Energy Justice and Multilevel Perspective Impact Assessment of Energy Access and Transition in Nigeria: A Mini-Grid Case Study

BY

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Abstract

This thesis aims to advance a multi-level governance approach to a '*just*' energy transition in developing countries. Using the Nigerian context as a test case and the mini-grid sub-electricity sector as case study, the thesis argues that a 'just' transition will not happen in developing countries despite numerous policy changes, unless the existing dominant meso-level energy regime structure is destabilised. The research reveals that the meso-level regime significantly hinders the country's current energy transition strategy, which is why policy regulations are unable to take into account various groups' needs and strategies. This is demonstrated by the case study analysis of the impact of mini-grid projects on important Niger Delta rural communities within the Nigerian context, as well as an energy justice (EJ) and multilevel perspective (MLP) examination of the Mini-grid regulation of 2016. The thesis recognises that because the transition is made up of heterogenous actors and their interests, as well as new technologies that are foisted onto old pathways, questions regarding path dependencies and the co-dependency of sociotechnical transitions are raised. Thus, the narrative of the country's current transition is one of "new wine in old wine skins," which hinders the empowerment and security of new entrants in the energy decision making space and the blossoming of niches (RE technologies). The thesis argues that MLP and EJ frameworks are able to recognize and address marginalization's that have occurred in the past and in the present transition, such that hinders niches. Furthermore, it contends that both frameworks can make corrections at the recognition, distribution, and procedural layers, and start multi-level governance initiatives to lessen the effects of exclusion, ultimately toppling the existing meso-level energy system of the country. The thesis concludes by offering a formalised policy approach that promotes the integration of sectoral techniques and conditions that make for the participation of all stakeholders, including non-state actors and soft law techniques, in order to ensure a successful energy transition and realisation of access goals for everyone.

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This ‘thank you’ will not be my last!

DEDICATION

This work is dedicated to **God,**

the one father who never forgets his own;

and for the happy repose of my loving father, carbon copy and best friend, Dr. Ekom Robert.

'…*Because you both called me,* Love!'

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List of Abbreviations

AfDB	African Development Bank
APT	Ability to Pay
BOT	Build-Operate-Transfer
CBDR	Common but Differentiated Responsibility Principle
CCA	Climate Change Act
COP	Conference of the Parties
CJEU	Court of Justice of the EU
CSR	Corporate Social Responsibility
DisCos	Distribution Companies
ECA	Energy Commission Act
ECN	Electricity Corporation of Nigeria
ECN	Energy Commission of Nigeria
ECOWAS	Economic Community of West African States
EREP	ECOWAS Renewable Energy Policy
EEA	European Environment Agency
EJ	Energy Justice
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment

EPI	Environmental Performance Index
EU	European Union
EPSRA	Electric Power Sector Reform Act
FBOs	Faith-Based Organisations
FF	Fossil Fuels
FGN	Federal Government of Nigeria
FiTs	Feed-in tariffs
FMPPWE	Federal Ministries – Power, Petroleum, Water Resources & Environment
GenCos	Generation Companies
GHG	Greenhouse gas
IEA	International Energy Agency
IPP	Independent Power Producers
IMF	International Monetary Fund
INDCs	Intended Nationally Determined Contributions
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
JTF	Just Transition Fund
JTM	Just Transition Mechanism
KP	Kyoto Protocol

PA	Paris Agreement
PBG	Performance-based Grant
PIA	Petroleum Industry Act
PPP	Polluters Pay Principle
PPP	Public-Private Partnership
MDGs	Millennium Development Goals
MLP	Multi-Level Perspective
MNCs	Multinational Corporations
MSMEs	Micro Small and Medium Enterprises
MYTO	Multi-Year Tariff Order
NBET	Nigerian Bulk Electricity Trading
NBS	National Bureau of Statistics
ND	Niger Delta
NDA	Niger Dams Authority
NDC	Nationally Determined Contributions
NEMSA	Nigerian Electricity Management Services Agency
NEP	National Energy Policy of Nigeria
NESI	Nigerian electricity supply industry
NEMP	National Energy Master Plan
NEP	Nigeria Electrification Programme

NEPA	Nigeria Power Authority
NERC	Nigerian Electricity and Regulatory Commission
NLNG	Nigeria Liquefied Natural Gas Limited
NREEEP	National Renewable Energy and Energy Efficiency Policy
NOGICDA	Nigerian Oil and Gas Industry Content Development Act
ST	Sustainability
OECD	The Organisation for Economic Cooperation and Development
PMU	Project Management Unit
REA	Rural Electrification Agency
REAP	Renewable Energy Action Plan
REMP	Renewable Energy Master Plan
REN	Renewable Energy Network
REPG	Renewable Electricity Policy Guideline
RES-E	Renewable Energy Source - Electricity
RESIP	Rural Electrification Strategy and Implementation Plan
RET	Renewable Energy Transition
RET	Renewable Energy Technologies
REF	Rural Electrification Fund
SSA	sub-Saharan Africa
SDG7	Sustainable Development Goal 7

SDG13	Sustainable Development Goal 13
SEforALL	Sustainable Energy for ALL
SMEs	Small and Medium-sized Enterprises
Solar PV	Solar photovoltaic
TCN	Transmission Company of Nigeria
TCN	Transition Company of Nigeria
TNCs	Transnational Corporations
UKRI-SIGMA	United Kingdom research institute sustainability, inclusiveness, and Governance of Mini-grids in Africa
UNDP	United Nations Development Programme
UNESCO	United Nations Economic and Social Council
UNFCCC	United Nations Framework Convention on Climate Change
UNSDG	United Nations Sustainable Development Goal
USAID	United States Agency for International Development
WETO	World Energy Outlook Reports
WB	World Bank

Chapter 1: General Introduction

"The Stone Age didn't end for lack of stone, and the oil age will end long before the world runs out of oil.''[1]

1.1 Background to the Study

To reduce emissions and protect the environment, national governments and international public organisations have joined forces to execute a sustainable energy transition agenda. The term "*energy transition*" refers to 'the change from one energy source to another.'[2] For example, from wood to coal, crude oil and natural gas (fossil fuels), and now to the sun and wind (renewable energy), to improve humanity's socio-economic and environmental existence. However, these governments and public international institutions' transition plans and programs have largely disregarded the justice component of these transitions. Justice here pertains to the lack of access to modern energy services, energy citizenship, technology, and global value chains, requiring knowledge production, strong legal frameworks, and addressing existing inequalities. Evidence suggests that global decarbonization has unintended consequences, particularly for developing countries. The lack of access to electricity in some areas (unserved rural communities) and energy inefficiency serve as examples of how energy transitions have in past, created inequalities and have continued to do so in the current transition.

Thus, energy transitioning being a vital component of human civilization for centuries has significantly impacted infrastructure, socio-economic development, and global economies. Its utility of transformation towards better systems circumscribes the necessity for which a multi-levelled governance is required given energy's complexity as well as with the current global decarbonisation agenda. Moreover, as the multilevel framework elaborates, [3] previous

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[1]The Economist, 'The end of the Oil Age', 23 October 2003, https://www.economist.com/leaders/2003/10/23/the-end-of-the-oil-age accessed 10 February 2023.

[2] C., Cleveland & C., Morris (eds.) *Dictionary of Energy* (Second edition, Elsevier, 2014) 201.

[3] Audley Genus & Anne-Marie Coles, Rethinking the multi-level perspective of technological transitions,

transition innovations bear relevance to the present one. Consequently, it is crucial to scrutinise innovations at the macro, meso, and micro levels to tackle the energy justice disparity in the current transition and underscore the advancement and implementation of innovative technologies.[4] This is especially true when considering the current energy industry's challenges of regime destabilisation, path dependencies, heterogeneity of actors, landscape pressures, and the emergence of new players in a complex transition space.

Research shows that 3 billion people in developing countries rely on traditional biomass for cooking and heating, with 789 million still without electricity and millions struggling to pay for energy services, when energy services are available.[5]Data further shows that more than 95% of these people are in sub-Saharan Africa or developing areas, and 85% are in rural areas.[6] This evidence supports the thesis's focus on mini-grids as a potential solution to address intersectional marginalisation in remote Niger Delta settlements, despite their oil and gas resources, pollution, and lack of electricity access. The above-stated example of the Niger Delta shows that Nigeria is not left out as one of the countries "in darkness," with about 60% of its population without access to grid electricity.[7] 35% of this figure are the people living in rural areas in Nigeria.[8] Nigeria's low electrification rate of 45% is causing reliance on generators,[9]

Research Policy, (2008) Volume 37, Issue 9, Pages 1436-1445 "multi-level perspective to analyses past transformational innovation episodes at macro, meso, and micro levels, attempting to explain radical development of novel technology and its socio-technical relations."

[4] Ibid.

[5] S., Bhattacharyya & D., Palit, (eds.) Mini-Grids for Rural Electrification of Developing Countries: Analysis and Case Studies from South Asia (Springer Pub, 2014) 2

[6] Ibid, United Nations (UN), *World Population Prospects: The 2012 Revision*, New York: UN, 2012

[7] M., Oseni, 'Households' Access to Electricity and Energy Consumption Pattern in Nigeria' (2012) 16 (1) *Renewable and Sustainable Energy Reviews*, 990-995

[8] Ibid 993.

[9] Y., Chanchangi et al., 'Nigeria's Energy Review: Focusing on Solar Energy Potential and Penetration' (2022) *Environment, Development and Sustainability* 1 – 42, 16

with nearly 60 million Nigerians owning them,[10] resulting in a fossil-fuel (FF) dominated power mix (gas-fired thermal and hydro).[11] Thus, the government has undergone several reforms to provide electricity to about 100% of the population by 2030.[12]

According to Akuru et al., Nigeria's total installed generation capacity is 14,380 MW, with 7527.5 MW available, but 3800–4700 MW often get transmitted due to faults and repair issues.[13] Of the total installed capacity of 14,380 MW, renewable hydroelectric energy accounts for 2,380 MW, despite a total potential of over 68,000 MW.[14] Thus, the trend for rural electrification has progressed slowly in the country. While off-grid electrification is not new in the country, starting in the 1970s, RE-based off-grid and solar PV-based electrification is a new trend towards rural electrification. Medium-sized diesel generators currently support off-grid generation, which is much more expensive than on-grid electricity supply, given the current setup of the electricity market.[15]

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[10] Akinyi Ochieng, 'Nigeria's Generator Addiction is An Opportunity in Disguise' (2017) emerge 85 available at: https://emerge85.io/Insights/nigerias-generator-addiction-is-an-opportunity-in-disguise/ last accessed 20 February 2023 " This includes 26% of households and 86% of operating businesses."

[11] International Trade Administration, 'Nigeria – Electricity and Power systems- Country Commercial Guide' available at: https://www.trade.gov/country-commercial-guides/nigeria-electricity-and-power-systems last accessed on 20 March 2023 - 'Nigeria's power generation is mostly gas-fired (thermal) and hydro of 80% and 20% respectively., with an installed capacity of about 12,522 MW.'

[12] Energy Commission of Nigeria (ECN), *National Energy Policy*, Abuja: ECN, April 2003. GET.invest, 'Nigeria's Energy Sector', available at: https://www.get-invest.eu/market-information/nigeria/energy-sector/ last accessed 20/02/23.

[13] Udochukwu Akuru, *et.al*.,'Towards 100% Renewable Energy in Nigeria' 71 (2017) *Renewable and Sustainable Energy Reviews* 943 – 953

[14] KPMG, 'Nigeria's Electricity Supply Industry Highlights', *Power Sector Watch*, Edition 2019 – Q1, May 2019. 2 available at: https://assets.kpmg.com/content/dam/kpmg/ng/pdf/audit/Nigeria-Electricity-Supply.pdf last accessed 20 March 2022. These potential includes (wind, hydro, solar, and biomass).

[15] GIZ, 'The Nigerian Energy Sector: An Overview With Special Emphasis on Renewable Energy, Energy Efficiency and Rural Electrification' (2nd edn, 2015) 1 – 152, 45 available at: https://www.giz.de/en/downloads/giz2015-en-nigerian-energy-sector.pdf last accessed 20/03/23, A., Babajide, & M., Brito, 'Solar PV systems to eliminate or reduce the use of diesel generators at no additional cost: A case study of Lagos, Nigeria.'172 (2021) *Renewable Energy*, 209-218. "both the sum-up diesel expense based on the power outages in the daytime, and diesel expense based on the power outages after sunset. In this case, there is a partial replacement of the fuel expense by using the solar PV system cost as backup during outages in the daytime. Not using a battery reduces the cost of the solar PV system significantly."

Thus, mini-grids, alongside off-grid solar, have the potential to accelerate electricity access to over 111 million households by 2030,[16] particularly in remote and expensive areas.[17]Mini-grids are "an integrated local generation and distributive system that supply electricity to a local group of customers, operating independently from the national transmission grid."[18] They can serve various customers, including private households, commercial businesses, agricultural loads, productive loads, and semi-industrials.[19] Similarly, they can be developed and owned by state utilities, private companies, communities, or a mix of players and can run on diesel, renewables, or renewable-diesel hybrids.[20] The choice of mini-grid as the nation's RE energy diversification option is fuelled by the unwavering resolve to fill the energy access and cost gap in the country by providing *'equal access to clean electricity'* throughout Nigeria through mini-grids.[21]

Thus, this wave of energy transition from fossil fuel (FF) to renewable energy (RE) has been driven by environmental challenges including climate change, fossil fuel depletion or peak oil, and the challenges of energy security arising from energy supply availability and scarcity. This transition becomes even more complex because of past transition inequalities and existing intersectionality's that have made most regions in the country more vulnerable with unresolved issues. For instance, most Niger Delta villages in Nigeria are typical island settlements, with a last mile and archipelagic topology that makes it difficult to access a secure link to the national grid despite being close to oil and gas electricity resources, hence the lack of electricity supply

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[16] Bloomberg NEF, 'State of the Global Mini-Grids Market Report: Trends of Renewable Energy Hybrid Mini grids in Sub-Saharan Africa, Asia and Island Nations.' (2020) Mini-Grids Partnership-Bloomberg NEF, 1-196. 'Towards meeting SDG 7.'

[17] Ibid "A study further estimates that by 2030, mini–grids will potentially connect over 111 million households in sub-Saharan Africa, Asia, and island nations, especially homes in remote and archipelagic areas that are too far apart and expensive to be covered by the grid."

[18] African Development Bank, Introduction to Minigrids; Green MiniGrid HelpDesk (2023)available at https://greenminigrid.afdb.org/how-it-works/help-desk-developers-and-operators/introduction-mini-grids last accessed 11/02/2024.

[19] Ibid

[20] Ibid

[21] FGN, National Energy Policy (2017) available at https://rea.gov.ng/wp-content/uploads/2017/09/National_Energy_Policy_Nigeria.pdf last accessed 12 December, 2023.

in these areas.[22] In essence, the Niger Delta villages in Nigeria, despite being close to oil and gas resources, have been undeveloped, polluted, and without secure electricity access for the last four decades, despite being the country's economic development source.[23]

Oyebamiji and Kigbara highlight the challenges faced by rural people living near oil and gas operations in the Niger Delta, including accessing electricity, high prices for refined petroleum products, and reliance on coal and firewood for cooking.[24] Whether the mini-grid option in this region can significantly enhance SDG 7 implementation, increase energy consumption levels, environmental clean-up, business growth, climate change mitigation, and socioeconomic status becomes the goal of using the energy justice - multilevel framework in this thesis. For instance, according to the National Bureau of Statistics, rural towns in the leading oil-producing states of Bayelsa and Rivers are among the places with a lack of energy access in the country despite being close to the power plants.[25]When it comes to the issue of capacity and the cost of accessing these mini-grids, as well as its procedural aspects, this thesis acknowledges a justice gap in the transition to mini grids, particularly for certain groups, which can hinder a 'just' transition.

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[22] Niger Delta Budget Monitoring Group, 'History of Niger Delta' (2023) available at: https://www.nigerdeltabudget.org/the-niger-delta/ last accessed 13/02/23.

[23] Ayodele Morocco-Clarke, 'In the Midst of so much Injustice, can there be a seat for Energy Justice at the Nigerian Table?' (2023) *The Journal of World Energy Law & Business* 1 -16 - *'John Gbemere & Ors v. Shell Petroleum Development Company Ltd. & Ors* - Suit No. FHC/CS/B/153/2005 (Unreported), *Ikechukwu Okpara & 3 Ors v. Shell Petroleum Development Company of Nigeria Limited & 5 Ors* - Suit No FHC/PH/CS/518/2005 (Unreported)', and other cases involving flagrant environmental pollution are examples of cases from this region that demonstrate the injustices this region has endured in addition to its lack of access to the same resources taken from their backyards to their detriment.

[24] O., Oyebbamiji & R. Kigbara (*Energy use and usage perceptions in the Niger Delta - Publications Library*, 2011) Available at: https://pubs.iied.org/sites/default/files/pdfs/migrate/GO3233.pdf accessed 11/02/23. IMF, 'The Unequal Benefits of Fuel Subsidies Revisited: Evidence for Developing Countries' (2015) IMF Working Paper (WP/15/250) 1, 3, 16 available at https://www.imf.org/external/pubs/ft/wp/2015/wp15250.pdf last accessed 08 August 2023, Jeffrey Sachs, et al. "Ending Africa's Poverty Trap." *Brookings Papers on Economic Activity*, JSTOR (2004) Vol. 1, 117–216. For instance, IMF writes that: "refined petroleum products are not easily available in these rural areas, many poor people are forced to pay higher than official prices for petrol, diesel, kerosene, and cooking gas, and they frequently have to travel some distance,"[24]

[25] GIZ, 'The Nigerian Energy Sector: An Overview With Special Emphasis on Renewable Energy, Energy Efficiency and Rural Electrification' (2nd edn, 2015) 1 – 152, 42 (National Bureau of Statistics) available at: https://www.giz.de/en/downloads/giz2015-en-nigerian-energy-sector.pdf last accessed 20/03/23

For instance, 70% of the Niger Delta's population lives in poverty due to low industrialization and transnational corporations (TNCs) impact on traditional economies,[26] leading to low-level businesses unsuitable for private investors who demand that their usage of mini-grid technology aligns with their affordability. This means that the primary barrier to local private participation in mini grids is cost. Rural businesses must either grow significantly to gain access to mini-grids or lose out on renewable energy.[27] The thesis therefore emphasises that mini-grids by themselves are ineffective because foreign companies own the mini grid value chain.[28] As a result, the local context becomes the focus for stimulation, using the Niger Delta communities as case studies for the electrically unserved/underserved areas in this thesis. The thesis on this note, emphasises the necessity of multi-level governance, energy citizenship, knowledge and skill development in order to successfully integrate mini-grids into the current system for a just transition.

Thus, as we stand at the verge of an end and the rise of yet another transition, where the nascent technology needs to influence the current regime for destabilisation,[29] it becomes necessary to see how timing, landscape influence, a strong legal and institutional framework, as well as the other implications of costs, investments, technology, skills, labour, interlinkages, evidence-based policymaking, and energy citizenship all interact with each other to shape yet again the current transition.

For instance, the 2022 World Energy Outlook Reports (WETO) finds that:

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[26] (n 23) For instance, the region relies on traditional subsistence-based farming and fishing for their economies, however much of this have become impaired by the pollution of their land and water resources by fossil extractive activities.

[27] S Bhattacharyya and De Montfort University, 'Sustainability, Inclusiveness and Governance of Mini-grids in Africa (SIGMA) Abstract' UK Research and Innovation Project (2022) available at: https://gtr.ukri.org/projects?ref=ES%2FT006684%2F1 last accessed 03 February 2022 – 'The barriers to mini-grid include cost, decentralized regulatory framework and process, unproven business models and low productive uses'

[28] Lucy Baker, 'Of Monopolies and mini-grids: the evolving Governance of Decentralised Electricity in Kenya, Tanzania, Nigeria and Senagal Ppt Presentation' UK Research and Innovation, Sustainability, Inclusiveness and Governance of Mini-grids in Africa (SIGMA): available at: https://static.s123-cdn-static-d.com/uploads/3093860/normal_622a046b15435.pptx last accessed 03/02/2023

[29] (n 3) 'Where the new socio-technical niche or regime reaches the point of 'social embedding'

> "Investments in energy transition technologies remain concentrated in a handful of regions and countries, with the Asia-Pacific region – led by China, accounting for almost half of the global investments in 2021. The rest of the Asia-Pacific region, including the whole of Southeast Asia, attracted less than 8% of global investments. In comparison, Europe accounted for around 28% of global investments, with more than half of these investments going to a handful of countries: Germany, the United Kingdom, France, and Spain. The Americas: especially the United States, drew over a quarter of all investments globally, while the rest of the Americas, including all of Latin America, accounted for less than 4%, followed by the Middle East and Africa, which together account for no more than 2% of the total."[30]

Intricately, the report mirrors how energy efficiency is required to progress the decarbonisation process and why holding contexts and stakeholders to the same standards is unfair because of varying energy consumption levels, cost, and their disparate starting positions. 'Contexts' here refer to social groupings or communities with similar experiences, norms, and beliefs. Using the case of the subsidies from fossil fuels within a local order as an example, an international monetary fund (IMF) analysis confirms that "a substantial share of benefits from fuel price subsidies goes to high-income households, further aggravating already present economic disparities."[31]

While this appears to be wrong, the withdrawal of subsidies can equally impact household energy consumption and welfare, including that of lower-income groups.[32] This is because of existing energy security issues and intersectionality's as well as the necessity of energy services for development hence, the emotional attachment to cheap fuel in Nigeria as a people's only

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[30] IRENA, World Energy Transitions Outlook 2022 - irena.org. https://www.irena.org/Digital-Report/World-Energy-Transitions-Outlook-2022

[31] IMF, 'The Unequal Benefits of Fuel Subsidies Revisited: Evidence for Developing Countries' (2015) IMF Working Paper (WP/15/250) 1, 3, 16 available at https://www.imf.org/external/pubs/ft/wp/2015/wp15250.pdf last accessed 08 August 2022.

[32] (n 25) (IMF, 'The Unequal Benefits of Fuel Subsidies Revisited)

benefit from the social contract.[33] Energy consumption refers to all the energy used in a household or required in a business for a particular process. Several factors have been held to influence energy consumption and this is not far removed from the question of contexts. For instance, in a household, the number of occupants, their daily activities, and the presence of energy-efficient appliances can significantly impact energy consumption. Similarly, in a business setting, the type of industry, production processes, and the implementation of sustainable practices can greatly influence the amount of energy required. Therefore, understanding the specific contexts in which energy is consumed is crucial for developing effective strategies to reduce energy consumption and promote sustainability.

Thus, there is a connection between socio-economic development on energy mix and consumption levels because of the essentiality of energy for development activities and an improved quality of life. According to Zhang and Li, several economic variables, such as financial development, urbanisation, population age distribution, and international trade, are significant in promoting clean and efficient energy from economic activities within the global economy.[34] These variables also play a role in driving the growth of energy consumption. For instance, Okere et al., states that:

> "high energy consumption and trade openness are necessary for economic activity, particularly financial intermediation transactions, which boost human activity and promote global interconnectedness. The population's age distribution influences energy consumption, with certain age groups generating significant demand for commercial and industrial activities and urbanisation stimulating economic activities and environmental impacts."[35]

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[33] This is exemplified by the number of households and small businesses that rely on generators for electricity needs in the country.

[34] M., Zhang, & P., Li, Analysing the impact of urbanization on energy consumption in Jiangsu Province. (2015) *Natural Hazards* 76 (1), 177–190

[35] Kingsley Okere, Onyemachi Ogbulu, Favour Onuoha & Izuchukwu Ogbodo, what drives the energy consumption mix in Nigeria? The role of financial development, population age groups, urbanization and international trade: insight from ARDL Analysis (2021) *OPEC Energy Review* 163
"for instance, certain age group's activities generate significant energy demand for commercial and industrial activities such as transportation, communication services, education and healthcare delivery, banking activities

Therefore, the decision to stop fossil fuel subsidies and redirect the funds to investments in renewable energy technology to diversify the energy mix and improve energy consumption, is a step in the right direction.[36] However, the immediate conflicts and effects these changes will have on the previously unserved and underserved groups when it comes to the knowledge, technology use, and costs; raise complex and multifaceted issues regarding the place of justice in the decarbonisation process. For instance, about 80% of the sub-Saharan Africa population as of 2019 lacked access to electricity and particularly; about 83 million people, 43% of the Nigerian population lacked access to electricity with about 85% of those without access being in rural areas.[37]

In recognition of these indirect effects of the transition on developing countries, an international energy agency (IEA) report accounts that clean energy transitions is putting pressure on hydrocarbon-dependent economies, raising concerns about investment finance due to the already poor state of these economies.[38] This is also true of the national legal system, where public, international, and national government intervention in the clean energy sector appears to benefit urban, affluent, and energy-efficient groups more than poor, rural, and vulnerable ones. For instance, evidence from a United Kingdom research institute sustainability, inclusiveness, and governance of mini-grids in Africa (UKRI-SIGMA) project, shows that prioritising productive mini-grid electricity may benefit developers and commercial ventures,[39]

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and other socio-economic activities that depend on energy. Same is the case with urbanisation which stimulates economic activities through increased economic and industrial activities, spatial and technological processes as well as socioeconomic factors that contribute to building the environment."

[36] Mary Izuaka, 'IMF urges Nigerian Government to Remove Fuel Subsidy by Mid-2023' *Premium Times* (Nigeria, 8 February 2023) available at < https://www.premiumtimesng.com/news/headlines/580711-imf-urges-nigerian-govt-to-remove-fuel-subsidy-by-mid-2023.html > last accessed 19 April 2023.

[37] World Bank Group, World Bank Global Electrification Database from 'Tracking SDG 7: The Energy Progress Report' available at : https://data.worldbank.org/indicator/EG.ELC.ACCS.RU.ZS?locations=NG last accessed 21/03/21.

[38] IEA, 'Financing Clean Energy Transitions in Emerging and Developing Economies,' (2021) IEA available at https://www.iea.org/reports/financing-clean-energy-transitions-in-emerging-and-developing-economies last accessed 22 September 2022.

[39] T., Sesan, *et al*, 'Who benefits from Mini-grids in rural African Communities? Evidence from Southwest Nigeria' 19 September 2022 available at: < https://www.sigma-gcrf.net/blog/who-benefits-from-mini-grids-in-rural-african-communities-evidence-from-southwest-nigeria > last accessed 02/02/22.

but not lower-tier users in agriculture and social sectors who lack capabilities in assessing these technologies, thus hindering rural development goals.[40]

Nigeria falls into this grouping wherein ample intervention is required to improve the energy consumption levels. From the preceding, the transition from fossil fuels (FF) to renewable energy (RE) tends to be advantageous for businesses and households, especially those that are well-established and capable of consistently spending a significant amount of money on electricity.[41] So, the transition builds on people's pre-existing realities and systems. As such, issues of affordability, energy poverty and access to mini grids (RE) remain, just as with fossils. Thus, the global ET call holds implications to developing countries who are battling with energy access and security challenge, and it is important that governments and public international institutions' transition plans and programs largely recognize this justice component of transitions.[42]

It is, therefore, crucial that within a context, "energy transition is appropriately engaged with these questions of justice"[43] in the transition process, as failure to do so may reveal issues of energy scarcity elsewhere, resulting in a lack of access to energy in some areas. This could translate into individual issues of poverty, health, education and agricultural challenges, limited economic opportunities, restricted energy choices, and a lack of political representation in energy decision-making.[44] Also, failure to acknowledge the underlying structural access issues to energy equality and their interaction with broader socioeconomic factors and global trends,

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[40] Ibid.

[41] Ibid.

[42] 'Justice' here, refers to the lack of access to modern energy services, energy poverty, affordability, energy inefficiency, timing, and the cost/use of renewable energy technology when developing contexts are transitioning.

[43] Darren McCauley, et al, 'Energy justice in the transition to low carbon energy systems: Exploring key themes in interdisciplinary research' (2019) *Applied Energy* 1-22.

[44] B., Sovacool, *et al,* 'Energy decisions re-framed as justice and ethical concerns' (2016) 1(16024) *Nat. Energy*, 1 – 6.

could result in the sustainability goal being lost or energy transition becoming unjust to other sectors and contexts of the global world, whether present or in the future.

In addressing this, with relevance to broader sustainability and energy transition concerns of developing countries, the United Nations have noted that;

> "Closing the electricity access gap requires targeted policies and regulations, multi-stakeholder partnerships, bottom-up actions, and increased investment in both on and off grid solutions."[45]

In response to this international transition agenda, the Nigerian government aims to increase its electricity generation capacity with 30% renewable energy. This diversification plan includes (i) Off-Grids, a hybrid of solar PV and diesel generator for household and productive use; ii) Mini-Grids, a diesel generator plant with low voltage (LV) supply for all types of demand (productive, household, social infrastructure,) and iii) national Grid Electrification.[46] By setting up rural electrification agency (REA) to target local communities without access to electricity with mini grid initiatives, the government's transition objective includes addressing the energy access, poverty and security issues while also greening the grid – through renewables: on grid and off grid options.

Following a pre-transition study, it has been recognized that mini-grid solutions will best serve 13.6 million people in Nigeria, and solar home systems will best serve 6.2 million people (6 per cent of the non-electrified population). Grid extension will best serve 86.2 million people (81 per cent of the non-electrified population) based on proximity to the existing grid.[47]

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[45] United Nations Department of Economic and Social Affairs, 'Accelerating SDG7 Achievement Policy Briefs in Support of the First SDG7 Review at the UN High-Level Political Forum' (2018) available at:https://sustainabledevelopment.un.org/content/documents/18041SDG7_Policy_Brief.pdf last accessed 21/03/23.

