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APPRAISAL OF LEGAL AND INSTITUTIONAL MECHANISMS FOR PROMOTING ENERGY SECURITY FOR SUSTAINABLE DEVELOPMENT, ENERGY EQUITY AND ECONOMIC PROSPERITY IN NIGERIA

Onyinyechi Lilian Uche*, Ebele Ogwuda**, Kenechukwu C. Asuku***

ABSTRACT

The Nigeria energy security issues cuts across availability, affordability, reliability, and environmental sustainability. The paper explores the intricate relationship between legal frameworks and institutional structures designed to ensure energy security for sustainable development, equity, and economic prosperity and illuminates how nations can adeptly navigate energy transition while balancing competing interests and priorities. It also outlines the responsibility of national governments to ensure fair and equitable access to energy for people, without causing harm to nature and the climate. The paper adopts a mix research methodology by conducting an in-depth examination of existing legal and institutional mechanisms at the national, regional, and international levels to highlight best practices, emerging trends, and innovative approaches that can help bolster energy security, foster equity in energy access, and safeguard the right to affordable energy supply in Nigeria. It also conducts a comparative case study analysis of successful legal and institutional mechanisms for energy security in Norway and extracts valuable lessons for Nigeria such as identifying and considering all different interests in developing a robust energy framework. The paper finds that currency convertibility, financing structures, insecurity, the availability and affordability of technology supply and technical know-how in the renewable energy sector are some of the challenges of energy security in Nigeria and therefore it, offers insights to guide decision-making processes and influence the future trajectory of energy governance. It concludes that the implementation of robust legal frameworks and institutional structures will significantly enhance energy access, energy efficiency and renewable energy development in Nigeria and drive sustainable development and economic prosperity.

Keywords: Energy equity, Energy Security, Renewable Energy, Sustainable Development.

1. INTRODUCTION

According to Abdallah and Odeleke, Energy is crucial for socio-economic development and positively impacts poverty eradication, quality of life, and national security.[1] The concept of Energy security for sustainable development and energy equity is the capability to establish an efficient, sustainable, and affordable energy system that meets the demands of people's lives and their daily activities regardless of race, socio-economic status or ability.[2] The European Commission and International Energy Agency defines energy security as supplies of energy in sufficient quantities at an affordable price in sustainable economic growth and through environmentally friendly means.[3]

In today's rapidly evolving global landscape, the nexus between energy security, sustainable development, energy equity, and prosperity has never been more critical as they have been known to be pivotal in shaping a nation's transition[4]. Ramchandra and Boucar, relate energy to climate, public health

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1 Ahmad Abdulsalam Abdalla and Blessing Odeleke Odetokun, 'Energy Security in Nigeria: Challenges and Prospects' (2023) 1(1) Journal of Arid Zone Economy 101 <https://safetyculture.com/topics/energy-security/-111> accessed 26 May 2024.

2 Patricia Guevara, 'Understanding Energy Security' (27 June 2024) <https://safety culture.com/topics/energy-security/> accessed 22 July 2024; Ajao KR, Adeniyi Ganiyu Adeogun, Habeeb A Ajimotokan and Mohammed Ajibola Shuaib, 'Energy Security and Nigeria's Sustainable Development: SDG 2030 (7)' (2020) 8(1) Journal of Energy Research & Reviews.

3 European Commission. 'In-depth Study of European Energy Security' (2014) SWD, 330 final/3, 2.7.2014, Brussels, http://ec.europa.eu/energy/sites/ener/files/ documents /20140528_energy_security_study_0.pdf, (10.05.2019). accessed 14 June 2024. See also Hisham Khatib and others, 'Energy Security' in (UNDP), World Energy Assessment: Energy and the Challenges of Sustainability' <https://www .undp.org/sites/g/files/zskgke326/files/publications/chapter4.pdf> accessed 14 June 2024.

4 Elizabeth Beairsto, 'Clean Energy and Justice for All: The Federal Government's Influence on State Energy Justice Legislation' (2024) 25 Vt J Env't L 307.

and security, emphasising its importance to the economy.[5] Access to reliable and affordable energy is fundamental for economic growth, social progress, and environmental sustainability.[6] Energy affects various aspects of human life, such as nutrition, health, education, technology, transportation, and communication.[7] Therefore, as the world grapples with the challenges of climate change, resource depletion, and geopolitical uncertainties, the need for robust legal and institutional mechanisms to promote energy security has become increasingly apparent. It is also imperative that these legal and institutional mechanisms underscore the right to uninterrupted, equitable energy supply at affordable rates, which should be enjoyed by all human beings.

Despite having abundant energy resources, Nigeria struggles with achieving energy security, sustainable development, energy equity, prosperity, and human rights protection. This is due to inadequate legal and institutional mechanisms, resulting in inefficient and unreliable energy supply, limited access for rural and vulnerable populations, and an overreliance on fossil fuels, which contributes to environmental degradation and climate change.[8] Additionally, there is an inequitable distribution of energy resources and benefits, violations of human rights, and obstacles to economic growth. It is crucial to identify and address the legal and institutional gaps that impede progress in these areas and develop effective mechanisms to tackle these challenges.

This paper explores the complex interplay between legal frameworks and institutional structures aimed at ensuring energy security for sustainable development, equity, and prosperity. By examining the multifaceted

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5 B Ramchandra and D Boucar, 'Energy and Sustainable Development in Nigeria: The Way Forward' (2011) 15(9) Renewable and Sustainable Energy Reviews 4966.

6 United Nations Statistics Division, 'Goal 7 of the SDG' (SDG Goals) <https://unstats. un.org/sdgs/report/2017/goal-07/> accessed 22 July 2024.

7 S.O. Oyedepo, 'Energy and Sustainable Development in Nigeria: The Way Forward' (2013) 52 Energy Policy

8 Olusola Joshua Olujobi, Uchechukwu Emena Okorie, Elizabeta Smaranda Olarinde, and Adetutu Deborah Aina-Pelemo, 'Legal Responses to Energy Security and Sustainability in Nigeria's Power Sector Amidst Fossil Fuel Disruptions and Low Carbon Energy Transition' (2023) 9(7) Heliyon 51 <https://doi.org/10.1016/ j.heliyon.2023.e17912> accessed 16 June 2024; KR Ajao, Adeniyi Ganiyu Adeogun, Habeeb A Ajimotokan and Mohammed Ajibola Shuaib, 'Energy Security and Nigeria's Sustainable Development: SDG 2030 (7)' (2020) 8(1) Journal of Energy Research & Reviews

dimensions of energy security, including availability, affordability, reliability, and environmental sustainability, the paper aims to shed light on how Nigeria can effectively navigate the energy transition while balancing competing interests and priorities. It also provides an overview of the duty of national governments to guarantee access to energy in a way that is fair and equitable for people, without causing harm to nature and the climate.

This paper conducts a comprehensive analysis of existing legal and institutional mechanisms at national, regional, and international levels to identify best practices and innovative approaches that can enhance energy security, promote equitable access to energy, protect the right to affordable energy, and foster prosperity in Nigeria. By examining the synergies between policy frameworks, regulatory measures, and institutional arrangements, the paper aims to provide insights for decision-making and the future of energy governance in Nigeria. It emphasises that achieving energy security is not just a technical or economic challenge, but also a legal, political, social, and environmental imperative that requires a holistic and inclusive approach. The paper argues that implementing robust legal frameworks and institutional structures will improve energy access, efficiency, and renewable energy development, leading to sustainable development and prosperity.

The paper is organised into five sections. The first section introduces the topic and emphasises the importance of energy equity and prosperity. The second section examines Nigeria's legal and institutional mechanisms related to energy systems, highlighting opportunities and challenges for energy security. The third section discusses barriers and strategies to enhance energy security, equity, prosperity, and sustainability. The fourth section presents a comparative case study of Norway's effective legal and institutional mechanisms for energy security, drawing lessons for Nigeria. The final section concludes with recommendations for improving energy security and promoting sustainable development.

2. LEGAL FRAMEWORK FOR ENERGY SECURITY

The role of law in guaranteeing energy security for all people cannot be overemphasised. This is because access to energy is a crucial pre-requisite for a country's economic and social development. The law plays an integral role in society as it establishes divergent rules that ought to be followed. For example, the law can regulate the use of energy resources and make for easy access to energy for the people. Where there is inadequate access to energy services, people will languish in poverty. With respect to climate change

issues, legal innovations contribute immensely towards the advancement of global efforts to make a transition from high-carbon energy to low-carbon energy. It is therefore trite that energy law enhances the promotion of human rights and the protection of the environment.[9] That is why this section of the paper is dedicated to a discourse of the relevant Laws, Regulations and Policies as well as Institutions established by law to drive energy security.

2.1 International Agreements and Treaties

2.1.1 United Nations Framework Convention on Climate Change (UNFCCC), 1992

The Convention was adopted in 1992 with the critical aim of preventing dangerous human interference with the climate system.[10] The 1997 Kyoto Protocol and 2015 Paris Agreement build on the Convention. The landmark accord which was ratified by 197 countries (including the United States) was the first global treaty to clearly address issues of climate change. It established an annual forum formerly known as the Conference of the Parties (COP) where international issues bordering on alleviating the concentration of greenhouse gases in the atmosphere are discussed.[11] The said meetings birthed the Kyoto Protocol and the Paris Agreement.[12] The UNFCCC just like most Conventions is not without limitations as three fatal flaws of the Convention

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9 Andriamirado Rakoto, 'The Law's Role in Ensuring Energy Security for All People: The Case of Access to Electricity in Madagascar' <https://www.scirp.org/journal/paperinformation?paperid=131416> accessed 27 June 2024.

10 United Nations Women, 'United Nations Framework Convention on Climate Change' <https://www.unwomen.org/en/how-we-work/intergovernmental-support/climate-change-and-the-environment/united-nations-framework-convention-on-climate-change> accessed 27 June 2024. The adoption of the Convention coincided with the inception of the UN climate regime. It was adopted at the Earth Summit in Rio de Janeiro, entered into force in 1994 and includes 197 parties today.

11 The Conference which convenes annually is the supreme decision-making body of the Framework Convention where most UN climate diplomacy occurs. For further reading, see ISPI, 'The UN Climate Regime's Achievements and Failures' <https://www.ispionline.it/en/publication/un-climate-regimes-achievements-and-failures-31837> accessed 28 June 2024.

12 Lindsay Maizland, 'Global Climate Agreements: Successes and Failures' (Council on Foreign Relations, 5 December 2023) <https://www.cfr.org/backgrounder/paris-global-climate-change-agreement> accessed 26 June 2024.

have been identified. They include a static annex system, interlinked decision-making and no formal rules of procedure.[13]

2.1.2 Kyoto Protocol, 2005

The Protocol operationalises the United Nations Framework Convention on Climate Change (UNFCCC) by requiring industrialised countries in transition to commit to limiting and reducing greenhouse gas emissions according to specific targets.[14] While the Convention mandates these countries to adopt mitigation policies and report periodically, the Protocol, effective since 2005, calls for a 5.2% reduction in six greenhouse gases across 41 countries, including the EU, from 1990 levels during the commitment period of 2008–2012.[15] Despite being recognised as a significant environmental treaty, its effectiveness has been questioned, leading to the 2012 Doha Amendment, which Nigeria ratified in 2020.[16]

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[13] 'UNFCCC - United Nations Framework Convention on Climate Change [UPSC GS-III]' < https://byjus.com/free-ias-prep/the-united-nations-framework-convention-on-cli mate-change-unfccc/> accessed 24 August 2024.

