-intensive sectors in Nigeria.

## CHAPTER 10: CONCLUSION AND RECOMMENDATION

### 10.1. Introduction

This chapter summarises the study's main findings and recommends specific actions to enhance natural gas utilisation and reduce gas emissions in Nigeria. The main research question for this study is- **Can a new legal framework drive the development of the domestic gas market for natural gas utilisation and emission-impact mitigation in Nigeria and emerging markets?** In order to answer this question, the study began by analysing current literature on oil and gas emissions in emerging markets with a particular focus on Nigeria. Next, the study investigated global best practices for natural gas utilisation and emission-impact mitigation. After that, the study appraised the existing regulatory regime governing gas utilisation in Nigeria. It also assessed the impacts of flaring emissions in Nigeria. Finally, the work examined how Nigeria can effectively minimise natural gas waste from flaring emissions. The recommendations made here are based on the findings of the study.

### 10.2. General Findings of the Study

The study finds that about 60 per cent of current increases in global emissions since 2012 to date has come from developing and emerging market areas.[1202] And that two-thirds of those emissions are generated from oil and gas combustion.[1203] In Nigeria, the oil and gas sector alone contributes more than 40 per cent of the flared emissions on the African continent, a level of gas waste amounting to a loss of around 7 billion dollars in gas sales every year.[1204] But although oil and gas production is the mainstay of Nigeria's economy, providing 65 per cent of current

[1202] Centre for Global Development, 'Developing Countries Are Responsible for 63 Percent of Current Carbon Emissions' (August 18, 2015). Also available at https://www.cgdev.org/media/developing-countries-are-responsible-63-percent-current-carbon-emissions accessed August 23, 2019.
[1203] Muntean M and others, 'CO2 Emissions of all World Countries' (European Commission, JRC Science for Policy Report, 2018) 5, 13.
[1204] Henry Umoru, 'Nigeria Accounts for 40 Percent of Gas Flaring Annually in Africa' (Report Published by All Africa, June 1, 2017); Also Published by the World Bank Group. Available at http://allafrica.com/stories/20170601244.html accessed October 19, 2017.

national revenue,[1205] it is also responsible for uncontrolled gas flaring that pollutes the environment, contaminates the soil and water, and pose public health challenges in the Niger Delta.[1206]

The study finds that gas flaring in Nigeria is as old as the inception of the nation's oil industry.[1207] For instance, between 1956 and 1963, all the associated gas produced during the early days of crude oil production in Nigeria was flared. However, between 1964 and 1978, only a 5 per cent reduction in associated gas flaring was seen. A further 30 per cent reduction in flaring occurred due to a slowdown in crude oil production in the 1980s.[1208] As the boom in crude oil production returned between 1996 and 2007, Nigeria wasted around 300.2 billion cubic feet of gas. Over the period, it consistently flared more than 22 BCM of gas every year, with 1996, 2001, 2004, 2006 and 2007 recording the highest flare increases with no less than 25 BCM of gas flared.[1209] Although recent data shows that less than 8 billion cubic meters of gas were flared annually from 2016-2020, thus indicating a reduction in flaring,[1210] this study finds that the decline in flaring has not translated to sufficient utilisation of gas in Nigeria. For instance, as of 2017, about 75 million people in Nigeria still live without access to electricity supply.[1211] This situation is no different in 2020, in which 47 per cent of the population still needs access to power[1212] while at the same time, valuable feed