[46]Sanusi Mohammed Ohaire, 'Financing Rural Energy Projects in Developing Countries: A Case Study of Nigeria" (DPhil thesis, *De Montfort University 2014)* 126.

[47] Mini-Grid Market Opportunity Assessment: Nigeria' (2018) SEforALL Africa Hub African Development Bank 27 available at: https://greenminigrid.afdb.org/sites/default/files/minigrid_market_opportunity_assessment_nigeria_june_2018.pdf last accessed 31/03/22.

Moreover, the study further stipulates that by 2030, 28.5 million households, or 125 million people, will be electrified.

While this is a good plan towards improving energy access, especially in rural communities in the country, as well as greening the grid, it is still the case that challenges persist due to the interaction of various sectors, including government agencies, local communities, private sector stakeholders, developers, and investors - whether local or international. Additionally, implementing renewable energy infrastructure in remote areas presents logistical challenges, procedural and recognition justice concerns, non-participatory decision-making, critical technical knowledge, poor returns on investments, job loss, and capacity requirements, as well as the need of a multi-level governance and specialised structures for project monitoring and maintenance. Moreover, the cost of renewable energy technologies may still be prohibitive for many rural communities, making it difficult for them to afford and adopt these new energy solutions. Therefore, while the plan is a step in the right direction, it is important to address these challenges to ensure effective and equitable energy access in rural areas.

This thesis aims to make a contribution within this context. The main goal of the thesis is to examine the institutional, legal, and regulatory frameworks surrounding the country's energy access and transition to renewable energy. Specifically, the study will use the EJ-MLP frameworks to examine the mini grid regulatory policy framework and institutional reforms necessary to advance a multi-level governance of energy transition in the country for a 'just' transition.

1.2 Research Question

To this end, the thesis poses the following research questions: First, what are the impacts of energy justice-multilevel perspective framework on Nigeria's renewable energy (RE) policies, laws, and regulations? Second, what is the legal basis and reasoning behind supporting multi-level governance of renewable energy projects especially as it relates to decision-making and procedures associated with the shift to renewable energy? As a corollary, this thesis consequently poses the third question: what are the implications of these RE laws and regulations for important players and stakeholders in Nigeria's electricity industry? Fourth, what are the problems and challenges of implementation or including the energy justice-multilevel norms within the current transition. Lastly, what are the legal and institutional

reforms needed to manage these challenges. Specifically, these questions are raised in the context of mini grids in rural Nigerian communities located in the Niger Delta, where environmental pollution and access to modern energy services is already a problem.

1.3 Research Method, Analytical Framework and Ethics

To address the research questions, the thesis employs a socio-legal method. This approach combines both legal and sociological perspectives to examine the intersection of law and society. By studying the Niger Delta rural community social context in which ET rules, policies, and strategies are formulated, and applied, the thesis aims to provide a comprehensive understanding of the impact of law on heterogeneous actors and communities in the 'just' transition discourse as well as the external and internal contexts that shape law and policy. The socio-legal method allowed for a nuanced analysis of legal issues, taking into account not only the letter of the law but also its practical implications and societal consequences within groups. The thesis explores the sociolegal relationship between law, energy transition, and diverse actors and communities, addressing socioeconomic and sociocultural disruption;[48] in the ET.

In doing this, I relied on documentary analysis of the main energy transition initiatives, projects, and policy objectives in Nigeria. The scope and criteria of document inclusion for the analysis spanned across the criteria of history, time, context, relevancy to the just transition phenomenon, and quality. Regarding sources, the research relied on reports from international energy agencies like the International Renewable Energy Agency (IRENA) and the International Energy Agency (IEA), government websites, institutional and news reports, think tanks, industry publications, policy papers, academic journals, and workshop outputs from the Rural Electrification Agency (REA).[49] The research analysed patterns, trends, and impacts on

[48] Racheal Bray & Rebecca Ford, Who's Got the Power? Ensuring Energy Justice in the Transition to Net Zero (2021) (Centre for Energy Policy: University of Srathclyde Report) available at: https://www.strath.ac.uk/humanities/centreforenergypolicy/newsblogs/2021/energyjusticeinthetransitiontonetzero/ last accessed 25 May 2023.

[49] 'By examining various documents, such as government reports, policy papers, and industry analyses, I was able to gain deeper insights into the factors that shaped the state's energy sector over time. This approach provided a solid foundation for evaluating the present transition and predicting future trends and challenges'

communities, providing insights into the legal and social aspects of the transition as well as challenges and opportunities.

Specifically, the thesis analysed materials from Rural Electrification Agency (REA) reports and updates on the mini grid roll-out projects phases I and II (2017–2019) and (2020–2022), respectively, as well as internal REA Energy Efficiency Programme (EEP) stakeholder workshop presentations (Phases 1 and 2). Also, mini-grid investigative and business case reports, were analysed. Additionally, investigative studies on energy access in the Niger Delta community, journals, policies, policy revisions and related topics, were analysed. It is stated that these rules and documents are available as public records on the websites of various governments and organisations, in libraries, and via the internet.

Regarding themes, the basis for the different document inclusion criteria is based upon the nature of the just transition phenomenon understudied, as well as the nature of the use of these documents. This is because the just transition concept is constantly changing and might mean several or different things for different contexts, showing how just transitions is pluralistic in nature, underpinned by several factors, which may be temporal, historical, cultural, social, economic, political, technological, etc. For instance, the use of historical documents like government reports, industry publications, and academic journals offered a comprehensive view of the subject matter, identifying key themes and perspectives for future policy decisions and stakeholder engagement strategies.

First, I used document analysis to develop content. The content analysis involved a literature review to identify research questions, gaps, and data sources.[50] The review established a theoretical framework, examining previous studies on energy access, poverty, justice, consumption and energy citizenship.[51] It also contextualized findings by comparing them to broader literature on sustainable development and renewable energy initiatives, ensuring the

[50] F., Miller & K., Alvarado, Incorporating Documents into qualitative nursing research. (2005) *Journal of Nursing Scholarship* 37 (4) 348 – 353.

[51] J., Corbin & A., Strauss, *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed; 2008) SAGE "Documents serve as data to be examined and interpreted to elicit meaning, gain understanding and develop new knowledge."

research was well-grounded in previous research and was relevant. Second, I used document analysis to define context. Here, document analysis served as agents in their own rights,[52] helping to showcase the energy and development culture of the state in past transitions and how this past underpins the current transition. Furthermore, document analysis allowed me to uncover crucial historical data and patterns that contribute to understanding the state's current energy landscape.[53] This highlights the long term effects of documents even after their creators have gone.[54] Here, a systematic review of formal and informal documents drawn from the nation's energy institutions websites, journals, reports, mini-grid developers' business reports, policies, international organisations, and investment reports in the solar-based mini-grid-driven sector was conducted.

Data was sourced from energy transitions in developing sub-Saharan countries and Nigeria, focusing on socio-economic and environmental factors affecting sustainable development in rural communities. The aim was to provide valuable insights for policymakers and stakeholders working towards just and sustainable development in Nigeria. Data analysis spanned a 5- to 7-year period to ensure relevance and iteration within policy revisions due to the fast-paced nature of transitions,[55] and NDC revisions. The study explores ET in Nigeria, focusing on mini-grid projects in Niger Delta rural communities. Case studies underscored the effects of past marginalisation on current transitions, confirming research hypotheses on path dependency, lock-in, and system interdependence,[56] necessitating a multi-level governance approach for just transitions. The Niger Delta community mini-grid case study highlights Nigeria's diverse

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[52] L., Prior, Document analysis. In L. Given (Ed.) *The SAGE encyclopaedia of qualitative research methods* (2008a; SAGE) 231 – 232.

[53] 'For instance, my perspective of the current transition has been shaped by the literature assessment of the MLP and EJ framework, which highlighted the significance of data document search and analysis in directing the examination of previous transitions.

[54] Ibid.

[55] This is due to the global social transformation that is shaping national transitions in response to events at the landscape level.

[56] Where the MLP captures as a dynamic meso-level regime characteristic that prevents the viability of niches for transition.

energy needs, unique social groupings, and unjust transition culture. It highlights the persistent marginalization of vulnerable communities due to development and state ownership. The study uses the MLP framework to capture actors' needs and emphasizes the need for multi-level governance to prevent gaps.

After the selection, the documents were differentiated into formal and informal documents and were distinguished from one another. The former was created for public consumption and, therefore, focused on external communication. Among these were articles and workshops report from Nigerian Electricity Regulatory Commission (NERC) and Rural Electrification Agency (REA) policy regulation and guidance, and studies from IRENA, REA, and the IEA. The analysis of documents tracked energy consumption changes, development of energy institutions, and legal aspects in the country. It corroborated primary sources and searched for information on-target site, energy choice, technology, infrastructure, land access, public participation, and employment. Documents were then sorted and verified for relevance to just transitions, covering first RE mini-grid technology projects, planning challenges, and their implementation in various groups and cases. Thematic analysis was then used to analyze legislation on the complexity of the subject and the just transition phenomenon, providing insights for policy revisions and validating underpinning norms and values. The review of documentation provided a comprehensive understanding of the sociocultural, political, and economic context of the mini-grid rural electrification project and the just transition phenomenon being investigated.

It is important to state that the study analysed Nigeria's primary legislation on energy transition, examining institutional and legislative regulations related to energy access and renewable energy transition, as well as other transition experiences. It did this to examine how justice and fairness have influenced policy making and their impact on stakeholders and industry actors, as well as draw connections to the existing dominant energy regime of the country as well as the country's development culture and normative values. Some RE related policy regulations and laws analysed include the Electric Power Sector Reform Act 2005, the Mini-grid Policy Regulation 2016, the Petroleum Industry Act 2021 and the Climate Change Act 2021. However, only the Mini Grid Regulation, 2016 will be critically analysed from an EJ-MLP perspective. This analysis though legal, uncovered to us the policy maker’s intention during law-making and as such provided a better understanding of how global climate change response and energy

transition trends have impacted the development of Nigeria's policies and governance strategies on energy transition. More specifically, the socio-legal method examines the effectiveness of the mini-grid regulation, focusing mainly on its compatibility or otherwise with the energy justice criteria of distributive justice, recognition justice and procedural justice in the planning, decision-making, siting, and implementation of the mini-grid to increase the accessibility of electricity for all Nigerians.

This analysis helps to strengthen the mini-grid case studies and the complexity of energy transition governance in the country. The analysis of key legislations and policy regulations as well as their implication on social groups, reveals the dilemma of the current transition and the need for a multi-level governance approach. The policy regulation, and laws are not only lacking in implementation but also in engagement, as they seem not to reflect context priorities. Thus, the research is interdisciplinary, incorporating knowledge from politics, economics, and sociology to explore complex issues in Nigeria's energy-deprived Niger Delta rural communities. This approach allows for a comprehensive understanding of international and sectoral linkages to energy transition (ET) and socio-legal issues, enhancing the quality and depth of findings for reforms. It adopts the socio-legal method and utilises the EJ and MLP frameworks for the analysis.

The MLP analysis starts with a discussion of whether a multi-level governance fits into the overall energy transition goal of the country, to ensure a just transition. The mini-grid case study (projects and policy regulation) is investigated in order to achieve this. The MLP is used to categorize mini-grid technology as a niche, the nation's current legal framework which favors gas as a transition fuel as a regime, and the government and international organizations required RE adaptation strategies like the NDCs, global trends and investments in the mini-grid sector, as landscape. The mini-grid case study shows that international and global pressures on national regimes have led to the broader adoption of mini-grid technology and their business model breakthroughs in developing nations.[57] The mini-grid and its business

[57] A., Rip, & R., Kemp, 'Technological change.' In Rayner, S., Malone, E.L. (Eds.), *Human Choice and Climate Change* (Battelle Press, Columbus, vol 2 1998), cf. (n 14) 6

models are therefore considered a niche innovation.[58] "Although its breakthrough presents windows of opportunity, its development has also led to gaps and tensions."[59] This is because of particular local difficulties and the case of context's exclusion from mini-grid value chains, development/siting and decision-making processes.[60]

For a seamless transition to take place with fewer consequences within the national order, subsequent interactions between the mini-grid technology (niche) and the dominant national regime (such as laws, policy, technology, sociocultural values, markets-knowledge, use and capabilities) must interactively, take place for the emergence of a just transition.[61] Within these interface points between dominant regimes and niches, interactions and tensions happen. This is where the values of fairness and equality come into play to balance out the many voices and find targeted solutions.[62] Then, the energy justice framework is used to evaluate the distributive, recognition, and procedural justice considerations within the categorizations (mini-grid technology, mini-grid policy regulation and mini-grid investment projects) in the Niger Delta region of the country. This analysis will reveal the costs and benefits of these projects and their impact on important industry stakeholders. The goal will be to demonstrate how diverse factors influence context needs, emphasising the importance of multi-level governance over one-size-fits-all policy regulation for capturing complex transition needs. This is how to ensure that EJ considerations shape the distribution, siting/targeting and decision-making processes of energy transition (mini grids) within the country.

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[58] Ibid, V., Bandi, et al., 'The Paradox of Mini-grid Business models: A Conflict between Business Viability and customer affordability in Rural India' (2022) 89 *Energy Research & Social Science* 1 -17, Here, the authors reveal the policymaker's struggle with integrating social entrepreneurship and socio-technical aspects of mini-grid operations in a rural market and propose a business model framework.

[59] Ibid

[60] Ibid

[61] Ibid

[62] Ibid 6-7.

1.4 Research Contribution

There is a nexus between energy transition, energy justice and social contexts in the sense that the shift from fossil fuel to renewable energy aimed at a low-carbon economy can bring about the unequal and inequitable distribution of its costs and benefits to various key actors. The EJ-MLP normative and conceptual framework is currently missing in Nigeria's renewable energy transition research. The research, therefore, provides an opportunity to not only fill a gap in the literature but to also make significant contributions to Nigeria's renewable energy policy and law-making. Thus, this thesis addresses gaps in energy justice research. It reviews Nigeria's electricity industry, and ET frameworks, focusing on their impact, opportunities, and challenges. It emphasizes the importance of multilevel governance in promoting sustainable energy transitions and the nexus between energy transition, justice, and social groups. Furthermore, the thesis emphasises the need for a multi-level perspective and an energy justice framework in Nigeria's renewable energy transition research to ensure the just implementation of mini grid projects.

The literature review shows an abundance of literature on Nigeria's electricity industry, the RE subsector, and many studies on energy justice and MLP frameworks. Various studies on the energy sector that have attempted to assess the reforms have generally focused on the impact, opportunities, and challenges offered by the reforms.[63] While some studies utilise the MLP to understand renewable energy technology adoption and deployment in Nigeria,[64] no literature currently uses the 'energy justice framework in conjunction with the MLP framework' to assess

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[63] A., Adenikinju, 'Electric Infrastructure Failures in Nigeria: A Survey-based Analysis of the Costs and Adjustment Responses' (2003) 31 *Energy Policy,* 1519–30; A., Adoghe, A., Odighe, & S., Igbinovia,'Power Sector Reforms: Effects on Electric Power Supply Reliability and Stability in Nigeria' (2009) 3(1) *International Journal of Electrical and Power Engineering,* 36–42; A., Idris, S., Kura, M., Ahmed, & Y., Abba, 'An Assessment of the Power Sector Reform in Nigeria' (2013) 2(2) *International Journal of Advancements in Research and Technology,* 137; A., Ochugudu, & V., Onodugo, 'Power Sector Reform Deliverables: How Well and How Good to Customers?' (2013) 1(1) *International Journal of Management Technology,* 1–14; A., David-West, 'Nigerian Power Sector: Value Investment Opportunity or Value Trap?' UK: CSL Stockbrokers Power Sector Infrastructure Review, 2014.

[64] O., Osunmuyiwa & A., Kalfagianni, 'Transitions in unlikely places: Exploring the conditions for renewable energy adoption in Nigeria' (2017) *Environmental Innovation and Societal Transitions* 22 26-40., O., Osunmuyiwa *et al*., 'Applying the multi-level perspective on socio-technical transitions to rentier states: the case of renewable energy transitions in Nigeria') (2018) *Journal of Environmental Policy & Planning* 20 (2) 143–156.

Nigeria's renewable energy policies and laws (particularly the mini-grid regulation 2016). Thus, from an academic perspective, the study further contributes to the scholarship on the electricity industry of Nigeria specifically. It contributes to the broad scholarship on energy justice in Africa, such as Aiken's paper that discussed the specific problems oil-producing African nations face (including Nigeria) and how these problems are currently being addressed via the energy justice paradigm.

The thesis also contributes to the broad scholarship on the diversity and plurality of EJ for sustainable just transitions in Africa, such as Olawuyi's analysis of the EJ dimensions of regulatory failure in the design and implementation of gas flaring policies.[65] Internationally and in terms of the role of technology in driving the transition,[66] the thesis adds data on "the different impacts of the transition on various social groups"[67] (in this example, the global south and the Niger Delta of Nigeria). It emphasizes the significance of including these voices for the success of the RE transition. But more importantly, the thesis uses these frameworks to speak to the importance of a multilevel governance approach to the realisation of just transitions in Nigeria. This is the literature gap that this thesis fills.

This research, also, provides an opportunity to not only fill a gap in the literature but also to make significant contributions to Nigeria's renewable energy policy and law-making. It emphasizes that existing energy transition governance structures, policies and electricity laws may not deliver on a 'just' renewable energy transition unless a formalized RE transition policy process across the multi-actors and sectors occurs. The reform should not just target an alignment with the context's need to assess electricity and investment but also the empowerment of capabilities following the growing impact of global RE and trends on social

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[65] A., Babalola & D., Olawuyi 'Overcoming Regulatory Failure in the Design and Implementation of Gas Flaring Policies: The Potential and Promise of an Energy Justice Approach. (2022) *Sustainability*. 14, 6800.

available at: https://ssrn.com/abstract=4060756 last accessed 11th February 2023.

[66] A., Cavoski, 'The European Green Deal and technological determinism' (2022) *Environmental Law Review* 24 (3) 201 – 213.

[67] R., Lee & A., Cavoski 'Climate change governance and environmental justice' (2021) University of Birmingham. 3-4 available at: https://blog.bham.ac.uk/publicaffairs/wp-content/uploads/sites/89/2021/09/Addressing-the-climate-challenge-comp.pdf last accessed 20/01/2022

contexts and the internationalisation or interconnections of value chains, as well as the remediation of existing inequalities based on past transitions.

Accordingly, the study utilizes the EJ-MLP framework to assess Nigeria's renewable energy policies and laws (notably, the mini-grid policy regulation) to identify inequalities in the energy transition process aimed at widening access to electricity. It assesses the impacts of the mini-grid policy regulation on major actors or stakeholders in energy production and consumption, the fair or unfair distribution of mini-grids and the participation of stakeholders, especially marginalised groups, in renewable energy decision-making. The research on sustainability transitions, especially the MLP, has primarily focused on the developed world or the global south.[68] This study will contribute to scholarship on energy transitions in the global south, as it will be one of the few utilising the EJ-MLP to study a developing country (Nigeria), particularly regarding RE and the electricity industry.[69] It studies transitions in an understudied country with different contexts and multiple/complex energy and development issues. This is also a contribution.

This study particularly aims to assess the energy justice framework and multi-level perspective impacts on Nigeria's renewable energy policies and laws and their implications on key stakeholders in the electricity industry. Its objectives include: a) to provide an understanding of energy transition and its role in the transition to a low-carbon economy; b) to understand the energy transition from the perspective of key stakeholders such as energy consumers, producers, markets, industry, government regulators, and every actor or stakeholder in the Nigerian electricity industry; c) to identify and review the various renewable energy policies and laws in Nigeria; and their legal justifications as well as provide a conceptual, theoretical and

[68] C., Mazur, M., Contestabile, G., Offer, & N., Brandon, 'Assessing and comparing German and UK transition policies for Electric Mobility' (2015) 14 *Environ. Innov. Soc. Transits*, 84-100; J., Wangel, S., Gustafsson, & Ö., Svane, 'Goal-based socio-technical scenarios: greening the mobility practices in the Stockholm City District of Bromma, Sweden' *Futures*, (2013) 47 79-92.

[69] M., Lawhon & J., Murphy, 'Socio-technical regimes and sustainability transitions: Insights from political ecology.' (2012) *Progress in Human Geography 36* (3) 354–378; Yasemin Atalay, Frank Biermann, Agni Kalfagianni, 'Adoption of renewable energy technologies in oil-rich countries: Explaining policy variation in the Gulf Cooperation Council states, (2016) *Renewable Energy'* 85 206-214.

normative understanding of key terms such as energy transition, energy security, energy poverty, access to electricity as a public interest issue, energy justice, and multi-level perspective. Lessons learned from the UNFCCC framework, the European Union (EU) and industrialized countries point to the "increasing use of regulatory and soft law measures to strike a balance between the interests of private investors and national contexts" in the current transition. This study will also reflect on whether the mini-grid regulation has successfully maintained this balance.[70]

One policy recommendation that is put forward in the study is that political and legal actors should actively participate in evidence-based decision-making. It is stressed that unless policy and legal makers understand and implement evidence-based RE policies, programmes, and laws, just transitions may not be realised. The study concludes that pursuing sustainable energy transition under the mini-grid technology and strategies should permit a more context-specific framing or targeting beyond the unserved and underserved categorizations currently provided for in the centralized mini-grid regulation. This is due to the variety of household income groups, siting, and mini-grid business models. This context-specific framing or standards should cut across mini-grids at the niche stage, regime stage, and landscape level to ensure that a formalized RE transition process occurs. This will help ensure proper awareness and engagement, planning, governance and targeting accompanying the transition's distribution, recognition, procedures, and strategies. Therefore, the main practical contribution of this study is that the energy justice and MLP frameworks will help policymakers and lawyers in Nigeria understand the energy injustices that exist in the electricity industry from a renewable energy (RE) point of view, for a comprehensive legislative and institutional reform.

1.5 Thesis Structure

The structure of the thesis is as follows. Chapter two outlines the conceptual framework employed for the study. Particularly, the energy justice (EJ) and multi-level perspective (MLP)

[70] The measures described in the mini-grid regulation are examined in this thesis to see how well they align with energy justice, energy security, and economic development goals.

frameworks used in gauging the driving ideals of the country's RE legislation and their effectiveness within the unserved and underserved contexts are explained in this chapter. The chapter speaks of the norms, theories, and concepts that underpin the application of MLP concept in this study– particularly; energy justice, sustainable development goals 7 and 13 (SDGs 7 & 13), energy citizenship, critical knowledge and participatory development theory etc – all of which are central to the mini grid initiatives and ideally make for a just energy transition. The MLP and EJ frameworks offer assessment criteria and layers to create benchmarks for analysing energy transition policies, legislation, and strategies (particularly the mini-grid policy regulation and projects). This introduction is highly beneficial for understanding Nigeria's energy transition policymaking process, from formulating laws and policies to implementing them.

It targets the levels of transition: macro, meso and micro levels to structure an assessment framework to assess how well international institutions' energy transition initiatives align with EJ standards concerning the effects of these framings, goals, and interventions in local contexts. These benchmarks and frameworks are used in the case studies in chapter five and six to examine the EJ consideration and effectiveness of Nigeria's energy transition policies and strategies. The goal is to show that these concepts, theories, and norms are all linked together, intersecting with one another, and fit into the overall aim and objectives of a just energy transition and that, although not explicitly stated, the concepts of energy justice are embedded in SDG7.[71]

Chapter three unpacks the MLP's application at the international level by showing an analysis of international influences as landscape factors at the macro level. Chapter four reveals the key laws, policy instruments, and relevant government agencies that govern energy access and transition in Nigeria. By emphasizing the role of regulation, law, and policy in attaining energy justice and transition, the chapter presents Nigeria's current regulatory framework as a dominant meso-level paradigm. It does this by demonstrating the extent to which the current

[71]B., Jones, B., Sovacool, & R., Sidortsov, 'Making the ethical and philosophical case for "Energy Justice" (2015) 37(2) *Environ. Ethics*, 145–168 at 149; D., Thomas, & C., Twyman, 'Equity and justice in climate change adaptation amongst natural-resource-dependent societies' (2015) 15(2) *Glob. Environ. Change*, 115–124.

RE transition (mini-grid) framework adopts the MLP. It further presents challenges and gaps in the current mini grid regulatory framework.

Chapter five is the EJ-MLP framework application and case study analysis chapter. The chapter focuses on the difficulties faced in the introduction of mini-grids. Using case studies, the chapter illustrates the difficulties of niche innovations towards the dominant meso level energy transition framework of the country. Chapter six will address the dominant institutional energy framework of the country, critiquing it for its poor institutional and coordination gaps and the need for it to advance a multi-level approach to governance and project distribution, targeting and procedures for a just transition. The analysis will reveal that the country has multiple policy objectives for energy transition: energy development, energy access/security and economic development, given its vastly different make-up of unequal groups. The chapter equally reveals that without proper consideration of these differences, the intervening social factors, the technology, energy governance structures/strategies, and other externalities, injustice in the cause of the transition could be further perpetuated. This position connects to the larger sustainability and energy transition debate, where developing countries are encouraged to transition to green energy with little care for their un-progressed state of energy use.

Chapter seven has final conclusions and recommendations that will be valuable for improving Nigeria's energy security and transition strategies using the MLP governance. It makes these recommendations, reflecting on the sociotechnical barriers and on-ground challenges faced by contexts, that could hinder the transitions.

CHAPTER 2: Concepts, Theoretical Framework and Review of Related Literature

The transition to RE comes with a two-pronged impact, pulling in opposing directions: One holds the prospect of clamping down on climate change and achieving sustainable development, while the other raises issues of energy poverty, access to modern energy services, knowledge and use of technologies, participation in decision making, and economic development, which are intrinsically the components of energy justice. The aim of this chapter is to show the legal basis and reasoning behind supporting multi-level governance of renewable energy projects, especially as it relates to decision-making and procedures associated with the shift to renewable energy. It clarifies this by unpacking the meaning, nature, justification, and scope of the multi-level perspective (MLP) framework as the (transition) theoretical framework in this study and the associated theories and concepts of energy justice, SDG 7 & 13, energy poverty, access to energy as a fundamental right, energy citizenship etc.

The MLP claims that these sociotechnical connections (entities and social nature), substantially impact transitions. In contrast, EJ contends that because of the transition's impact on people (their choices) and their livelihoods, justice and equality must be communicated and applied throughout the entire transition process. The chapter identifies the connection between ET and EJ, and discusses energy justice's normative and analytical aspects as well as those of the MLP. It goes further to demonstrate how and why EJ tenets—distributive, recognition, and procedural—must be connected throughout the energy transition project's micro, meso, and landscape stages, from the RE transition planning stages all the way through to implementation. The purpose of drawing this connection is to bolster the thesis's main emphasis on the importance of the justice of transitions, without the exclusions or marginalisation's of vulnerable contexts, and to show how the MLP tool can be used to achieve a just transition. It shows how the EJ-MLP connection throughout the transition process can help the development of integrated, yet differentiated governance targets, structures and strategies to help prevent entrenched injustices.

2.1 About 'Energy Transitions'

The current energy transition (ET) involves significant changes across various dimensions, aiming to shift our reliance on fossil fuels towards sustainable and renewable energy sources.

These dimensions may be technology, based on new technological advancements including solar photovoltaic, wind, hydropower, and hydrogen technologies, all of which come with certain layers of regulatory, market, political, rights, knowledge and use concerns.[1] For instance, the various mini grid business models and their regulatory measures. ET equally brings about material changes involving efficient energy consumption in buildings and infrastructure, or organizational and institutional changes that bring about government intervention, policies, and incentives. Politically, ET will require strong political will to manage dilemmas and competing interests, global trends, and international cooperation and the promotion of green technologies to power businesses for job creation and knowledge production. Socio-culturally, ET can impact attitudes and behaviours towards energy consumption, thereby promoting environment protection and sustainable living.

According to Markard et al;

> "Transitions involve a broad range of actors and typically unfold over considerable timespans (e.g., 50 years and more). In the course of such a transition, new products, services, business models, and organizations emerge, partly complementing and partly substituting for existing ones. Technological and institutional structures change fundamentally, as well as the perceptions of consumers regarding what constitutes a particular service (or technology)."[2]

It is the recognition of the relevance of these interconnections required to happen across the current energy transition process and the attendant complexities, that is the major highlight of the use of the transition theory in this study. Thus, the 'sustainability' of socio-technical transitions—in the case of the current FF-ET transition—is a consideration of the interconnection of the economic, social, and environmental implications of the transition and the policy considerations so as to set up strategies to incentivise or stymie the negative impacts, challenges or barriers to the transition through policies and regulations/laws. This recognition

[1] Frank Geels, The multi-level perspective on sustainability transitions: Responses to seven criticisms (2011) Environmental Innovation and Societal Transitions Vol 1 (1) 24 – 40.

[2] Jochen Markard, Rob Raven, & Bernhard Truffer, Sustainability transitions: An emerging field of research and its prospects, (2012), *Research Policy*. Vol. 41(6) 955-967.

is crucial because it paves the way for more integrated approaches to sustainable development, where solutions are not a one-size-fits-all type or seen in isolation but rather as part of a larger system that recognises transition without leaving anyone behind.