[14] Kyoto Protocol 2005, arts 2 and 3.

[15] United Nations Climate Change 'What is the Kyoto Protocol?' <https://unfccc.int/kyoto_protocol> accessed 27 June 2024. The Protocol which was adopted in 1997 and entered into force in 2005 was the first legally binding climate treaty. It required developed countries to reduce emissions by an average of 5 percent below 1990 levels, and established a system to monitor countries' progress. But the treaty did not compel developing countries, including major carbon emitters China and India, to take action. The United States signed the agreement in 1998 but never ratified it and later withdrew its signature. Nigeria became a Party to the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 and ratified the Kyoto Protocol in 2004.

[16] Editors of Encyclopaedia Britannica, 'Kyoto Protocol International Treaty, 1997' (Britannica) https://www.britannica.com/event/Kyoto-Protocol accessed 26 June 2024 The Treaty was coined or named after the Japanese city in which it was adopted in December 1997. The Protocol is the first addition to the UNFCCC which committed its signatories to develop national programs to reduce greenhouse gases emission. Greenhouse gases such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and sulfur hexafluoride (SF_6), affect the energy balance of the global atmosphere in ways expected to lead to an overall increase in global average temperature, known as global warming (see also greenhouse effect). The long-term effects of global warming according the Intergovernmental Panel on Climate Change (established by the United Nations Environment Programme and the World Meteorological Organization in 1988) comprises a general rise in sea level around the world, resulting in the inundation of low-lying coastal areas and

2.1.3 The Paris Agreement, 2015

The Paris Agreement is considered to be the most significant global climate agreement to date. It requires all countries to set emissions-reduction pledges.[17] In so doing, Governments or countries set targets, known as

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the possible disappearance of some island states; the melting of glaciers, sea ice, and Arctic permafrost; an increase in the number of extreme climate-related events, such as floods and droughts, and changes in their distribution; and an increased risk of extinction for 20 to 30 percent of all plant and animal species. The Kyoto Protocol committed most of the Annex I signatories to the UNFCCC (consisting of members of the Organisation for Economic Co-operation and Development and several countries with "economies in transition") to mandatory emission-reduction targets, which differed depending on the unique circumstances of each country. Other signatories to the UNFCCC and the protocol, consisting mostly of developing countries, were not required to restrict their emissions. The protocol entered into force in February 2005, 90 days after being ratified by at least 55 Annex I signatories that together accounted for at least 55 percent of total carbon dioxide emissions in 1990. For further reading see, United Nations Climate Change 'What is the Kyoto Protocol?' <https://unfccc.int/kyoto_protocol> accessed 27 June 2024. See also, 'Nigeria Ratifies Doha Amendment to Kyoto Protocol on Climate Change' (Premium Times, 2 October 2020) <https://www.premiumtimesng.com /news/more-news/418089-nigeria-ratifies-doha-amendment-to-kyoto-protocol-on-cli mate-change.html> accessed 28 June 2024. See also Articles 20 and 21 of the Kyoto Protocol.

[17] 'The Paris Agreement' (United Nations Climate Change) <https://unfccc.int/process-and-meetings/the-paris-agreement> accessed 26 June 2024. The International Treaty on Climate Change was adopted in 2015 at the 21st session of the Conference of the Parties (COP21) of The United Nations Framework Convention on Climate Change (UNFCCC) which was held in Paris in November and December 2015 by the 195 participating countries. For further reading see, 'Nationally Determined Contribution (NDC) to the Paris Agreement: Nigeria' (IEA, 15 February 2022) < https://www.iea.org/policies/11784> accessed 26 June 2024. The Agreement opened for signature on 22 April 2016 – Earth Day – at UN Headquarters in New York. It entered into force on 4 November 2016, 30 days after the so-called "double threshold" (ratification by 55 countries that account for at least 55% of global emissions) had been met. Since then, more countries have ratified and continue to ratify the Agreement, reaching a total of 125 Parties in early 2017. The current number of ratifications can be found here. In order to make the Paris Agreement fully operational, a work programme was launched in Paris to develop modalities, procedures and guidelines on a broad array of issues. Since 2016, Parties work together in the subsidiary bodies (APA, SBSTA and SBI) and various constituted bodies. The Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) met for the first time in conjunction with COP 22 in Marrakesh (in November 2016) and adopted its first two decisions. For further reading, see, 'Key Aspects of the Paris

nationally determined contributions (NDCs), with the objectives of avoiding scenarios where the global average temperature rises from 2°C (3.6°F) above preindustrial levels and pursuing efforts to keep it below 1.5°C (2.7°F).[18] The Agreement also aims to reach global net-zero emissions, where the amount of greenhouse gases emitted equals the amount removed from the atmosphere, in the second half of the century. (also known as being climate neutral or carbon neutral). With regard to the expansion of renewable energy, the Paris Agreement is particularly important as it obliges participating parties to control their conservatory gas secretions as well as take measures to mitigate the adverse effects of weather variation on human health and the environment.[19] The Paris Agreement represents a **landmark** in the multilateral climate change process. The reason is that for the first time, there is a binding agreement that brings all countries together to fight climate change and take measures to adapt to its effects.[20] The primary challenge with this Agreement

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Agreement' (United Nations Climate Change) <https://unfccc.int/most-requested/key-aspects-of-the-paris-agreement> accessed 26 June 2024.

[18] Paris Agreement, arts 2 & 3. The NDCs represent targets and actions for the post 2020 period. Nigeria's updated NDC reflects higher ambition, higher quality, and higher national buy-in. See, 'Nationally Determined Contribution (NDC) to the Paris Agreement: Nigeria' For further reading see, 'Nationally Determined Contribution (NDC) to the Paris Agreement: Nigeria' (IEA, 15 February 2022) <https://www. iea.org/policies/11784-nationally-determined-contribution-ndc-to-the-paris-agreement-nigeria> accessed 27 June 2024.

[19] Nigeria however lacks a comprehensive low-carbon energy policy, and the 2003 National Energy Policy only briefly addresses low-carbon energy strategies, falling short of establishing a practical national program. The Energy Commission in order to address this lacuna fashioned the Inexhaustible Energy Map in 2006, revised in 2011, with the goal of developing and utilizing renewable energy sources as alternatives to conventional sources, aiming to contribute 10% of the country's power supply by 2030. The challenge lies in the lax enforcement and the absence of severe penalties for non-compliance. For further reading see, Olusola Joshua Olujobi, Uchechukwu Emena Okorie, Elizabeta Smaranda Olarinde, and Adetutu Deborah Aina-Pelemo, 'Legal Responses to Energy Security and Sustainability in Nigeria's Power Sector Amidst Fossil Fuel Disruptions and Low Carbon Energy Transition' (Heliyon, 3 July 2023) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10359868> accessed 25 June 2024.

[20] 'The Paris Agreement' (United Nations Climate Change) <https://unfccc.int/process-and-meetings/the-paris-agreement> accessed 28 June 2024. Nigeria signed the Paris Agreement in September 2016 and ratified it in March 2017. By doing so, it committed itself to reducing its GHG emissions. For further reading see, DCC Federal Ministry of Environment Nigeria, '2050 Long-Term Vision for Nigeria (LTV-2050) - Towards the Development of Nigeria's Long-Term Low Emissions Development Strategy (LT-LEDS)' (United Nations Climate Change)

which is the problem with most international agreements is enforceability. While the Paris Agreement requires monitoring and reporting of carbon emissions, it cannot compel a country to reduce emissions.[21]

2.2. National Laws, Regulations and Policies in Nigeria

2.2.1 The Constitution of the Federal Republic of Nigeria, 1999

The 1999 Nigerian Constitution which makes provision for environmental protection Chapter II of the Constitution specifically section 20.[22] It stipulates that 'the state shall maintain and improve the environment and safeguard the water, air, and land of Nigeria, as well as the forest and wildlife.'[23] This provision connotes that the government has to ensure a safe and clean environment for the people, sadly, Chapter II of the Constitution is non-justiciable.[24] The implication is that an aggrieved party cannot rely on it

<https://unfccc.int/reports?search2=&search3=&items_per_page=10&order=name&sort=desc&f%5B0%5D=corporate_author%3A91&f%5B1%5D=document_type%3A4233> accessed 2 July 2024.

[21] Julia Nahm, 'Failure and Successes of the Paris Agreement' (Alliance for Citizen Engagement, 8 August 2023) <https://ace-usa.org/blog/research/research-foreign policy/failures-and-successes-of-the-paris-agreement/> accessed 27 June 2024.

[22] The Rights under chapter II are known as socio-economic rights. They are considered ideals which the nation is merely expected to strive towards meeting for the citizenry. As such, they are not enforceable because they do not come within the purview of civil and political rights that are enforceable under chapter IV of the 1999 Constitution. For further reading see, Akin Olawale Oluwadayisi, 'Economic and Socio-Cultural Rights in the Democratic Governance of Nigeria: Enforcement Mechanisms Beyond Justiciability' (2014) 5 NAUJILJ <https://www.ajol.info> accessed 4 July 2024.

[23] Olusola Joshua Olujobi, Tunde Ebenezer Yebisi, Oyinkepreye Preye Patrick and Afolabi Innocent Ariremako, 'The Legal Framework for Combating Gas Flaring in Nigeria's Oil and Gas Industry: Can It Promote Sustainable Energy Security?' (2022) 14(13) Sustainability. <https://www.mdpi.com/2071-1050/14/13/7626> accessed 28 June 2024.

[24] See section 6(6)(c) of the 1999 Constitution which provides that that the judicial powers (c) shall not except as otherwise provided by this Constitution, extend to any issue or question as to whether any act of 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 II of this Constitution. See also the cases of Archbishop Olubunmi Okogie (Trustee of Roman Catholic Schools) & Others v Attorney-General of Lagos State (1981) 2 NCLR 337, 350; Badejo v Federal Minister of Education (1990) LRC 735 where the provision received judicial affirmation.

in the court of law to either enforce his right to fair hearing as enshrined in section 36 of the 1999 Constitution or take necessary steps to seek redress. As such, it can therefore be concluded that section 20 does not guarantee significant environmental protection or conservation against environmental degradation.[25]

Recently, it has been held that where any of the fundamental objectives and directive principles of state policy have been legislated upon, it becomes enforceable.[26] Also, some scholarly opinions and cases have flawed the argument on non-justiciability of section 20 of the 1999 Constitution and embraced the assertion that the environmental rights of citizens are indeed as important as the fundamental human rights guaranteed in the Fourth Chapter of the Constitution. Consequently, there ought to be a way of reassessing the issue of non-justiciability.[27] This therefore implies that in an action for the violation of the right to environment, the provision of section 20 on the Right to Environment can be linked to section 33 (Right to Life) of the 1999 Constitution, section 34 (right to dignity of the human person) and Article 24 of the African Charter[28] (right to a favourable environment). Reliance on these provisions can establish the Right to a healthy environmental life. This

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[25] Olusola Joshua Olujobi, Tunde Ebenezer Yebisi, Oyinkepreye Preye Patrick and Afolabi Innocent Ariremako, 'The Legal Framework for Combating Gas Flaring in Nigeria's Oil and Gas Industry: Can It Promote Sustainable Energy Security?' (2022) 14(13) Sustainability. <https://www.mdpi.com/2071-1050/14/13/7626> accessed 28 June 2024.