[1205] Nigeria Extractive Industries Transparency Initiative, 'Overview' (Last Updated, June 9, 2021). Available at https://eiti.org/es/implementing_country/32 accessed May 2, 2021.
[1206] Stanley N and others, 'Environmental and Economic Impacts of Crude Oil and Natural Gas Production in Developing Countries' (2016) vol 1, Issue 3, IJEEE, 64-73 at 67.
[1207] Amadi Akobundu N, 'Impact of Gas Flaring on the Quality of Rainwater, Groundwater and Surface Water in Parts of Eastern Niger Delta, Nigeria' (2014) Vol. 2, No. 3, JGG, 114-119 at 114.
[1208] Nigerian Gas Flare Commercialisation Production, Historical Background' (NGFCP, 2021) https://www.ngfcp.dpr.gov.ng/about-us/historical-background/ accessed September 5, 2021.
[1209] Azeez G. Aregbe, 'Natural Gas Flaring- Alternative Solutions' (2017) Vol. 5, No. 1, WJET, 139-153 at 143.
[1210] World Bank Group and GGFR, 'Global Gas Flaring Tracker Report' (April 2021) 12.
[1211] World Bank, 'Nigeria's Flaring Reduction Target: 2020' (March 10, 2017). Available at https://www.worldbank.org/en/news/feature/2017/03/10/nigerias-flaring-reduction-target-2020 accessed May 2, 2021.
[1212] World Bank Group, 'Nigeria to keep the Lights on and Power its Economy' (Press Release No: 2020/151/AFR, June 23, 2020) 1.

gas that could have been channelled to electricity generation to meet the energy needs Nigerians are still being wasted.[1213] And despite holding the largest natural gas reserve on the African continent and as the fifth-largest exporter of liquefied natural gas globally,[1214] the study finds that domestic gas consumption in Nigeria is consistently low due to insufficient pipelines and processing plants to connect supplies to the domestic market.[1215] In addition, most gas produced with crude oil that could not be transmitted to the local market or allocated for export as LNG[1216] is either reinjected or flared.[1217]

To maximise gas use, in 2008, the government developed a 'Gas Master Plan' to promote investments in critical infrastructure and 'gas-fired plants' to boost power generation. But this study finds that no progress was made as security risks in the Niger Delta region stalled planned projects needed to enhance gas supply to the domestic market.[1218] In addition, under Nigeria's current licensing regime, production activities are jointly executed between the national oil company (NNPC) and multinational operators. Therefore, as the holder of majority stakes under the operating agreements, the obligation to fund gas projects and manage the risk associated with gas production falls primarily to the NNPC. However, the study identifies a lack of 'partner funding' as another reason hindering investment in capturing associated gas and limiting flaring emission through flare stacks.[1219]

Also, regarding the security of pipelines and emission reduction, the study finds that the absence of local regulators to coordinate oversight response with federal regulators in oil and gas operations contributes to poor protection of facilities and pollution control. The study also finds that attempts to end natural gas flaring in Nigeria using regulatory fines[1220] have equally not worked, not necessarily because the fines are meagre but also because regulators generally lack the willingness to enforce fines. This is because of the overriding economic interest of the

[1213] Azeez G. Aregbe 2017 (n1209) 143.
[1214] BP, '2019 Statistical Review of World Energy' (June 2019).
[1215] n640 [5]
[1216] Henry Biose, 2019 (n1072) 22.
[1217] n640 [6]
[1218] U.S. EIA, Country Analysis Brief: Nigeria (n44) 15.
[1219] Royal Dutch Shell, 'Investors' Handbook' (2014); Chevron Corporation, 'Nigeria Fact Sheet' (May 2015); ExxonMobil, 'Financial & Operating Review' (2014) 24-36.
[1220] The Associate Gas Reinjection Act, 1979; The Environmental Guideline and Standards for the Petroleum Industry (EGASPIN), Revised Edition 2002.

Government in production activities that causes significant gas flaring. Also, underpinning this challenge, the study finds that combining the revenue and regulatory functions for the sector in a single regulator also undermines regulation of gas flaring in Nigeria.

And underpinning most of the challenges affecting efficient utilisation of gas and emission control had been the delayed passage of the Petroleum Industry Bill into law thus contributing to stifling the development of the gas sector in Nigeria. The study also finds a lack of transparent, flexible and incentivised regulatory and governance architecture for the gas sector created more uncertainties in the gas sector's investment climate.[1221]