Geels puts it better when he states that:

> "Sustainable transitions are necessarily about interactions between technology, policy, power, politics, economics, business, markets, culture, discourse, and public opinion, hence the need to address the theoretical approaches that address, firstly, the multi-dimensional nature of sustainability transitions and, secondly, the dynamics of structural change. With regard to structural change, the problem is that many existing (unsustainable) systems are stabilised through various lock-in mechanisms, such as scale economies and sunk investments in machines, infrastructure, and competencies. And that, with institutional commitments, shared beliefs and discourses, power relations, and political lobbying by incumbents, stabilises existing systems. Additionally, the problem is also that consumer lifestyles and preferences may become adjusted to existing technical systems, creating lock-in mechanisms or path dependence that make it difficult to dislodge existing systems. So, the core analytical puzzle of sustainable transitions is to understand how environmental innovations emerge and how they can replace, transform, or reconfigure existing systems."[3]

Thus, energy transition is much more than the shift towards greener energy sources – like the wind, solar, hydro etc. It describes the scope and depth of a transformative shift towards a more digitalised and sustainable economy. This kind of economy calls for the use of low-carbon technologies made from critical minerals and renewable energy sources that are scarce and unequally distributed, but necessary for development across all contexts and industrial sectors.[4] In other words, the current energy transition occurs on a multitude of layers and as such, can be expressed from multiple perspectives. Paramount to the energy transition conversation is the global climate change challenge which has raised sustainability challenges in several

[3] (n 1) Geels (2011)

[4] Deloitte, Zero in on Critical Minerals: Why are they vital for the green economy (2023). Available at: https://www2.deloitte.com/uk/en/focus/climate-change/critical-minerals.html last accessed 03/05/2023.

dimensions. These sustainability challenges are equally aggravated by sectoral lock-ins and path-dependencies,[5] as well as their silo solution approaches towards the climate change problem.

In light of this, the notion of sustainable transitions emerges from this comprehension of the web of connectivity or synergy of social and technical systems that follow their structural nuances, and their public utility rationale.[6] Joerges calls these systems; large technical systems and describes them as:

> "systems of machineries and freestanding structures performing, more or less reliably and predictably, complex standardised operations by virtue of being integrated with other social processes, governed and legitimated by formal, impersonal rationalities."[7]

These systems are equally conceptualised as socio-technical systems. This is because of their effect on social welfare of a people; they include: energy, water, transportation, and generally public utilities justifying the need for an extent of state's regulation of the sector. Geels, has explained that "these socio-technical systems consist of (networks of) actors (individuals, firms, and other organisations, collective actors) and institutions (societal and technical norms, regulations, standards of good practice) as well as material artefacts and knowledge."[8]The energy sector falls under this subset of socio-technical systems and so does the current FF-RE transition given the many sectoral layers the transition touches, and the many transformations required from the interlinkages or dependency of these sectors on each other to drive the current

[5] (n 1)

[6] These systems include sectors like energy supply, water or transportation supply.

[7] Bernward Joerges, 'Large technical systems: Concepts and issues' *The development of large technical systems* (2019) 9 - 36

[8] F, Geels, 'From sectoral systems of innovation to socio-technical systems: insights about dynamics and change from sociology and institutional theory' (2004) 33 *Research Policy* P 897 – 920.

FF-RE transition. Thus, a socio technical transition is a set of processes that leads to a fundamental shift in socio-technical systems.[9]

This transition theory speaks of the need for their integration from concept of sustainable or just transitions (energy justice) which addresses minimisation of the negative impacts of the transition either through transition planning, policymaking, structures, and the roll out or implementation of energy transition projects.[10] This is because these other transition linkages where not well considered during policymaking - as an enabler, can often become a barrier to the transition. Scholars have so far recognised four prominent transition (theoretical) frameworks. These include Transitions Management Theory or Approach,[11] Strategic Niche Management, [12] Transitions Context Approach, and Multi-Level Perspective (MLP). [13] However, this work has relied on the MLP, which will be covered in more detail in the next section, to analyse the current complex or multi-sectoral FF-RE transition and the attendant policy considerations and challenges in Nigeria.

The choice of the MLP framework in this study is due to its ability to capture well, the multiple perspectives of Nigeria's energy access, security, and transition issues, as well as the impact on diverse actors and needs. The MLP, therefore captures well the utility of the thesis to implement just considerations in the governance of RE transition strategies and projects from the planning to project implementation stages. MLP allows for a comprehensive analysis of the various

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[9] F., Geels, J., Schot, The Dynamics of Socio-technical transitions – a socio-technical perspective in J., Grin, J., Rotmans, J., Schot (Eds.) *Transitions to Sustainable Development* (2010) Routledge 9 – 101.

[10] Thus, guidance and governance play a role, and this is where law/policies come in.

[11] J., Rotmans, R., Kemp, & M., van Asselt, 'More evolution than revolution: transition management in public policy' (2001) 3 *Foresight*, 15-31.

[12] R., Kemp, J., Schot, & R., Hoogma, 'Regime shifts to sustainability through processes of niche formation: The approach of strategic niche management' (1998) 10(2) *Technology Analysis and Strategic Management*, 175-198.

[13] F., Geels, 'Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study' (2002) 31 *Research Policy*, 1257-1274; FW Geels, 'From sectoral systems of innovation to socio-technical systems: Insights about dynamics and change from sociology and institutional theory' (2004) 33 *Research Policy*, 897-920.

layers involved in the governance of renewable energy transition strategies and projects, seeking to understand the interplay between different stakeholders, policies, and technologies, to enabling a holistic approach to decision-making.

As will be expressed in the mini-grid project case study analysis, the MLP choice fits well with the EJ tenets—distributive, recognition, and procedural—as a means of advancing the just transition goal. Using the mini grid project case studies, the MLP's utility in identifying the different sectoral knowledge, experiences, and perspectives pertinent to a more equitable and successful transition is justified. This is because MLP aligns well with the distributive, recognition, and procedural EJ tenets and its utility, which seeks the considerations of fairness and equity and its expressions throughout the energy transition project's stages and influence – whether at the micro, meso, and landscape stages.

2.2 Multi-Level Perspective Framework

The MLP is considered the most comprehensive tool with an integrative approach to sustainability transitions. It is one of such analytical frameworks used to understand the complex nature of sustainability transitions. The distinguishing feature of this framework is that it offers a comprehensive perspective on transitions, spanning everything from small-scale initiatives to specialised breakthroughs to sector-level regimes and wider societal contexts, while simultaneously allowing for both stability and change.[14] The MLP is used in this section to set out two main points. First, it argues that the MLP framework provides a valuable perspective for understanding the Nigerian energy transition and its challenges. Second, it provides the legal reasoning and justification necessary to validate the much-needed multi-level governance of renewable energy transition in the country for a 'just' transition. This section also explains how the three MLP levels – macro, meso and micro, will be presented in the subsequent chapters.

[14] F., Geels, 'Sociotechnical Transitions to Sustainability' (2018) available at: https://doi.org/10.1093/acrefore/9780199389414.013.587 last accessed 14 February 2023.

As an interdisciplinary framework, the MLP draws ideas from the sociology of innovation, evolutionary economics, and institutional theory to argue that transitions require process alignments along three analytical levels – niche innovations, socio-technical regimes, and socio-technical landscape.[15] The MLP, as a governance form, recognises the political dynamics in the scaling, diffusing and entrenchment of innovation as well as the several actors.[16] This study adopts and utilises the MLP as one of its two analytical frameworks.

The MLP seeks to provide an understanding of socio-technical change and systems innovation using three levels – niche, regime, and landscape.[17] These levels function as analytical and heuristic concepts to help understand socio-technical change and are not representative of ontological descriptions of reality.[18] The niche or micro-level (first stage) is the lowest but most dynamic level and is where radical innovation develops without outside or external pressure or an extant regime.[19] The regime or Meso-level (second stage) comprises institutions, policies, practices, or routines that help create and sustain innovative technological systems.[20] At this level, the pathway for steadiness of the technological innovation is developed or where it will slowly change under the niche's influence.[21] The landscape or macro-level (third

[15] G., Verbong, & F., Geels, 'The ongoing energy transition: Lessons from a sociotechnical, multi-level analysis of the Dutch electricity system (1960-2004)' (2007) 35(2) *Energy Policy*, 1025–1037 at 1031.

[16] F., Geels, 'Sociotechnical Transitions to Sustainability' (2018) available at: https://doi.org/10.1093/acrefore/9780199389414.013.587 last accessed 14 February 2023.

[17] F., Geels, 'From sectoral systems of innovation to socio-technical systems: Insights about dynamics and change from sociology and institutional theory' (2004) 33 (6-7) *Research Policy*, 897–920 at 913.

[18] F., Geels, 'Ontologies, socio-technical transitions (to sustainability), and the multi-level perspective,', (2010) 39 (4) *Research Policy* 495-510

[19] F., Geels, 'Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study' (2002) 31 (8/9) *Research Policy* 1257-1274, Adrian Smith, Jan-Peter Voß, John Grin, 'Innovation studies and sustainability transitions: The allure of the multi-level perspective and its challenges,' (2010) (39) 4 *Research Policy* 435-448.

[20] J., Foxon, 'Transition pathways for a UK low carbon electricity future,' 52 (2013) *Energy Policy* 10-24

[21] Adrian Smith, Jan-Peter Voß, John Grin, 'Innovation studies and sustainability transitions: The allure of the multi-level perspective and its challenges,' (2010) (39) 4 *Research Policy* 435-448.

stage) is perceived as one containing broad external trends and events or the political, trends, economic and environmental concerns that influence change.[22]

A detailed analysis of the three levels of MLP has been undertaken elsewhere;[23] however, for the research, the importance lies in the interplay of these three levels to make or hamper socio-technical transitions. Geels notes that the coinciding of the three levels can bring about a transition.[24] Thus, the MLP assesses the interactions that exist between the niche innovations and extant regimes operating in a broader landscape environment. RETs (solar panels and home systems) are niches but, the study's focus will be on mini grid technology. It should be noted that, since these technologies can support several business models, it can sometimes become challenging to distinguish between a niche and a regime. For example, while solar and wind are relatively new, they might be grouped as "regimes", arguably advanced enough.[25] The objective of this study is not to dwell on identifying niches and regimes; but to understand the nature, challenges, and utility of MLP and its three stages; and assess the role that energy justice plays in Nigeria's development or shift to renewable energy technologies at these levels or stages.

2.2.1 MLP's Analytical Framework and the Need for Reframing

It is agreeable that the MLP theory provides an analytical framework to explain the object of regulation—mini grid technology options (in this research's case study), and their potential impact on a country's electricity sector and energy transition objectives. Mini-grid technology options refer to decentralised energy systems that provide electricity to a small community or

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[22] Ibid, Daniël Lachman, 'A survey and review of approaches to study transitions,' (2013) 58 (C) *Energy Policy* 269-276

[174] F., Geels, & S., Sorrel, 'The Socio-Technical Dynamics of Low-Carbon Transitions' (2017) (1) (3) *Joule* 463 - 479

[24] G., Verbong, & F., Geels, 'The Ongoing Energy Transition: Lessons from A Sociotechnical Multi-level Analysis of the Dutch Electricity System (1960 – 2004)' (2007) *Energy Policy*,; Frank Geels, Johan Scott, 'Typology of Sociotechnical Transition Pathways' (2007) 36 (3) Research Policy 399-417

[25] Ibid

group of users.[26] The MLP theory helps in the comprehension of how this sub- electricity system with different actors can be regulated in a way that promotes sustainable transition, ensures affordability, and addresses the needs of marginalised contexts and other stakeholders.

By recognising the various actors involved and their unique needs, such as technology providers and developers, investors, policymakers, and consumers, and the global trends and sectoral linkages associated with the transition, the MLP theory enables a comprehensive approach to regulation and policymaking that considers these complex dynamics of the mini-grid technology market. MLP also provides a methodological lens through which to identify the key legal design elements needed for governing a complex energy system and RE transition process, such as a mini grid electricity system. The methodological assessment also aims to determine whether any legal or policy gaps exist that could potentially impede the transition process.

As an explanatory theory, MLP describes and explains what makes socio-technical transitions complex and why. This analysis takes into account the length and breadth of energy systems as well as their transition processes, implying that the characteristics and dynamics of energy systems extend beyond their constituent parts or agents, and result in dynamics that are challenging to understand.[27] For instance, when we look at mini-grid technology, we perceive it as a developer's property, an investor's investment project and business model, a government's social welfare policy objective, or as a good or service that consumers can access. The option of Mini grids can also be seen from the lens of creating a new job opportunity or energy independence, or as a breakthrough for meeting the needs of those unconnected to the national grid, etc. Mini-grid technology encompasses much more than just these perspectives. Thus, one of the tools within the sustainable transition's literature is the use of "reframing" to capture the transition's dynamics and its varying perspectives.

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[26] Energy Catalyst, Technical Guide: Mini-Grids (2020) 1-10 PP 2. Available at: last accessed https://energycatalyst.ukri.org/wp-content/uploads/2023/06/Technical-Guide-Mini-grids.pdf 04/01/2023.

[27] Melanie Mitchell, *Complexity: A Guided Tour* (OUP 2009) 3 & 12

Reframing is "the process of redefining events and experiences from a different point of view."[28] Watzlawick et al, considered 'reframing' in the active word;

> "To reframe: means to change the conceptual and/or emotional setting or viewpoint in relation to which a situation is experienced and to place it in another frame that fits the 'facts' of the same concrete situation equally well or even better, thereby changing its entire meaning."[29]

Overall, reframing involves the process of making new meanings and changing the way an issue or problem is understood for better possibilities or perspectives for addressing it. Given the wide-scale nature and objective of the current transition and the attendant complexities and actors, the tapestry of influences and their areas of responsibility, demanding the enlargement of policy spaces in different sectors and disciplines under different institutions, the ongoing transition engenders many properties and dynamics and as such requires a reframing. In the current study, this tool allows for a deeper examination of the underlying assumptions and values that shape our understanding of sustainability transitions. By reframing, stakeholders can challenge dominant narratives and reshape the discourse around sustainability, leading to more transformative and inclusive solutions. MLP, through reframing, divides the transitions' nature and dynamics into three layers: micro, meso, and macro, to help with comprehension of the complexities of the transitions.

By utilising reframing as a tool, MLP can, at the micro-level, analyse the changes that individuals can make, such as adopting sustainable energy choices as habits in their everyday lives. In this thesis, the mini-grid technology is analysed at the micro-level in more detail in Chapter 5. The research considers niches at the microlevel because they are the smallest unit where the transition process actually begins, in light of the birth of a novel technology.[30] At the

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[28] S., Beebe, M., Redmond, T., Geerinck, & C., Milstone. *Interpersonal communication: Relating to others* (2000: 2nd Canadian ed.) 63

[29] P., Watzlawick, J., Weakland & R., Fisch. *Change: Principles of problem formation and problem resolution*. (1974) W.W. Norton & Company; New york. 95

[30] F, Geels, 'From sectoral systems of innovation to socio-technical systems: insights about dynamics and change from sociology and institutional theory' (2004) 33 *Research Policy* 897 – 920.

meso-level, reframing allows for the examination of the structures and institutions that shape sustainability transitions, such as government policies and business practices.[31] Finally, at the macro-level, reframing enables MLP to explore the broader societal and cultural shifts that are necessary for achieving long-term sustainability goals.[32] Overall, reframing is a powerful tool that helps MLP critically analyse and challenge existing systems and narratives, paving the way for transformative change. The next section will provide the legal justifications, evaluating why and how these three MLP stages will be used for the study's analysis in the subsequent chapters.

2.2.2 MLP's Three Layers and Normative Contribution

The value of the MLP is the understanding of transitions as "an interplay of developments at three analytical levels: niches (the locus for radical innovations), socio-technical regimes (the locus of established practices and associated rules that stabilize existing systems), and an exogenous socio-technical landscape."[33] The niche stage is the seed stage of transitions, where new ideas, practices, or technologies emerge from new actors like entrepreneurs, start-ups, and spinoffs. These radical innovations, often facing resistance from established regimes, can disrupt existing systems and lead to larger-scale societal transformations. For example, the rise of Electric Vehicles (EVs) is a niche development in the automotive industry with a prediction to change transportation using fossil fuels. With more than 400 billion dollars invested in the last 10 years, it is anticipated that, under existing regulatory targets, the global EV market will rise above 45 percent.[34] Thus, it is evident how EVs, as examples in this case, might change the way the transportation industry functions and, consequently, how all parties involved—regulatory agencies, consumer behaviour, and technology—would function.

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[31] Ibid

[32] Ibid

[33] A., Rip, & R., Kemp, Technological change. In S. Rayner, & E. L. Malone (Eds.), *Human choice and climate change: (1998) Vol. II, Resources and Technology* 327-399., Battelle Press., Geels, Frank, Technological Transitions and System Innovations: A Co-Evolutionary and Socio-Technical Analysis, (2005) Elgaronline.

[34] McKinsey Company, Why the Automotive Future is Electric (2021) Why the future involves e-mobility | McKinsey last accessed 29/12/2023.

It is therefore at the niche stage that ongoing experimentation of innovations should be carried out. This is because trials and innovation either thrive and power through, leading to a successful transition or are damaged by never coming to light. It is therefore vital to create, invest in, experiment, and nurture niches in obscurity away from the market until they are ready. Innovations that survive the niche stage, begin to find expression (through testimonials from samples), and have a greater chance of surviving alongside or toppling well-established systems. In the thesis, which looks at the justice of transitions, mini-grid technology is considered a niche. The theoretical and practical implications for framing mini-grid technologies as niches here are because of the novelty of this technology towards transformative energy solutions in the country. It is reckoned that this technology has the capacity to provide electricity access to remote and underserved communities that are currently reliant on traditional and unreliable energy systems. The study recognises that mini-grid technology has the potential to disrupt the existing energy landscape, challenging the dominance of fossil-based systems and paving the way for a more sustainable and inclusive energy future.

By focusing on mini-grid technology as a niche, the study acknowledges the unique and innovative nature of this energy solution in the country, the new players it brings to the electricity system and the connected linkages, as well as the competition this brings to the existing fossil and hydro-grid energy systems. The framing of Mini-grids as niches in this study therefore allows for a comprehensive analysis of the theoretical and practical implications of mini-grid technology, considering its potential to address energy challenges and contribute to sustainable development. As will be analysed further in Chapter 5, Mini grids fall into the category of new digital and storage technologies seeking to overrun the old system of large nuclear/gas power plants, centralised national supply grid system and long-distance transmission lines.[35] The new decentralised technologies aim to restructure the local energy system management or the electricity sector, increase consumer ownership opportunities in energy,[36] and lower the cost and requirement of centralised energy planning in order to achieve

[35] C., Burger, A., Froggatt, C., Mitchell & J., Weinmann *Decentralised Energy: A Global Game Changer* (2020) Ubiquity Press P 1-21

[36] Ibid chapter 2

the policy goals of the nation's FF-RE transition, which are energy access, security, and decarbonisation. For this reason, the new system needs to be governed by the appropriate regulatory framework, and this is where the 'socio-technical regimes (the locus of established practices and associated rules that stabilize existing systems)'[37] needs to be addressed.

Because Mini grids build on the interconnected roles of the technology developer and the consumers, it will require a regime to manage the relationship of the customers and technology developers, as well as how the new technology is introduced into the market and society; and how it interacts with the existing energy infrastructure. Thus, the regime stage, which is the "meso level" refers to the semi-coherent set of rules that plan and govern the activities and behaviours of the social groups and actors who reproduce the various components of socio-technical systems.[38]

The regime stage forms the 'deep structure' that accounts for the stability of an existing socio-technical system.[39] According to Giddens, regime stage provides rules that look at the outcome of action ("duality of structure").[40] It operates with a two-pronged approach like a two edged sword, where on the one hand, actors enact, instantiate and draw upon rules in concrete actions in local practices; and on the other hand, these rules configure actors, their roles and responsibilities.[41] Examples of regime rules are cognitive routines and shared beliefs, capabilities and competences, lifestyles and user practices, favourable institutional arrangements and regulations, and legally binding contracts.[42]

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[37] (n 1) Geels (2011)

[38] M., Mostafa & V., Songthaveephol, 'Clash of titans: The challenges of socio-technical transitions in the electrical vehicle technologies – the case study of Thai automotive industry' Technological Forecasting and Social Change, (2020) 153 (c) Elseiver

[39]F., Geels, from sectoral systems of innovation to socio-technical systems: Insights about dynamics and change from sociology and institutional theory (2004) *Research Policy*, Vol. 33 (6-7) 897-920.

[40]A., Giddens, The Constitution of the Society (1984) Cambridge: Polity.

[41] (n 1) Geels (2011).

[42] Ibid

The nature of regimes is that they are amenable to change reacting to the changing social nature and interactions of the context hence the existence of policy changes, new laws and regulations seeking to incentivise, govern or drive change. This is why laws are acclaimed as social engineering tools. In this thesis's analysis, the regime stage consists of the Mini Grid Policy Regulation, the Electric Power Sector Reform Act, the Constitution, the nation's electricity sub-sector, which includes the supply industry's (generation, transmission, and distribution companies), contractual agreements and business models, and commissions and agencies responsible for electricity regulation, as well as related sectors at all levels. This is because all these elements collectively form the legal and regulatory framework governing the electricity sector in the country.

Oughton et al, puts it well when he says that;

> "the entire electricity system is a network of mutually interlinked and interactive elements comprising of not only physical components but also its agents' social and economic choices, leading to many governance structures, policies, and laws."[43]

For instance, one of the major criticisms of Nigeria's electricity sector is the weakness of its governance structure, which stems from the regime's complexity. The complex make-up of the regime reveals a vast web of mutually interlinked and interactive elements extending from the consumer to the developer, the market, existing systems, and government interventions in the sector, which often leads to a lack of clarity in regulations and their implementation. According to Arowolo's research findings, the country's reforms in the electricity sector failed because of this poorly managed complexity, which left the regulatory framework weak and ineffectual.[44]

The value of the regime stage lies in the policymaker's recognition and interaction with this wide scope of agencies and influences, as well as with the heterogenous context (for social acceptability), to give rise to more effective and inclusive policy reforms and governance

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[43] Edward Oughton, Will Usher, Peter Tyler and Jim Hall, Infrastructure as a Complex Adaptive System (2018) *Complexity* 4-5

[44] Wale Arowolo, Yannick Perez, Market reform in the Nigeria power sector: A review of the issues and potential solutions, 144 (2020) *Energy Policy*

structures. This mirrors the importance of a formalised policy process that should best happen at this transition stage to achieve greater legitimacy for the new regime. Therefore, social engineering (reforms) generally takes time to take effect because it takes time for people to adjust to new circumstances, for policies to take effect, or for laws to be passed. The reason is partly because existing systems are characterized by lock-in, and innovation occurs incrementally, with small adjustments accumulating into stable trajectories. [45] These trajectories occur not only in technology, but also in cultural, political, scientific, market and industrial dimensions.[46]

For instance, the Nationally Determined Contributions of States (NDCs), a global policy measure, recognises this impact of time, differentiated and incremental strategies towards decarbonisation, as it requires that states' measures towards decarbonisation be constantly revised upwards over every five years to record incremental steps and strategies towards decarbonisation. [47] Thus, while science, technology, politics, markets, user preferences, and cultural meanings have their own dynamics, coordinated by different sub-regimes, they also interpenetrate and co-evolve with each other while also drawing from landscape influences. The landscape stage is the third and major stage of the transition that encapsulates all the wider and external backdrops (technical and material) that sustain society. [48] This includes demographical trends, political ideologies, societal values, and macro-economic patterns that actors at niche and regime levels cannot influence in the short run.[49]

The normative contribution of the landscape level lies in the ripple effect it creates in the transition process. In this thesis analysis, the global decarbonisation driver comes from

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[45] Ibid

[46] Ibid

[47] Conference of the Parties, Adoption of the *Paris Agreement*, Dec. 12, 2015. U.N. Doc. FCCC/CP/2015/L.9/Rev/1 (Dec. 12, 2015). Art 4 (2).

[48] A., Rip, & R., Kemp, 'Technological change', In S. Rayner & E. L. Malone (eds.), *Human choice and climate change* (Columbus, Ohio: Battelle Press, 1998) 327–399.

[49] (n 1) Geels (2011)

international policies and laws like the Paris Agreement and the attendant trends or impacts it engenders in sectoral policy spaces or the internationalisation of value chains in a context's electricity sector planning, investment, and development strategies. These trends can bring about multi-threshold relations cutting across geographical boundaries and sectors, bringing about cultural and political shifts that result in attitudinal change towards energy companies. They could also bring about regulatory intervention in electricity markets, as well as a change in our energy choices and energy decision-making. Some other landscape dynamics could be war or energy price changes, or fluctuations as shocks. The Ukraine-Russio war and the implication on rising energy prices is an example. On this note Soininen and Huhta put it well when they state that;

> "decentralised electricity systems are nested on hierarchical levels, represented clearly in the way the energy sector and its transitions are governed on global, regional, national, and local levels."[50]

Thus, the MLP, as first developed by Rip and Kemp,[51] and described more extensively by Kemp et al., [52]and Geels and his collaborators,[53] consider the role of various actors as critical for socio-technical transitions. It is assumed therefore that socio-technical transitions are "not caused by one single event or driver",[54] and their outcomes are characterised by uncertainty

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[50] N., Soininen & K., Huhta, Law for Decentralised Electricity Systems: Lessons from Complexity Theory in Ruven Fleming, Kaisa Huhta and Leonie Reins (eds.), (2021) *Sustainable Energy Democracy and the Law Brill* 86

[51] A., Rip, & R., Kemp, 'Technological change', In S. Rayner & E. L. Malone (eds.), *Human choice and climate change* (Columbus, Ohio: Battelle Press, 1998) 327–399.

[52] R., Kemp, A., Rip, & J., Schot, 'Constructing transition path through the management of niches', In R. Garud & P., Karnoe (Eds.), *Path Dependence and Creation* (Mahwah, NJ: Lawrence Erlbaum, 2001) 269–299.

[53] F., Geels, 'From sectoral systems of innovation to socio-technical systems: Insights about dynamics and change from sociology and institutional theory' (2004) 33(6-7) *Research Policy*, 897–920; G., Verbong, & F., Geels, 'The ongoing energy transition: Lessons from a sociotechnical, multi-level analysis of the Dutch electricity system (1960-2004)' (2007) 35(2) *Energy Policy*, 1025–1037.

[54] G., Verbong, & F., Geels, 'The ongoing energy transition: Lessons from a sociotechnical, multi-level analysis of the Dutch electricity system (1960-2004)' (2007) 35(2) *Energy Policy*, 1025–1037 at 1031.

and complexity.[55] It is further believed that these different actors work together or oppose each other at the these three levels of the MLP in order to alter the system to bring about transition.[56] The literature identified five actors: government, the public, markets, the 'third' sector and the traditional energy industry as capable of influencing transition, with the government as the most potent force.[57]

By investigating the dynamics of the transition pathway from carriages to automobiles, Geels portrays that technical innovations emerge from interactions between actors.[58] These entities or elements' interdependence, functionality, and co-evolutionary processes drive the transition. [59] The MLP theory holds that transitions happen through the interplay of those processes at different levels.[60] The theory perceives the inter-relationship between these dimensions – sectors, sociotechnical systems, social groups, and rules as complex, necessitating strong governance. For instance, consumers' increasing support for and strong demand for renewable energy today appears to be having a long-term effect on the energy markets by encouraging the shift to a green energy market.

However, the question would be, who are these consumers and RET (Mini-grid technology) developers and investors, and can they be found in the Nigerian society? Additionally, savvy consumers are discovering new ways to purchase renewable energy to support sustainability

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[55] J., Grin, 'The multilevel perspective and design of system innovations', In J van Bergh and F Bruinsma (eds.), *Managing the transition to renewable energy. Theory and practice from local, regional and macro perspectives* (Cheltenham: Edward Elgar, 2008) 47–79

[56](n 54) Verbong & Geels., 1025–1037 at 1031; R., Kemp, A., Rip, & J., Schot, 'Constructing transition path through the management of niches', In R Garud and P Karnoe (eds.), *Path Dependence and Creation* (Mahwah, NJ: Lawrence Erlbaum, 2001) 269–299 at 277.

[57]B., Sung, & W., Song, 'Causality between public policies and export of renewable energy technologies.' (2013) 55 *Energy Policy* 95–104. B., Sung, & S-D., Park, 'Who Drives the Transition to a Renewable-Energy Economy? Multi-Actor Perspective on Social Innovation' (2018) 10 *Sustainability* 448

[58] (n 57) Sung & Park

[59] Ibid

[60] R., Kemp, 'Technology, and the Transition to Environmental Sustainability: The Problem of Technological Regime Shifts,' (1994) 26(10) Futures 1023 - 1046

goals,[61] acting as co-producers, peers, and partners in the electricity sector. [62] While there is increased consumer demand for renewable energy in the West due to greater awareness of green energy, it is doubtful if developing countries, including Nigeria, share a similar experience.[63]

MLP therefore believes that the likelihood of achieving seamless transitions increases with a greater understanding of sociotechnical systems' nature, characteristics, and functioning patterns.[64] This also includes understanding the sources of inertia in those systems; the context or environment where systems operate in, the conditions under which those systems change; and, especially, the processes through which transitions to different sociotechnical systems come about.[65] The goal here is a timely awareness of transitions and the capabilities to launch into it. Also, "an improved understanding of how such radical transitions have occurred in the past could potentially inform efforts to rework existing systems in more sustainable directions."[66]

On this note, the nation's transition to oil and gas proves an exciting perspective as the country sets up structures for yet another transition. Whether these past transition structures

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[61] B., Sung, & S-D Park, 'Who Drives the Transition to a Renewable-Energy Economy? Multi-Actor Perspective on Social Innovation' (2018) 10 *Sustainability* 448, J., Eliashberg, R., Chatterjee, 'Analytical models of competition and implications for marketing: Issues, findings, and Outlook' (1985) 22 *J. Mark. Res.* 237–261

[62] M., Davids, S., Dijkstra, J., van de Kletersteeg, D., Reumkens, '*How Large Energy Consumers Can Power the Energy Transition: Translating Demand into Additional Renewable Power Generation'* (2015) Climex-Report; (Naarden-Vesting, The Netherlands, 2015) Available at: https://climex.com/wp-content/uploads/2016/01/Climex-Report-How-large-energy-consumers-can-power-the-Energy-Transition.pdf accessed 26 May 2022.