[26] See Attorney General of the Federation v Guardian Newspapers Ltd (1999) 5 SCNJ 324.

[27] Y L Adewunmi, 'Environmental Justice in Nigeria: Examining the Issue of Locus Standi' <https://unilaglawreview.org/2021/01/13/environmental-justice-in-nigeria-exami ning-the-issue-of-locus-standi/>accessed 28 June 2024. See also, Rhuks Temitope Ako, Ngozi Finette Unuigbe and Eghosa Ekhator, 'Overcoming the (Non)justiciable Conundrum: The Doctrine of Harmonious Construction and the Interpretation of the Right to a Healthy Environment in Nigeria' in Justiciability of Human Rights Law in Domestic Jurisdictions (2016) 123-141 <https://www.researchgate.net/publication /301265531_Overcoming_the_Nonjusticiable_Conundrum_The_Doctrine_of_Harmonious_Construction_and_the_Interpretation_of_the_Right_to_a_Healthy_Environment_in_Nigeria> accessed 9 July 2024.

[28] The African Charter on Human and Peoples Rights, 1981 is an international human rights instrument that is intended to promote and protect human rights and basic freedoms in the African continent. For further reading see, 'The African Charter on Human and Peoples' Rights' (African Union) < https://au.int > accessed 2 July 2024.

becomes doable by virtue of section 12 of the 1999 Constitution which permits the application of the Africa Charter in Nigerian courts as long as it has been enacted into law by the National Assembly.[29]

In Jonah Gbemre v Shell Petroleum Development Company of Nigeria Ltd. and ors[30] the court held that the practice of gas flaring is unconstitutional as it violates the guaranteed fundamental rights of life and dignity of human persons provided in the Constitution of the Federal Republic of Nigeria and the African Charter on Human and Peoples Rights.

From the foregoing, the Constitution does not specifically and directly provide for energy security as a fundamental right. This undoubtedly can lead to ambiguity with little or no focus on energy-related issues. The said lacuna in the Constitution or lack of government priority of energy security also trickles down to issues of federalism (a fundamental principle of the Nigerian Constitution), the allocation of resources, particularly natural resources like oil and gas. Also, the non-recognition of energy security as a fundamental right presents lopsided access to affordable and sustainable energy which could lead to conflicts and hinder the development of a unified energy policy.

2.2.2 The Electricity Act, 2023

The Electricity Act of 2023 repeals the Electric Power Sector Reform Act 2005 (EPSRA) and aims to consolidate the laws relating to the electricity supply industry in Nigeria. It also seeks to integrate renewable energy into Nigeria's energy mix and provide a comprehensive legal and institutional

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[29] Y L Adewunmi, 'Environmental Justice in Nigeria: Examining the Issue of Locus Standi' <https://unilaglawreview.org/2021/01/13/environmental-justice-in-nigeria-examining-the-issue-of-locusstandi/> accessed 28 June 2024.

[30] (2006) LPELR-11798 (CA). See also the case of Centre Oil Pollution Watch v Nigerian National Petroleum Corporation (2018) LPELR-50830 (SC) where the locus standi of non-state actors to enforce the fundamental rights of people in the oil-producing community was upheld by the Supreme Court. The Court per Kekere-Ekun (JSC) held that sections 20 and 33 of the 1999 Constitution, as well as Article 24 of the African Charter on Human and Peoples' Rights, recognize the fundamental rights of the citizenry to a clean and healthy environment to sustain life. For further reading, see Femi Falana, 'Justiciability of Chapter Two of 1999 Constitution (as amended): Need for the Nigerian Judicial System to be more proactive' (Vanguard, 3 March 2022) <https:// www.vanguardngr.com/2022/03/justiciability-of-chapter-two-of-1999-constitution-as-amended-need-for-the-nigerian-judicial-system-to-be-more-proactive/> accessed 29 June 2024.

framework to guide the operation of the electricity market in Nigeria.[31] The Act additionally encourages state government participation in the power sector and increases private sector investment.[32] It also establishes the Nigerian Electricity Regulatory Commission (NERC) which regulates the electricity sector in Nigeria.[33] The Act neither defines renewable energy nor provide sufficient incentives for its development but it promotes the generation of electricity through renewable sources.[34]

There are also concerns with regard to the implementation of the law such as bureaucratic bottlenecks bordering on slow decision-making process and limited funding. The possibility of regulators being influenced by vested interests thereby leading to sharp practices can also not be ruled out. Integrating renewable energy sources into the existing grid can likewise pose technical and regulatory challenges. Even though the Act makes provision for tariffs and subsidies in section 116, it does not adequately address consumer disputes that may arise from such tariffs and service quality. Another implementation challenge that may arise is the fact that the Act does

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31 Electricity Act, ss 1, 164.

32 This was made possible by the amendment of paragraph 14(b) of the Concurrent list, Part II of the Second Schedule of the 1999 Constitution. The paragraph now reads that the House of Assembly can make laws for the State to generate, transmit, and distribute electricity to areas within that state. For further reading see, 'The Electricity Act, 2023. See also, Raymond Ofagbor and Ndentuokid, 'The Legal and Commercial Implications of the Electricity Act, 2023, For the Nigerian Electricity Supply Industry (NESI)' (AELEX 2023), <https://www.aelex.com/legal-and-commercial-implications-of-the-elec tricity-act-2023/> accessed 28 July 2024. ANDERSEN, 'Overview of the Electricity Act 2023: Implications and Opportunities for Investors' (ANDERSEN Global, August 29, 2023,) <https://ng.andersen.com/overview-of-the-electricity-act-2023-implications-and-opportunities-for-investors/> accessed 1 July 2024. See also the long title to the Act.

33 Electricity Act, s 33.

34 See ss 1(l), 80. See also Seun Timi-Koleolu, Aderonke Alex-Adedipe, Olawale Atanda and Nuratulahi Yishawu, 'Renewable Energy Laws and Regulations Nigeria 2024' (ICLG, 20 September 2023) <https://iclg.com/practice-areas/renewable-energy-laws-and-regulations/nigeria> accessed 29 July 2024

not effectively cover issues of limited access to electricity in rural areas which is one of the solutions to energy security in Nigeria.[35]

2.2.3 The Climate Change Act, 2021

The Climate Change Act, 2021 is a reflection of Nigeria's insightful commitment towards addressing climate change issues.[36] The law establishes a National Council of Climate Change to supervise and drive Nigeria's climate change plans.[37] It also provides for the Climate Change Fund in section 15 but fails to provide modalities for funding to support climate change initiatives and research. Implementation of the Act presents a possible likelihood of conflict issues as the law may conflict with other existing laws and regulations, especially the ones that border on energy, agriculture, and land use. Finally, with regard to the focus of the Act which is both on mitigation and adaptation measures, it might be daunting to implement adaptation measures effectively, particularly in vulnerable communities.[38] For Nigeria to surmount the development challenges of climate change, it is necessary to have extensive adaptation and mitigation measures much more than what the CCA provides.[39]

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35 The establishment of a Rural Electrification Agency in section 127 of the Act does not guarantee adequate access to electricity in the rural areas without proactive measures and political will to ensure accessibility.

36 Before the Act was enacted, only a few environmental litigation cases were documented in Nigeria. With the introduction of the Climate Change Act, individuals or entities, whether private or public can now seek redress or take legal actions regarding perceived failure by the Council to regulate offences and penalties arising from non-compliance with climate obligations as provided in the new law. For reading, see Olusola Joshua Olujobi and Ikiyouleimo Success Odogbo, 'Strategic Evaluation of the 2021 Nigeria Climate Change Act: Surmounting Challenges, Paving the Way for Success, and Envisioning Future Trajectories' (2024) 10 Social Sciences & Humanities Open <https://www.sciencedirect.com/science/article/pii/S2590291124001256> accessed 3 July 2024.

37 Climate Change Act 2021, s 3. The Council also oversees the coordination of national climate actions, mobilises financial resources for the support of climate change actions, and administers the newly created Climate Change Fund, among others. With respect to the administration and control of the Council, the Act establishes a Secretariat in Section 2 and designates it as the administrative, scientific, and technical arm of the Council in Section 7

38 Climate Change Act, s 20.

39 'A Critique of the Climate Change Act 2021' <https://www.linkedin.com/pulse/critique-climate-change-act-2021-therockandpartners> accessed 23 August 2024.

2.2.4 The Petroleum Industry Act (PIA) 2021

The PIA 2021 which repealed the Petroleum Act of 1969 made relevant innovations for the Petroleum sector; some of which promote energy security in Nigeria.[40] However, these innovations are with regard to the deregulation of the petroleum industry,[41] and the establishment of regulatory bodies such as the Nigerian Upstream Regulatory Commission (NURC) and the Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA) which are to ensure improved efficiency, accountability and transparency in the sector and also enhance the security and reliability of the petroleum supply chain.[42] In practice, these regulatory bodies currently do not have sufficient independence and clarity to act leading to uncertainty and delays.[43]

The objective of the industry deregulation is to attract private investments, create a competitive and efficient market that guarantees the availability, affordability, and reliability of petroleum products and ensure that citizens have reliable and affordable access to petroleum products.[44] While the PIA is

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An extensive adaptation and mitigation measures will go long way to reduce the vulnerability of the economy to climate change.

40 The law established the Nigerian Upstream Regulatory Commission (NURC) and the Nigerian Midstream and Down Petroleum Regulatory Authority (NMDPRA). It sets clear boundaries between them the objective of which is to improve efficiency, accountability, and transparency in the sector to generally enhance the security and reliability of the petroleum supply chain. For further reading see, Anumekanume Zudonu, 'Energy Security and the Petroleum Industry Act, 2021' (LinkedIn, 24 October 2023) <https://www.linkedin.com/pulse/energy-security-petroleum-industry -act-2021-anumekanume-zudonu-4byif> accessed 3 July 2024.

41 Section 205 of the Petroleum industry Act 2021.

42 Section 4-10 and Sections 29-36 of the Petroleum industry Act 2021.

43 PWC, The Petroleum Industry Act, Redefining the Nigerian Oil and Gas Landscape, August 2021, https://www.pwc.com/ng/en/assets/pdf/nigeria-petroleum-industry-act-1.pdf> accessed 26 August, 2024.