## 10.3. Recommendations

### 10.3.1. Review the Petroleum Industry Act (PIA) 2021

In July 2021, the Nigerian Government stepped up action to address challenges facing domestic gas utilisation when it finally passed the Petroleum Industry Bill into law, thus setting up a much-debated regulatory framework to drive the growth of the Nigerian gas sector. However, while the PIA 2021 is expected to attract investment in gas infrastructure, especially with a 10-year tax break for pipelines development to enhance gas utilisation in Nigeria, the new regime at best is a progressive legal document. For instance, though the PIA creates the Upstream Regulatory Commission and the Downstream/Midstream Regulatory Authority to regulate oil and gas operations, thus decoupling clustered functions of the DPR, there is no guaranty this move will foster efficient management of gas resources. This is because the commercial and environmental functions for the sector are still combined in both entities. This could lead to a conflict of interest and bungle efficient regulation of the gas sector, as was seen under the DPR. Moreover, while the commercial viability of gas production is essential, maintaining effective oversight of the impact of the gas operation on the environment is equally critical. Consequently, the commercial and environmental

[1221] Chidinma Uchechukwumgemezu, 'MOMAN Hopeful PIB will Lead to Free Market for Industry Players' (Today NG, June 9, 2021). Available at https://www.today.ng/news/nigeria/moman-hopeful-pib-lead-free-market-industry-players-369982 accessed June 9, 2021.

functions in the gas sector operation should be separate and not combined under a single regulatory entity.

Under section 53 subsection (1) of the PIA 2021, it provides that the Minister of Petroleum shall, within six months from the commencement of PIA, cause to be incorporated under the Company and Allied Matters Act, a limited liability company, which shall be called Nigerian National Petroleum Company Limited (NNPC Limited). And upon incorporation, the ownership of the shares in the NNPC Limited shall be vested in the federal government.[1222] Controversies have continued to trail the privatisation of the National Oil Company- the Nigerian National Petroleum Corporation (NNPC) by the new PIA 2021. Critics argue that this move deprives ordinary Nigerians of control over what is 'rightfully their communal asset.' In terms of the services which the NNPC delivers, while the public may have focused on petroleum product affordability under the public company, Nigerians worry that this move could seriously affect them since product pricing will now be determined and set by private stakeholders in the company.[1223]

However, another point of worry with privatising the State Oil Company concerns the transfer of assets. The PIA 2021 is not very clear about the transfer of government shares in NNPC Limited. For example, under section 53 subsection 5, the PIA provides that 'Shares held by the Government in NNPC Limited are not transferable including by way of sale, assignment, mortgage, or pledge unless approved by the Government and endorsed by the National Economic Council on behalf of the Federation.' Although membership of the National Economic Council of Nigeria is constitutionally required, most of the people who sit on the Council are politicians, including others co-opted by the President.[1224] In monetary terms, the value of government assets are usually enormous, and the point to note is that these assets belong to the people, not just the elite political class or those who support them. In other words, it is crucial that when disposing of state assets to private individuals or groups, the transfer process is transparent, the public is

[1222] Section 53(3) PIA 2021, Nigeria
[1223] Femi Aborisade, 'Privatisation of NNPC: The Most Fundamental Problem with the Petroleum Industry Act (PIA)' (Sahara Reporters, August 23, 2021). Available at http://saharareporters.com/2021/08/23/privatisation-nnpc-most-fundamental-problem-petroleum-industry-act-pia-femi-aborisade-esq accessed September 30, 2021.
[1224] Section 153 (1); Paras 18, 19 of Part 1 of the 3rd Schedule of the Nigerian Constitution 1999 (as amended)

fully aware of the interests involved. And that it is not for political considerations but that the benefits of such action duly accrue to the citizens.[1225]

### 10.3.2. Create a New Gas Company Separate from the National Oil Company with Independent Administrative and Regulatory Powers Over the Gas Sector

Although the 2012 version of the Petroleum Industry Bill proposed creating a new gas company to allow for adequate management and maximisation of Nigeria's gas resources[1226] independent of the management of crude oil under the NNPC,[1227] this provision was scrapped from the newly passed PIA 2021.[1228] In other words, with the status quo remaining, meaning the NNPC remains in control of the production and development of both crude oil and natural gas resources in Nigeria. The concern with leaving the NNPC in charge of managing the nation's oil and gas resources is that the NNPC could continue to neglect the development of the gas sector due to its focus on crude oil production. With more attention paid to crude oil production, the gas sector's growth could seriously be undermined. On the other hand, creating a new gas company with independent control of gas administration in Nigeria will make for efficiency in the production and development of the sector.