[63] P., Morris, L., Buys, D., Vine, 'Moving from outsider to insider: Peer status and partnerships between electricity utilities and residential consumers.' (2014) 9 (6) *PLoS ONE.* e101189. Available at: https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0101189&type=printable last accessed 26 March 2022

[64] W., Miller, & M., Senadeera, 'Social transition from energy consumers to prosumers: Rethinking the purpose and functionality of eco-feedback technologies.' (2017) 35 *Sustain. Cities Soc* 615–625.

[65] Ibid.

[66] S., Sorrell, 'Explaining Sociotechnical Transitions: A Critical realist Perspective' 47 (2018) *Research Policy* 1267 - 1282.

redistributed inequalities in terms of the benefits, burdens, and costs of oil and gas on a specific group of individuals will provide a study case for the future transition process – green energy. It is through this lens that the MLP analysis in chapters 3 and 4 of this study looks at the socio-technical (global) factors that influence the implementation of electricity laws and policies in Nigeria's Niger Delta rural communities, with an analysis of some electricity laws and mini-grid policy regulation and some oil and gas and mini-grid project case studies in Nigeria's Niger Delta rural communities, in chapter 6.

Through a case study analysis of some of these mini-grid projects and oil and gas operations and their attendant structural obstacles, the research illuminates the complex dynamics between government regulations, context issues, energy access needs, and environmental concerns. This case studies analysis in chapters 5 will answer the third and fourth research question on the implications of RE laws and regulations for important players and stakeholders in Nigeria's electricity industry, and the problems and challenges of implementation.

2.2.3 MLP Drawbacks

The MLP theory has significant drawbacks due to its artificial construct. First, Svensson and Nikoleris,[67] and Sorrel,[68] have criticised the extent of MLP's explanatory capacity. Svennson et al., argue that the ontological foundations of the MLP make the theory unable to explain transitions and how they come about.[69] Sorrel even suggests that a critical realist perspective would lead to a holistic understanding of the nature and causes of sociotechnical transitions than MLP.[70] It is trite that the MLP theory isn't a truth machine, but it can nonetheless reveal interesting patterns and mechanisms,[71] and promote better analysis and

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[67] O., Svensson, & A., Nikoleris, 'Structure reconsidered: towards new foundations of explanatory transitions theory.' (2018) 47 *Res. Policy* 462 - 473

[68] (n 66) (Sorrell)

[69] (n 67) Svensson et. al.,

[70] (n 66) (Sorrell)

[71] F., Geels, 'A sociotechnical analysis of low-carbon transitions: introducing the multi-level perspective into transport studies.' (2012) 24 *J. Transp. Geogr* 471- 482.

thought of the energy transition problem.[72] And in this case, can show deficits in the Nigerian electricity system and infrastructure, that influenced the oil and gas regime. This revelation can allow for marginalised communities to be spotted and reveal how a pattern of injustices on a specific group of the society might be prevented in the current FF-RE transition.

Secondly, Sorrell,[73] has compared MLP theory to a heuristic device and has critiqued it for being too adaptative to different case studies. He argues that such a loose organising framework and adaptations based upon low-level learning processes and economic decisions that contribute to path dependence and a contingent series of events, weaken the efficacy of the theory.[74] But I agree with Kemp,[75] that these low-level learning processes help to explain and give insight into why the revolutionary technology transition might be slow and gradual. To Kemp, shifting away from hydrocarbon-based energy technology may be slow due to its requirement of special skills, learning operational techniques, and all kinds of institutional changes.[76] Hence, the MLP framework provides the research with a toolkit, "space for creativity and sociological imagination",[77] and the wherewithal to construct multi-levelled governance strategy for a just transition in Nigeria.

On this note, Kemp rightly observes that 'the problem of transitioning lies in the complexity of technological systems', and this poses a formidable task of unlearning and learning of a technology change, a fundamental shift in production; infrastructure; organisation; market; institution; laws and particularly, in the way people live their lives.[78] Thus, MLP could be a formidable guide to the policymakers to understand differentiated needs, actors and their

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[72] M., Porter, 'Towards a dynamic theory of strategy.' (1991) 12 *Strategy. Manage. J*. 95 - 117

[73] (n 66) Sorrell

[74] Ibid

[75] (n 60) (Kemp)

[76] Ibid

[77] F., Geels, 'Disruption and low-carbon system transformation: progress and new challenges in socio-technical transitions research and the multi-level perspective.' (2017) 37 *Energy Res. Soc. Sci*. 224 - 231.

[78] (n 60) Kemp

differentiated transition timelines, as well as how concepts and past patterns interrelate to create a new system. Brian Arthur,[79] saw the impact of externalities in the transition process, and expressed how such externalities reinforced the entrenchment of a specific technology based on the idea of social use, value, and preference. This value, and the societal preference and use, permits the technology to realise a certain advantage of a wide adoption that engenders a locked-in pattern that paves the way for its dominance.[80]

This difficulty of externalities brings up the role of policies, institutions and laws in shaping and driving transitions and development. Institutions, systems, and regulations can therefore support the development of formalised spaces for understanding injustices, gaps, and integration of existing interconnections, which may support attitudinal reorientations and the development of policy spaces necessary for 'just' transitions. However, policies, rules and institutions can equally aggravate negatively, transition processes due to their rigidities. For example, RE development, technology and institutions are of a specific kind, with inter-relationships that can create well-known problems of fit and compatibility. They can also raise complex strategic behavioural patterns and marginalisation issues, thus requiring government intervention for incentivising investments and balancing purposes.[81]

Therefore, social adaptation in response to a technological change becomes habitual – becoming a neighbourhood of tastes, lifestyles, and habits (pattern). The implication is that understanding a region's past and present sociotechnical systems/actions can significantly help design a sustainable pathway or business model to realise goals. This is because, over time, technology change and socio-economic trends mesh, co-interact and evolve, thereby making new transitions slow or their processes patterned after a past frame or structure.[82] It is in light of this that this thesis proposes the application of justice considerations (Distributive,

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[79] B., Arthur, 'Competing Technology: An Overview' In Giovanni Dosi, C Freeman, R Nelson Richard, G Silverberg, and L Soete (Eds.), *Technology Change and Economy Theory* (London, Pinter Pub 1988) Pun 591

[80] Ibid

[81] P., David & S., Greenstein, 'The Economics of Compatibility Standards: An Introduction to Recent Research, Economics of Innovation and New Technologies' (1990) 3 – 41.

[82] (n 60) Kemp.

Procedural and Recognition justice tenets), throughout the hierarchical levels of the country's use of mini-grid technology as a FF-RE transition option from the niche, regime, to the landscape stages. By incorporating justice considerations at each hierarchical, transitional and governance level, this thesis hypothesises that the benefits and burdens of mini-grid technology would be distributed equitably among all stakeholders without excluding or leaving anyone behind.

2.3 Supporting Theories and Concepts.

It is true that a variety of players and their roles in the current transition to renewable energy also have an impact on market structure. This highlights the importance of governments and major energy companies spearheading initiatives to guarantee that the costs, benefits, and resources of the RE transition are distributed fairly to everyone. This multi-levelled governance role turns on the underlying concerns and structures that deepen the concerns of justice, as well as the powerful factors that shape the extent and nature of government interference and strategies in the transition.

This subsection will briefly discuss the associated theories, concepts, and norms that underpin the MLP governance theory as used in this research, some of which include; energy poverty, electricity as a public service issue, access to energy services/security and the SDGs 7 and 13, energy justice, and energy citizenship. Importantly, these theories, conceptions, and norms are interconnected, intersect, and do match with the general goals and objectives of this study. It will be noted, for example, that SDGs 7 and 13, energy security, energy poverty, and access to electricity are all just transition concerns that are high on the public service agenda. As such, to prevent unjust transitions, careful multi-layered national government and international strategy interventions are required.

Below is a visual representation of the connections and intersections between these concepts and norms, as well as how they fit into the study's overall aim and objective of a multilevel governance of RE projects to ensure a just transition in the country.

2.3.1 Visual Representation of Key Thesis's Idea and Concepts for a Multilevel Governance.

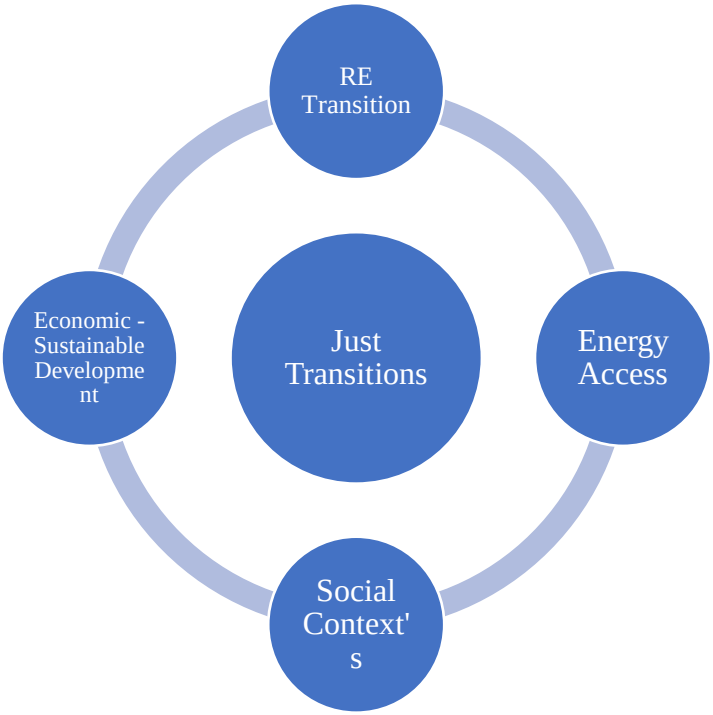


Figure 1 – A Multilevel perspective of the transition

2.3.2 Energy Justice

Energy justice is a normative and conceptual framework that seeks the distribution in equal and equitable proportions, the benefits as well as costs from energy production and

consumption, and emphasizes participation in energy decision-making.[83] It identifies where injustices occur in the energy value chain, sections of society that are ignored, and whether there are any processes to remedy it - aimed at exposing and reducing the said injustices.[84] As an outgrowth of the environmental justice concept, it takes into account the issues of energy poverty and sustainable access to energy services and has derived momentum from grassroots social conflicts in the 1980s.[85]

Thus, energy justice is also conceptualized within the context of availability, accessibility, and affordability (Triple A). Availability is whether a particular form of energy or energy service is available; accessibility refers to the extent to which people in a geographic location can access it; and affordability refers to their capacity to afford the energy services.[86] For instance, a recent UKRI-SIGMA study shows how access to mini-grid electricity in the southwestern rural area of Nigeria is fundamentally hampered by affordability issues.[87]The EJ framework has therefore been utilized by researchers to explore several areas of energy discourse and

[83] D., McCauley, R., Heffron, S., Hannes, & K., Jenkins, 'Advancing Energy Justice: The Triumvirate of Tenets' (2013) 32 (3) *International Energy Law Review*, 107-110.

[84] Kirsten Jenkins, Darren McCauley, Raphael Heffron, Hannes Stephan, Robert Rehner, 'Energy justice: A conceptual review' (2016) 11, *Energy Research & Social Science*, 174–182.

[85] R., Heffron, & K., Talus, 'The Evolution of Energy Law and Energy Jurisprudence: Insights for Energy Analysts and Researchers' (2016) 19 *Energy Research and Soc. Science* 1 - 10

[86] A., Reddy, 'Energy issues and opportunities', In: R Repetto, (Ed.), *The global possible*. (New Haven: Yale University Press, 1985) 371–373; T., Johansson, & J., Goldemberg, 'The Role of Energy in Sustainable Development: Basic Facts and Issues', In: Thomas B. Johansson and José Goldemberg (Eds.) *Energy for sustainable development: A policy agenda*, (United Nations Development Programme, 2002) available at - ext.undp.org/aplaws_publications/2101911/Energy%20for%20Sustainable%20Develop last accessed 25 March 2022.

[87] T., Sesan, U., Uduka, I., Faleye, & D., Yusuf, 'Who benefits from mini grids in rural African Communities? Evidence from Southwest Nigeria' (Nigeria; September, 19 2022) available at: https://www.sigma-gcrf.net/blog/who-benefits-from-mini-grids-in-rural-african-communities-evidence-from-southwest-nigeria last accessed 02 February 2022

related issues such as energy production and systems,[88] energy security,[89] energy policy,[90] energy consumption, [91] the energy trilemma, [92] political economy of energy, [93] energy activism,[94] and climate change.[95]

In that case, 'energy justice' has only recently become relevant in every energy research. This has not always been the case. Heffron,[96] believes that the development of energy law's history has been fragmented and fraught with implications, and that early attempts to develop energy rules focused only on the difficulty of safety, energy waste management and the exploitation/security of energy resources. To him, each regulation (primarily national) was reactionary and limited in nature, driven by a selected motivation and not holistic in its

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[88] R., Heffron, D., McCauley, 'Achieving sustainable supply chains through energy justice, (2014) 123 *Appl. Energy* 435–437.

[89] B., Sovacool, R., Sidortsov & B., Jones, *Energy Security, Equality and Justice* (London: Routledge, 2013).

[90] (n 83).

[91] K., Jenkins, D., McCauley, R., Heffron, & H., Stephan, 'Energy justice, a whole systems approach,' 2 (2) (2014) *Queen's Political Rev.* 74–87; S. Hall, 'Energy justice and ethical consumption' (2013) 18(4) *Local Environ*, 422–437.

[92] R., Heffron, D., McCauley, & B., Sovacool, 'Resolving society's energy trilemma through the energy justice metric' (2015) 87 *Energy Policy*, 168–176.

[93] K., Jenkins, R., Heffron, & D., McCauley, 'The political economy of energy justice: A nuclear energy perspective,' in: T Van deGraaf, B Sovacool, A Ghosh, F Kern, M Klare (Eds.), *Palgrave Handbook of the International Political Economy of Energy* (London: Palgrave Macmillan, 2016) 661-682.

[94] S., Fuller, & D., McCauley, 'Framing energy justice: perspectives from activism and advocacy' (2016) 11 *Energy Res. Soc. Sci*, 1–8.

[95] B., Sovacool, *Energy and Ethics: Justice and the Global Energy Challenge* (Basingstoke: Palgrave Macmillan, 2013); K., Bickerstaff, G., Walker & H., Bulkeley, 'Introduction: making sense of energy justice', in: K. Bickerstaff, G. Walker, H. Bulkeley (Eds.), *Energy Justice in a Changing Climate* (London: Zed Books, 2013) 1–13; B., Sovacool & M., Dworkin, *Global Energy Justice: Principles, Problems, and Practices* (Cambridge: Cambridge University Press, 2014).

[96] R., Heffron, & K., Talus, 'The Evolution of Energy Law and Energy Jurisprudence: Insights for Energy Analysts and Researchers.' 19 (2016) *Energy Research and Soc. Science* 1 - 10

coverage.[97] Energy Justice, therefore, became the philosophical justification that was lacking within the development of energy law.[98]

Over the past decade, the 'universe' of EJ has grown in leaps and bounds. It has stretched from scholarship and specialism into guiding principles for decision-makers at all levels.[99] EJ further questions the implementation and implication for legal and regulatory systems and judicial decision-making. [100] A literature review reveals how energy justice has developed into interdisciplinary dimensions, touching upon economics, trade, climate change, sustainable development, and environmental law.[101] To illustrate, Sovacool and Dworkin, see 'energy justice' as a "global energy system that fairly disseminates both the benefits and costs of energy services, and one that has representative and impartial decision-making.'[102]

Sovacool, using the EJ concept, exposes how the lack of interdisciplinarity in energy transition conversations hampers justice of the energy transition agenda.[103] For instance, he discusses the dearth of female authors in the energy sector and believes that this may indicate a lack of interdisciplinarity and an underrepresentation of social science and humanities

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[97] Ibid. For example, the national and international legal developments that began in the eighteenth century can be traced to the extraction and mining industry, where national laws and legislations were developed to safeguard workers who endured several fatalities, accidents and poor working conditions. Some UK legislation: Coal Mines Inspection Act, Coal Mine Registration Act (1860) and promulgated the Mines and Colleries Bill (1842)- which prohibited underground work for women and girls and boys under the age of 10.

[98] (n 91) (D McCauley *et. al)* (2014)

[99] Ara Begum, R., R. Lempert, E. Ali, T. A. Benjaminsen, T. Bernauer, W. Cramer, X. Cui, K. Mach, G. Nagy, N.C Stenseth, R. Sukumar, and P. Wester, 2022: Point of Departure and Key Concepts. In: Climate Change of the Intergovernmental Panel on Climate Change [H.-O.Portner, D.C.Roberts, M.Tignor, E.S.Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Loschke, V. Moller, A. Okem, B, Rama (eds.) Cambridge Uni. Press, Cambridge, UK and New York, NY, USA, 121-196 pp 124.

[100] Ibid

[101] B., Sovacool, 'What are We Doing Here? Analysing Fifteen Years of Energy Scholarship and Proposing A Social Science Research Agenda' 1 (2014) *Energy Research & Social Science* 1- 29

[102] B., Sovacool, & M., Dworkin, 'Energy justice: Conceptual insights and practical applications,' (2015) 142 *Applied Energy* 435-444, 436

[103] (n 101) Sovacool (2014) 7-8

disciplines and methodologies.[104] According to his research, 'as of 2014, fewer than 4.3 per cent of citations were from arts and humanities and social science publications, and only 12.6% of articles towards energy transition relied in full or in part on social science methods and tools.' [105] Furthermore, he records a significant disconnect between what energy policy researchers believe to be crucial and what decision-makers, businesses, the utility industry, or other relevant fields believe and do.[106] In this regard, Sovacool believes that disciplinary isolation has a significant impact.[107]

Therefore, he emphasises the need for research to become more applicable to solving problems in the real world and the significance of human-centred approaches in capturing the multifaceted influence that attitudes, habits, and experience have in influencing energy use and transitions.[108] He stated that focusing energy conversations back on people—rather than just resources, technology, or prices—can demonstrate how much the energy intensity of our societies and lifestyles varies,[109]which then influences the kind of rules needed. He went on to give the example that 90 per cent of worldwide personal consumption occurs in wealthy nations, as residents use, on average, 32 times as many resources as those in developing nations. [110]Therefore, EJ takes on how economics (policies and laws) currently engages with mini-grid distributional, procedural and recognition issues and further advances the role of justice in the face of competing interests and scarce RE technologies.[111]

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[104] Ibid

[105] Ibid

[106] Ibid

[107] Ibid

[108] Ibid 11

[109] Ibid

[110] Ibid

[111] R., Heffron, D., McCauley, & B., SovacooL, 'Resolving Society's Energy Trilemma Through the Energy Justice Metric (2015) 87 *Energy Policy* 168 - 176

The distributional, recognition and procedural issues arising from energy transition are covered by the triumvirate approach introduced by Jenkins et al.[112] Walker and Day have drawn on the distributional element of the triumvirate EJ framework to conceptualise fuel poverty as an energy justice concern because of the relationship and importance of energy to the basic rights and entitlements of sufficient and healthy everyday life.[113] Mundaca L. et al., have employed the procedural justice tenet to show how energy transition processes in a setting, brought about crisis and tensions that necessitated a balance of diverse viewpoints through the instrumentality of policy regulation.[114] This research highlighted the significance of fair transition processes for social acceptance and the role laws and policies play in attaining this.[115]

The recognition tenet of the EJ triumvirate framework reiterates Sovacool's notion of moving toward a human-centred transition approach, in which sections of the global society that have been disregarded or misrepresented are targeted and recognised in the current RE transition.[116] Rasch E. et al., have shown how the energy justice is "produced" through people's participation in new imaginations and normativity of justice and their rejection of the old.[117] As a result, they strongly rely on the "recognition" and alignment of particular themes like history, time, contexts, perspectives, and region in determining energy justice, placing people at the centre of energy transition research, law-making, and processes.[118]

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[112] Kirsten Jenkins, Darren McCauley, Raphael Heffron, Hannes Stephan, Robert Rehner, 'Energy justice: A conceptual review' (2016) 11, *Energy Research & Social Science*, 174–182, 175

[113] G., Walker, & R., Day, 'Fuel Poverty as Injustice: Integrating distribution, recognition and procedure in the struggle for affordable warmth' (2012) 49 *Energy Policy* 69 -75

[114] L., Mundaca, H., Busch, and S., Schwer, "Successful' Low-Carbon Energy Transitions at the Community Level? An Energy Justice Perspective' (2018) 218 *Applied Energy* 292 – 303 at 292, 294

[115] Ibid

[116] B., Sovacool What are we doing here? Analysing 15 years of energy scholarship and proposing a social science research agenda (2014) 1 *Energy Res. Soc. Sci*., 1-29

[117] E., Rasch, & M., Kohne, 'Practices and Imaginations of Energy Justice. A Case of Noordoostpolder, The Netherlands' (2017) 107 *Energy Policy* 607 – 614 at 607, 608

[118] Ibid 608

2.3.3 Energy Justice Pluralism

Energy justice had initially only been focused on ensuring equitable access for marginalized communities, rather than accommodating diverse perspectives on energy production and consumption.[119]However, emerging debates on 'energy justice' have recognised the expanding space of energy justice and called for the pluralist understanding to the study and application of this concept. For instance, Sovacool et al, have stated that the decarbonisation of energy systems has the potential of escalating inequality not only between social groups but also against other intersecting inequalities, creating unfavourable externalities and solidifying unjust labour and land use practices that can even be violent.[120] One challenging issue of ET governance is defining and identifying the ways that marginalised identities overlap—or intersect—in decarbonisation agendas in order to avoid exacerbating already-existing inequalities or creating new ones.[121] It is for this reason that a multilevel governance approach is crucial.

Similarly, other recent studies have highlighted the growing indirect impacts of decarbonisation and connected projects on human rights and have examined how national and international law could frame policies and legal frameworks to deal with these impacts.[122] For instance, Baptista proposes the addition of a historical dimension to the spatial analysis of energy systems.[123] Central to this view is the understanding of the historical and spatial impact on energy systems and the importance of their consideration if we are to understand future

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[119] Benjamin Sovacool, Shannon Bell, Cara Daggett, Christine Labuski, Myles Lennon, Lindsay Naylor, Julie Klinger, Kelsey Leonard, Jeremy Firestone, Pluralizing energy justice: Incorporating feminist, anti-racist, Indigenous, and postcolonial perspectives, (2023) *Energy Research & Social Science,* Volume 97.

[120] Ibid

[121] Ibid

[122] D., Olawuyi, *The Human Rights Based Approach to Carbon Finance* (Cambridge Uni Press; 2016) 14, 63, 75-77, 141, R Heffron, D McCauley, and B Sovacool, 'Resolving Society's Energy Trilemma Through the Energy Justice Metric' (2015) 87 *Energy Policy* 168 – 176

[123] I., Baptista, 'Space and Energy Transitions in Sub-Saharan Africa: Understand Historical Connections' (2018) 36 *Energy Research & Social Science* 30 - 35

energy transitions.[124] However, despite these new illuminations, implications of past transition impacts, the connections between past, present, and future still remain understated in current policy interventions.[125]

For instance, the empirical record of the most recent IPCC report demonstrates that 'developing countries lag in the adoption of large emission technologies.'[126] The report cites several factors, including insufficient enabling legislation, funding, technological development and transfer, and capacity, as contributing to the delayed uptake of large-scale RE technologies in developing nations.[127] What is impressive in this recent report is how it addresses energy transition in relation to climate change mitigation, sustainable development, the multidimensional drivers and stakeholders, and the role of capacity building and increased finances towards accelerating the transition objective.[128]

However, the report does not draw linkages between time and previous transitions that resulted in the apparent infrastructural deficiencies and capacities of developing nations. This is what Sovacool et al. refer to as "binary representations of identities", as several ET policy strategies and practises are generally non-intersectional and, in many cases, too narrowly focused on green washing activities such as the mere distribution of new energy infrastructure or increasing representation, without disrupting the underlying framework that generates these inequalities.[129] Most developing nations' vulnerabilities and incapacities due to energy poverty, climate change, and technologies result from inequality that dates back more than a century. These disparities have fuelled some people's development at the expense of others, reproducing

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[124] Ibid

[125] Ibid

[126] IPCC, Climate Change 2022: Key Vulnerability, Key Risks and Reasons for Concerns. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O.Portner, D.C.Roberts, M.Tignor, E.S.Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Loschke, V. Moller, A. Okem, B, Rama (eds.) Cambridge Uni. Press, Cambridge, UK and New York, available at: https://www.ipcc.ch/report/ar5/wg2/ last accessed 06/02/23 Pp 1066- 1079

[127] Ibid

[128] Ibid

[129] (n 119) Sovacool et al (2023).

disparate starting points. Thus, since some countries' affordability, lack of access, energy poverty, and energy justice challenges cannot be separated from the place of history, time, and context, some researchers have advocated for energy progression and energy democracy rather than energy transition.[130] Interestingly, this perspective captures rightly the utility behind the use of the MLP as an approach to achieving just transitions because it broadly levels out differentiated transition strategies and targets as opposed to a one size fits all approach to ET.

Advocates for expanding the definition of "energy justice" contend that limiting the theory's scope would result in a "general blindness" to historical accounts of the global south, their present experiences, and their future demands, making the theory inappropriate for policy design and policy evaluation in those contexts.[131] Baptista puts it well when he observes that these narratives are often missing in global energy initiatives, such that 'bringing about energy transitions would require far more than the creation of efficient markets and technological advancement.'[132]Broto and Alves,[133] have described how the idea of energy justice should evolve to deal with the complex demands of energy transitions within the global south. This formulation is one of the foremost far-reaching. It agrees with the 'pluralistic' lens with which energy justice is framed in this research to the extent that it offers a particularistic analysis of renewable energy's transition in Nigeria's marginalised and vulnerable communities. This country faces massive energy access issues, security, and sustainable development challenges.

The research also agrees with Broto and Alves to the extent that 'delivering transformative change in developing societies, requires the assessment of energy problem and energy justice principles from multiple and integrated perspectives, adjusted to a context's condition which

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[130]V., Nalule, 'How to Respond to Energy Transitions in Africa: Introducing the Energy Progression Dialogue.' In: V., Nalule, (eds) *Energy Transitions and the Future of the African Energy Sector*. (Palgrave Macmillan 2020)

[131] Giuseppe Pellegrini-Masini, Alberto Pirni, Stefano Maran, 'Energy justice revisited: A critical review on the philosophical and political origins of equality,' (2020) 59 *Energy Research & Social Science* 1- 7 at 1

[132] (n 123) Baptista

[133] V., Broto, & S., Alves, 'Energy Justice, and Sustainability Transitions in Mozambique' (2018) 228 *Applied Energy* 645-655

shapes the outcome of strategies and policies.' [134] On the other hand, there are many unanimous views that the multidisciplinary status of 'energy justice' does not provide clear criteria for defining the theory. This is because different studies and people employ different perspectives − even when studying the theory.[135] Accordingly, the approach has potential risks for the lack of unanimous results. While 'justice and development' need to be considered as an inherent feature of the social world, the looseness of the complexity blurs boundaries, thereby potentially reducing the theory's explanatory power and leading to debate on unavoidable externalities.[136]

It is for this reason that this thesis recommends a formalised transition process space that recognises different EJ frames interrelatedly thereby reproducing an inclusive transition process. For instance, a multidisciplinary status of EJ regarding global climate change allows for evaluation of the whole energy systems and an application based on subjective experiences and the giving of differential treatment – and this may mean that the planet will still have pollution havens. Moreso, other disciplines connected to the sustainable development and energy transition goal have their interpretation of justice,[137] and so does the world on all levels.

The use of a singular lens or a 'one size fits all' approach for the appraisal of the impact of energy transition across the world risks ignoring the dimensions that underpin social life; the obduracy of energy infrastructure.[138] It obscures the path dependencies that historically shape transitions,[139] and the various socio-technical arrangements that structure the broader energy system and energy transition process. This is also a significant impediment. Hence, the MLP's

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[135] Kirsten, Jenkins and Hernandez D hold this view.

[136] (n 114) 179 (Mundaca et al.,)

[137] subjects like 'economics' have a comparative advantage and free trade as a criterion for justice.

[138] A., Hommels, 'Studying Obduracy in the City: Toward a Productive Fusion Between Technology Studies and Urban Studies' 30 (2005) *Sci. Technol. Hum. Values* 323 – 351, Including equality of approach, process and standards

[139] R., Kemp, A., Rip, & J., Schot, 'Constructing transition path through the management of Niches', In R Garud & P., Karnoe (Eds.), *Path Dependence and Creation* (Mahwah, NJ: Lawrence Erlbaum, 2001) 269–299.

lens for the advancement of a multi-levelled governance approach to enhance the justice of the transition. There is however a risk with the employment of this approach which can overlook the various ways in which the consequences of past forms of inequality can inform present marginalisation and further entrench future injustices for already marginalised or vulnerable members of society.