44 Pursuant to section 53(1) of the Act, the former NNPC is now today known as NNPC Ltd which makes it a limited liability company with the purpose of improving its efficiency, transparency and accountability. NNPC limited as a limited liability company, presently operates as an independent profit driven national petroleum company. What this means is that it does businesses like every other private company in the Petroleum sector. With the transition to NNPC Limited as a commercially oriented entity, more emphasis is on their duties as a business venture. The aim is to enhance efficiency and effectiveness in the petroleum sector. For further reading see, Anumekanume Zudonu, 'Energy Security and the Petroleum Industry Act, 2021' (LinkedIn, 24 October 2023)

expected to attract investment into the Nigerian oil and gas sector and serve as a catalyst for the development of the sector, the PIA doesn't say much about the energy transition and also did not provide sufficient incentives for the development and deployment of renewable energy sources.

Section 64 of the act also stipulates that NNPC Limited is to engage in the development of renewable resources in competition with private investors. However, Nigeria needs to do more to provide the enabling infrastructure to cushion the effect of grid integration challenges, regulatory framework and the right level of investment for the energy transition. By virtue of Section 235 of the Act, Host Community Development Trust (HCDT) can now be incorporated.[45] The rationale for this is to promote stability and reduce disruptions in oil production and distribution which could positively impact on energy security. This will in turn ensure a reliable and consistent energy supply for Nigerians.[46]

2.2.5 The National Environmental Standards and Regulations Enforcement Agency (NESREA) Act. 2007

The NESREA Act was enacted to generally address issues of environmental challenges and achieve environmental protection in every sector, including energy.[47] The law established National Environmental Standards and Regulations Enforcement Agency with the sole responsibility of protecting and developing the environment, promoting biodiversity conservation and

<https://www.linkedin.com/pulse/energy-security-petroleum-industry-act-2021-anumekanume-zudonu-4byif> accessed 3 July 2024.

45 Ibid. This is done with the fund being sourced from 3% of the operating expenditure of oil and gas companies operating in host communities.

46 Section 104 of the Act provides for the establishment of a fund that supports the development of gas infrastructure projects like processing plants, pipelines, and terminals. The fund aims to enhance the utilization and monetization of gas resources. For further reading see Anumekanume Zudonu, 'Energy Security and the Petroleum Industry Act, 2021' (LinkedIn, 24 October 2023) <https://www.linkedin.com/pulse/energy-security-petroleum-industry-act-2021-anumekanume-zudonu-4byif> accessed 3 July 2024.

47 See the long title to the Act and section 2 of the Act. See also N C Ole and S C Dike, 'The Development of Renewable Electricity in Nigeria: An Appraisal of the Relevant Laws' (2020) 4(4) African Journal of International Energy and Environmental Law 115-133 (SSRN, 2021) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3770380 > accessed 4 July 2024.

sustainable development of Nigeria's natural resources as a whole.[48] It empowers the Agency with the duty of enforcing all environmental laws as well as enforcing compliance with provisions of international agreements, protocols, conventions and treaties on the environment to which Nigeria is a signatory.[49] While NESREA has a mandate to enforce environmental standards, its focus may not be specifically on energy-related regulations, potentially hindering its ability to promote energy security. The absence of coordination with other regulatory agencies involved in the energy sector may be problematic culminating in inconsistencies and inefficiencies. The Act's inability to provide sufficient penalties for non-compliance or flagrant abuse of environmental regulations weakens its effectiveness.[50] NESREA may also lack the requisite resources, such as personnel and funding, to effectively enforce environmental regulations.[51]

2.2.6 Federal Ministry of Environment

The Ministry of Environment is charged with the responsibility of addressing environmental issues and ensuring effective coordination of all matters related to the environment in the country. The mandate of the ministry includes guaranteeing control of environmental issues as well as protecting and conserving natural resources. It likewise formulates policies and supervises activities towards preventing desertification and deforestation; the

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48 National Environmental Standards and Regulations Enforcement Agency Act, s 1. The Agency is a parastatal of the Federal Ministry of Environment. It is important to point out that NESREA Act 2007 repealed the Federal Environmental Protection Agency Act Cap F 10 LFN 2004. For functions and powers of the Agency, see section 7-8 of the Act.

49 National Environmental Standards and Regulations Enforcement Agency Act, s 7. See also 'About NESREA' (Federal Government of Nigeria Single Window for Trade) < https://trade.gov.ng/en/custom-pages/about-nesrea> accessed 4 July 2024. The Act amongst others focuses on enforcement of Laws and Regulations on the Environment., maintaining environmental Standards creating environmental awareness and engaging in partnership for the protection of the environment. For further reading see Kingsley Ejike Anih, 'The Role of NESREA Act 2017 in Ensuring Environmental Awareness and Compliance in Nigeria' (2017) IOSR Journal of Applied Chemistry <https://www. researchgate.net/publication/ 333998318_The_role_of_Nesrea_act_2017_in_ensuring_environmental_awareness_ and_compliance_in_Nigeria> accessed 4 July 2024.

50 Nwachukwu Okechukwu, 'NESREA and the Challenges of Environmental Regulation in Nigeria' <https://www.researchgate.net/publication/377410510_ NESREA_and_the_Challenges_of_Environmental_Regulation_in_Nigeria> accessed 24 August 2024.

51 Ibid

management of flood, erosion and pollution, and also climate change and clean energy.[52] The Ministry's mandate however does not extend to energy-related policies which potentially hinders its ability to promote energy security. Also, a lack of synergy with other ministries and agencies involved in the energy sector may impede effective performance of its role. The paucity of funds, inadequate personnel to effectively address energy-related environmental issues, and insufficient expertise in energy-related matters also hinder the Ministry from effectively carrying out its mandate. Decision-making processes within the Ministry may be bureaucratic which will lead to delays in the implementation of environmental policies.

2.2.7 The Nigerian Electricity Regulatory Commission (NERC)

The Nigerian Electricity Regulatory Commission is an independent body that was established to carry out technical and economic regulation of the Nigerian Electricity Supply Industry.[53] It was established in 2005 to oversee the formation and review of electricity tariffs, develop transparent policies regarding subsidies, promote efficient and environmentally friendly policies, as well as formulate and enforce standards in the creation and use of electricity in Nigeria.[54] The role of NERC in promoting the development and utilisation of renewable energy services is not clearly defined in section 34(2) of the Electricity Act. Also, the powers of NERC in the same section to seal and enter the premises of persons 'operating without a license or suspected to have committed an offence' is likely to be abused if checks are not put in place.

Without adequate funding, manpower, stakeholder engagement, and effective regulatory oversight which is crucial to ensure fair competition and consumer protection, it will be almost impossible for NERC to efficiently carry out its role outlined in the Electricity Act 2023. There is presently an ongoing problem of striking the right balance between allowing market forces to drive efficiency and safeguarding consumer interests

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52 'Federal Ministry of Environment' < https://euepin.unilag.edu.ng/federal-ministry-of-environment/> accessed 4 July 2024.

53 Electricity Act, s 33. See also 'Nigerian Electricity Regulatory Commission' < https:// nerc.gov.ng/> accessed 5 July 2024.

54 'Nigerian Electricity Regulatory Commission' < https://nerc.gov.ng/> accessed 5 July 2024. NERC was basically created to regulate the tariff of Power Generating companies owned or controlled by the government, and any other generating company which has a licence for power generation and transmission of energy, and distribution of electricity. See section 34 of the Electricity Act for functions and powers of the Commission.

2.2.8 The Federal Ministry of Power

The Ministry is the policy making arm of the Federal Government saddled with the responsibility of providing power in the country. In the discharge of its mandate, the Ministry is guided by the provisions of the National Electric Power Policy (NEPP) of 2001, the Roadmap for Power Sector Reform of August 2010 and the Electricity Act 2023.[55]

2.2.9 Federal Ministry of Water Resources (FMWR)

The task of the Ministry involves providing sustainable access to safe and sufficient water to meet the socio-economic needs of all Nigerians via efficient water resources management for irrigated agriculture, basic human needs, hydropower generation, and the promotion of a healthy population whilst ensuring the maintenance of freshwater bodies.[56] Limited stakeholder involvement, budgetary constraints to execute capital-intensive projects, poorly trained personnel, overlap of functions among institutions/agencies, and poor local capacity with regard to financial, organisational and political capabilities have all been identified as problems that hamper efficient performance of the Ministry.[57]

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[55] 'Federal Ministry of Power, Nigeria' < https://power.gov.ng/> accessed 5 July 2024. The Ministry is in charge of formulating electricity related policies in Nigeria. It has so far issued about four policies related to renewable energy to wit: the National Renewable Energy and Energy Efficiency Policy; the National Renewable Energy Action Plan; the National Energy Efficiency Action Plan; and the Sustainable Energy for All Action Agenda. For further reading see, also Seun Timi-Koleolu, Aderonke Alex-Adedipe, Olawale Atanda and Nuratulahi Yishawu, 'Renewable Energy Laws and Regulations Nigeria 2024' (ICLG, 20 September 2023) <https://iclg.com/practice-areas/renewable-energy-laws-and-regulations/nigeria> accessed 29 July 2024. The Rural Electrification Agency (REA), Electricity Management Services Limited (EMSL) of Nigeria, and National Power Training Institute of Nigeria (NAPTIN) are all under the ministry. The activities of the independent regulator, National Electricity Regulatory Commission (NERC) are also overseen by the ministry. See Charlotte Remteng, Muhammad Bello Suleiman, Chiamaka Maureen Asoegwu and Chysom Nnaemeka Emenyonu, 'Policy and Regulatory Framework for Energy in Nigeria' <https://energypedia.info/wiki/Policy_and_Regulatory_Framework_for_Energy_in_Nigeria> accessed 5 July 2024.

[56] Ibid. The Ministry through its Department of Dams and Reservoir Operations is involved in numerous hydropower projects. It handles the civil works and issues water licenses in hydropower projects.

[57] B U Ngene and Others, 'Assessment of Water Resources Development and Exploitation in Nigeria: A review of Integrated water Resources Management

2.2.10 Energy Commission of Nigeria

The Commission is responsible for strategic planning and coordinating national energy policies, advising the government on funding for research, development, production, and distribution in the energy sector. It also monitors performance indicators related to government energy policies. [58]However, the Energy Commission of Nigeria faces challenges such as inadequate strategic planning, poor funding, lack of coordination, and insufficient cooperation with other agencies. These issues can impede efforts to ensure national energy security, economic growth, and environmental protection.[59]

2.2.11 The National Renewable Energy and Energy Efficiency Policy (the Policy) 2015

The Policy document generally provides an overarching (regulatory) framework and procedures to advance renewable energy and energy efficiency in Nigeria particularly for energy security in order to drive sustainable development across the country. [60] The policy has been criticized for not articulating policy measures needed to drive the development of renewable energy market in Nigeria. The inability to establish the watchdog group, charged with the duty of implementing, monitoring and evaluation of

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Approach' <https://www.sciencedirect.com/science/article/pii/S2405844021000608 > accessed 24 August 2024.