### 10.3.3. Complete New Gas Projects and Expand Incentives for Projects to Develop the Gas Market and Improve Utilisation

In addition to other gas projects such as the Ajaokuta-Kaduna-Kano (AKK) gas pipeline project that is currently under construction, Nigeria has presently seven new critical gas projects planned to improve domestic utilisation in Nigeria. The AKK project completion is still threatened by legal disputes over the right of way. Political will is needed to settle any form of prolonged disputes out of court if timely

[1225] Nathan K V S K, 'Privatisation of Public Assets in Developing Countries' (November/December 2002) Issue 44, No. 44, Amicus Curie; JALS, 1-14 at 9.
[1226] Section 163 Nigeria's Petroleum Industry Bill, 2012.
[1227] Section 159, Nigeria's Petroleum Industry Bill 2012.
[1228] Ernst and Young, 'Nigeria's Government Considers Petroleum Industry Bill 2020, a New Framework for the Oil and Gas Sector' (EY Global Tax Alert, January 13, 2021) 1-6.

completion is to be met. The initial completion period for seven new gas projects could not be met due to the financial constraints arising mainly from the global pandemic. Government must intensify efforts to attract funding to develop these projects, many of which are yet to enter development phases. With available financing, these newly planned projects that are expected to come into operation between 2021 and 2025 can be realised. In addition to the current ten-year tax incentive to pipeline developers, the government needs to incentivise project developers to attract more investment in gas infrastructure development by providing grants to companies for new gas projects.

### 10.3.4. Grant the NESREA Oversight Powers over Oil and Gas Pollution.

Under sections 7 and 8 of the National Environmental Standards and Regulatory Enforcement Agency (NESREA) Act of 2007, the Agency as the primary environmental protection agency in Nigeria can regulate all but pollution incidents arising from oil and gas operation in Nigeria. This means that where the Regulatory Commission or Authority responsible for regulating oil and gas pollution fails to carry out that duty, even during an emergency or threat to human health and the environment, NESREA cannot take necessary steps to remedy the situation. Also, with conflicts of interest in the economic and environmental functions of the DPR (now regulatory Commission/Authority) usually undermining protections for the environment, NESREA needs to exercise regulatory control over oil and gas pollution. A repeal or an amendment of the NESREA Act 2007 to extend the Agency's powers into oil and gas emission will strengthen regulatory compliance and monitoring of the impact of gas activities on the environment.

### 10.3.5. Devolution of Regulatory Powers to Local Authorities

There is hardly any jurisdiction where efficient regulation of oil and gas activities is achieved without the contribution of local or regional authorities. In most successful jurisdictions such as Alberta, Canada and the United Kingdom, permits must be obtained from Municipal and Local Council authorities before specific projects especially, exploration activities or pipeline construction, can proceed on

lands.[1229] In Nigeria, the exploration and production activities mainly take place in remote and local areas, while the powers regulating the impact of these operations are concentrated in the federal government. The federal government also maintains a majority interest in the sector's operations. This means that revenue maximisation is often prioritised over protecting local communities that are adversely affected by these operations. To mitigate emission impacts from natural gas activities in local areas, it is critical for regulatory powers from the centre to be devolved to local authorities to improve oversight and control of gas operations in their areas.

### 10.3.6. Efficient Monitoring and Protection of Gas Pipelines

Between 1999 and 2012, Nigeria recorded a total of 22,839 incidents of pipeline vandalism, 482 cases of pipeline fire outbreaks and 519 pipeline ruptures.[1230] More particularly, over the last five years, for example, 9,562 cases of vandalism and 219 ruptures were reported between 2015 and 2019, thus suggesting increases in pipeline incidents.[1231] To curb the spate of vandalism, the NNPC introduced pipeline protection contracts to groups in host communities to minimise the disasters.[1232] However, pipeline protection contracts have not yielded desired expectations.[1233] The following steps will improve pipeline protection:

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[1229] Fredrik Burstrom, 'Environmental Management Systems and Co-operation in Municipalities' (2000) Vol.5, No.3, Local Environment: The IJJS, 271-284 at 272-273.