Thus, recognising developmental concerns like improved access to electricity, energy use and security, and delivering clean, affordable and low-carbon energy to deal with global climate change - complicates human rights situations in developing countries if appropriate safeguards are not put in place.[140] Human rights and development considerations need to be addressed in energy projects and implementations, and this has been entrenched in multilateral negotiations, e.g. the Paris Agreement 2015 – which recognized that "when taking actions to deal with global climate change, parties must respect, promote and consider their respective right obligations."[141] This includes the rights of individuals with disabilities, indigenous peoples to live independently, their right to access secure energy services and health care, their rights to sustainable livelihood and well-being, and, ultimately, their right to development and even gender equality.[142] Thus, those that share this pluralist sentiment perceive an enlarged 'energy justice' frame as a means of categorising abuses and 'set the parameters to decipher a pattern of growing harm which entrenches past injustices,' such that require accountability and reparation.[143]

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[140] D., Olawuyi, 'Climate justice and corporate responsibility: Taking human rights seriously in climate actions and project' (2016) 34 (1) *Journal of Energy and Natural Resources* 1-18

[141] United Nations Framework Convention on Climate Change, The Preamble to the Paris Agreement, May 9, 1992, S. Treaty Doc No. 102-38, 1771 U.N.T.S. 107.

[142] 'Access to effective health services: the livelihoods of most poor people depend on their bodies and secure rights of ownership, access and use are fundamental to the sustainability of livelihoods of those who rely on natural resources' Robert Chambers, 'Poverty and livelihoods: whose reality counts?' (1995) 7 (1) *Environment and Urbanization* 173-204

[143] (n 93) 180 Jenkins *et al* (2016)

Recent scholarship has also noted the growing 'mismatch between international legal norms and local priorities and practices in the EJ discuss.'[144] Similarly, there has been no imposition of a universal energy justice standard, given the common but differentiated responsibilities (capabilities) principle of the Paris Agreement. [145] Therefore, the 'right' energy transition strategy may be a pocket of targeted, differentiated strategies. This targeted strategy approach, as opposed to a centralised or one-size-fits-all model, best describes 'just' transitions because it captures the true environmental and social nature of energy production and consumption and its impact on the different actors in a nation or community.[146] Despite aligning with the developing country's (enlarged) concept of EJ and the need to acknowledge different audiences for EJ impact, the research equally argues for the clarity, connectivity, and integration within the orientations of the energy justice scholarship.[147] This is done so that both creativity and development are sharpened holistically.

2.3.4 Evaluative and Normative Contributions of Energy Justice

The energy justice framework emerged following the environmental justice or climate justice debates.[148] Environmental justice as a conceptual and normative framework requires the distribution of environmental costs and benefits in equal and equitable proportions,

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[144] G., Siciliano, F., Urban, M., Tan-Mullins, & G., Mohan, 'Large Dams, Energy Justice and the Divergence Between International, National and Local Development Needs and Priorities in the Global South' (2018) *Energy Research and Social Science* 199 – 209.

[145] Paris Agreement to the United Nations Framework Convention on Climate Change (adopted Dec. 12, 2015) T.I.A.S No 16 - 1104 (PA) Art 2 (3), (4) and (14)

[146] (n 144) Siciliano

[147] K., Jenkins & D., Hernandez, 'Towards Impactful Energy Justice Research: Transforming the Power of Academic Engagement' (2020) 67 *Energy Research & Social Science*

[148] Kirsten Jenkins, 'Setting energy justice apart from the crowd: Lessons from environmental and climate justice.' (2018) 39 *Energy Research & Social Science* 117-121. Darren McCauley, & Raphael Heffron. 'Just transition: Integrating climate, energy and environmental justice.' (2018) 119 *Energy Policy* 1-7.

participation in environmental decision-making and access to natural resources.[149] Similarly, energy justice seeks to "evaluate (a) where injustices emerge, (b) which affected sections of society are ignored, (c) which processes exist for their remediation to (i) reveal, and (ii) reduce such injustices."[150]Table 1 below shows the evaluative and normative contributions of energy justice based on three tenets of distributive justice, recognition justice, and procedural justice. It affords a perspective to understand the disparities in an energy system.[151]

Table 2.1: The evaluative and normative contributions of energy justice

Tenets	Evaluative	Normative
Distributional	Where are the injustices?	How should we solve them?
Recognition	Who is ignored?	How should we recognise?
Procedural	Is there fair process?	Which new processes?

Table 2.1: Source: Jenkins et al.[152]

The 'Energy justice' framework begins with the basic philosophy of fairness and social justice. It is based on the underlying assumption that 'energy and its systems are necessary for human flourishing and the complexity of energy decision-making as a socially embedded phenomenon goes beyond technical and economic consideration.'[153] It calls for the equal distribution of

[149] David Schlosberg, 'Reconceiving Environmental Justice: Global Movements and Political Theories,' (2004) 13 (3) *Environmental Politics* 517-540.

[150] Kirsten Jenkins, Darren McCauley, Raphael Heffron, Hannes Stephan, Robert Rehner, 'Energy justice: A conceptual review' (2016) 11, *Energy Research & Social Science* 174–182.

[151]Ibid.

[152]Ibid.

[153] Aileen McHarg, 'Community Benefit Through Community Ownership of Renewable Generation in Scotland: Power to the People?' (September 15, 2015) SSRN 1-12 available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2668264 , cf. A McHarg, 'Energy Justice: Understanding the

energy benefits and risks and to provide people across all areas with safe, affordable, and sustainable energy. The idea is that energy policy must address "the unequal distribution of ills" from distribution on infrastructure siting, subsidies (RE pricing) and consumption indicators within the context of global and local pressures.[154]

To do so, the EJ advances three core themes: distributional, procedural, and recognition justice, upon which the research is based. Distributional justice addresses the matter of scarce resources and the process of distribution. It recognises questions of access and the uneven spread of burdens, benefits, and costs with regard to affordable access to energy services.[155] It also assesses the desirability or otherwise of technology and siting in specific localities. Closely connected to this is the tenet of recognition that is concerned with processes that expose and engender stigmatisation, marginalisation, and unfair treatment of a group of individuals, communities etc., who are economically incapacitated from access to sustainable energy resources/technology. [156] The procedural tenet investigates existing strategies/policies, particularly the standards set up to deal with these complexities. The tool allows for questions that pertain to who was heard, how they were listened to, and the processes leading up to the RE decision-making.[157]

It is from a seamless interaction of these three (3) concepts that the underlying assumption of EJ's framework seeks to provide equal, fair, available, and affordable access to energy. The EJ is a conceptual framework that focuses on decision-making and social justice implications of energy policies emphasizing the burden and benefit distribution of energy services and contributing to more representation and impartial energy decision-making.[158] It raises the

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'Ethical Turn' in Energy Law and Policy', in Iñigo del Guayo and others (eds), *Energy Justice and Energy Law* (Oxford, 2020; online edn, Oxford Academic, 18 June 2020)

[154] D., McCauley, R., Heffron, H., Stephen, K., Jenkins, 'Advancing Energy Justice: The Triumvirate of Tenets' 32 (3) (2013) *Int. Energy Law Rev*. 107 – 110.

[155] Ibid

[156](n 155)

[157] Ibid

[158] Ibid

questions of social responsibility by the private sector, the government and the public, how the costs and benefits of energy production and consumption should be distributed and whether stakeholders have participated or are recognized within the policymaking process.[159] Accordingly, it suggests applying the concept of fairness, equality, access, procedure, etc., by decision-makers when formulating energy laws and policies. In the case of this research, the idea is to examine the presence, interpretation, and application of these tenets within the RE laws and policies in Nigeria and to spot where injustices would occur within the RE system and how justice can be achieved.

2.4 Critical Knowledge Production

> "Skills gaps and shortages are almost inevitable whenever any new product or service appears, and the green economy is no exception."[160]

Critical knowledge production holds a central seat when it comes to just transitions as well as its governance. There are many types of knowledge production for policy,[161] but reliance will be placed on local knowledge and its implication to just transitions as well as the role of governance to enhance this. Clearly, local knowledge is one of three major types of knowledge that influence public policy,[162] however the specialised area and global nature of the current energy transition has largely obscured the importance of local knowledge towards the co-production of key skills necessary for a just transition. This is because of the nature of the technologies involved, issues relating to knowledge and use, intellectual property, global

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[159] R., Heffron, & D., McCauley, 'Achieving sustainable supply chains through energy justice,'123 (2014) *Appl. Energy* 435–437. Cf. K Jenkins, *et al*., ' Energy justice: a conceptual review', (2016) 11 *Energy Research and Social Science* 174-182.

[160] ILO, Skills Development for a Just Transition (October 2022: Just Transition Policy brief). Available at https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_860617.pdf P 1-16 pp 8 last accessed 04/02/2024.

[161] Kharisma Nugroho, Fred Carden & Hans Antlov, Local Knowledge Matters: Power, context and policy making in Indonesia Policy Press (2018) 1.

[162] Ibid.

transition, markets and the internationalisation of value chains. The use of foreign nationals in the exploration of oil and gas activities by multinational corporations (MNCs) and the employment of locals in cleaning and security roles, along with the exploitation of the nation's oil and gas exports abroad, highlight the growing significance of multilevel governance in ensuring the co-production of knowledge in the nation for a just transition. This section explains critical knowledge as an associated concept of a just transition and shows how this concept fits with MLP and EJ frameworks.

2.4.1 Critical Knowledge and MLP

Nugroho et al, define 'local knowledge' as "the knowledge that people in given communities or organisations have accumulated over time through direct experience and interaction with society and the environment."[163] Accordingly, the International Labour Organisation (ILO) has addressed the importance of knowledge and skills development as one of the key policy areas to address environmental, economic, and social sustainability, as well as the basic principle for a just transition.[164] They have also elaborated on the essential role of education and training for all individuals at all stages, in the contribution to job creation benefits and minimization of the burdens of transition.[165] However, it has been rightly noted that these skill approaches may differ based on national context and priorities, embracing the integration of "local knowledge" into new skills. Since there is a deficiency in the formation and co-production of critical knowledge in ET in the nation, this is the framing of critical knowledge that is employed in this study.

As if the lack of critical skills is not already a challenge when it comes to the use of new technologies and energy-related local labour in the current transition, fossil-based job loss, job reallocation, and new jobs equally accompany the transition. This means that "reskilling and upskilling" must happen, despite the disruption brought on by job loss, if workers are to benefit

[163] Ibid

[164](n 160) ILO

[165] Ibid

from new career opportunities.[166] Thus, 'just' transitions, and the transitions to these new jobs, will not happen by default if people do not develop the new skills necessary to take advantage of these new job opportunities.[167] This is where a multilevel governance approach becomes the way to target these reallocations, ferrying actors across the transition towards a fair landing without leaving anyone behind. Multilevel governance through policy is what is needed to shape the links between local knowledge and the development of critical knowledge towards the development of skills for the transition.

Uneke et al. have highlighted the existence of weak capacity at the institutional level, the gaps in knowledge creation and application in policy making, as well as the incapacity to engage stakeholders in policy formulation and program.[168] These addresses how policies are designed in the country, to whom these policies apply, and if they in any way reflect local knowledge. The criticality of this to a just transition becomes therefore a governance intervention concern. While it is true that academic research-associated communication channels may be preferred by policymakers as legitimate means of informing decisions—particularly in the context of energy—it is crucial to recognise local knowledge as crucial knowledge in policy making because allowing other forms of knowledge to inform policy is intrinsically democratic and implies public participation. [169]

However, it has been argued that because local knowledge often uses different means of communication than academic research, it tends to capture different meanings, thus their relegation or selective usage by policymakers.[170] Thus, while having local knowledge is usually advantageous, it also poses problems from the standpoint of "objective" information

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[166] Ibid

[167] Ibid

[168] C., Uneke A., Ezeoha, C., Ndukwe, P., Oyibo, F., Onwe. Development of health policy and systems research in Nigeria: lessons for developing countries' evidence-based health policy making process and practice (2010) *Health Policy* 6(1):e109-126

[169] (n 161) Nugroho et al.

[170] Keith Holmes & Michael Crossley, whose knowledge, whose values? the contribution of local knowledge to education policy processes: a case study of research development initiatives in the small state of Saint Lucia, Compare: (2004) *A Journal of Comparative and International Education*, 34:2, 197-214

provided by researchers in the eyes of policymakers when it comes to its probative weight. For instance, researchers have captured how local developers captured policymakers' interest and consequent incentives by doing rather than telling.[171] This opens up the weight placed on local knowledge co-production when it comes to ET.

Thus, the state of affairs in ET and policy making is usually complicated hence the use of MLP to argue that powerful actors use the influence of political systems and strategies, to promote or block transitions.[172] And they do this by ignoring other actors' knowledge (local knowledge) in the transition agenda. Thus, the role of other actors besides businesses and developers' participation has become increasingly crucial owing to the criticality of the decarbonisation goal for all. This means that engendering public awareness, alongside investment in research, can upscale the transferability and application of local knowledge to new technology use and configuration, and vice versa, via a formalised policy process. Yet, we cannot conceptualize the politics of transitions without contextualizing the actors and types of power that are exerted during transitions.[173] For instance, businesses and other industry players use corporate political power to influence the government and thwart transitions through agenda-setting, lobbying, and even institutional strategies.[174] This is because governance is the basis of the transitions, and this is exercised through relations with diverse stakeholders. For instance, it is the case that governmental policies are needed to provide shielding' or 'nurturing' spaces for niche technologies.[175]Accordingly, Grin et al. have suggested that the Dutch Knowledge Network on

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[171] O., Osunmuyiwa, F., Biermann, & A., Kalfagianni, Applying the multi-level perspective on socio-technical transitions to rentier states: the case of renewable energy transitions in Nigeria', (2018*) Journal of Environmental Policy and Planning,* vol. 20, no. 2, pp. 143-156

[172] Ibid.

[173] F., Avelino, & J., Wittmayer, Shifting power relations in sustainability transitions: A multi-actor perspective. (2016) *Journal of Environmental Policy & Planning*, 18, 628–649 'highlighting power struggles between industry and policy-makers at the cost of others, particularly energy communities and civil society.'

[174] F., Geels, Regime Resistance against Low-Carbon Transitions: Introducing Politics and Power into the Multi-Level Perspective. (2014) *Theory, Culture & Society*, *31*(5), 21-40.

[175] R., Raven, F., Kern, B., Verhees, & A.,Smith, (2015). Niche construction and empowerment through socio-political work. A metaanalysis of six low-carbon technology cases (2015) *Environmental Innovation and Societal Transitions.*

System Innovations and Transitions approach acknowledges the state's central role in collective decision-making, overcoming transition inertia caused by incumbent actors.[176]

This begs the question, to who do our policy makers listen to? Do they have access to local knowledge and if they do, do they match through policies local knowledge with increasingly sophisticated data and nuanced analysis from multiple sources to inform policy decisions.[177] Democratisation is increasing demand from civil society for greater openness in the policy-making process, and decentralisation is providing local governments with the space to experiment with policy solutions relevant to local contexts and needs, and these presents an important opportunity to integrate local knowledge in policy processes.[178]

For instance, a study reveals that the 2015 National Renewable Energy and Energy Efficiency Policy (NREEEP), which facilitated public and private power investments, is largely driven by political and business interests,[179] with informal advisory channels often favoured over formal mechanisms.[180] According to a research's interview below, the three-year draft-production process—which was outsourced to a consultant before being turned over to an inter-ministerial committee for review—made it challenging to identify the policy's research or evidence-based foundation.[181]

Now the question is whether the consultant used any sort of evidence-based approach, whether they went out to do any sort of data gathering, or whether they just looked at great policies that exist in other countries and just thought, well, this will be great for Nigeria, and tried to maybe

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[176] J., Grin, J., Rotmans, & J., Schot, On patterns and agency in transition dynamics: Some key insights from the KSI programme (2011) *Environmental Innovation and Societal Transitions*, 1(1), 76–81. Elsevier B.V.

[177] T., Sesan, & W., Siyanbola, "These are the realities": insights from facilitating researcher-policymaker engagement in Nigeria's household energy sector. *Humanit Soc Sci Commun* (2021) 8, 73

[178] Ibid

[179] Ibid

[180] Ibid

[181] Ibid

write something that they could situate in our own local context. That, I don't know. I don't know what the process was.[182]

Thus, with regard to the role of MLP for critical knowledge and participatory development, it is clear how the MLP manages socio-technical constellations like technology actors, institutional gatekeepers, societal norms, markets, and user practices limited to the energy sector and or sub-sectors.[183] By doing so comprehensively, the MLP describes an enduring political phenomenon that cuts across the nation's multiple sectors, such that influences the political behaviour of the state, including its interactions with the socio-technical system and other actors. This is clearly captured by the MLP's framework levels.

More importantly, the MLP governance framework as used in the nation's ET analysis argues that powerful actors block transitions by being 'reactive' to new technology entrants through the creation of tough market entry rules, or by being 'proactive' through the enactment of standards that are highly stringent on niches, or by being defensive by limiting access to financing options.[184] In this regard, we see MLP's governance relevance in the use of local knowledge in the highlighting of technology adoption which emphasises institutional structure in transitions.[185] However, the thesis argues that rather than focusing only on reformulating regime rules and norms to block transitions, MLP can enhance co-production by providing a formalised policy space for patronage network between all actors for the development of workable strategies to impinge local knowledge into ET strategies.

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[182] Ibid

[183] (n 1)

[184] M., Smink, M., Hekkert, & S., Negro, Keeping sustainable innovation on a leash? Exploring incumbents' institutional strategies (2015) *Business Strategy and the Environment*, 24(2), 86–101.

[185] (n 174) Geels (2014)

2.4.2 Critical Knowledge and EJ

A just transition draws on diverse backgrounds and disciplines that reflect the normative standards of equality and fairness. It touches on technology, management and policies to enhance knowledge, use and diversification suitable to a context's peculiarities. Thus, critical knowledge production for the current transition addresses justice concerns in the knowledge, use, skill, labour in the application of new technologies and this is where the multilevel governance finds expression. Closely related to the just transition background is the environmental justice framework, which equally searches for the sense of justice in the way people/communities are affected (or not) by environmental interventions. Drawing from Gramsci's "*subaltern theory*," 'it is argued here that access to sustainable energy may not be feasible in sub-Saharan Africa (using Nigeria as a case study) unless the "usually" affected people, who are frequently the weak or the poor, have the opportunity to participate in the critical knowledge production of "energy justice" and "energy transition" for themselves as well as develop and profit from renewable energy technology and production businesses.[186]

Therefore, it is crucial to empower and involve the local or vulnerable contexts in decision-making processes and provide them with the necessary resources and education to actively participate in the energy transition. This approach will not only ensure equitable access to sustainable energy but also promote social and economic development in sub-Saharan Africa. While some scholars have referred to this as 'energy democracy,'[187] given the affordability and lack of engagement issues that have made it difficult for vulnerable communities to access RE technologies and services, this study speaks to the importance of a critical knowledge production in resisting and decolonizing of approaches that do not reflect, recognise, or consider the experiences of a people. Without stifling the voices or liberties of a people, a new EJ frame can emerge through dialogue-based interaction with global RE trends or top-down

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[186] Hanne Svarstad, & Tor Benjaminsen, 'Reading radical environmental justice through a political ecology lens,' (2020) 108 *Geoforum* 1-11 at 2. 'To decolonize recognition, we suggest a focus on 'senses of justice' as well as on 'critical knowledge production' - Senses of justice refer to ways in which people affected by environmental interventions subjectively perceive, evaluate and narrate the situation and its consequences.'

[187] Eric Osei Opoku & Alex Acheampong, 'Energy justice and economic growth: Does democracy matter?,'45 (1) (2023) Journal of Policy Modeling 160-186,

approaches and support (finances, technology) in a formalised renewable energy transition process, which can help accelerate a 'just' transition.[188]

In these contexts, energy democracy, justice and transition cannot be achieved by merely producing policies and regulations. In fact, the element of engagement must be interwoven into the negotiation processes, culture, jobs, and capacity building towards decision-making and project implementation. Vulnerable contexts must not be excluded or displaced but engaged with for a macro perspective of energy justice. For instance, protests demanding an end to electricity tariffs, increase fuel pricing, subsidy removal and police brutality have taken place in towns and cities across Nigeria amidst increasingly disproportionate impacts of policy decisions and strategies on the vulnerable.[189] These issues are not novel, but they reveal the growing intersection of power relations and social justice within the environment, development, and energy transition discuss.

With regards to 'justice,' this research relies on the work of Jenkins',[190] which evaluates where injustices emerge, which factors of the society are ignored, and which processes exist for remediation in a bid to reveal and reduce such inequities. Jenkins and Sovacool, [191]establishes the importance of addressing how energy poverty, demand, access, distribution, and consumption patterns are influenced by many factors that lessen the likelihood of reaching 'just' policy decisions and implementation. On this note, this research explores how the benefits and costs of mini-grid electricity production and consumption could be equitably accessed or

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[188] Marcus Green, 'Gramsci Cannot Speak: Presentations and Interpretations of Gramsci's Concept of the Subaltern, (2002) 14 (3), *Rethinking Marxism*, 1-24; 'Gramsci and Friere's construct allows this study to perceive energy justice from the lens and voices of the most powerless people living within the socio-economic, political, intellectual, philosophical, religion and economic confines.',

[144] World Africa, 'Nigeria: Protests erupt against Power, fuel Price Hike Electricity Tariff Set to Increase After Petrol Prices in Oil-Rich Country Have Risen for 3 Straight Months' (2020) available at https://www.aa.com.tr/en/africa/nigeria-protests-erupt-against-power-fuel-price-hike/1963122 last accessed 13/02/23

[190] K., Jenkins, B., Sovacool, D., McCauley, 'Humanizing Sociotechnical Transitions Through Energy Justice: An Ethical Framework for Global Transformative Change' (2018) *Energy Policy* 117 p 66-74

[191] Ibid

distributed. Based on Fuller and Bulkeley's[192] justice procedural considerations, Sovacool and Jenkin's energy justice tenets emphasizes the importance of a necessary interconnection of individual rights, empowerment, and responsibility. This presupposes an integrated approach where no actor or stakeholder is left out, whether internationally or locally, as unjust externalities could, in turn, lead to energy injustice locally. The primary concern in this study is how social context differences in access to energy services affect efforts to achieve sustainability, universal access, and energy transition goals.

Energy justice stems from jurisprudential discussions on the general concept of 'justice,' which is relative. Aristotle sees 'justice' from a distributive and corrective perspective and applies this to energy efficiency because it aims at the common interest of a community.[193] Rawls perceives 'justice' to be about procedure and allocation. To him, 'anything just; must adhere to relevant procedure'.[194]In application, uncovering what 'justice' means with regard to energy transition for all, from a minimalist perspective, would always be incoherent and would not reveal or erase the source of the problem. However, Sovacool et al.; said it better when they stated that 'in order to achieve the goal of justice, decision-makers must be blind to partiality and political bargaining and must weigh benefits and costs objectively and empirically – making justice a matter of restoring and maintaining balance and proportion.'[195]

On this note, one indicator of energy justice would be whether international and local institutional policymakers make decisions procedurally fairly. It will also include if people believe they have equal and capable access to those RE options and a voice on procedures, including opportunities for correction and remediation when injustice is

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[192] H., Bulkeley, J., Carmin, V., Broto, G Edwards, and S., Fuller, 'Climate Justice, and Global Cities: Mapping the Emerging Discourses (2013) 23 (5) *Global Environmental Change*, 914 - 925

[193] Irwin Terence, '*Justice*' Aristotle's First Principles Oxford, 1990; (online edn, Oxford Academic, 1 Nov. 2003), https://doi.org/10.1093/0198242905.003.0020, accessed 13 Feb. 2023.

[194] J., Rawls, *A Theory of Justice* (1971) Harvard Uni. Press

[195] B., Sovacool & M., Dworkin, *Global Energy Justice: Problems, Principles, and Practices* Cambridge Uni. Press (2014) 11

perpetuated.[196] The perception of "justice" as a system of procedure and correction would help to reveal or prevent unseen and unintended consequences of a green transition. By increasing knowledge of context-related challenges, the whole systems approach, diverse frames of the energy problem, and integrated action, it may be possible to achieve a sustainable transition.[197]

2.5 Energy Citizenship.

In many ways, as will be seen in Chapter 4, where the thesis discusses the energy transition storyline of the country, it will be seen that there has been an enduring connection of the citizens of the country with the energy system, whether good or bad. This enduring relationship can be felt by a first-time visitor to Nigeria who, experiences a power outage for the first time as they witness the light go out of people's faces with yells of, 'oh NEPA,' especially during a live football match. The same goes for the people's infectious joy and screams of 'Up NEPA', when the lights come back on. Now this is one way this study can relate how deeply a people are connected to the energy system as citizens, given the context of citizenship as a relationship between the citizens and the state. Additionally, the citizens' dependence on the energy system can be linked to the nation's long history of exploiting its oil and gas resources, which has influenced both its economic and labour sectors, despite the detrimental effects on the environment.

Devine-Wright has also provided credence to this idea of natural or beneficial citizenship, pointing out the close connection between the energy system and the state apparatus.[198] However, in this work, 'energy citizenship' is used metaphorically to refer to;

A novel representation where the public are conceived as active rather than passive stakeholders in energy system evolution and where the potential for action is framed by notions

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[196] Ibid 11-12, 200-211, 365 -377

[197] M., Bevier, *Key Concepts in Governance* (2009) Sage Pub. Ltd 202

[198] P., Devine-Wright, Energy Citizenship: Psychological Aspects of Evolution in Sustainable Energy Technologies, in J. Murphy (ed) *Governing Technology for Sustainability* (Routledge 2007) 63-86.

of equitable rights and responsibilities across society for dealing with the consequences of energy consumption, notably climate change.[199]

This concept offers a valuable conceptual tool for reflecting on a range of critical dimensions of energy processes, and has been used to theorise the relationships between individuals and the collectives of which they are part.[200]It emphasises the approach of energy users and customers as active participants in the development of tailored or personalised energy solutions, projects, and entrepreneurial ventures that can widen energy access outside of government initiatives.[201] Thus, by empowering individuals and communities to become active participants in the energy transition, 'energy citizenship' fosters a more inclusive and democratic approach to energy governance. This new approach demonstrates the importance of community involvement in decision-making processes and shared responsibility in tackling pressing energy issues such as climate change and energy inequality, thereby encouraging collaboration between different stakeholders, including governments, businesses, and local communities. This is the framing of energy citizenship undertaken in this study.

Energy citizenship encompasses changes made to the energy system as well as the production, delivery, storage, and consumption of fuel, heat, and electricity.[202] It is not limited to small-scale renewable energy production, households, or local power distribution,[203] and can be pluralist in nature and application, cutting across existing unequal intersections to produce novel constructs towards a more just society. Thus, energy citizenship is an amalgam of connections at any level of sociotechnical organization, not tied to any specific level of

[199] Ibid 67-68.

[200] Antti Silvast, & Govert Valkenburg, Energy citizenship: A critical perspective, (2023) *Energy Research & Social Science*, Vol. 98

[201] J., Schot, L., Kanger & G., Verbong, The Roles of Users in Shaping Transitions to New Energy Systems (2016) 1 (5) *Nature Energy* 16054.

[202] Ibid 169

[203] Ibid

organization.[204]Thus, there is no natural connection between 'being an energy citizen' and 'endorsing low-carbon transitions' or other arguable goods.

When we look at the critical contribution of the energy citizenship concept to the just transitions, we think of the important roles that citizens especially small and medium scale innovators can play in promoting the availability, security and affordability of energy resources.[205] Renn et al, have stated that the energy citizenship concept aims at empowering and assigning more active roles to the public as producers.[206] However, this 'empowering and its implications, as will be seen; is a multidimensional process that requires coherent governance frameworks that bring together different sectors, institutions and stakeholders in the public and private domains and this requires governance.[207] Thus, energy citizenship becomes a critical concept in the conscription of new actors into the production, distribution, and sale of energy, without discrimination as to domicile or nationality and without discrimination.[208] Accordingly, this understanding of energy citizenship advocates for a fundamental shift from centralised energy options, centrally owned, large company driven or government manged; to a decentralised, diversified and distributed energy generation model in which citizens can actively participate across the entire value chain.[209] Olawuyi stipulates that this definition comes with the need to providing adequate legal, institutional and financial support (incentives) for private sector

[204] Ibid

[205] (n 198) Devine-Wright, D., Olawuyi, From Energy Consumers to Energy Citizens: Legal Dimensions of Energy Citizenship in Fleming Ruven Sustainable Energy Democracy and the Law (Brill; 2021) 101 – 123. "This participation goes beyond deliberative democracy but in active localism and energy empowerment through local content initiatives and investment contracts"

[206] O., Renn, F., Ulmer & A., Deckert, *The Role of Public Participation in Energy Transitions* (Elseiver 2020) 1-10.

[207] D., Olawuyi, Financing Low-Emission and Climate-Resilient Infrastructure in the Arab Region: Potentials and Limitations of Public-Private Partnership Contracts in Walter Leal Filho and Amr Abdel Meguid, *Climate Change Research at Universities: Addressing the Mitigation and Adaptation Challenge*s (Springer 2017) 533 – 547.