58 Ibid. The ECN also serves as a center for the collection and dissemination of information relating to national policy in the energy sector. The commission was established by the enabling Act No. 62 of 1979 later amended by Act No. 32 of 1988 and Act No. 19 of 1989. For further reading see, Energy Commission of Nigeria, 'Energy Commission of Nigeria' <https://energy.gov.ng> accessed 9 July 2024.

59 'Energy Commission of Nigeria' http://www.energycharter.org accessed 24 August 2024.

60 'National Renewable Energy and Energy Efficiency Policy (NREEEP 2015)'< https://admin.theiguides.org/Media/Documents/NREEE%20POLICY%202015-%20FEC%20APPROVED%20COPY.pdf> accessed 9 July 2024. The Policy high lights the government's programs and measures for deploying renewable energy and energy efficiency technologies as well as practices geared towards facilitating Nigeria's green transition. See also, Seun Timi-Koleolu, Aderonke Alex-Adedipe, Olawale Atanda and Nuratulahi Yishawu, 'Renewable Energy Laws and Regulations Nigeria 2024' (ICLG, 20 September 2023) <https://iclg.com/practice-areas/renewable-energy-laws-and-regulations/nigeria> 29 July 2024.

NREEEP can be directly connected to the non-elaboration of the needed policy measures.[61]

2.2.12 The Nigerian Bulk Electricity Trading (NBET) Plc

The Nigerian Bulk Electricity Trader (NBET) manages the electricity pool in the Nigerian Electricity Supply Industry (NESI), purchasing power from Generating Companies (GenCos) via Power Purchase Agreements (PPAs) and selling it to Distribution Companies (DisCos) through Vesting Contracts. NBET is the sole buyer of power on the national grid, including renewable sources.[62] However, concerns have arisen about its ability to fulfil these roles following a recent NERC order, effective July 25, 2024, prohibiting NBET from entering new contracts for electricity purchases and sales. This order, based on the Electricity Act 2023, effectively ends NBET's intermediary role in energy transactions between GenCos and DisCos.[63]

2.2.12 The Transmission Company of Nigeria (TCN)

TCN is a federal government-owned electricity utility company which emerged from the defunct National Electric Power Authority (NEPA) as a product of the merger of the Transmission and Operations sectors in April 2004. It engages in the evacuation of electric power generated by the GenCos

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[61] Bem Ayangeaor, 'Review of Nigeria's National Renewable Energy and Energy Efficiency Policy' <https://www.researchgate.net/publication/361109456_REVIEWOF_NIGERIA%27S_NATIONAL_RENEWABLE_ENERGY_AND_ENERGY_EFFICIENCY_POLICY> accessed 25 August 2024.

[62] Seun Timi-Koleolu, Aderonke Alex-Adedipe, Olawale Atanda and Nuratulahi Yishawu, 'Renewable Energy Laws and Regulations Nigeria 2024' (ICLG, 20 September 2023) <https://iclg.com/practice-areas/renewable-energy-laws-and-regulations/nigeria> 29 July 2024. The NBET which was incorporated on 29 July 2010 is 100% owned by the Federal Government of Nigeria. It was established as part of the roadmap for power sector reform towards the full implementation of the Electric Power Sector Reform Act (EPSRA) 2005 now repealed by the Electricity Act 2023. For further reading see, 'NBET' < https://nbet.com.ng/> accessed 11 July 2024.

[63] 'Implications Of the NERC Order on the Transition to Bilateral Trading in The Nigerian Electricity Supply Industry 2024' < https://www.dlapiperafrica.com/en/nigeria/insights/2024/-implications-of-the-nerc-order-on-the-transition-to-bilateral-trading-in-the-nigerian-electricity-supply-industry-2024> accessed 25 August 2024. The order is known as the order on the Transition to Bilateral Trading in the Nigerian Electricity Supply Industry.

and transmits the same to DisCos.[64] The effective implementation of this plan is significantly hindered by market distortions, poor regulatory environment, inadequate infrastructure which characterise the energy market conditions in the nation, poorly established standard quality and barriers which is a major setback to the development of the energy market absence of quality research and development in renewable energy systems.[65]

2.2.13 The Renewable Energy Master Plan (REMP)

The Renewable Energy Master Plan (REMP) highlights the short, medium and long terms within the national energy supply mix. It also articulates strategic approaches and measures to meet the said targets.[66] The effective implementation of this plan is significantly hindered by market distortions, poor regulatory environment, inadequate infrastructure which characterise the energy market conditions in the nation, poorly established standard quality and barriers which is a major setback to the development of the energy market absence of quality research and development in renewable energy systems.[67]

2.2.14 Rural Electrification Agency (REA)

The Rural Electrification Agency is established by the Electricity Act to expand the electricity grid, develop isolated mini-grid systems, and promote renewable energy power generation in rural, unserved and underserved areas of Nigeria. [68] The Agency cannot function optimally due to problems of poor

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[64] Transmission Company of Nigeria, 'About Transmission Company of Nigeria (TCN)' (Transmission Company of Nigeria) < https://tcn.org.ng/page_about _us.php> accessed 11 July 2024.

[65] Udochukwu B Akuru, Ogbonnaya I Okoro, 'Renewable energy investment in Nigeria: A review of the Renewable Energy Master Plan' < https://scielo.org .za/scielo.php?script=sci_arttext&pid=S1021-447X201400030000 8> accessed 25August 2024.

[66] Energy Commission of Nigeria, 'Energy Policy and Planning' (Energy Commission of Nigeria) <https://energy.gov.ng/policy_planning.php> accessed 11 July 2024. The plan is consequently a roadmap for realization of government's commitment towards creating the requisite enabling environment for sustainable energy supply for national development with involvement of the private sector.

[67] Udochukwu B Akuru, Ogbonnaya I Okoro, 'Renewable energy investment in Nigeria: A review of the Renewable Energy Master Plan' < https://scielo.org .za/scielo.php?script=sci_arttext&pid=S1021-447X201400030000 8 > accessed 25August 2024.

[68] Electricity Act, s 127. For objectives, functions and powers of the Agency see sections 128-129 of the Electricity Act. See also, Seun Timi-Koleolu, Aderonke

performance by relevant Ministries and Agencies with respect to electrification geo-data management systems (including virtual/physical infrastructure and online interfaces), High capital investment which leads to obscured grid extension planning from Disco and profitability concerns in rural areas.[69]

2.2.15 Nigerian Electricity Management Services Agency (NEMSA)

NEMSA, established by the Electricity Act 2023, provides electrical inspectorate services for NESI,[70] focusing on enforcing technical standards, conducting inspections, and certifying electrical installations and meters to ensure safe and reliable electricity supply. Its mandate overlaps with that of NERC, as both regulators monitor and enforce standards in the Nigerian Electricity Supply Industry.[71]

3. CHALLENGES AND SOLUTIONS TO ENERGY SECURITY

In Nigeria, over 140 million people lack access to energy, representing about 71% of the population.[72] The UNDP defines energy security as the

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Alex-Adedipe, Olawale Atanda and Nuratulahi Yishawu, 'Renewable Energy Laws and Regulations Nigeria 2024' (ICLG, 20 September 2023) <https://iclg.com/practice-areas/renewable-energy-laws-and-regulations/nigeria> accessed 29 July 2024.

69 Victor Osu, 'Nigerian Rural Electrification Agency' <https://energypedia.info> accessed 25 August 2024.

70 Electricity Act, s 172. For objectives and functions of NEMSA, see section 176 of the Act. NEMSA also guarantees the safety of lives and property in the NESI, and other allied industries/workplaces. For further reading see, Nigerian Electricity Management Services Agency 'Mandate' (Nigerian Electricity Management Services Agency) <https://nemsa.gov.ng/mandate/> accessed 11 July 2024.

71 Ngozi Chinwa Ole, 'The Nigerian electricity regulatory framework: hotspots and challenges for off-grid renewable electricity development' <https://www.researchgate.net/publication/342728810_The_Nigerian_electricity_regulatory_framework_hotspots_and_challenges_for_offgrid_renewable_electricity_development/link/60222fcc92851c4ed55b8e5a/download?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIn19> accessed 25 August 2024

72 World Economic Forum, 'Energy Transition: Here's How Nigeria Is Tackling the Barriers to Its Green Energy Transition' (8 May 2023) <https://www.weforum.org

continuous availability, accessibility, and affordability of energy in sufficient quantities.[73] Scholars view energy security as crucial to power politics and resource distribution, impacting various aspects of the economy, particularly agricultural production, food security, health, and education.[74] Nigeria faces challenges to energy security, including energy transition issues, insufficient financing, energy poverty, inadequate infrastructure, untapped renewable energy potential, and insecurity. These challenges are discussed below.

a. **Energy Transition:** Energy transition is the shift from reliance on fossil fuels to renewable and cleaner energy sources.[75] However, this shift faces a multitude of challenges, such as power disruptions, dated distribution systems, climate change impacts, cyberattacks, and geopolitical uncertainties.[76] These challenges not only affect the energy sector's capacity to meet current demand but also the ability to transition to clean energy.[77] Unlike energy revolutions of the past, the clean energy transition is not driven by scarcity or the discovery of new energy resources, it is propelled by the urgent need to mitigate climate change.[78]

/agenda/2023/05/how-nigeria-is-tackling-barriers-to-its-green-energy-transition/> accessed 11 July 2024.

73 J Ikeme, 'Assessing the Future of Nigeria's Economy: Ignored Threats from the Global Climate Change Debacle' (2008) African Economic Analysis, De Montfort University, Leicester, UK. See also, Pinar Buket Kilinç-Pala, 'Approaches in Energy Exclusive Security: Theories of Energy Security and the Dominance of Realism' (May 2021) 49(1) Politics & Policy DOI: 10.1111/polp.12411. see also Shahi Md Tanvir Alam, 'Sustainable Energy Security for Economic Development: Trends and Challenges for Bangladesh' (2020) 46 Journal of Energy & Development 219.

74 Pinar Buket Kilinç-Pala, 'Approaches in Energy Exclusive Security: Theories of Energy Security and the Dominance of Realism' (May 2021) 49(1) Politics & Policy DOI: 10.1111/polp.12411.

75 National Council on Climate Change Publications, Energy Transition and Climate Change <https://natccc.gov.ng/energy-transition-climatechange/#:~:text=Energy%20transition%20refers%20to%20the,%2C%20distribute%2C%20and%20consume%20energy> accessed 19 July 2024.

76 See generally International Energy Agency, Power Systems in Transition: Challenges and Opportunities Ahead for Electric Security (2020) 9-19 (reporting on the ongoing transitions and challenges facing the electricity sector).

77 Stren & Blan Partners 'Transitioning to a Clean Energy Economy- Challenges and Opportunities for Nigeria' (Superuser, November 12, 2023) <https://strenandblan.com/2023/11/13/transitioning-to-a-clean-energy-economy-challenges-and-opportuni ties-for-nigeria/> accessed 19 July 2024.