[1230] NNPC Annual Statistical Bulletin from 1999-2012 in Uzoma Nnadi, Zaki El-Hassan, David Smyth and James Mooney, 'Lack of Proper safety Management Systems in Nigeria Oil and Gas Pipelines' (Institution of Chemical Engineers, Symposium Series No. 159) 24 Hazards, 1-10 at 4; Mmeje D U and others, 'Investigation of Pipeline Vandalism and its Implications on Business Activities in Nigeria' (2017) Vol. 38, JRDM, 69-81.

[1231] NNPC, 'NNPC Annual Statistical Bulletin 2019' (NNPC, 1st Edn, 2019) 24.

[1232] Geetha Narayanasamy, 'Nigeria hands Pipeline Protection Contracts to Oil-producing Communities' (S Platts Global, 2015). Available at https://www.spglobal.com/platts/ko/market-insights/latest-news/oil/031215-nigeria-hands-pipeline-protection-contracts-to-oil-producing-communities accessed May 1, 2021.

[1233] Mmeje D U and others, 'Investigation of Pipeline Vandalism and its Implications on Business Activities in Nigeria' (2017) Vol. 38, JRDM, 69-81.

1. Since most pipelines in Nigeria run through remote or local areas, those who live close are often the local authorities in each State should be legally empowered to coordinate strategies for monitoring and security of pipelines with the Nigerian Pipelines and Storage Company (NPSC) Limited. The NPSC, whose sole responsibility is to maintain and ensure the integrity of all pipelines located in downstream, is headquartered in Abuja with branch offices in just 5 States- Warri (Delta), Port Harcourt (Rivers), Gombe, Mosimi (Ogun State), and Kaduna State.[1234] With NPSC branches offices not sufficiently equipped technologically to track real-time information from pipelines in remote locations, working with local authorities will bring robust improvement in the management and security of gas pipelines in Nigeria.

2. The integrity of pipelines, especially of gas gathering lines and larger transmission lines, can be improved by the introduction of 'smart or inspection pigs' to monitor and send out real-time pipeline data from remote locations that regulators cannot readily access in person.[1235] When inserted into pipelines, smart pigs gather information about the pipeline from within using ultrasonic sounds or magnetic flux leakage to send echo signals, detect leakages or flaws in the pipeline, and transmit such signals to the sensor. Information conveyed includes pipeline curvature bends, diameter, temperature and pressure, and corrosion or loss of metal.[1236]

   Although Wireless Sensor Networks (WSNs) are not new to monitoring oil and gas pipelines in Niger Delta, WSN has been subject to vandals who usually destroy WSN monitors before damaging pipelines.[1237] In addition, unlike most sensors which can be handheld and isolated, infrared technology, a motion sensor designed to detect and assess movements around a facility

[1234] NNPC, 'Nigerian Pipelines and Storage company Limited (NPSC)' (2020). Available at https://nnpcgroup.com/Downstream/pages/npsc.aspx accessed May 1, 2021.
[1235] Uzoma N and others (n261) 5, 6.
[1236] Rigzone, 'How Does Pipeline Pigging Work?' (2021). Available at https://www.rigzone.com/training/insight.asp?insight_id=310&c_id= accessed May 2, 2021.
[1237] Fidelis C. O and others, 'Wireless Sensor Networks (WSNs) in Industrial Automation: Case Study of Nigeria Oil and Gas Industry' (2013) Vol. 2, Issue 3, IJERT, 1-7 at 6.

can be deployed to detect compromising steps around pipelines. When the sensor detects an intruder, it sends an alert to a control panel, which alerts a monitoring centre.[1238] This makes infrared sensing different from other wireless sensors that only detect signals or obstructions when the intruder directly contacts a pipeline facility. Compared to ultrasonic sensors, for instance, infrared sensors have a higher resolution and are low cost which return much faster response obstacles are detected.[1239] But, again, the WSNs previously deployed in the sector was mainly by some of the multinationals and not necessarily by the agencies or institutions such as DPR or the NPSC, respectively responsible for regulating the sector and protecting pipelines downstream.