[208] (n 205) Olawuyi (2021).

[209] Ibid

participants to actively design, develop and implement energy solutions and projects that can expand energy access in developing contexts.[210]

While devolution and decentralisation can be articulated through the energy citizenship framework, this thesis's analysis adds that the marginalisation of vulnerable contexts—rural communities—occurs even in the context of decentralisation, because of underlying development culture, influential parties, and the failure of governance policy strategies to acknowledge the peculiarities of the context. As the case study analysis will demonstrate, private citizenship ownership of mini-grid businesses, for example, continues to overlook and exclude rural contexts. This was the also the case with DisCos following the 2015 electricity privatisation reforms. Furthermore, it is the case that private mini-grid developers with licences reside in cities and employ families as temporary labour, thereby monopolising the mini-grid market because local workers have little knowledge of the procedures involved in mini-grid production and trade.

Interestingly, the same is also the case at the global level, where most of the transition technologies and investments have internationalised value chains. The thesis argues that the private developer has every right to pursue profit or to exclude rural contexts because they do not provide a conducive 'productive' operating environment, but that it is concerning that the local people who would like to have access to these services cannot because they are unable to pay for them. This differentiated interests and actors reveals how the justice of the transition is shaped by complexities and competing interests, thereby requiring the advancement of a multi-levelled governance strategic approach.

[210] Ibid

CHAPTER 3 Global Renewable Energy Trends

> "Renewables were already expanding quickly, but the global energy crisis has kicked them into an extraordinary new phase of even faster growth as countries seek to capitalise on their energy security benefits..."[1]

This chapter presents the international influences of energy transition in developing contexts using the landscape tenet - one of the MLP framework tenets discussed in the previous chapter. MLP's landscape level encompasses demographical trends, political ideologies, societal values, and macro-economic patterns that influence a transition. Its utility lies in its ability in creating transitional opportunities as well as capturing the need of integration the interconnected impacts of the transition on contexts, sectors, and in ensuring a just transition. Sorrel explains "that transitions happen when a sociotechnical system becomes affected in various ways by the broader physical, political and economic environment beyond the control of the actors within the system."[2] It is in these ways captured as the landscape stage by the MLP, that global renewable energy trends tend to impact the transition. So far, governments, international policies, institutions, global RE value chains, technology, market factors, social contexts, and unforeseen events have all influenced the renewable energy transition, thereby promoting multiple objectives.[3]

Paramount among these objectives are environmental protection, economic development, energy access, and security, which require collaboration and balance among governments, institutions, and stakeholders for a successful transition. Thus, the positive economic impacts

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[1] International Energy Agency, 'Renewable Power's Growth is Being Turbocharged as Countries Seek to Strengthen Energy Security' (December 2022; IEA Press Release) available at: https://www.iea.org/news/renewable-power-s-growth-is-being-turbocharged-as-countries-seek-to-strengthen-energy-security last accessed 10 March 2023.

[2] S. Sorrell, 'Explaining sociotechnical transitions: A critical realist perspective.' *Research Policy*, (2018) *47*(7), 1267-1282.

[3] Unforeseen events like the Ukraine-Russian war, and other externalities have all intervened in the current transition, leading to the championing of multiple objectives under the guise of the renewable energy transition

of renewable energy (RE) on the energy transition depend on competitive markets, technological advancements, financial stability, business models, social acceptability, and economic development, necessitating strong normative alignment between national and international policies.[4] This alignment is crucial, as it would enable countries to share best practices, cooperate on research, trade and development, and collectively address global environmental challenges.

This chapter explores the international impact of the transition as well as landscape factors on Nigeria's electricity industry, focusing on implementation problems and landscape challenges. It provides analysis for policymakers to navigate the changing energy landscape. This ties in nicely with the assessment of national laws/policy regulations in the following chapter.

3.1 Global trends and key transition influences – MLP's landscape level.

The three MLP levels—regime, niche, and landscape—can all cause transitions,[5] when '*considered together*.' This thesis uses the landscape to show the outside factors that affect a transition, emphasising how important "*the timing of landscape pressure*" is for regimes,[6] especially regarding niche innovations like mini grid technology, used in this study. This is because if landscape pressure occurs at a time when niche innovations are not fully developed or when a context is not ready for regime reforms, the transition path will be different.[7] It is therefore the case that the landscape stage equally plays an interfering role in creating opportunities for transitions to occur. Thus, the purpose of this section is to identify landscape variables driving the shift from FF to RE in Nigeria, their applicability, and potential opportunities or challenges they have generated.

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[4] P., Crossley, Renewable *Energy Law: An International Assessment* (Cambridge Uni. Press, 2019) 223.

[5] 'Particularly, these three transition layers are denoted with certain properties which relate to their capability to fulfil a specific function (niches and regimes) and to destabilise regimes or stimulate niches (landscape).' - Laur Kanger, Rethinking the Multi-level Perspective for Energy Transitions: From Regime Lifecycle to Explanatory Typology of Transition Pathways (2021) 71 *Energy Research and Social Science* 1-12.

[6] Ibid

[7] F., Geels, & J., Schot, Typology of Societal Transition Pathways (2007) 36 (3) *Res. Policy*, 399 – 417 pp 405

Landscape factors are expressed generally as externalities and are globally scattered across multiple sectors and disciplines. They can be one or a series of unequally combined factors and events that crystallises agency – in the form of political coalitions.[8] Jacobsson and Lauber, puts it well when they state that;

> "Policies introduced during historic windows of opportunity, created self-reinforcing effects, which in conjunction with external events enabled major policy and energy system changes in Germany.[9]

The landscape layer is therefore, "an exogenous environment beyond the direct influence of niche and regime actors,"[10] that encapsulates all the wider and external backdrops (technical and material) that sustain society.[11] This includes demographical trends, political ideologies, societal values, and macro-economic patterns that actors at niche and regime levels cannot influence in the short run.[12] Thus, rising global energy demand, access issues, and climate change are driving the current renewable energy transition. This shift has led to political coalitions and legal and institutional reforms to promote low carbon practices towards a more sustainable society. Accordingly, Leippard and Flachsland, have perceived these political coalitions and legislative frameworks/policies as landscape level processes because they pressure the energy sectors and trigger policy changes.[13]

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[8] A., Smith, A.; J., Voß, J.-P.; J., Grin, J. Innovation studies and sustainability transitions: The allure of the multi-level perspective and its challenges (2010) 39 *Res. Policy* 435–448.

[9] S., Jacobsson, & V., Lauber, The Politics and Policy of Energy System Transformation – explaining the German Diffusion of Renewable Energy Technology (2006) 34 *Energy Policy*, 256 – 276.

[10] (n 5) 400

[11] A., Rip, & R., Kemp, 'Technological change', In S. Rayner & E. L. Malone (eds.), *Human choice and climate change* (Columbus, Ohio: Battelle Press, 1998) 327–399.

[12] F., Geels, The multi-level perspective on sustainability transitions: Responses to seven criticisms, (2011) Environmental Innovation and Societal Transitions Vol 1 (1) 24 – 40.

[13] Anna Liepprand, & Christian Flachsland, Regime Destabilisation in Energy Transitions: The German Debate on the Future of Coal, (2018) 40 *Energy Research & Social Science* 190 – 204 pp 190, They have also considered conditions, regulations, and processes at higher political levels like international public law system and regional political bodies (European Union), to be landscape factors.

It will be recalled that the thesis uses the MLP as a conceptual framework because of its capacity to capture the multi-dimensional interactions that the transition brings about. Because the landscape level is the technical, physical, and material backdrop that sustains society, it encompasses various factors from various sectors, including cultural, demographic, environmental, economic, and political contexts. Interestingly, these factors can be static or gradually changing, long-term processses, or rapid exogenous shocks.[14]For instance, the thesis perceives the global climate change problem as well as the Ukraine-Russio war as a landscape factor given the capacity these events have in pressuring niches and regimes (actors) for a transition. It also presents the national, regional, and international, particularly the developing country's context's experiences and circumstances as landscape.

With innumerable climate change problems, [15] and the Ukraine-Russia war came the unprecedented rise in energy demand in many parts of the world due to the dependence on natural gas from Russia for wide energy needs. These issues equally uncovered the crucial importance of the transition away from fossils and the need for decentralised and devolved energy options. Interestingly, these range of backdrop issues can lead to landscape pressures that destabilise existing regimes, eroding legitimacy through external financial resource flow, public and policy support, and the endogenous commitment of industries to the existing regime. [16] Turnheim and Geels explain that, destabilisation is the process where firms

[14] H., Van Driel, & J. Schot, Radical Innovation as a Multilevel Process: Introducing Floating Grain Elevators in the Port of Rotterdam (2005) 46 *Technol. Cult*. 51 – 76. 'Gradually changing features can include climate and geography; long-term processes could be industrialization or neoliberalism; and rapid external shocks could be things such as major weather events, military conflicts, political administration changes, and economic downturns.'

[15] The Intergovernmental Panel on Climate Change (IPCC) has conducted an analysis that clearly shows that within the next several decades, emissions must be reduced to net-zero in order to avoid a dangerous increase in world temperatures. Available at: Energy is at the heart of the solution to the climate challenge — IPCC https://www.ipcc.ch//2020/07/31/energy-climatechallenge/ last accessed 06/01/2024.

[16] Daniel Rosenbloom, Harris Berton, & James Meadowcroft, Framing the Sun: A Discursive Approach to Understanding Multi-dimensional Interactions within Socio-technical Transitions Through the Case of Solar Electricity in Ontario, Canada (2016) 45 *Research Policy* 1275 – 1290, 1277.

experience financial losses, deteriorating reputations, and a decline in support as a result of external pressures.[17]

It is therefore the case that these actors and sectors: finances, policymaking/governance, market/supply, technology production firms etc, are the major actors that can influence the landscape sector towards the destabilisation of regimes. This follows the crucial discursive or interactive role of actors as captured by the multi-level governance approach, which allows for actors to create the legitimacy needed for transitions to appear 'desirable, proper and appropriate', and by underpinning them within an existing cultural framework of beliefs, values, and norms.[18] This legitimacy can also take the approach of cultural reframing such that allows social factors and context struggles to equally take on the landscape factor or one of niches. Thus, by examining the interactions between these different levels of actors, such as global corporations, international organisations, national governments, global value chains and local communities, MLP can provide insights into how global forces shape the contours of national transition strategies and influence factors like, infrastructure, technology, laws/institutional reforms, and trade (value chains). The next section will look at some of such trends and demonstrate their relevance in influencing global decarbonisation initiatives, laws/policies, and sectoral implications on the national landscape.

3.1.1 Conflicts and Conflicting policy objectives: Making or Breaking Sustainable Energy Transitions.

Before now, studies showed that "countries were unwilling to engage in legal harmonisation or convergence of their renewable energy laws despite the globalisation of the decarbonisation agenda and renewable energy technologies (RET)."[19] In fact, countries sought to achieve

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[17] Bruno Turheim, & Frank Geels, The Destabilisation of Existing Regimes: Confronting a Multi-dimensional Framework with a case study of British Coal Industry (1913 – 1967) (2013) 42 *Research Policy* 1749 – 1767, 1750. 'they argue that this is different from economic decline in that early destabilisation involves scepticism about current procedures and business models because bankruptcies and contracting markets are more commonly viewed as contributing factors.'

[18] F., Geels, & B., Verhees, Cultural Legitimacy and Framing Struggles in Innovation Journeys: A Cultural - Performative Perspective and a case study of Dutch Nuclear Energy (1945 -1986) (2011) *Technology Forecast Soc. Change* P 910 – 930 PP 911.

[19] Ibid, 162. (The various Nationally Determined Contributions (NDCs) of states exemplify this)

conflicting legislative objectives in their national energy transition laws and policies.[20] An example is the recent global energy crisis triggered by Russia's invasion of Ukraine alongside other issues; has engendered rising fossil fuel prices worldwide, "which have prompted many nations to seek to strengthen protectionist policies towards their energy security and RE development."[21] For instance, Fernandez captures this in light of the EU, when she states that;

> "Three events, including the Brexit vote, Donald Trump's climate disbelief, and OPEC's production cuts, have impacted EU energy governance patterns. As 2030 goals are softer than expected, it's possible that these events may push policymakers towards European targets for supply security, conflicting with emissions reduction goals."[22]

Similar to how policies diffuse, "trends" equally diffuse, acting as a forecasting and experience lab tool that can impact transitions. Trends, play a significant role in shaping the future by providing insights into what people want and need and how they behave. In this regard conflicts: wars and conflicting policy objectives or approaches have created impulses for or against the current transition from FF to RE.[23] Some of these conflicting approaches or policy objectives crystallise from the rise of localism and differentiation which specify uniquely customised principles/contributions towards the decarbonisation.[24] While this occasionally creates a variety of windows of opportunity for the transition, it is argued that these differentiated approaches and business model solutions or projects may reproduce many multidimensionality's, which, in situations where they are not well managed on multiple levels,

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[20] Ibid, 161 -162.

[21] Library of Congress, '*Trends in Globalisation-Globalisation: A Resource Guide*' (April 2023) available at: https://guides.loc.gov/globalization/trends-in-globalisation last accessed 10 March 2023. 'This crisis has led to fossil fuel supply disruptions and energy security challenges of even developed countries, leading many countries to strengthen policies supporting renewables and has equally improved the competitiveness of solar PV and wind generation against other fuels.'

[22] Rosa-Marie Fernandez, Conflicting energy policy priorities in EU energy governance. *J Environ Stud Sci* (2018) 8, 239–248

[23] The context's RE transition rules and policies, influenced by norms and objectives, impacts positive transitions, while global trends as well as local and regional factors equally influence landscape dynamics

[24] D., Olawuyi, From Energy Consumers to Energy Citizens: Legal Dimensions of Energy Citizenship, in Fleming Ruven (eds) *Sustainable Energy Democracy and the Law* (Brill; 2021) 101-123.

may lead to pressure from niche innovations or contexts before they are fully developed or ready, resulting in a wide range of transition paths that might prevent the timely achievement of the decarbonisation goal. Thus, where landscape factors are understood and well-coordinated or leveraged upon, contexts can stay ahead of the energy transition curve, innovate, and adapt to changing demands**.**

It is this struggle towards building a legitimacy within transitions that is the bane of this thesis contribution on the advancing multilevel governance of renewable energy projects to ensure a just transition within a context. The thesis clarifies this by use of mini grid case studies in Nigeria to show the struggle within these 'dynamic, multi-casual and multifaceted processes.'[25] The use of EJ-MLP in this work therefore calls for the recognising of equality considerations throughout these multi-level or dimensional interactions during the transition journey. This chapter then reveals how through equitable considerations interrogations of these international influences – identified as landscape, legitimacy of a regime is built and contested.

For instance, the global push for decarbonisation and the impact of externalities, such as the Ukraine-Russian war, has resulted in a shift towards renewable energy production, technological advancements, job losses, and multinational corporations (MNCs) divesting from fossil fuels. Therefore, these renewable energy trends can provide insight into values and impact and expose policy gaps. As more and more countries and companies shift towards renewable energy sources, it is essential to analyse the effect on the environment and the economy.

3.1.2 Different Economic Development Policies and Goals

Economic theory argues that countries that seek to accomplish multiple legislative objectives are overreaching, which reduces the effectiveness and legitimacy of renewable energy laws.[26] Moreover, it has also been argued that aligning legislative goals to a context's peculiar needs could help achieve some form of normative convergence that can impact RE scope,

[25] (n 11) Rip and Kemp (1998)

[26] (n 4) 162 (Crossley)

development, and deployment within a country.[27]This is because most countries, such as those in sub-Sahara Africa (SSA), share similar goals, norms, and challenges throughout the region, and international objectives where not reflective of the people's concerns can reproduce injustice and their non-acceptance of the transition.

Thus, whether the conflicting nature of global transition policies with national energy transition goals delays the realisation of the decarbonisation agenda or is reflective of energy justice; becomes the concern of landscape influence in this regard. This is because landscape influence can either set back the global transition agenda by meeting a country's energy needs, delay a context's energy objectives, which could in turn aid the decarbonisation agenda, or balance both. For example, countries with ambitious targets for transitioning to renewable energy sources may be deterred due to other conflicting country policies like development and energy security. This can lead to delays in decarbonisation efforts and pose a challenge to energy justice.

The fossil fuel extraction in the Niger Delta region of Nigeria is very instructive in this regard, for despite being a major oil-producing area for decades, the local communities have experienced severe black outs and vandalizations, environmental degradation and pollution, leading to health issues and loss of livelihoods; thus, their current claims for renewable energy (decentralised) options despite being close to the national grid. This highlights the unequal distribution of benefits and burdens associated with energy activities, as well as the importance of multilevel governance for 'just' transitions. This debate on the best policy objective to take when it comes to issues on energy transition (decarbonisation) and energy access and security, turns on the linkages between environment protection and economic development. For this analysis, the nationally determined contributions (NDCs), under the Paris Agreement that permit the alignment of goals reflecting different national capacities, will be relied on.

First, Sovacool et al., argue that energy transition politics in carbon-intensive regions vary significantly across countries and energy types, with different infrastructure configurations,

[27] (n 4) 163 - EU member states have a degree of similarity in their legislative objectives.

actors, tactics, outcomes and responses to global or supranational pressures.[28] Therefore, the place of '*contexts*' in transitions cannot be considered unimportant, nor should the operation of RE transition functionalities be in isolation, because a context's level of economic development in a way mirrors the energy challenges or experience faced therein, as well as their transitioning capability.

For instance, in developed countries where energy infrastructure is advanced and energy resources are abundant, the energy conversation there is that of rising energy prices while the case for most developing contexts is one of lack of access to energy, energy poverty and energy security - which in turn impacts economic development. Thus, focusing solely on the transition functionalities without considering these unique contexts can lead to ineffective and unsustainable solutions that do not address the specific energy challenges faced by different communities - hence the United Nations Framework Convention on Climate Change (UNFCCC's) '*differentiated responsibilities approach*.' The observed conflicted expressions of the current transition are not only differentiated by countries, but the differences cut across even social contexts and sectors within a nation.

Following from the above, it becomes essential to consider how international law considers the unique needs of developing nations while pursuing decarbonisation, and if it has been able to persuade both developing and developed countries to present a unified front on questions of responsibility, accountability, and justice in addition to the convergence of renewable energy policy and legal objectives.[29] International Renewable Energy Agency (IRENA) and United Nations Framework Convention on Climate Change (UNFCCC), suggest that most decarbonisation programmes and international law policies have referenced developing countries' needs. For instance, the UNFCCC has incorporated the principle of common but

[28] B., Sovacool, D., Hess, R., Cantoni, D., Lee, M., Brisbois, J., Walnum, R., Freng, B., Rygg, B., Korsnes, M., Goswami, A., Kedia, and S., Goel, 'Conflicted transitions: Exploring the actors, tactics, and outcomes of social opposition against energy infrastructure.' (2022) 73 *Global Environmental Change* 1 – 28.

[29] Like with the agreement on accountability as an inherent feature of loss and damage at the CoP 26

differentiated responsibilities and sustainable development into all its laws and policies.[30] The principle "recognises the differing historical contributions of states to climate change, which have resulted in a 'climate debt' between nation-states. For instance, in attempting to put developing countries' energy transition into perspective, the World Bank (WB), stated that developing countries "face a triple penalty for their energy transition, leading to poverty."[31] Thus, the UNFCCC aimed to facilitate the urgent transition by localizing differentiation and nationally determined contributions, ensuring global transition strategies were tailored to context needs.

Second, it has also been proposed that decarbonisation may be heavily impeded by differentiated responsibilities and context-specific experiences, as no single country's efforts alone can save the climate. This is because, while most countries remain committed to the Agreement, there is divergent ambition on climate policy, including Nationally Determined Contributions and long-term strategies to 2050.[32] Some of those in this school of thought are the European Union (EU),[33] and the World Trade Organisation (WTO), who have emphasized the increasing tensions in international trade due to differing regulatory capacities and comparative advantages in trade and climate change.[34] While this may hold true, the proposed

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[30] Article 13, Paris Agreement, Conference of the Parties, Adoption of the Paris Agreement, Dec. 12. 2015 U.N. Doc. FCCC/CP/2015/L.9/Rev/1 (Dec. 12, 2015)., SDG 7 (indicator 1-3)

[31] L., Rajamani, 'The principle of common but differentiated responsibility and the balance of commitments under the climate regime' (2000) 9(2) *Rev Eur Commun Int Environ Law* 120 –131.

[32] Andrew Prag, The Climate Challenge and Trade: Would border carbon adjustments accelerate or hinder climate action? *OECD*, Background Paper for the 39th Round Table on Sustainable Development 25 February 2020. Available at: The Climate Challenge and Trade... background paper RTSD39.pdf (oecd.org) last accessed 05/01/2024. P 6

[33] European Commission, 'The Carbon Border Adjustment Mechanism (CBAM) of the European Union, which went into effect in October 2023, is a ground-breaking instrument for pricing carbon emissions from the production of carbon-intensive goods entering the EU and for promoting cleaner industrial output in non-EU nations." Carbon Border Adjustment Mechanism - European Commission (europa.eu) last accessed May 1, 2024. M., Duran, Securing Compatibility of Carbon Border Adjustments with the Multilateral Climate and Trade Regimes (2023) 72 (1) *International and Comparative Law Quarterly* 73 -103. 'EU's carbon border adjustment mechanism (CBAM), disrespects the principle of Common but Differentiated Responsibilities and Respective Capabilities (CBDRRC).'

[34] (n 32) 7 Prag.

carbon border adjustment mechanism (CBAM), has equally raised concerns about differentiated responsibilities, energy justice, and just transitions, with EU countries arguing it violates multilateral legal frameworks like the WTO and UNFCCC.[35] Thus, at the policy level, energy transition policies may potentially violate existing rules, while multilateral policies, both unilateral and international, may influence countries' decarbonisation policies design.[36] Langhelle captures this well by stating that:

> "The merging of environment and development is both simple and notoriously complex but inescapable, as there is simply no way out of the sustainable development equation. It is simple in the sense that it builds on intuitive ideas which merge environmental and developmental concerns. It is complex in the sense that it demands the cooperation of all countries in a globalized, competitive, capitalist system."[37]

Thus, the complexity of the transformation speaks to the fact that a firm hold on either position has a propensity to perpetuate social exclusions, inequalities and a disorderly transition, which may well lead to the unfeasibility of limiting warming levels to 1.5°C. This challenge "raises the most conceptually simple (but hard to achieve in practice) question of how or what universal commensurate action is required to directly regulate carbon emissions in all major economies."[38] This research proffers the multilevel governance framework and uses the Nigerian multiple perspective energy transition context as a case study. It argues that even the multi-level perspective and governance approach, carries hidden complications, as different interpretations of "commensurate" action or regulation may exist for different contexts and capabilities.[39] According to Krishnan et al., the key risks include the choice of a smooth or abrupt pathway to net-zero emissions, the measures taken by stakeholders to ease adjustments,

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[35] (n 33) Duran.

[36] (n 32) 8 Prag.

[37] Oluf Langhelle, 'Sustainable Development: Linking Environment and Development,' in James Meadowcroft, and Daniel J. Fiorino (eds.), *Conceptual Innovation in Environmental Policy* (Cambridge, MA 2017)

[38] (n 32)

[39] Ibid

and the potential for challenging constraints irrespective of whether the pathway chosen is a relatively smooth and gradual one.[40]

And even where the transition pathway chosen is relatively orderly, other concerns still justify the need for a multi-level governance given the scale of the transformation required, such as;

> "(i) The supply not scaling up sufficiently, creating supply and demand imbalances, shortages, price increases, or volatility as a feature; (ii) mismatch or mistiming between the ramping down of high-emissions activities and the ramping up of low-emissions activities, resulting in energy price volatility and issues with reliability that may result in a backlash that delays the transition or conversely, (iii) the risk that stakeholders maintain two parallel energy systems in an inefficient and cost-effective manner; (iv) the inability to access the volume of financing required in the initial phases of the transition when many of the investments would be front-loaded; and (v) additional costs incurred and investments needed, such as adaptation and the re-skilling of workers or to adaptation efforts."[41]

As a matter of fact, the conflict's edges are multi-layered, it goes beyond just economic and social adjustments (unevenly exposed business models, supply chains). It equally involves physical building blocks, many renewable energy sources and technologies, critical minerals and other sectors, contexts, industries, stakeholders, legal and policy frameworks, histories, capacities, and institutions. It is in light of this that this thesis suggests the effective management of the energy system's transformation through a multi-level governance framework. Krishnan et al's research succinctly captures this clearly when they state that;

the goal of reaching net zero emissions by 2050 will require the whole global economy, regions, and sectors, such that certain hard-to-abate sectors, regions, and economies with low residual gross CO2 emissions will have to be counterbalanced by CO2 removals. What this means is

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[40] Mekala Krishnan, Hamid Samandari, Jonathan Woetzel, Sven Smit, Daniel Pacthod, Dickson Pinner, Tomas Naucier, Humayun Tai, Annabel Farr, Weige Wu, and Danielle Imperato, A net-zero transition would entail a significant and often front-loaded shift in demand, capital allocation, costs, and jobs (2022 Report). Available at: A net-zero economy: The impact of decarbonization | McKinsey last accessed 05/01/2024

[41] Ibid

that we cannot solely rely on reducing emissions from certain sectors or regions to achieve net zero emissions by 2050. Instead, we will need to actively implement strategies and technologies for balancing out the transition without unfairly overburdening any specific sector or region without adaptation strategies.[42]

Furthermore, the '*developmen*t' theory of the state's control over natural resources, as interpreted within the country's past energy transitions, is controversial. The highlight of 'd*evelopment'* on the current transition, which prioritises gas as a transition fuel – as will be seen in the next chapter, is directed towards the attainment of energy security and economic development. However, this energy/economic policy direction ignores making a renewable energy legislation, which speaks to the incoherence of the nation's energy transition policy. Since this thesis also perceives an internal normative structure, values, and social context as landscape, Kivimaa and Sivonen, have contended that "an increasingly multifaceted landscape creates a complicated policy environment where pursuing policy coherence becomes harder."[43] Due to this circumstance, evaluating policy effectiveness, functionalities, and links to impact has also become challenging, leading to increased visibility of vulnerabilities, policy, and cultural gaps. Therefore, a multi-level governance is necessary, starting with EJ education for public and policymakers to enhance their better balance of conflicting policy objectives and understand what 'just transition' means for groups within the country's transition strategy.

Kivimaa and Sivonen, have equally recommended integrating the energy security strategies of actors within energy policies to prevent functional overlap.[44] Additionally, 'just' transition is impacted by the complexity of a country's energy transition challenge, which is driven by elements at the international, local and regional levels. This also justifies the need for an integrated approach and multi-level governance. Key among these dimensions and tensions is how to hold accountable those responsible for climate change and ensuring justice for

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[42] Ibid

[43] P., Kivimaa & M., Sivonen, 'Interplay between low-carbon energy transitions and national security: An analysis of policy integration and coherence in Estonia, Finland and Scotland.' (2021) 75 *Energy Research & Social Science*.

[44] Ibid

vulnerable communities without energy access in polluted or climate change-vulnerable areas.[45]This can be done by addressing climate change-driven loss, damage and historical marginalization while finding solutions to energy supply and consumption.[46]

Furthermore, The MLP and EJ framework provide a pluralist lens for understanding energy use marginalization, emphasizing the need for multilevel governance in renewable energy transition planning to prevent or correct injustices. The EJ's triumvirate tenets offer tools to reduce injustices and balance interests through multi-level governance, considering corrective justice within recognition justice, and evaluating a context's capacity for transition. Below is an example of how a country successfully achieved multiple legislative objectives in regulating decarbonisation and energy transition within a specific timeframe, in light of many landscape factors.

3.1.3 The Lenses of Opposition Even in Alignment: Germany's Example and Landscape Implication.

It is trite that this thesis approaches the RE transition from a multiple lens, hence the use of the MLP framework drawing upon several concepts and theories. The benefits of this approach allow for inclusivity and a more holistic analysis of the transition process. The national RE transition agenda is premised on this idea of MLP, with the landscape layer capturing top-bottom approaches of international law systems, policies, investment contracts, technology global trends, and financial agreements towards the transition. For instance, the various international agreements, such as the Paris Agreement and the Sustainable Development Goals, provide a framework for countries to transition to renewable energy. Thus, the MLP's landscape captures these influences through institutional, international, local, and sectoral influences on the transition within a national context, thereby providing a comprehensive understanding of the various factors that influence the transition to renewable energy at a national level. While the transition recognises the overall benefits of these varying landscape factors in shaping the

[45] E., Williams, 'Attributing Blame? – Climate Accountability and the Uneven Landscape of Impacts, Emissions and Finances' (2020) 161 *Climatic Change* 273 – 290.

[46] Ibid

transition contours, the transition equally recognises the implications of having a wide range of global factors that shape a context's transition given the problem of fit and compatibility as well as policies and system rigidities.

It is therefore the case that when policy objectives align with a context's needs and experiences, "many opposing themes are frequently elevated, which may make the legislation impossible to implement."[47] This case is not peculiar only to developing countries as the problem of wide landscape influences on national objectives equally go through the case of localism and the need of developing a localised and home-grown approach/objective. Exploring a developed country's transition success story is essential for identifying lessons that can be applied; however, while a developed country's success story may provide valuable lessons, it is necessary to acknowledge that every context is unique and that what works in one country may not necessarily work in another. Germany is chosen as an example due to its successful policy transformative change in the energy transition.