78 See UN Secretariat of the High-Level Dialogue on Energy, Theme Report on Energy Transition: Towards the Achievement of SDG 7 and Net-Zero Emissions

> The increasing frequency of severe weather events exacerbates the urgent need for an energy transition for a sustainable environmentally friendly energy solution.[79] Nigeria's energy policy, however, has undermined the importance of energy efficiency for the environment and economic growth.[80] Its complex energy sector and its uncertain and inconsistent legislative and regulatory structure affect investors and operators.[81]

Nigeria's energy transition plan (ETP) which is primarily anchored on six key objectives i.e poverty eradication through an increase in the standard of living for over 100 million people; driving sustainable economic growth in key domestic commercial sectors; providing universal electricity access to the entire population; mobilizing investments and private sector involvement by creating significant market opportunities in the energy transition process; serving as a blueprint to Nigeria's commitment and ambition to achieving carbon neutrality; and successfully steering the long-term job loss in the traditional energy sector that will arise from decarbonisation is purported to promote a fair, inclusive and equitable energy transition.[82]

However, for these objectives to be realised, there is a need for policy and regulatory change mainly aimed at creating a conducive environment for businesses to invest in energy transition.

Similarly, energy transition requires skilled and competent human resources both in the public and private sectors, to plan, implement and manage energy projects and programs.[83] Nigeria's education and training system is

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(September 2021) 1<https://www.un.org/sites/un2.un.org/files/2021-twg_2-062321.pdf > accessed 2 July 2024 (arguing for a rapid energy transition in response to climate change).

79 Ted Burhams and Carina Wallack, 'Accelerating the Clean Energy Transition: Challenges, Importance & Outlook' (7 May 2024) <https://sepapower.org/knowledge/ energy-transition/> accessed 21 July 2024

80 Etiosa Uyigue and others,' Energy Efficiency Survey in Nigeria: A Guide for Developing Policy and Legislation' (Community Research and Development Centre (CREDC) 2009). https://www.osti.gov/etdeweb/servlets/purl/21328691> accessed 28 July 2024.

81 Ibid.

82 Templars, 'Nigeria's Energy Transition Plan: A Journey Towards Equity, Fairness and Inclusion'<https://www.templars-law.com/app/uploads/2022/10/Nigerias-Energy-Transition-Plan-.pdf> accessed 19 July 2024.

83 Emmanuel Onyedikachi Idogwu, 'Nigeria's Energy Transition: Challenges, Commi tments and Solutions' (Medium)

inadequate to meet the current and future needs of the energy sector, especially in the areas of renewable energy and energy efficiency. It is therefore imperative to invest in developing and retraining its human capital and foster collaboration and knowledge sharing among the stakeholders to build the necessary capabilities and competencies for the energy transition.

b. **Energy financing:** A major aspect of energy security is energy financing, however, the change from fossil fuel to renewable energy, which is slow in developing countries, has led to international financing institutions and development partners being reluctant to fund fossil fuel projects, especially gas, due to climate concerns.[84] The Western banks and financial institutions have shut off finance for hydrocarbon development and it has significantly impacted developing countries.[85] At the 28th United Nations Climate Change Conference (COP,28) participating countries amongst other things agreed to accelerate efforts to phase down unabated coal power, phase out inefficient fossil fuel subsidies, substantially reduce methane emissions, double the average annual rate of energy efficiency improvements, and triple renewable energy capacity by 2030.[86] The implication is that if these climate mitigation pledges are realised, there will be a sharp contraction in the global demand for fossil fuels. Therefore, Nigeria needs to mobilise innovative and diversified sources of financing such as green bonds, carbon markets, blended finance, and public-private partnerships, to support its energy transition.

   Currency fluctuation and inflation have also been identified as a factor affecting energy financing as they pose a risk to foreign investors and

https://medium.com/@OnyedikachiIdogwu/nigerias-energy-transition-challenges-commitments-and-solutions-7f59b2739e9c accessed 23 July 2024.

84 Sikandar Abdul Qadir, Hessah Al-Motairi, Furqan Tahir and Luluwah Al-Fagih, 'Incentives and Strategies for Financing the Renewable Energy Transition: A Review' (2021) 7 Energy Reports 3590.

85 Neil Ford, 'The Fossil Fuel Financing Dilemma' (Africa Business, April 4 2024) <https://african.business/2024/04/african-banker/the-fossil-fuel-financing-dilemma> accessed 23 July 2024.

86 Diego Mesa Puyo, Augustus J Panton, Tarun Sridhar, Martin Stuermer, Christoph Ungerer and Alice Tianbo Zhang, 'Key Challenges Faced by Fossil Fuel Exporters During the Energy Transition' (27 March 2024) IMF eLIBRARY <https://www.elibrary.imf.org/view/journals/066/2024/001/article-A001-en.xml> accessed 19 July 2024.

project developers.[87] One of the solutions proffered by the World Economic Forum (WEF, 2023) is the funding of more energy projects with local naira to enable the growth of community-based developers. According to WEF a local currency facility helps reduce overall credit risk, lower capital costs and protect conservative capital from potential loses.[88]

c. **Energy Poverty:** Energy affordability is vital for economic development and equitable access to energy.[89] It is not limited to providing electricity alone, it encompasses clean cooking, fuels and heating.[90] According to a report by the World Bank, Nigeria has one of the highest poverty rates in the world, with 40% of its population living below the national poverty line. The implication is that many Nigerians do not have enough income to pay for their basic needs let alone invest in renewable energy systems.[91] The high upfront costs, maintenance costs, and tariffs of renewable energy technologies also deter many potential customers, especially in rural areas where access to finance is limited. Also, the transition towards cleaner energy can increase disparities, benefiting some while burdening others, particularly through energy insecurity. That is, the high cost of energy relative to household income.[92] Nigeria needs to address the affordability

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87 World Economic Forum, Mobilising Investments for Clean Energy in Nigeria, Community Paper (May 2023) <https://www3.weforum.org/docs/WEF_ Mobilizing _Investment_for_Clean_Energy_in_Nigeria_2023.pdf> accessed 19 July 2024.

88 Ibid.

89 Elizabeth Beairsto, 'Clean Energy and Justice for All: The Federal Government's Influence on State Energy Justice Legislation' (2024) 25 Vermont Journal of Environmental Law 307.

90 Gray Group International Insights, Energy Insecurity: Addressing Challenges in Access and Stability (Gray Group International, 21 July 2024) <https://www.graygroup intl.com/blog/energy-insecurity> accessed 19 July 2024.

91 World Bank Group, 'Deep Structural Reforms Guided by Evidence Are Urgently Needed to Lift Millions of Nigerians Out of Poverty, Says New World Bank Report' (22 March 2022) <https://www.worldbank.org/en/news/press-release/2022/03/21/afw-deep-structural-reforms-guided-by-evidence-are-urgently-needed-to-lift-millions-of-nigerians-out-of-poverty> accessed 24 June 2024.

92 Sanya Carley and David M Konisky, 'The Justice and Equity Implications of the Clean Energy Transition' (2020) 5 Nature Energy 569, 571; Shalanda Baker et al, The Energy Justice Workbook (Initiative for Energy Justice, 2019) <https://iejusa.org/wp-content/uploads/2019/12/The-Energy-Justice-Workbook-2019-web.pdf> accessed 20 July 2024 ("[T]he goal of achieving equity in both the social and economic participation in the energy system, while also remediating the social, economic, and health burdens on marginalized communities").

issue by providing subsidies, incentives, grants, and loans to lower the costs and risks of renewable energy adoption and by enhancing the income and livelihoods of its people through economic diversification and social protection[93]

d. **Policy and Regulatory challenges:** Investors and operators face uncertainty and inconsistency due to Nigeria's energy sector's complicated and dispersed legal and regulatory framework.[94] The sector also suffers from weak governance, corruption, and inefficiency, which undermine the effectiveness and accountability of the institutions and agencies.[95] Currently Nigeria has a myriad of institutions, energy laws, policies and programmes which are all aimed at guaranteeing adequate, reliable and sustainable supply of energy at appropriate cost and in an environmentally friendly manner, but the implementation of the laws and policies have not effectively taken place. For instance, as far back as 1988, the Commercialization and Privatization Decree No. 25 was aimed at partial commercialisation of power to address the acute power shortages. The reform did not produce the desired effect, since the country's power plants with a total installed capacity of over 6,000MW as of 1998 have been operating below 60% of their total installed capacity.[96] Therefore, while it is important that Nigeria harmonises and streamlines its energy policies and regulations and strengthens the capacity and transparency of its energy institutions to create an enabling environment for the energy transition,[97] it should also adopt a strong compliance and implementation mechanism.

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[93] Emmanuel Onyedikachi Idogwu, 'Nigeria's Energy Transition: Challenges, Commitments and Solutions' (Medium) https://medium.com/@Onyedikachi Idogwu/nigerias-energy-transition-challenges-commitments-and-solutions7f59b2739e9c accessed 23 July 2024.

[94] Ibid.

[95] Ibid.

[96] CM Nkiruka, Unbundling and Privatization of the Nigerian Electricity Sector: Reality or Myth? (Centre for Energy, Petroleum and Mineral Law Policy, University of Dundee, 2011) 6.

[97] Tobi Oluwatola, 'Analysis: Nigeria's Energy Transition Plan: Challenges for Decade of Gas' (Premium Times, 12 September 2022) <https://www.premiumtimesng.com/news/headlines/553662-analysis-nigerias-energy-transition-plan-challenges-for-decade-of-gas. html?tztc=1> accessed 23 July 2024.

e. **Insecurity & Conflict:** In war-torn regions, electricity transmission and distribution infrastructure have often been destroyed.[98] The World Bank report indicates that climate and conflict shocks disproportionately affect Nigeria's poor are multiplying, and their effects were compounded by COVID-19.[99] Also, conflicts over energy resources, such as oil and gas reserves, have been a source of geopolitical tensions. While the far-reaching consequences of these tensions affect the country directly, they also affect the global energy market and stability.[100]

In addition to the challenges itemised above, there are also challenges such as physical deterioration of energy transmission and distribution facilities, inadequate metering system, increase in the incidence of power theft through illegal connections, manpower constraints and inadequate support facilities, high cost of electricity production, inadequate basic industries to service the power sector, poor billing systems, poor settlements of bills by consumers, inadequate generation capacity, deforestation, desertification, erosion and a host of other environmental problems.

3.1 Solutions to energy security in Nigeria

Energy security can be addressed using different approaches. These approaches include energy as an environmental problem, as an economic problem, and as a technological and engineering problem or as a foreign policy and military problem.[101] A crucial vehicle for a move towards a more

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98 Morgan Bazilian, Ijeoma Onyeji, Peri-Khan Aqrawi and Benjamin K Sovacool, 'Oil, Energy Poverty and Resource Dependence in West Africa' (2013) 31 J Energy & Nat Resources L 33.