3. The use of high-strength pipeline steels when replacing, upgrading, or building new pipelines for offshore operations with durability up to 50 years should be legislated for new pipeline projects. While the thickness of a pipeline wall may not imply that the pipeline is beyond rupture or vandalism, 'for offshore pipelines, the use of line pipes in grade X70 with a wall thickness up to 40 millimetres is increasingly becoming the current trend.[1240]

   Two grades of line pipes are commonly preferred for pipeline design for transporting crude oil, natural gas liquids, liquid petroleum gas and condensates in Nigeria. These are (i) line pipes that correspond with ASTM A106 Grade B or API 5L Grade B for low-pressure range for high working pressure or large diameter pipelines; And (ii) any of the API 5XL range of steel pipes for high working pressure or large diameter pipeline where the

[1238] Electronic Projects Focus, 'What is the Difference between the Motion Sensor, Position Sensor and Proximity Sensor?' (Elprocus, 2013-2021). Available at https://www.elprocus.com/difference-motion-sensor-position-sensor-proximity-sensor/ accessed May 2, 2021.
[1239] Baharuddin M and others, 'Ultrasonic and Infrared Sensors Performance in a Wireless Obstacle Detection System' (First International Conference on Artificial Intelligence, Modelling and Simulation 2013) IEEE, 439-444 at 439, 443.
[1240] Qiang Bai and Yong Bai, 'Subsea Pipeline Design, Analysis and Installation' (Elsevier Inc, 2014) 675.

lower grade would require excessively thick walls to cope with the desired working pressure.[1241]

Although pipelines design that uses materials from ASTM A106 Grade B or API 5L Grade B are inexpensive and have durable life span (at least Grades B), however, from a technical and economic point of view and good weldability, Grade X70 steel pipes are advisable for strategic pipelines of large diameter.[1242] X70 steel pipes are basically known for their high strength and toughness and possess a higher strength/weight ratio. They also have good formability and good weldability. Weldability is a very critical technological factor in pipeline steels as it governs how difficult or easy it is to crack welded joints after it becomes solid.[1243] According to Weglowski and others, X70 high strength steel pipes prove more reliable in the development of high-pressure transportation pipelines that takes oil and gas from fields located in remote areas, some of which can be 500-600km away from the market or oil and gas facilities, across harsh environments.[1244] While the high-strength X70 steel pipeline can withstand the peculiar challenges of the Nigerian offshore terrain, the financial implication associated with a similar project makes developing such pipelines difficult in Nigeria.

4. When gas pipeline construction is completed, an independent certification body should undergo additional testing before the gas can be allowed to flow in them.[1245] Doing this will give it the robust compliance checks necessary to ensure the safety of gas pipelines. Also, if it is possible, "during manufacturing of pipes, it is important to ensure the strength of pipes

[1241] Section 2 Subsection 2.1.2, Paragraph (A) of the Guidelines and Procedure for the Construction, Operation and Maintenance of Oil and Gas Pipelines and their Ancillary Facilities, DPR and Nigeria, 2018
[1242] Andrzej Kimpel, 'Assessment of the Advisability of the Use of Steel Pipes X70 and X80 for Strategic Pipelines of Large Diameters with Respect to their Weldability' (2014) Vol. 28, Issue 12, Welding International, 953-956 at 953-4.
[1243] M. St. Weglowski and others, 'A Comprehensive Study on the Microstructure and Mechanical Properties of Arc Girth Welded Joints of Spiral Welded High Strength API X70 Steel Pipe' (2020) Vol. 20, Nos. 14, ACME, 1-18 at 1.
[1244] ibid
[1245] Nord Stream 2, 'Fact-checking Myths' (2021) https://www.nord-stream2.com/media-info/facts-myths/ accessed May 1, 2021; Nord Stream 2: New Pipeline for Europe's Energy Future' (February 21, 2021) 2.

through double independent automated inspection of weld joints; by undertaking additional non-destructive test of weld joints; carrying out a hundred per cent expansion of pipes up to the yield stress throughout the entire length.[1246] Also, carry out a factory hydraulic test of pipes at a pressure corresponding to 96 per cent specified minimum yield strength direct from inside out. Although these procedures could become cumbersome or wear out regulators, where emergency replacement is required, this will, and others will ensure that the highest quality standards are complied with.[1247]