Germany's Renewable Energy Act (EEG) 2021, is guided by the goal of being greenhouse gas neutral by the middle of the century, consistent with the more stringent EU climate target (a regional trend). The Act aims to boost renewable energy public acceptance by offering communities allowing wind farm construction, a 20-year share of the park's income at 0.2 cents per kilowatt-hour.[48] This is a social incentive. The Act equally increases the renewable energy surcharge for tenants, thereby increasing costs for the average family.[49] This example demonstrates a significant disparity, between the regional and global objective to reduce carbon emissions, the social aim of development and social acceptance, and the economic objective of a surcharge on renewable energy.

Sovaccool highlights this when he speaks about the unique demands of sustainable electricity access on natural resources, affecting the environment, economy, and marketplace, yet its

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[47] Ibid

[48] K., Appunn, 'What's New in Germany's Renewable Energy Act 2021' *Clean Energy Wire.org* 6th Jan 2021 Available at: https:/www.cleanenergywire.org> last accessed 23/03/2021.

[49] Roger Karapin, 'Household Costs and Resistance to Germany's Energy Transition' (2020) 37(3) *Review of Policy Research,* 313 – 341.

impacts are often overlooked by the population.[50] To him, this must do partly with energy technologies' physical invisibility and importance.[51] Renewable energy is a generally safe and sustainable option, but like conventional energy sources, it faces a tardy rollout and commissioning in most developing SSA nations. The public's apathy towards renewable energy technologies like RET is attributed to the complexity of the transition, low regional engagement, unpredictable regulatory environments, inconsistent policy strategies, and changing technological landscapes. This is an illustration of how landscape factors affect energy transitions within a context.

For instance, in a large-scale survey of new energy systems, Komendantova et al. discover correlations between the degrees of knowledge of technologies, expectations of socioeconomic advantages, and perceptions of risks (environmental, technical, social, and economic),[52] which are all elements captured under MLP's landscape level. Further studies also show that approaches to initiating energy projects and technology transfer, particularly in rural Africa, are fraught with improper engagement and comprehensive stakeholder consultations.[53] There is also the perception that the diffusion of technologies from industrialised to developing countries is done with limited evaluation and consideration of the effects on the host nation or community.[54]And for many, a renewable energy project in Africa is about "finding an empty land and fixing solar panels to provide light for the people because they lack electricity."[55]

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[50] B., Sovacool, 'Cultural Barriers to Renewable Energy and Energy Efficiency in United States (2009) 31 *Technology in Society* 365 – 373.

[51] Ibid

[52] Nadejda Komendantova, *et al.*, 'On the crossroad – renewable energy sources or shale oil? Understanding patterns of social attitudes in Jordan' (2022) 46(1) *OPEC Energy Review* 3-31.

[53] A., Hasan, M., Raza, & H., Bawahab, 'Renewable Energy Project Implementation in Africa: Ensuring sustainability through community acceptability' in Sarpong Hammond Antwi and Debora Ley (eds), 11 (2021) *Scientific African Volume* 1 – 10, 2.

[54] Ibid 2.

[55] S., Antwi & D., Ley, Renewable Energy Project Implementation in Africa: Ensuring Sustainability through community acceptability in Sarpong Hammond Antwi and Debora Ley, *Scientific African Volume* 11 (2021)1 102

Antwi and Ley, have highlighted the critical role of social acceptance and recognition of the barriers to acceptability at local levels in order to achieve the triple goal of energy access, project sustainability, and sustainable development in Africa.[56] These issues are critical concerns of the landscape level through which the MLP seeks an interaction alongside all other levels to effectively integrate social, economic, and environmental concerns into its initiatives to achieve a 'just' transition. Ramcharan, has asserted that to transform our energy systems; we must alter the assumptions underpinning them.[57] He argues that '*social axioms'* (the basic driving force of what we describe as RE norms, values, and global trends in this thesis that shapes acceptability) are essential for understanding the task of RE transition.[58] Global renewable energy trends highlight energy justice frames, challenges for businesses, and the importance of government intervention and market incentives in promoting solar products.[59] Trends also consider how the transition's complexity and the application of various energy justice lenses to unique context needs have led to conflicting legislative objectives.

According to Crossley, "successful government intervention in the energy transition requires a long-term structure that is predictable, stable, and integrated."[60] Le Page, recommends developing a comprehensive and coherent market design hinged upon social acceptance for market liberalisation and decarbonisation of the electricity sector.[61] The use of innovative technologies to enhance green energy has generated economic dislocations that a competitive

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[56] Ibid.

[57] A., Ramcharan, 'The Social Axiom Framework: Towards a Renaissance of Sustainability' (2022) 100 (1433) *Texas Law* Review.

[58] Ibid

[59] A., Hasan, *et al*, 'Urdu Bazaar: A study on the acceptability of alternative energy sources for a book market in Karachi' (2013) 6 (International Institute for Environment and Development, London) available at: https://www.iied.org/16536iied.

[60] (n 4) 97.

[61] J., Le Page, 'Towards a New Deal for the Integration of Renewable Power Generation in the Internal Energy Market: A Regulatory Perspective on European Climate and Energy Policy' in T., Cottier & I., Espa (eds), *International Trade in Sustainable Electricity: Regulatory Challenges in International Economic Law* (CUP 2017) 101-119.

market and normative objectives like energy justice can solve.[62] There is, therefore, a lens of justice in the fair competition of RE resources; however, this frame of energy justice based on the free market also faces the challenge of 'unequal playing fields,' even within local contexts.

Interestingly, evidence of RE development progress highlights the immediate significance of multi-level governance, for the transition's sustainability and recognises the existence of trade-offs and policy options.[63] Regional and global trends in RE show how the transition is shaped by international, national, sectoral, market and local values and trends, as well as how energy justice takes 'an objective rather than a formalistic or disciplinary approach,'[64] to align with the context's needs and a wide range of sectoral, geographical, and disciplinary perspectives requiring integration.

3.2 Renewable Energy Policies as Landscape – Local, regional or International And Their Interactions.

The International Energy Agency (IEA) has pulled together statistics and studies that show how green energy is developing in regions and countries and how regulations have played an important role in green energy development in these countries.[65] Consequently, "the international environmental community and many donor countries have encouraged developing countries to adopt strategic (RE) policies to encourage low-carbon development."[66]

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[62] IRENA, IEA and REN21, 'Renewable Energy Policies in a Time of Transition'(2018) IRENA, OECD/ IEA and REN21 available at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2018/Apr/IRENA_IEA_REN21_Policies_2018.pdf?rev=72587b606dc442bd8c8b4f74e0f4a574 last accessed 15/01/2021 p 11 – 23.

[63] A., Guzman, & J., Pauwelyn, *International Trade Law* (Wolters Kluwer: 3rd Edn, 2009) 28.

[64] J., Flattery, 'Balancing Efficiency and Justice in EU Competition Law: Elements of Procedural Fairness and their Impact on the Right to a Fair Hearing' (2020) 7(1) *The Competition Law Review*53 – 81

[65] (n 62), IEA, '*World Energy Outlook 2022*,' (IEA, Report Paris; 2022) available at - https://www.iea.org/reports/world-energy-outlook-2022, Last accessed 10 March 2023.

[66] E., Baldwin, S., Carley & S., Nicholas-Crotty, 'Why do Countries Emulate Each Other's Policies? A Global study of renewable energy policy diffusion' (2019) 120 *World Development* 29-45.

Therefore, green energy policies,[67] are a set of recognised and strategic steps a state opts for to help stimulate and support increased uptake of renewable energy and promote their consumption, production, and dissemination. They are directives and strategies of the government to address renewable energy development and climate change.

These targets, regulations, and strategies could be local, regional, and international, with long-reaching adoption and impact in national jurisdictions. They could be local policies with positive or negative impacts and influence in other nations. Drawing on the experiences of some developed economies concerning energy transition, climate change-leading countries, for instance, have prioritised and promoted their national policies in other countries through international development activities.[68] For example, Sial and Doucette,[69] describe how South Korea exploits the Build-Operate-Transfer (BOT) model of public-private partnership (PPP) under the pretext of corporate social responsibility (CSR) in developing countries to generate a series of environmental and labour standards abuses.[70] The Laos dam, Korea's first CSR-PPPL project, is an example.[71] The project operated as a social incentive and prioritised the development of core competencies and the participation of local partners.[72]

While there are concerns about imperialism and exploitation in Korea's development cooperation, these concerns are not specific to Korea and its CSR practices (because the

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[67]Carfora Alfonso, et al, 'Renewable energy development and green public policies complementarities: The case of developed and developing countries' (2018) 115 *Renewable Energy* 741-749 - These policies could be: economic policies, local content, sustainable development policies etc aimed at reducing emissions and promoting climate change or improving energy security and fostering economic growth via job creation and innovation in new industries.

[68] GIZ, 'Company Report' (2012) 26 available at: https://www.giz.de last accessed 23 March 2021.

[69] Farwa Sial & Jamie Doucette, 'Inclusive partners? Internationalising South Korea's chaebol through corporate social responsibility-linked development cooperation' (2020) 41(10) *Third World Quarterly*1723-1739.

[70] For instance, in Korean production factories in India, Indonesia and Vietnam.

[71] This project was financed under the PPPL programme, built by a consortium led by SK Engineering and Construction (Korea's third largest chaebol) and Korean Western Power became the now infamous Xe-Pian Xe-Namnoy Hydropower Project in Laos, after suffering a structural collapse in July 2018.

[72] The project aligned with Korea's request-led Country Partnership Strategy with Laos, which prioritises the energy sector, networking with private businesses, and promotion of CSR Korea– Laos CPS 2016.

constant pressure to accumulate capital and profit often undermines environmental and human rights protection by multinational companies in developing countries).[73] However, the legitimation function of developed states through these private companies in host states raises fears about imperialism and exploitation in developed countries' investment and development cooperation in developing states.[74] The current transition to RE bringing about the deployment of global value chains and technologies towards the RE project development raises these questions. The oil and gas experience of Nigeria's Niger Delta with multinational corporations and the unending social, energy and environmental implications is very instructive in this regard.

This is because, like with oil and gas, the value chain, expertise, capabilities, jobs, markets, technology, financing, and policy instrument are international and alien to the people, hence the importance of skills for co-production of these technologies.[75] The only clear thing known to the people is their ownership of their natural resources, but how this gets translated to the version of 'development' that impacts a community of people regarding affordable electricity access reflects the bane of 'just transition' in this study. The developed country policy promotion or diffusion strategy lies in reorienting the scope and narrative of projects on global value chains and technologies and placing the socioeconomic requirements of developing contexts at the centre of increased productivity.[76]A similar rationale underlies investments in RET made in developing nations.

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[73] (n 69) Sial.

[74] Ibid

[75] International Labour Organisation, 'Renewable Energy and Jobs: Renewable Energy Jobs Hit 12.7 Million Globally' (September 2022; ILO Press Release) available at: https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_856515/lang--en/index.htm last accessed 12 March 2023.

[76] Ibid

3.2.1 International Regulation and Policies – RE for Electricity

International law-making operates on the twin principles of shared commitment to dealing with global (environmental) problems and sovereign equality, which predispose a consensus decision-making approach towards legislative processes.[77] The adequacy of its law-making process, substantively and procedurally based on consensus decision-making, has met severe hardship, notably where the international legislative objectives differ considerably from those of regions or states or conflict with states' economic interests.[78] Questions over the best approach to regulatory development in the environmental field, climate change, and now green energy, however interconnected these themes are, have been challenging to resolve.[79] This situation has led to multiple contexts, sectors, framing and approaches to decarbonisation manifesting conflicting objectives. Notably, elements of mutual support, shared goals, common but differentiated obligations, and soft principles of sovereignty and equity have evolved into common themes that frame international environment protection discussions,[80]which point to an integrative process of balancing these complex objectives.

International measures on green energy can help promote justice, which is essential for achieving energy security and a sustainable future for the planet.[81] As such, policymakers and stakeholders must continue working together to develop effective and comprehensive regulations that can help address these critical issues. Some of these measures are already within several United Nations Frameworks for Climate Change (UNFCCC), including the Kyoto Protocol (KP). By linking climate mitigation and adaptation initiatives to human rights and social justice, it would be possible to emphasise energy justice as a critical goal in decarbonisation.[82] For instance, the Paris Agreement of 2015 – has, at its heart, nationally

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[77] Philippe Sands, et al., Principles *of International Environmental Law* (3rd edn, CUP, 2018) 896.

[78] Ibid

[79] Ibid.

[80] Ibid.

[81] D., Dorman & D., Ciplet, 'Sustainable Energy for All? Assessing Global Distributive Justice in the Green Climate Fund's Energy Finance' (2022) 22(1) G*lobal Environmental Politics* 94

[82] Ibid

determined contributions and aims to meet the Sustainable Development Goals (SDGs) of climate neutrality, energy access, and environmental protection.[83] The Agreement also extends an earlier pledge to jointly mobilise US$ 100 billion annually for developing countries, prioritising those most vulnerable to climate change.[84] The Agreement has led to several decisions, including the Sharm el-Sheikh Implementation Plan, proposing funding arrangements for climate change-related loss and damage.[85]

The United Nations has consistently provided a working template towards sustainable development. With the Kyoto Protocol,[86] the significant achievement was the commitment of Annex 1 countries to emission reduction targets and a timetable for their achievement.[87] The Paris Agreement 2015, aimed to "enhance the implementation of the united nations framework on climate change, increase the global average temperature to well below 2 degree Celsius, and pursue efforts to limit the temperature increase to 1.5 Celsius above pre-industrial levels."[88]

3.2.2 Regional Renewable Energy Policies as Landscape.

Due to the challenges in establishing a multilateral regulatory arrangement based on universal application and consensus decision-making, regional policy arrangements and strategies for achieving global goals have been established. For instance, the Economic Community of West African States (ECOWAS), which comprises fifteen-member states, including Nigeria, has set up a regional renewable energy policy – ECOWAS Renewable Energy Policy (EREP), "that

[83] Art 4 (2) U.N. Doc. FCCC/CP/2015/L.9/Rev/1 (Dec. 12, 2015)

[84] (UNFCCC 2015, CP.21.9; Decision.114).

[85] Decisions -/CP.2712 and -/CMA.4,13 'agenda item 8(f) of the Conference of the Parties at its twenty-seventh session'

[86] Kyoto, 10 December 1997, 16 February 2005

[87] Ibid

[88] Article 2, Paris Agreement, FCCC/CP/2015/L.9/Rev.1 12 December 2015

sets indicative targets at the regional level to ensure the increased use of renewable energy sources and bioenergy in the region before 2030."[89] Other objectives include, "the inclusion of renewables for grid electricity supply, creating a favourable investment climate for public-private investors, and promoting access to energy services in rural and urban areas." [90] These strategies are to harmonise the member states' national policies and targets. However, these targets are not mandatory, and the ECOWAS member countries must define their own strategies for achieving the regional targets.[91]

For instance, EREP has as one of its targets "an increased share of renewable energy in the overall electricity mix, including large hydro, to 48% by 2030, and an increase in the share of the rural population served by decentralised electricity (mini-grids and stand-alone) to about 25% by 2030."[92] The West African economic region is a prototype of communities that live along the same geographical boundary and share similar economic realities.[93] It is, therefore, necessary to provide a regional template with a particular focus on similar solutions for electricity that can catalyse or complement the adoption and implementation of such strategies nationally.

It is believed that regional templates like this one could bring about a normative convergence that could lead to a possible diffusion because the states included in this regional arrangement share comparable demands, geographical space, and even markets. So, a specific legal or policy structure that satisfies their needs could be considered energy justice. However, even within such arrangements, variances and vulnerabilities persist, necessitating an integrated approach to identify and protect the group's most vulnerable members. Thus, EREP, in collaboration

[89]ECOWAS, Renewable Energy Policy (EREP) P 19, 41 Available at: http://www.ecreee.org/sites/default/files/documents/ecowas_renewable_energy_policy.pdf last accessed 04/03/22

[90] Ibid.

[91] Ibid.

[92] Ibid., Article 2

[93]Ibid. 19, 24 – 27. They share similar interests, patterns, challenges, and circumstances, such as complex and undeveloped markets, developing economies, and similar environmental conditions.

with ECOWAS Energy Efficiency Policy, aims to diversify the region's energy mix and promote access in rural areas.[94]The regional platform allows for the regional exchange of knowledge and technology transfer and further accelerates policy reform towards sustainable energy.

The European Union (EU) is another regional organisation that has taken steps to regulate renewables through its member state (MS) strategies and their subsequent transition to green energy by 2050. According to reports, "the EU formerly held the third-highest carbon emission levels, with Germany and Poland among its most major contributors."[95] Impressively, the reverse is the case today as conventional energy (coal), previously dominated about 75% of the electricity generation market, has dropped significantly due to the closure of most of the coal plants in Europe.[96] Following the International Renewable Energy Agency's (IRENA) evaluation of the EU's possibilities for renewable energy, the EU ratified the PA and commissioned a 'clean energy package for "all Europeans."[97] The council also decided on "a set of energy and climate targets for the years running up to 2030."[98] The package seeks to identify cost-effective renewable energy options across all member states, sectors, and technologies to meet the proposed 27% renewables target for 2030.[99]

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[94] Ibid

[95] Abi Carter, '7 of Europe's top 10 CO2 emitters are in Germany, available at: **https://www.iamexpat.de/expat-info/german-expat-news/7-europes-top-10-co2-emitters-are-germany** last accessed 04/03/23.

[96] Kira Taylor, 'Europe halfway towards closing all coal power plants by 2030: Half of Europe's 324 coal-fuelled power plants have either closed or announced a retirement date before 2030' (2021) *EURACTIV*. Available: https://www.euractiv.com/section/climate-environment/news/europe-halfway-towards-closing-all-coal-power-plants-by-2030/. Last accessed 04/03/23.

[97] IRENA, 'Renewables Energy Prospects for the European Union' (2018) European Commission 13 – 15, available at :https://www.irena.org//media/Files/IRENA/Agency/Publication/2018/Feb/IRENA_REmap_EU_2018.pdf last accessed 07/03/23.

[98] Ibid

[99] Ibid

Thus, the EU is well on track to achieve its 2030 emission reduction target,[100] especially in the power sector, particularly with today's technologies and an integrated EU power and single energy market. The EU- wide target is a strong declaration of interest, and national-level commitments and implementation have been vital to suggest this possibility. However, trends indicate that many national long-term objectives do not align with the EU's 2050 decarbonisation goals, mainly related to other end-use sectors like transport, building, shipping etc. hence, the EU Green Deal.[101] For instance, the reports mentioned lowering 2020 national ambition targets for Denmark, Spain, and Hungary.[102] Furthermore, twelve states, including Belgium, Bulgaria, Denmark, Poland, Sweden, Cyprus, Austria, Germany, and France, were criticized for not making sufficient progress towards achieving their national targets.[103]

Interestingly, evidence suggests that the heterogeneous conditions among the EU countries may justify these differences in their responses towards the EU regional goal.[104] The same argument could exist for the global community at large. Currently, the EU seeks alignment with 2050 decarbonisation goals, particularly in end-use sectors (buildings, industry, and transport), where progress has been slow in the past.[105] It hopes to achieve this through the European Green Deal.

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[100] The 'Fit for 55' package, adopted as part of the Green Deal – an NDC update, aims to enable the European Union to achieve climate neutrality in 2050 and a net reduction in greenhouse gas emissions of at least 55% by 2030 compared to 1990 levels. It also has more stringent emission reduction goals for MS.

[101] European Commission, Report from the Commission to the European Parliament and the Council (2020) COM (2020) 954 final - available at: https://www.europarl.europa.eu/RegData/docs_autres_institutions/commission_europeenne/com/2020/0954/COM_COM(2020)0954_EN.pdf 4.

[102] Ibid

[103] Ibid, 4 - 5.

[104] Jenner et al., 'What Drives States to Support Renewable Energy?' (2012) 33(2) *Energy J.*, 1 – 12, 3,9,11.

[105] European Commission and IRENA, 'Renewable Energy Prospects for the European Union' (2018), 1-120, 21. available at: https://www.irena.org//media/Files/IRENA/Agency/Publication/2018/Feb/IRENA_REmap_EU_2018.pdf?rev=4241f3f988254b7c8ac9b0cc004bbee1 last accessed 15/02/23.

3.2.3 National RE Policies

Most renewable energy policies are backed by regulatory support and 'just' transition mechanisms targeting green energy development and deployment within local structures. Crossley analysed 113 renewable energy legislation and policies of different countries (except Nigeria) to reveal that countries diverge from achieving renewable energy convergence due to their needs and priorities.[106] The rationale behind this is not far-fetched from the different starting positions and needs of countries which translates to states' differentiated standards.[107] Before now, government intervention in this sector through subsidies, public ownership, and regulation was based on the perception of energy/electricity as a public good. However, it has since become evident that because renewable energy sources are not cost-competitive, the market alone cannot mainstream them. As a result, social incentives like integrating new technologies into livelihoods can accelerate the adoption, acceptance, participation, and development of capabilities for the RE transition in the nation.[108]

Furthermore, RE development entails using technology and global value chains that touch upon different policy objectives and multiple sectors with international and transboundary implications. The global sustainable investment review has detailed global interest and engagement in sustainable investing covering environmental, social, and governance in about five markets.[109] Interestingly, "sustainable investment assets worth $30.7 trillion have gone to Europe, the USA, Canada, Japan, Australia, and New Zealand as of 2018. In 2016, Japan saw a RE investment increase of almost 308%, with similar growth in other

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[106] (n 4) Crossley 6-7.

[107] (n 77) Sands 235.

[108] IRENA, 'Off-grid renewable energy solutions to expand electricity access: An opportunity not to be missed,(2019 International Renewable Energy Agency) available at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Jan/IRENA_Off-grid_RE_Access_2019.pdf Last accessed 10 May 2023

[109] IRENA, 'World Energy Transitions Outlook' (2022) 49, available at: file:///C:/Users/user/Downloads/IRENA_World_Energy_Transitions_Outlook_2022.pdf last accessed 19/07/22

developed countries."[110]The unequal distribution of RE investments compared to developing countries in SSA, which only receive 2% of these investments, raises a just transition concern.[111] And this is a much more excellent justification for the national governments to intervene in this sector.

3.3 Assessment of Case studies

3.3.1 Nigeria

Nigeria's RE promotion began with introducing its national energy policy in 2003 and the national renewable energy master plan in 2005. The nation implemented a comprehensive RE policy strategy to address institutional, regulatory, and economic limitations that hinder energy efficiency and renewable energy from competing with other energy sources.[112] The policy focus "attempted to address the multidimensional nature of the country's energy system, encompassing wind, concentrated solar thermal, solar photovoltaic, hydropower, biomass, and geothermal energy."[113] It also addressed issues relating to renewable energy (RE) and energy efficiency (EE), research and development, RE pricing, RE financing, subsequent legislation, and the relationship between EE and the environment.[114] Nigeria's RE policy direction

[110] A., Van de Putte, A., Campbell-Holt & G., Little John, 'Financing the Sustainable Energy Transition (2020) 73. The Geopolitics of Global Energy Transition; Lecture Notes in *Energy Policy*, 257 – 277, 260.

[111] (n 108) IRENA.

[112] A., Adelaja, 'Barriers to national renewable energy policy adoption: Insights from a case study of Nigeria' (2020) 30, *Energy Strategy Reviews*, 1 -10, 2- 4. , W. Esan, O. Ajayi, J. Akinola, 'Renewable energy in Nigeria: law, regulation, trends and opportunities (June 2021;IBA News Report) available at: Renewable energy in Nigeria: law, regulation, trends and opportunities | International Bar Association (ibanet.org) last accessed 11 April 2023

[113] Ministry of Power, Federal Republic of Nigeria, National Renewable Energy and Energy Efficiency Policy (NREEEP) Approved by the FEC for the Electricity Sector (2015) available at: http://admin.theiguides.org/Media/Documents/NREEE%20POLICY%202015%20FEC%20APPROVED%20COPY.pdf last accessed 12/02/2023,

[114] Ibid.

diversifies its energy mix to include more renewables, creating cost-effective and efficient national energy utilisation schemes for advancement and sustainable development.[115]

The National Renewable Energy and Efficiency Policy (NREEEP) 2015,[116] is a policy document the Nigerian Federal Government set up and approved to increase the country's renewable energy mix. The NREEEP's goal aligns with the ECOWAS regional policy and sets national targets for renewable energy and energy efficiency.[117] It provides the guideline for a strategic renewable energy action plan (REAP) that guarantees an affordable, sustainable, equitable, and reliable supply of RE at a fair and cost-reflective price.[118] The policy has "the major objective of developing the country's energy resources by diversifying the energy mix to achieve national energy security and an efficient delivery system."[119] It underscores strategies for accelerating the process of the acquisition and diffusion of RE technologies. By promoting investments in the sector, the policy stipulates financing mechanisms and encourages collaboration among stakeholders.

When it comes to Nigeria's renewable energy share in the energy mix, under the NREEEP, targets and timelines leading up to 2030 have been provided for each RE resource. With hydropower, the policy stipulates incorporating small-scale hydropower plants in rural development plans. It emphasises the increased need for gender and indigenous participation in the planning, designing, and constructing of micro and mini-large hydropower stations.[120] It further stipulates and expects the country to reach a target of 4 627 Mw and 8,174 Mw of large and small hydropower programmes by 2030.[121] These policies for indigenous participation are,

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[115] Ibid.

[116] Ibid

[117] Ibid 3

[118] Ibid 3

[119] Ibid.

[120] Ibid. 10 – 12.

[121] National Renewable Energy and Energy Efficiency Policy (NREEEP), 2015 Curated by Clean Tech Incubation and Acceleration Foundation with the generous support of ALL ON Approved By The Federal Executive Council (FEC) For the Electricity Sector April 20, 2015 , 3 available at: https://www.all-on.com/media/publications/simplified-guides-to-nigerias-energy-access-policies-and

however, lacking the normative concept of energy citizenship because there is still a sense of knowledge, finance and investment capacity, and technology gaps that prevent full and meaningful participation. Some of the Mini Grid project case studies covered in Chapter 5 serve as examples in this regard.

For solar electricity programs, the country is expected to achieve the 6,831 Mw target and 3,411 Mw of wind program target by 2030.[122] The policy in seeking to increase the percentage contribution of solar to the total energy mix, among other things, emphasises the development of an appropriate pricing structure and feed-in tariff (FIT) for concentrated power projects.[123] The policy expects the country to produce efficiency guidelines, achieve a 40% replacement of inefficient energy appliances by 2020, and enact all relevant legislations required for the policy implementation by 2020.[124] However, these measures have still not been met. In recognising the importance of off-grid RE strategies to rural electrification, the policy seeks to employ a sustainability pathway for efficient energy practices towards 2030. It has equally provided finance, regulatory structures, education, training, capacity development, and global/regional collaboration strategies within the said policy.[125] However, the approach's application reveals instances of poor societal expression, requiring further investigation in Chapter 5. The Federal Ministry of Power (FEP) and the National Energy Regulatory Commission (NERC) are the primary stakeholders responsible for implementing and aligning the policy with the country's development strategies.[126]

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regulations/_jcr_content/par/textimage.stream/1595010022370/2415fb964b5387e6cca3ea4546d4118e8c8ed77f/national-renewable-energy-and-energy-efficiency-policy-nreeep.pdf last accessed 06/03/23.

[122] Ibid

[123] Ibid 4, Ministry of Power, 'National Renewable Energy and Energy Efficiency Policy (NREEEP), 2015, Federal Republic of Nigeria 24 available at: http://admin.theiguides.org/Media/Documents/NREEE%20POLICY%202015-%20FEC%20APPROVED%20COPY.pdf last accessed 06/03/23.

[124] Ibid 7-11, 33 – 40.

[125] Ibid 8, 25 – 41.

[126] Ibid 8-9

An assessment of the country's RE potential shows that local conditions, particularly in Borno, Kaduna, Zamfara, Lagos, Edo, Delta, Taraba, and Plateau, are typically favourable for wind turbines.[127] Wind energy can be employed at a macro-level for private, small, and community street lighting, agricultural, and water pumping applications.[128] The rural communities in these regions could benefit immensely from technologies deployed from this resource. A strong hydro capacity and potential also exist in the country. The government has an ongoing Mambila hydroelectric power project to provide an additional 3,150 Mw of electricity to the mix.[129] Again, the country's solar PV potential is quite significant. With an average solar radiation of 3.5 kWh/m2 a day at the coastal latitude and 7 kWh/m2 a day at the far North, deploying solar photovoltaic technologies will be feasible and viable in the country where equipment and deployment costs are reasonable.[130]

3.3.2 Germany's Example

In the decades, Germany has recorded tremendous green energy use, growth, and development. Many EU member states have constantly relied on the EU's increasing RE directives and on Germany's laws and RE promotion strategies, given the EU court's frequent citation of them in its case law. Germany's policies and strategies can contribute to Nigeria's renewable energy development, but their unique context raises questions about policy transplanting and potential trend diffusion in developed versus developing countries. First, it is observed that Nigeria is an SSA country with poor institutional structures, markets, and capacities. Again, it is a multi-ethnical, populous, and energy-starved country dependent on fossil fuels for economic development. On the other hand, Germany is a developed country with a mature market and

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[127] Lahmeyer International Consultants, 'Report on Nigeria Wind Power Mapping Projects' (2005) Federal Ministry of Science and Technology, Abuja, Nigeria 37-51 (Unpublished) cited in A., Agbetuyi, Felix Akinbulire, T., Abdulkareem, A., Awosope, 'Wind Energy Potential in Nigeria' (2012) 3 *International Electrical Engineering Journal* 595-601

[128] Ibid.