99 World Bank Group, Nigeria Poverty Assessment 2022: A Better Future for All Nigerians, February 2022, <https://documents1.worldbank.org/curated/en/099730003152232753/ pdf/P17630107476630fa09c990da780535511c.pdf> accessed 14 July 2024. See also World Bank Group, 'Deep Structural Reforms Guided by Evidence Are Urgently Needed to Lift Millions of Nigerians Out of Poverty, Says New World Bank Report' (World Bank Press Release) <https://www.worldbank.org/en/news/press-release/2022/03/21/afw-deep-structural-reforms-guided-by-evidence-are-urgently-needed-to-lift-millions-of-nigerians-out-of-poverty#:~:text=The%20report%20adds%20that%20climate,support%20for%20households%20is%20 scant> accessed 22 July 2024.

100 Gray Group International Insights, Energy Insecurity: Addressing Challenges in Access and Stability (Gray Group International, 21 July 2024) <https://www.graygroupintl.com /blog/energy-insecurity> accessed 22 July 2024.

101 This progression reflects a growing understanding of the interconnectedness between environmental policies and social equity. See, e.g., J Mijin Cha, Vivian Price, Dimitris Stevis, Todd E Vachon and Maria Brescia-Weiler, Workers and

sustainable human civilisation, towards what countries like China have termed an "ecological civilisation", is electricity - a hugely versatile and flexible form of energy.[102] At the World Economic Forum meeting held in Nigeria in 2023, a country context risk analysis that shows Nigeria's biggest risks in scaling the sector reveals complications with currency convertibility, financing structures, the availability and affordability of technology supply and technical know-how in the renewable energy sectors as some of the challenges of energy security[103]. These risks negatively affect the growth of the sector. As such, developing financial and technical assistance solutions are key to stimulating the sector's growth. The paper therefore suggests the following solutions;

a. Rural Electrification: A world bank data showed that 48% per cent of Nigerians are rural dwellers, which indicates that Nigeria needs to focus more on rural electrification to steer economic development[104] While one of the major purposes of introducing rural electrification in Nigeria in 1981 is to reduce economic disparities and empower local governments,[105] it is important to note also that full implementation of rural electrification will reduce the burden of urban overpopulation, reduce mass migration to the cities and reduce gas emission due to decrease in the use of fossil fuels.[106]

Communities in Transition: Report of the Just Transition Listening Project (Labor Network for Sustainability, 2021) 2 <https://www.labor4sustainability.org /files/JTLPreport2021 .pdf> ("[The] 'just transition' has recently become more mainstream in climate discourse.").

102 Jan Froestad and Clifford Shearing, 'Energy and the Anthropocene: Security Challenges and Solutions' (2017) 68 Crime L & Soc Change 515.

103 World Economic Forum, 'Mobilizing Investments for Clean Energy in Nigeria, Community Paper' (World Economic Forum, May 2023) <https://www3.we forum.org/docs/WEF_Mobilizing_Investment_for_Clean_Energy_in_Nigeria _2023.pdf > accessed 23 July 2024.

104 UN Desa, 'World Urbanization Prospects, the 2011 Revision' (Population Division, Department of Economic and Social Affairs, United Nations Secretariat, 2014); UN Desa, 'World Urbanization Prospects: The 2014 Revision, Highlights' (Population Division, Department of Economic and Social Affairs, United Nations Secretariat, 2014) < http://esa.un.org/unpd/wup/Highlights/WUP2014-High lights.pdf> accessed 23 July 2024.

105 C Diji, 'A Critical Assessment of the Nigerian Rural Electrification Policy' (2014) 2 International Journal of Advanced Studies in Engineering and Scientific Inventions 118.

106 Abdulrahman Olaniyan, Stéphane Caux and Pascal Maussion, 'Rural Electrification in Nigeria: A Review of Impacts and Effects of Frugal Energy Generation Based on Some of E-waste Components' (2024) 10(11) Heliyon.

Also, In a 1982 discussion paper by Elizabeth Cecelski and Sandra Glatt, titled The Role of Rural Electrification In Development, it was noted that one of the most significant differences between the developing nations of the world and those in which people enjoy healthy, productive lives is the establishment and widespread use of effective electric power systems.[107] This implies that rural electrification impacts all strata of a nation from education, to the reduction of greenhouse emissions, to security and the economy. Achieving rural electrification on the other hand requires the government pursing the principles of energy security, tapping from the abundant renewable power sources like sunlight, biomass, hydropower and wind which Nigeria is rich in.

b. Filling the financing gap and changing regulations: Financing options and green economy initiatives like solar, wind and hydroelectric power are essential for energy security. Section 3(1) of the Electricity Act of 2023 mandates the Ministry of Power to prepare an Integrated National Electricity Policy and Strategic Implementation Plan (INER&SIP) which will include provisions for the optimal utilisation of renewable sources; off-grid and mini-grid systems; supply infrastructure; and foster public-private partnerships to drive the growth and sustainability of the power sector.[108] It is expected that the implementation of the plan which was supposed to come into effect in June 2024 would catalyse the much-needed development of the renewable energy sector in Nigeria.

Other options available for filling the financing gap are the development of energy subsidy schemes and tax incentives to investors. The incentives could be pioneer status incentives, accelerated capital allowances, VAT exemption for renewable energy equipment, green bonds and sustainable financing as introduced by the Finance Act of 2022.[109] Also, protection of investors by effectively implementing the Electricity Act of 2023 which encourages private entities and individuals to invest in and engage in the energy value chain to

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[107] Elizabeth Ceceliski and Sandra Glatt, 'The Role of Rural Electrification in Development' (1982) A Discussion Paper from the Center for Energy Policy Research, Resources for the Future, Washington, DC <https://pdf.usaid.gov/pdf_docs/pnaaq579.pdf > accessed 23 July 2024.

[108] Electricity Act 2023, s 3(1), The National Integrated Electricity Policy and Strategic Implementation Plan

[109] Chukwuemeka Ozuzu, David Akpeji, Sophia Udolisa, 'Financing Renewable Energy Projects in Nigeria' (AO2Law, 22 May 2024) < https://ao2law.com/wp-content/uploads/2024/05/Financing-Renewable-Energy-Projects-in-Nigeria-22-May-2024.pdf> accessed 24 July 2024.

help diminish the control previously held by the federal government and few individuals through privatisation.[110] Indigenous private investors will help cushion the currency convertibility issue identified as a problem at the 2023 WEF.[111]

With the launching of the Energy Transition Plan in 2021 that supports achieving universal access to energy by 2030 and a carbon-neutral energy system by 2060, there is a need for an action plan that states targets and timelines to enable the plan to be properly monitored and its goals achieved.

c. **Community Involvement:** With regard to energy transition, while the federal government's focus is on attracting investment, it has not specified the different roles of the society, especially with regard to curbing climate change.[112] Government officials and civil society organizations need to involve local communities in the decision-making and policy-making processes so that citizens can actively understand the impact energy transition has on the socio-economic development of their communities.

Incorporating citizen's participation in the budgetary process and implementation is crucial to achieve the desired result. Community involvement is important, particularly in the context of Nigeria's Energy Transition Plan which was developed to achieve net-zero emissions. This can be done using peer-to-peer learning networks to share best practices, troubleshoot problems, and collaborate on developing sustainable energy solutions that are tailored to their specific needs.[113] Traditional wisdom, when joined with modern technology and inventive solutions, has become a potent force for change. Also, community-driven initiatives such as energy cooperatives and microgrid projects which are collaboratively done allow

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[110] Ibid.

[111] World Economic Forum, 'Mobilizing Investments for Clean Energy in Nigeria, Community Paper' (World Economic Forum, May 2023) <https://www3. weforum. org/docs/WEF_Mobilizing_Investment_for_Clean_Energy_in_Nigeria _2023.pdf > accessed 24 July 2024.

[112] Tengi George-Ikoli & Matteo Molineris, Power to the People: Perspectives on Nigeria's Energy Transition Plan, Natural Resource Governance Institute, 3 May 2024) <https://resourcegovernance.org/articles/power-people-perspectives-nigeria s-energy-transition-plan> accessed 24 July, 2024.

[113] Toyin Banjo, 'Empowering Communities: Sharing Knowledge and Opportunities in Nigeria's Energy Landscape' (Business Day, April 18, 2024) <https://business day.ng/opinion/article/empowering-communities-sharing-knowledge-and-oppor tunities-in-nigerias-energy-landscape/> accessed 22 July 2024.

communities to implement decentralised energy solutions that are adapted to their individual needs.[114]

d. Enlightenment and Education: it has been said that energy decisions are influenced by economic, political, environmental, and social factors, [115] Therefore, educating consumers about energy efficiency and conservation can lead to reduced energy consumption, help individuals understand energy-related issues, make informed decisions and participate in energy-related discussions.[116]

Also, education and awareness can drive innovation in energy technologies and practices, consequently, building climate change and energy transition awareness into school curricula will help enlighten society. There is a need to build a climate change awareness culture in Nigeria. Citizens across the country should be aware of what climate change adaptation and mitigation measures the government can take and —must ensure that these goals are met

Other enlightenment initiatives should include public hearings and media campaigns to educate the populace on energy transition and its impact.[117] With regards to supporting policy implementation, an informed public is more likely to support and comply with energy security policies than an uninformed populace.

Aside from regulatory options, overhauling the existing energy infrastructures by both the generation and transmitting companies in Nigeria is critical to energy security as the continuous use of outdated and obsolete

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[114] Toyin Banjo, 'Empowering Communities: Sharing Knowledge and Opportunities in Nigeria's Energy Landscape' (BusinessDay, April 18, 2024) <https://businessday.ng/opinion/article/empowering-communities-sharing-knowledge-and-opportunities-in-nigerias-energy-landscape/> accessed 25 July 2024.

[115] U.S. Department of Energy, 'Energy Literacy, Essential Principles and Fundamental Concepts for Energy Education, A Framework for Energy Education for Learners of All Ages' (US Global Change Research Program, March 2012) <https://www1.eere.energy.gov/education/pdfs/energy_literacy_1_0_high_res.pdf> 23 July 2024.

[116] Filomena Pietrapertosa, Marco Tancredi, Monica Salvia and Monica Proto, 'An Educational Awareness Programme to Reduce Energy Consumption in Schools' (2020) 278 Journal of Cleaner Production 124178.

[117] Tengi George-Ikoli and Matteo Molineris, 'Power to the People: Perspectives on Nigeria's Energy Transition Plan' (National Resource Governance Institute, 3 May 2024), <https://resourcegovernance.org/articles/power-people-perspectives-nigerias-energy-transition-plan> accessed 24 July, 2024.

equipment by energy companies contributes to energy shortage, scarcity and reduction in performance.[118]

4. CASE STUDY AND BEST PRACTICES: LESSONS FOR NIGERIA

The pursuit of clean energy is an essential piece of the global fight against climate change. However, this transition must be undertaken with a keen eye towards its impact on human rights. The international and national human rights law provides a framework for ensuring a just and equitable clean energy future for all. These legal frameworks will be discussed below.

This section of the paper will provide an overview of legal and institutional mechanisms for energy security in Norway. It will also discuss their impacts on promoting energy security and highlight critical lessons that can be adapted to promote sustainable development, energy equity and prosperity in Nigeria.