### 10.3.7. Public Participation in Environmental Decisions and Justiciability of Environmental Rights in Nigeria

Public participation is critically important in environmental protection and sustainability as no nation can effectively protect or safeguard its environment without support and guidance from the public.[1248] When more citizens are engaged in the decision-making process over projects that could significantly impact the environment, it increases the legitimacy of the decision-making process concerning project development. It also enriches policymakers' knowledge when decisions on project development with a defining impact on the environment are to be made.[1249] In Nigeria, the Environmental Impact Assessment (EIA) Act of 1992 provides public consultation in the decision-making process before project approvals are granted, but this is not common. In fact, most oil and gas projects decisions were undertaken without public consultation with the people of host communities that bear the impact of the project activities.

This is made worse by section 6 subsection 6 paragraph (C) of the Nigerian Constitution 1999 that makes the right to environmental protection non-justiciable against the State. Where project decisions that could have a damaging impact on the environment are taken by regulators or where the latter fails to take necessary action to mitigate the impacts on the environment and people, a private citizen

[1246] Sergey Serdyukov, 'Main Technical Solutions for the Nord Stream 2 Gas Pipeline Offshore Section' (Vienna, May 26, 2017) 11.
[1247]ibid.
[1248] Laura H. B and others, 'Making Space: How Public Participation Shapes Environmental Decision-making' (Stockholm Environment Institute Discussion Brief, January 2019) 1.
[1249] ibid

cannot legally challenge the decision or inaction of the authorities to protect the environment. This, of course, has contributed to significant pollution of the environment, particularly from the oil and gas sector in Nigeria. In order to mitigate the impact of oil and gas pollution in Nigeria, a repeal of the section 6 subsection 6 (C) of the 1999 Constitution is necessary to allow the public and interested person to be able to seek redress in the court of law when environmental integrity or people's health is threatened by oil and gas activities. Justiciability of environmental issues will deepen accountability in the operations of oil and gas companies and enhance sustainability in Nigeria.

### 10.3.8. Domesticate Climate Treaty to Mitigate Emission-Impacts

It is a basic tenet of international law that when State parties sign up to any global treaty, it should ensure that its practices conform to what was signed under the treaty. For some countries, to ensure that it implements the commitment or provisions of a treaty, it must incorporate the treaty or relevant sections into its domestic law for ease of enforcement.[1250] The Paris Agreement 2015 proposes keeping global temperatures below 2 degrees Celsius and requiring countries to work to promote sustainable development and environmental integrity and offers joint opportunity to improve efforts to mitigate GHG emissions impacts in Nigeria.

Also, apart from the commitment of governments to strengthen the abilities of their cities, local authorities, and regions to address climate change, the agreement recognises the role of non-state actors in contributing to emission reduction. Private sectors are also invited to scale up action to minimise GHG emissions in their activities.[1251] With the oil and gas sector responsible for most emission impacts in Nigeria, domesticating the Paris Agreement or relevant sections into Nigerian law will strengthen regulatory efforts to minimise flaring emissions in oil and gas operations. Although Nigeria submitted its instrument of ratification to signify a readiness to contribute to achieving the objectives of the Paris Climate Agreement, the applicability of the treaty up to the point of writing holds a persuasive effect in Nigeria. To strengthen Nigeria's capacity to mitigate

[1250] United Nations, From Exclusion to Equality: Realising the Rights of Persons with Disabilities' (Geneva, 2007) 51-54.
[1251] European Commission, 'Paris Agreement: Climate Action' (2021).

the impact of oil and gas emissions, the Paris Agreement should be made to bind carbon-intensive sectors of the economy. But this must begin with Nigeria advancing a two-third majority vote by its national assembly in favour of domesticating the treaty into the Nigerian body of laws to give it the force of law required to drive a reduction in carbon emissions and gas flaring in Nigeria.