4.1 Norway

The Royal Norwegian Ministry of Energy has the principal responsibility to facilitate a coordinated and integrated energy policy and promote high value creation through efficient and environment-friendly management of Norway's energy resources.[119] The overriding objective for Norway is to make development ecologically, economically and socially sustainable. This is evident in its robust, strategically structured legal and institutional energy regulatory system which ensures effective management of resources, security of energy supply and a well-functioning power market.[120] Furthermore, developing infrastructure for electricity production and transmission can result in conflicts between user and environmental interests during planning, construction or operation. Conflicts may also arise in connection with water

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[118] KR Ajao, Adeniyi Ganiyu Adeogun, Habeeb A Ajimotokan and Mohammed Ajibola Shuaib, 'Energy Security and Nigeria's Sustainable Development: SDG 2030 (7)' (2020) 8(1) Journal of Energy Research & Reviews

[119] The Norwegian Ministry of Energy <https://www.regjeringen.no/en/dep/ed/organisation/id774/> accessed 03 July 2024.

[120] The Norwegian Ministry of Energy, 'Regulation of the Energy Sector: The Legal Framework' (Energy Facts – Norway, 9 July 2024) <https://energifaktanorge.no/en/regulation-of-the-energy-sector/det-juridiske-rammeverket/> accessed 11 July 2024.

resources management, cultural heritage, and local communities. Norway's legislative framework is intended to ensure that all the different interests are heard and considered and that projects are subject to government control and conditions that safeguard different interests.[121]

Norway has an almost entirely renewables-based electricity system, with renewable resources accounting for 98% of generation in 2020, of which hydro is the dominant source at 92%.[122] In this context, therefore, the Norwegian legal framework governs the energy sector and water resources management. These legislations include the Waterfall Rights Act,[123] Watercourse Regulation Act,[124] Water Resources Act,[125] Energy Act,[126] Offshore Energy Act,[127] Electricity Certificate Act,[128] and other key regulations such as the EU Water Framework Directive (2000/60/EC).[129] An overview of some of these identified legislation will follow in subsequent sections to highlight the critical relevance of legal and institutional frameworks for energy security.

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[121] Ibid.

[122] International Energy Agency (IEA), 'Norway 2022 Energy Policy Review', (IEA, June 2022) <https://www.iea.org/reports/norway-2022> accessed 10 July 2024.

[123] Act No. 16 of 14 December 1917 relating to acquisition of waterfalls (Waterfall Rights Act) <https://www.regjeringen.no/globalassets/upload/oed/vedlegg/lover-og-reglement /act_no_16_of_14_december_1917.pdf> accessed 11 July 2024.

[124] Act No 17 of 14 December 1917 Relating to Regulations of Watercourses <https://www.regjeringen.no/globalassets/upload/oed/vedlegg/lover-og-reglement /act_no_17-of_14_december_1917.pdf> accessed 11 July 2024.

[125] Act No. 82 of 2000 on river systems and groundwater (Water Resources Act). (Food and Agriculture Organization of the United Nations, 20 February 2023) <https:// www.fao.org/faolex/results/details/en/c/LEX-FAOC031705/> accessed 12 July 2024.

[126] Energy Act No. 50 of 1990 (Climate Change Laws of the World) <https://climate-laws.org/document/the-energy-act-no-50-of-1990_f8a0> accessed 12 July 2024.

[127] Offshore Energy Act No. 21 of 2010 (Climate Change Laws of the World) <https://climate-laws.org/document/offshore-energy-act-no-21-of-2010_2981> accessed 12 July 2024.

[128] Electricity Certificates Act, No. 39 of 2011 (Climate Change Laws of the World) <https://climate-laws.org/document/electricity-certificates-act-no-39-of-2011_fda9> accessed 12 July 2024.

[129] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000, Official Journal L 327, 22 December 2000, pp 1–73.

4.1.1 Waterfall Rights Act

The overall purpose of the Waterfall Rights Act is to ensure that hydropower resources are managed in the country's best interests through public ownership of hydropower resources at national, county and municipal levels.[130] A non-state developer must hold a licence under the Waterfall Rights Act in order to acquire such rights and such licences may only be issued to public bodies, i.e. state-owned enterprises, municipalities and county authorities, and to companies where such bodies hold at least two-thirds of the capital and the votes in the company.[131]

4.1.2 Energy Act

The purpose of the 1990 Energy Act is to ensure that energy is generated, converted, transmitted, traded, distributed and used rationally and in the best interests of society. The Act provides a framework for competition in electricity generation and trading; it also provides the legal basis for regulating grid companies.[132] Essentially, the Norwegian energy sector is based on a free market, competitive framework through clear regulations and guidelines which govern the trading and transmission processes. This therefore provides a background for the acceptability of services and choices for consumers. It also ensures the availability and affordability of energy which feeds into the clear concept of energy security.

On the other hand, despite the privatisation of the power sector in Nigeria in 2013,[133] Nigeria still suffers incessant power cuts and perennial power grid collapses. This continued energy insecurity has engendered a myriad of negative impacts on the Nigerian economy and environment. It has further been argued that the privatisation of the power sector in Nigeria is based on capitalist values, ideology, orientation and assumption and the assumption of a free market presupposes that the market operates in a competitive environment. However, this is not true in reality as the power sector privatisation in Nigeria has only succeeded in entrusting the collective wealth of the people in the hands of few elites, leading to massive job losses through

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130 The Norwegian Ministry of Energy, 'Regulation of the Energy Sector: The Legal Framework' (Energy Facts – Norway, 9 July 2024) <https://energifaktanorge.no/en/regulation-of-the-energy-sector/det-juridiske-rammeverket/> accessed 11 July 2024.

131 ibid

132 ibid

133 The Federal Government of Nigeria unbundled the Power Holding Company of Nigeria (PHCN) and sold 18 utility firms to private investors.

retrenchment of workers, high electricity bills without commensurate services among other negative impacts. [134]

4.1.3 Offshore Energy Act

The Offshore Energy Act provides the legal basis for offshore renewable energy production. The Act applies to Norway's territorial sea outside the baselines and to the continental shelf, however individual provisions are also applicable to internal waters. A licence is required for electricity generation, conversion and transmission in areas covered by the Act.[135] The Norwegian state has the right to utilise offshore energy resources and this must be done in line with the provisions of the Offshore Energy Act as the relevant regulatory mechanism governing such activities. A licence is required for electricity generation, conversion and transmission in areas covered by the Act. Thus, such licences can only be obtained after the central government authorities have decided to open specific areas for licence applications and hold an auction for interested, qualified parties/bidders.[136] This provision lends further credence to the legal requirements for a level playing field and transparency in the regulation and issuance of licences for offshore energy sources.

5. RECOMMENDATIONS AND CONCLUSION

This paper has interrogated issues pertinent to sustainable development and prosperity through legal and institutional mechanisms in Nigeria. It has also provided an in-depth overview of the legal framework for the regulation of energy in Nigeria and the imperatives for energy security. Furthermore, the paper outlines a comparative analysis between Norway and Nigeria and what lessons can be drawn. Nigeria is currently imbued with 'energy insecurity', where there is an interruption to the availability of energy sources/supply and energy is unaffordable,[137] particularly for low income households.

It is overwhelmingly clear that Nigeria has made massive strides in developing its legal and institutional mechanisms for regulating energy

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[134] Isa Aminu and Zainab Brown Peterside, 'The Impact of Privatization of Power Sector in Nigeria: A Political Economy Approach' (2014) 5(26) Mediterranean Journal of Social Sciences.

[135] ibid

[136] ibid

[137] Patricia Guevara, 'Understanding Energy Security' (SafetyCulture, 27 June 2024) <https://safetyculture.com/topics/energy-security/> accessed 22 July 2024

generation and supply. However, this has not translated to the much-desired economic prosperity and access to energy which affects the provision and sustainability of humans' basic needs. This has implications for economic growth, political stability, and overall development and security of other sectors such as agriculture and manufacturing.

First, it is pertinent to note that while Norway provides regulatory oversight and governance for its energy through its Ministry of Energy, thus ensuring cohesion and less bureaucracy, Nigeria operates an apparently discordant approach to power/energy governance. Like Norway, Nigeria has a significant reliance on hydro as a dominant source for power supply. However, the Nigerian Ministry of Power does not have any clear mandate over the Nigerian water resources. This is rather vested on the Nigerian Ministry of Water Resources for agricultural purposes while hydro-power governance for purposes of energy generation and supply - including hydroelectric dam operations - is overseen by the Hydroelectric Power Producing Areas Development Commission (HYPPADEC),[138] an agency with the Federal Ministry of Environment as its parent ministry. This therefore creates clear issues of political and administrative bureaucracies, increased operation costs, as well as, inefficient operations and services arising from poor inter-ministerial coordination and cooperation. As mentioned earlier, the mandate of the Ministry of Environment does not extend to energy-related policies which potentially hinders its ability to promote energy security. Also, a lack of synergy with other ministries and agencies involved in the energy sector may impede effective performance of its role. This paper therefore recommends a leaner, more streamlined governing/administrative authority with clear mandates and oversight functions, to provide energy security and promote further prosperity for Nigeria.

Secondly, issues such as policy summersaults, security risks, terrorism, economic sabotage, corruption, poor enforcement of existing legal framework and financial constraints have consistently beleaguered the Nigerian energy sector. It is therefore imperative that urgent steps are taken to regulate these areas. The power sector, despite its privatisation in 2013, retains the appearance of a monopoly scheme that has no firm legal obligation

[138] The Hydroelectric Power Producing Areas Development Commission is charged with the responsibility of formulating policies and guidelines for the development of hydroelectric power producing areas and managing ecological menace due to operations of dams and other hydroelectric power activities.

to deliver satisfactory services to consumers. It is recommended that adequate research is undertaken and efficient legal provisions/guidelines are put in place to fully entrench a free market system while ensuring the abundance of energy resources.

Thirdly, natural gas constitutes a low-hanging fruit, in line with a more climate-conscious world. Nigeria holds Africa's largest gas reserves and is the continent's third-largest producer after Algeria and Egypt.[139] Since 2008, Nigeria launched the Gas Master Plan, aiming to establish Nigeria as a natural gas hub for supply and demand by 2015, but those targets were not met. Despite a more modest Natural Gas Policy initiated in 2017, Nigeria remains unable to achieve set targets for achieving sustainable energy access. The paper recommends an overhaul of the existing legal framework for natural gas extraction and distribution which should be enforced to ensure efficient energy transition for Nigeria from fossil-based fuels to clean energy sources.

Finally, legal and institutional mechanisms play a pivotal role in promoting energy security in any clime or jurisdiction. As has been mentioned earlier, the critical components of energy equity include availability, accessibility, acceptability and affordability. The effective achievement of these factors ultimately underpins sustainable development, energy equity and prosperity for every society, including Nigeria. It is therefore imperative that all relevant stakeholders, particularly government agencies and policymakers are at the forefront of reviewing, developing and ensuring compliance with laws and policies which promote the efficient generation, distribution and utilisation of energy for the common good of the Nigerian state.

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[139] ibid