### 10.3.9. Stricter Fines for Flaring and Prosecution of Flare Defaulters.

The 2018 Flare Gas Regulation in Nigeria is a novel regulation and a step in the right direction. If effectively implemented, it could drive increases in utilisation of natural gas and enhance GHG emission reduction in oil and gas operations. However, the penalties stipulated under the Regulation where an operator submits inaccurate or incomplete flare data or if a producer fails to install metering equipment are not stringent enough to deter gas flaring. The sum of 50,000 Naira fine or imprisonment not more than six months or both as punitive measures against gas anyone who provides inaccurate flare data to the DPR[1252] is a low fine compared to profits accruing from oil and gas operation for gas producers. Consequently, producing companies will readily pay the fines and continue to flare. The same low bar extends to where a gas producer fails to prepare, maintain, or submit accurate data or restrain a Permit Holder from accessing a flare site. This also includes when he fails to install a piece of metering equipment. In these cases, the producer is liable to pay an additional fine of 2.50 dollars per 28.317 (one thousand standard cubic feet) of gas flared or vented under an operating license.[1253]

In Alberta, Canada, it is considered a crime for anyone to attempt to or obstruct the Alberta Energy Regulator or its authorised persons from inspecting an oil and gas facility. And the fines for this vary but is stringent enough to deter flaring of gas, unlike in Nigeria, where a meagre sum is set only for oil and gas companies. Under section 96 (1) of the Oil and Gas Conservation Act 2000, any person authorised by the Alberta Energy Regulator to inspect all wells, plants, and records

[1252] Regulation 5, Flare Gas (Prevention of Waste and Pollution) Regulation 2018, Nigeria.
[1253] Regulation 21 Sub-regulation 2, Flare Gas (Prevention of Waste and Pollution) Regulation 2018, Nigeria.

shall have access to these facilities where oil and gas are refined, produced, handled, processed, or treated. This shall include any place used in connection with a well or with a place where oil and gas are refined, produced, handled, processed, and treated. Under subsection 4, whoever prevents, hinders, or obstructs or fails to permit or assist any person authorised by the Regulator pursuant to subsection 1 in exercising the powers conferred by subsection 1 is guilty of an offence. And if the offending party is a corporation, it shall be liable to the payment of a fine not exceeding 500,000 dollars. But if the guilty person is a private individual, they shall be liable to a fine not exceeding 50,000 dollars. Also, a person that is guilty of an offence under the Act shall be liable on conviction for each day in which the violation occurs or continues.[1254]

In *R v. Land Petroleum International Incorporated,* the Provincial Court was ordered by a Provincial Court to pay 80,000 Canadian Dollars to the Alberta Energy Regulator (AER) after it was found guilty of one charge of obstructing the AER duty under the Oil and Gas Conservation Act (OGCA).[1255] The AER had attempted severally to inspect the natural gas facility near Ponoka, Alberta, which was licensed to Land Petroleum but were denied access to the facility in 2018 by the company's President. This hindrance was considered a serious non-compliance and breach of the duty of AER to ensure safe and environmentally responsible energy development,[1256] including the allocation and conservation of water resources, managing public lands, protecting the environment, and providing economic benefits for Albertans.[1257] However, suppose Nigeria is really intent on emission-impact mitigation and deterrence of flaring of natural gas, in that case, a stricter fine should be set, and the courts should be able to adjudicate the provisions of the 2018 Gas Flare Regulation.

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[1254] Section 110, 108 of the Oil and Gas Conservation Act (Revised Statutes of Alberta) 2000 (current as of June 15, 2020).
[1255] R v Land Petroleum International Inc., 2021 ABPC 76 (20210303); Alberta Energy Regulator, 'Land Petroleum Ordered to Pay $80,000 Fine' (March 11, 2021). Available at https://resource.aer.ca/stories/land-petroelum-ordered-to-pay-80000-fine accessed March 25, 2021.
[1256] Alberta Energy Regulator, 'Land Petroleum Ordered to Pay $80,000 Fine' (March 11, 2021). Available at https://resource.aer.ca/stories/land-petroelum-ordered-to-pay-80000-fine accessed March 25, 2021.
[1257] Alberta Energy Regulator, 'News Release: Land Petroleum and Bill Fung Charged for Hindering AER Inspections' (August 13, 2020) 30. nr-20200813.pdf

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