[129] Ibid 11.

[130] M, Akorede *et al.*, 'Current Status and Outlook of Renewable Energy Development in Nigeria' (2017) 6(1) *Nigerian Journal of Technology* 196 – 212, 206.

solid institutions and is energy-sufficient, though with coal. Thus, Germany's goal for transition differs slightly from Nigeria's energy policy direction. Both countries belong to different regional institutions with member states grouped on similar factors, capacities, and goals; however, these regional institutions and case-study arrangements: developed and developing nations all want one thing – climate neutrality and sustainable energy development.

Germany's energy transition from nuclear and fossil fuels to renewable energy has depended on a range of supportive policies like feed-in tariffs. Surcharges were effectively used to pass along RE technology expenses to electricity users.[131] Because of the unequal distribution of these high costs, which led to opposition in the transition process, which could delay the decarbonisation process, surcharges were steadily lowered until they were finally eliminated. Consumption of power from renewable sources increased significantly, from about 6% in 2000 to more than 42% in 2019.[132] This indicates that the 2010 energy expansion target of 35% for 2020, was achieved earlier than expected.[133] From the Renewable Energy Sources Act, which entered into force in 2000, to the 2023 revision, Germany's strategies, timelines, targets, policies, and regulations have been ambitious, consistent, and upwardly revised.[134]

First, the Act facilitated market access for new electricity generation technologies by guaranteeing their purchase at fixed rates and their integration into the market.[135] During the (2015 - 2017) period, remuneration rates for renewable electricity were no longer set by the government but determined by auctions in the market, resulting in some price falls in 2017.[136]

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[131] (n 48) Appun

[132] Federal Ministry of Economic Affairs and Energy, 'Renewable Energy Sources in Figures: National and International Development 2019', 5 – 6 available at: https://www.bmwk.de/Redaktion/EN/Publikationen/Energie/renewable-energy-sources-in-figures.pdf?__blob=publicationFile&v=3 last accessed 7 March 2022

[133] Ibid.

[134] Future Policy. Org, 'The German Feed-in Tariff', available at: https://www.futurepolicy.org/climate-stability/renewable-energies/the-german-feed-in-tariff/ last accessed 07/03/23.

[135] Ibid 6.

[136] Ibid.

The drive for green energy and the consequent emergence of novel technologies lead to a sector's flexibility, both an opportunity and a challenge, which is why legislation and the market are important. As demonstrated in Germany's case, the role of rebalancing is enabled by laws and policies as tools for enforcing justice within the energy transition process. Germany's understanding of the flexibility of energy systems has demonstrated the significance of having a well-structured market and laws and knowing when to limit laws and let the market regulate the system.[137] For instance, Sorrel's view of the poor performance of niche innovations due to the expense and difficulty in competition with existing technologies justifies Germany's targeted sector policy intervention strategy.[138]

This planned substitution of an auction method for subsidies highlights the value of competition in ensuring that renewable technologies are commercially viable, highlighting the beneficial functions of markets, subsidies, and policies as positive landscape measures when properly implemented. For instance, the German government established a competitive bidding or subsidy auction system for solar energy projects, in which solar companies would compete for a certain amount of financing.[139] This strategy was appropriate for the environment and pushed more active development processes roles and projects to local investors and private entrepreneurs, increasing competition and lowering the overall cost of solar energy generation.

An assessment of Germany's EEG transition reveals an emission reduction, especially in the power sector, and overwhelming funding awards to citizens for landlord-to-tenant electricity and onshore wind projects.[140] It is observed that the funding strategy piqued employment in the country, leading to approximately 349,100 and 315,000 people in the renewable energy

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[137] IEA, 'World Energy Outlook' (OECD/IEA, 2018) 302 – 304 available at: https://iea.blob.core.windows.net/assets/77ecf96c-5f4b-4d0d-9d93-d81b938217cb/World_Energy_Outlook_2018.pdf last accessed 07/03/23.

[138] S., Sorrel, 'Explaining Sociotechnical Transitions: A Critical Realist Perspective' (2018) 47(2) *Research Policy* 1262 – 1282.

[139] (n 134)

[140] (n 105) 6.

sector in the years 2016 and 2017, respectively.[141] From solar energy, a very sharp rise in employment of about 38% was recorded in the renewable energy sector, more than any other sector in 2011.[142] Moreover, during this period, Feed-in tariffs, optional direct marketing innovations, and optional market premium and management bonuses were EEG's targeted policy and support measures for niche technologies and RE businesses – that guaranteed their prices.[143] However, by 2017, the numbers fell to 14% share, which is about 42,800 people, and statistics show that auction was the regulatory target option for this period.[144] The above example indicates the use of multiple regulatory approaches (push and pull and social incentives) in the incentivising RE transition in the country.

The 2021 EEG introduced capacity/support measures, targets, milestones, and timelines to improve integration in the heating, building, and transport sectors.[145] The regulation equally stipulated RE production targets for the period with a policy consideration of innovative tenders, fixed premiums, incentives to steer/support renewable buildings, and mandatory obligations to control output.[146] The EEG 2023 law is more consistent towards meeting the 1.5-degree pathway in the Paris Climate Agreement.[147] The EEG, which became fully implemented on January 11, 2023, has an 80% growth target for wind and solar energy and an increase in overall consumption from 600 to 800 terawatts.[148] The EEG 2023 provides funding for RE innovation

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[141] (n 105) 35.

[142] (n 105) 35 – 36.

[143] Ibid.

[144] Ibid 34 – 36.

[145] Kerstine Appune, 'What's New in Germany's Renewable Energy Act 2021' (2021) *Clean Energy Wire* available at: https://www.cleanenergywire.org/factsheets/whats-new-germanys-renewable-energy-act-2021 last accessed 07 March 2023.

[146] Ibid.

[147] Energie und Klimaschutz, 'We're Tripling the Speed of the Expansion of Renewable Energies' (December 2022) *Die Bundesregierung* available at: https://www.bundesregierung.de/breg-de/themen/klimaschutz/amendment-of-the-renewables-act-2060448 last accessed 06/03/23.

[148] Ibid.

to compensate for electricity production volatility.[149] For instance, higher remuneration rates for newly installed rooftop solar systems were in effect as of July 30, 2022.[150]

The Act "also provides new incentives so that more is done to ensure that the energy transition becomes locally accepted and established."[151] For instance, wind and solar projects run by citizens' energy cooperatives are exempted from tendering duties for a less bureaucratic process.[152] The EEG 2023 Act equally allows for increased financial participation of municipalities in wind energy projects to improve local acceptance and eliminate surcharges.[153] It is important to note that a review of Germany's renewable energy policy stance and regulation demonstrates the value of having a legislative foundation for policies, mainstreaming RE within sector planning, strong institutions, coherence between private and public policy, and consistent investments.

On the other hand, the Nigerian REP faces challenges in achieving policy objectives due to a lack of legislative framework, non-mainstreaming of renewable energy in sector planning, weak institutions, inconsistent investments, and policy coherence. For instance, many years after establishing the Renewable Energy Master Plan and the National Renewable Energy Policy 2015, there is no legislative framework for their implementation or entrenchment. Thus, Olanrele, has provided results that show that RE policy has little effect on the deployment of renewable electricity generation in the country.[154] It has been observed that Nigeria plans to

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[149] Ibid.

[150] Ibid.

[151] Ibid.

[152] Ibid 'Similar initiatives have been sparked by the UK Localism Act of 2011, such as the multibillion-pound West Midlands Energy Capital Project, which was created by a group of regional investors and business owners with the intention of enhancing energy access throughout the West Midlands' - See Energy Capital, 'A Regional Energy Strategy for the West Midlands' available at appendix.pdf (wmca.org.uk) last accessed 07/01/24 P 1 -68 PP 1,2, 6,7,8,9

[153] The 2023 Act summarily stipulates the FG's financing from the 'Energy and Climate Fund'.

[154] Iyabo Olanrele, 'Assessment of Renewable Electricity Policy for Sustainable Electricity Generation in Nigeria' (2021) IF-COP26-Policy-Brief.pdf Climate Compatible Growth Version 1 P 2 available at: https://climatecompatiblegrowth.com/wp-content/uploads/2021/09/1F-COP26-Policy-Brief.pdf last accessed 13/03/23

install 13 GW of off-grid solar capacity and achieve a 2% annual energy efficiency improvement, with a goal of a 30% improvement by 2030.[155] The country's high solar radiation intensity would be the most plausible reason for this policy target. However, the country lacks the technology or the market niche to flourish this RE option. In working towards realising this target, the government in 2014, set up about 60 solar projects with more installations under construction and consideration,[156] with a high percentage of these projects targeting rural electrification, particularly in the North middle-belt region of the country.[157] Most of these initial projects failed, were destroyed, or remained unrealised.

> "Furthermore, there seems to be a recorded development from the hydropower sector because this is the only other renewable energy resource exploited massively in the country, even before solar. Hydropower accounts for about 30% of the total installed capacity of 1900 Mw of electricity in the country, with an additional 1900 Mw for small stations.[158] The nation's hydropower stations supply 1,968 Mw of electricity against an exploitable large-scale potential of about 11,000 Mw.[159] To achieve this potential, the government has identified many hydropower sites. However, these steps have triggered tensions over social and environmental dilemmas - such as "GHG emissions, destruction of ecosystem services and agricultural gains, environmental/land pollution, climate change-induced droughts and human rights issues of community displacement due to flood."[160]

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[155] United Nations Agency for International Development (USAID), 'Analysis of Intended Nationally Determined Contributions'(2016) https://www.climatelinks.org/sites/default/files/asset/document/INDC%20White%20Paper%20-%20June%202016_public_RALI.pdf last accessed July 2020.

[156] A., Aliyu, J., Dada & I., Adam, 'Current Status and Future Prospects of Renewable Energy and Policy Framework' (2015) 48 *Renewable and Sustainable Energy Reviews* 336 – 346.

[157] Ibid.

[158] Energy Commission of Nigeria [ECN]., 'National Energy Masterplan (Draft Revised Edition)' National Energy Masterplan (2014) (Draft Revised Edition). Abuja, Nigeria. Available at: www.energy.gov.ng

[159] Ibid.

[160] Z., Elum & V., Mjimba, 'Potential and Challenges of Renewable Energy Development in Promoting a Green Energy Economy' (2020) 12(2) *Africa Review* 184.

More recently, Nigeria's off-grid strides have been met with significant development due to private investment in the sector and government support regulation removing taxes from importing solar panels and related RE technologies. However, this is very little and pales compared to the regional and global target and the great RE potential present in the country. It has been argued that while the exploitation and attainment of a diversified RE mix or legislative objective remain technically feasible, its success depends on the appropriate deployment of human and financial capacity in a consistent, well-coordinated policy/legislative regime. This example can be deduced from Germany's case, as the country consistently revised policies and backed them up with solid legislation and financial investments that were instrumental in the tremendous growth recorded in the RE sector. These investments and regulatory support measures were impressively identified, temporarily applied, and constantly revised, updated, and removed to push these renewables closer to the market.[161] Therefore, the EEG recognised the role of the market and employed the same in developing renewables in Germany.

3.4 Other Landscape Trends and Tensions -Policies, Economics, Technology and Trade

This section examines the other landscape factors and their effects on policies, socioeconomic development, technological advancement, and trade on the current energy transition policies and their justice implications. For example, job opportunities may shift from traditional fossil fuel industries to the renewable energy sector in countries where renewable energy policies are implemented. This can have positive and negative implications for workers and communities dependent on fossil fuel industries.

3.4.1 Investments

The global policy framework recognises how regions and homes to about 120 developing and emerging markets continue receiving comparatively low investments.[162] The report shows that

[161] (n 48), (n 105).

[162] IRENA & CPI, Global landscape of renewable energy finance, (2023) International Renewable Energy Agency, Abu Dhabi. Available at https://mc-cd8320d4-36a1-40ac-83cc-3389-cdnendpoint.azureedge.net//media/Files/IRENA/Agency/Publication/2023/Feb/IRENA_CPI_Global_RE_finance_2023.pdf?rev=6213e7fa55ec4991a22514572e7996c5 last accessed 14/03/23.

of the USD 2.8 trillion invested in renewable energy globally between 2000 and 2020, only 2% – equivalent to USD 60 billion, excluding large hydropower – went to Africa, despite the continent's enormous potential and needs.[163] Trends like this highlight how energy security and affordability have become primary objectives for some countries rather than sustainability. For instance, it is estimated that USD 570 billion will be spent on new oil and gas development and exploration every year until 2030.[164] Regionally, the African continent held a wide gap between renewable energy investment and fossil fuels (the latter ten (10) times higher). Nigeria ranked third among the African countries with the highest capital expenditure on oil and gas exploration between 2020 – 2022.[165]

Continued fossil investments show the importance of realising energy access, efficiency, and security. However, the emerging issue of losing this newfound access because of the inability to pay still exists. For instance, evidence suggests that the deployment of RE will increase by 85% by 2027 and overtake coal and gas-fired power plants to become the primary source of electricity by 2025.[166] These trends imply that government intervention may impact the use of technology, possibly leading to discriminatory policies, causing policy diffusion to fail, thereby requiring multi-governance coordination for strategies and investments.

These differential outcomes – informed by local capabilities, uneven resource distribution, energy access, institutional and regulatory limits, etc.- indicate the complex terrain of energy transition and the importance of integrating or using a multi-level perspective in designing transition strategies.[167] A key outcome of the above trends rehearses how efficiency and

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[163] Ibid 60.

[164] Ibid., International Institute for Sustainable Development (IISD), 'In Our Nature: Solutions for a Sustainable Future' (IISD Annual Report 2021-2022) 1 – 40, available at: IISD Annual Report 2021–2022 | In Our Nature: Solutions for a sustainable future last accessed 11 March 2023 'For instance, the work on the WTO deal reshaped an economic governance framework to directly enable sustainable development.'

[165] (n 162) 38 – 40.

[166] World Economic Forum, Energy Transition: Renewables will be World's Top Electricity Source Within Three Years, IEA Data Reveals (February 2023) Available at: https://www.weforum.org/agenda/2023/02/renewables-world-top-electricity-source-data/ last accessed 14/03/23.

[167] (n 162) 7 - 13.

sustainability will depend on which RE resources are available to the user and accompanying capabilities. The gaps in the transition process highlight the need for a global, inclusive energy transition, emphasizing international and South-South cooperation for broader investments.[168]

3.4.2 Extractivism

Trends also show repeated patterns of 'extractivism' where there is an apparent reduction of human rights protection and poor ownership process within the RE transition.[169] For instance, it has been observed that community property (agarian land and rivers) are expropriated through legislative urgency procedures, forcing communities to accept bargain prices and sell to third parties for energy projects.[170] An instance is Nigeria's Mambila and Zamfara dam projects which faced failed negotiation challenges, despite significant investments, resulting in environmental flooding, pollution, and social displacement. Studies in the Nigerian - Zamfara dam situation reveal that the project met the environmental impact and post-construction mitigation standards but failed to obtain proper license procurement.[171]

Evidence also suggests that jobs in the overall energy sector particularly transition-related technologies, could reach about 100 million by 2050.[172] According to IRENA, "this is 15% more than the planned energy scenario and 72% more than total energy employment

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[168] (n 162) 13 – 28 'This report for instance observes that Investments have been made by private actors. Private capital flows to the technologies and countries with the least risks – real or perceived. These risks hamper flows to the SSA as they do not feature in business profit models. And the majority of public investments are made domestically with relatively little international collaboration.

[169] Nick Meynen, & Deigo Marin, 'Why Energy Justice: Towards a New Economic and Energy Framework' (2022) Europe European Environmental Bureau Report (2022) available at: https://eeb.org/wp-content/uploads/2022/11/Why-Energy-Justice-EEB-Reflection-Paper.pdf.

[170] Ibid.

[171] G., Siciliano, et al , 'Large Dams, Energy Justice and the Divergence Between International, National, and Local Development Needs and Priorities in the Global South' (2018) *Energy Research & Social Science*, https://doi.org/10.1016/j.erss.2018.03.029 last accessed 29/03/2021 7.

[172] IRENA, Global Renewables Outlook: Energy Transformation 2050 IRENA Abu Dhabi (2020) 100-102 available at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Apr/IRENA_Global_Renewables_Outlook_2020.pdf?rev=1f416406e50d447cbb2247 last accessed 15/02/23

presently."[173] This means that if current transition measures create over 22 million new jobs and those RE jobs outweigh job losses in fossil fuels and nuclear energy, that is a win for development, sustainable energy, and the environment. However, the outcome could be different for Sub-Saharan African countries because of inadequate capacities.[174] For instance, statistics show Southeast Asia and Latin America will have the highest share of renewable energy jobs (83% and 72%), respectively, while North America, the Middle East, and North Africa will fall at 40% and 45%.[175] It equally shows that from an estimated 42 million jobs in renewables, SSA holds 4.8% of global employment.[176] The trend reveals that those developed regions display the highest energy transition patterns because they have better access and well-structured economic conditions that enable them to adapt or tackle challenges quickly.

Unlocking these developmental benefits or potential requires fostering global, regional, or local synergies between energy and socioeconomic systems.[177] For example, IRENA models have suggested that multiple global interactions for developing renewable technologies can deliver 75% of the energy-related carbon emission reduction needed and increase developing countries' socioeconomic footprint (GDP, employment, and welfare).[178] IRENA records that over 12.7 million new jobs have been created globally from RE as of 2021.[179] However, statistics show that these jobs are not evenly distributed across countries.[180] Also, jobs lost in fossil fuels and

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[173] Ibid.

[174] Ibid 103 – 109. 'It is estimated that the fossil fuel sector could shed about 6 million jobs.'

[175] Ibid 142.

[176] Ibid.

[177] Nang Da, 'Overview of Global and Regional Renewable Energy Policy Landscape' IRENA (2019), available at https://www.irena.org last accessed 29 March 2021.

[178] (n 172).

[179] Ibid.

[180] This is necessary because according to IRENA's report, Developing countries in SSA accounted for less than 0.50 million of those 12.7 million new jobs and 50 000 of off grid jobs in Nigeria. See: IRENA and ILO (2022), Renewable energy and jobs: Annual review 2022, International Renewable Energy Agency, Abu Dhabi and International Labour Organization, Geneva. P 28 available at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Sep/IRENA_Renewable_energy_and_jobs_2022.pdf?rev=7c0be3e04bfa4cddaedb4277861b1b61 last accessed 08 March 2023.

other sectors of the economy further strengthen the need for actions to address RE jobs, investment, gender, technology, and capabilities in order to ensure a just transition. This is where the multi-level perspective and governance come in.

The report spotlighted on the renewables value chain. It showed trends that RE technologies, including environmental and labour standards, are diffusing well in Asia with impacts on local communities and local content, adding value and instigating domestic manufacturing leading to more significant economic and job opportunities.[181] It also showed that jobs in the solar photovoltaic (PV) in 2021 were the fastest-growing sector, accounting for more than a third of the total renewable energy workforce.[182] The report acknowledged that many factors, including costs, investments, new and cumulative capacities, and various policy measures, shape these employment trends.[183] Thus, renewable energy jobs need a comprehensive approach with policies on deployment, integration, capabilities, industrial policies, education, skills training, labour market measures, diversity and inclusion strategies, and regional revitalisation.[184] Therefore, a socioeconomic outlook would involve aligning these global RE energy development strategies with social, economic, and environmental norms/ needs.

3.4.3 Financial Mechanisms

Government intervention in the sector implies financial or regulatory support to incentivise and enable green energy technologies in areas without this technical know-how. This is where green energy development cuts across regulation to market support, awareness, and technology. An analysis of different RE policy instruments reveals the importance of feed-in tariffs for solar

[181] Ibid 3

[182] Ibid 8

[183] Ibid 10

[184] Ibid 9

energy technologies.[185] Germany's Renewable Resource Energy Act of 2000 (EEG) and policy strategy of optional direct marketing innovations (market and standard premium, management bonuses) and the corresponding growth in solar electricity confirm this.[186] These regulatory support mechanisms "include feed-in tariffs, feed-in premiums, renewable portfolio standards/quota obligations, green certificate trading/renewable energy credits, competitive tendering, net metering, subsidies, loans, investment tax credits, green power schemes, grants, development support, and other indirect mechanisms."[187] Depending on the objectives to be achieved, some regulatory mechanisms target the end price or quantity of RE to confer certain benefits to the consumer or the RE market's demand or supply side.[188] Others are designed to accelerate renewable energy investments or support the operation of renewable energy projects.[189]

A feed-in tariff (FiT) is one of the most successful incentive schemes for accelerating renewables growth, particularly solar and wind.[190] *Feed-in Tariffs* are policies that set a structure to reward RE investments.[191] They are viable support mechanisms for deploying all types and sizes of renewable installations in nations with low financial and investment risk. They are tailored to technology, installation size, mounting system type, and frequent installation site.[192]Developed countries though currently moving towards competitive bidding like in the EU, first introduced FiTs to meet renewable energy targets and create job

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[185]Johnstone *et al*., 'Renewable Energy Policies and Technological Innovation: Evidence Based on Patent' (2010) 45 *Environmental and Resource Economics* 133 – 155.

[186] (n 105) 27 – 30.

[187] (n 4) 176.

[188] Ibid 176 – 223.

[189] Ibid.

[190] Y., Lu, et al., 'A Critical Review of Sustainable Energy Policies for the Promotion of Renewable Energy Sources' (2020) 12 (5078) S*ustainability* 1- 30, 18.

[191] Friends of the Earth, Feed-in Tariff Campaign Boosts UK Solar Power (2017) Available at: https://friendsoftheearth.uk/climate/feedin-tariff-campaign-boosts-uk-solar-power last accessed 15/03/23.

[192] Karolina Daszkiewicz, 'Policy and Regulation of Energy Transition' in M., Hafner & S., Tagliapietra (eds), *The Geopolitics of the Global Energy Transition*, (2020) 73 Lecture Notes in Energy 210.

opportunities.[193] With three key provisions of guaranteed grid access, long-term contracts, and cost-based purchase pricing, it is inevitable that "FiTs investors will be paid a cost-based price for the excess generated electricity to the grid."[194]

Le Page has observed that many EU member states, for instance, have established support for renewable energy source - electricity (RES-E) producers through feed-in tariffs.[195] Many studies have shown how FiTs and merit order effects were instrumental in reducing electricity prices while positively affecting innovation, competitiveness, and employment.[196] The use of competitive tendering (auctions) has helped the achievement of RET deployment at the lowest cost[197] – Germany's case study. Dugeri and Mendoca[198] have proposed FiTs as the most appropriate instrument for increasing the share of renewable energies in the power sector; this aligns with global framework conditions and international best practices.[199]

Interestingly, some of these regulatory mechanisms, which guarantee fixed financial returns to RES-E installations for each MWh produced, due to cost and irrespective of market prices or

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[193]M., Meyer-Renschhausen, 'Evaluation of Feed-in Tariff Schemes in African Countries' (2013) *J. Energy* South Africa 24.

[194] M., Mendoca, *Powering the Green Economy: The Feed-in Tariff Handbook* (2009 1st ed. Routledge) cited in Lu Y., Khan Z., Alvarez-Alvarado M., Zhang Y, Huang Z, and Imran M, A Critical Review of Sustainable Energy Policies for the Promotion of Renewable Energy Sources' S*ustainability* (2020) 12, 18

[195] Jerome Le Page, 'Towards a New Deal for the Integration of Renewable Power Generation in the Internal Energy Market: A Regulatory Perspective on European Climate and Energy Policy. In T. Cottier & I. Espa (Eds.), *International Trade in Sustainable Electricity: Regulatory Challenges in International Economic Law* Cambridge: (2017) Cambridge University Press. 101-119

[196] M., Ortega-Izquierdo & PRio, 'Benefits and Costs of Renewable Electricity in Europe' (2016) 61 *Renewable and Sustainable Energy Reviews* 372 – 383, 372, 375.

[197] J., Winkler, et al., 'Effectiveness and Efficiency Auctions for Supporting Renewable Electricity – What We Can Learn from Recent Experiences' (2018) 119 *Renewable Energy*, 473 – 489, 473.

[198] M., Mendonca, D., Jacobs and B., Sovacool, Powering the Green Economy: The Feed-in Tariff Handbook (2009 1st ed. Routledge)

[199] M., Dugeri, 'Promotion of Renewable Energy in Nigeria Through Feed-in-Tariff Schemes: A Legal Analysis' (2019) *Energy Economic* – Academia 1-10, available at: https://www.academia.edu/41422915/Promotion_of_Renewable_Energy_in_Nigeria_Through_Feed_In_Tariff_Schemes_A_Legal_Analysis last accessed 15/03/23.

system needs, have been held to segregate RES-E generators from the market effectively.[200] These new renewable generators are perceived to come with high investment costs and constitute trade barriers – implicitly or explicitly, depending on national intervention or legislation – which distorts the internal market.[201] A study on the effect of the feed-in-system policy on wind and solar photovoltaic energy investments in the EU between 1992 and 2015, by Mitaka A et al., revealed that a feed-in system policy (or renewable energy subsidies) does not necessarily enhance investments in RET.[202] However, instead, from a new renewable energy subsidy performance indicator and the type and characteristics of the subsidy contract, the market conditions, and the differences in the choice of RE sources affect the RE subsidy's effectiveness.[203] This view agrees more with Walter, who maintains that the effectiveness of various support policies is technology, country, regional, and other factor-dependent.[204] Le Page, adds that "market arrangements in Europe vary greatly and can significantly impact market functioning, hedging strategies, and investment decisions."[205]

The above position connects with the point made in this study about the significance of 'contexts' for global trends and policy diffusion. It links the common but differentiated capabilities and responsibilities principle (CBDR), to the view that "there is no single best regulatory support mechanism that will adequately accelerate the development and subsequent commercialisation of all renewable energy technologies and projects in all countries." [206]The

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[200] (n 4) Crossley 183, citing T. Couture, Y. Gagnon, 'An Analysis of Feed-in Tariff Remuneration Models: Implications for Renewable Energy Investment' (2010) 38 *Energy Policy* 955, 959

[201] Ibid.

[202] A., Mitaka, A., Alcino & E., Izdin 'The Effect of the Feed-in-System policy on Renewable Energy Investments: Evidence from EU countries (2020) 92 *Energy Economics* 1 – 30, 1.

[203] Ibid.

[204] M., Walter, et al., 'The Adoption of Green Energy Technologies: The Role of Policies in Austria, Germany, and Switzerland' (2017) 14(14) *Int. J. Green Energy*, 1192 -1208.

[205] (n 195) 'Le Page states factors such as the centralisation or decentralisation of dispatch decisions and imbalance settlement periods can play a crucial role in determining the success of a market.'

[206] R., Ottinger, L., Matthews & E., Czachor, '*Renewable Energy National Legislation: Challenges and Opportunities'* in D Zillman D et al. (eds) *Beyond the Carbon Economy: Energy Law in Transition* (OUP, 2008) 183 – 206, 206, citing IEA, 'Renewable Energy: Market and Policy Trends in IEA Countries,' (2004; IEA Report)

position justifies the market failure justification for government subsidies in the sector and the climate change goal. This means that several support mechanisms opted for by countries, their design features, and implementation will differ in every country and even within a region. For these different types of policies to be successful, they must be carefully designed and adequately supported.[207]

Crossley points to the differences in the indigenous renewable and non-renewable energy sources in each country, the national energy market structure, and the varying legislative objectives in national renewable energy laws/policies as the reason for implementation differences.[208]All these differences, alongside national support schemes, limited liquidity, and competition in electricity markets, arguably constitute quantitative restrictions on cross-border trade.[209] To safeguard against job loss and non-adaptation in technically disadvantaged areas, many support strategies to train, adapt and develop knowledge in installations, opportunities, and infrastructure will need to be considered in preparation for the development of green energy. Like the EU's single market, national-based support arrangements incentivise developers to install facilities with higher financial rewards (like in marketplaces and industrial hubs) rather than in rural areas with low demand.[210] However, this can put other RE developers in a disadvantaged position, impeding the decarbonisation goal.

Government financial support can incentivise RE technology producers without regard for market prices or system needs, thus leading to hostile prices. These considerations also apply

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available in https://www.iea.org/reports/renewable-energy-market-and-policy-trends-in-iea-countries last accessed 23 April 2023. 'it is the design of the support mechanism rather than its type that determines its success'.

[207] Ibid.

[208] (n 4) 176.

[209] Opinion of Advocate General Bot (2014) Ålands vindkraft AB v Energimyndigheten. (January 2014 Document 62012CC0573) (C-573/12), available at: EUR-Lex - 62012CC0573 - EN - EUR-Lex (europa.eu) last accessed 26 February 2021 'In Essent Belggium (C-204/12 to C-208/12), the tension between the principle of the free movement of goods, on the one hand, and the requirements of environmental protection on the promotion of electricity produced from renewable energy sources in the internal electricity market.'

[210] For instance, The Solar Nigeria Programme was designed and delivered as a pioneering initiative created to champion and accelerate the development of public and private markets for off grid solar power in Nigeria. FCDO, Annual Review: Programme Completion Review – 2021 available at: https://iati.fcdo.gov.uk/iati_documents/90000553.odt last accessed 07/03/23

to direct or indirect support mechanisms for electricity generated from nuclear and fossil fuels. Beyond national boundaries, trends have shown an ongoing diffusion of RE innovations nationally and regionally due to regional markets (trade), soft instruments and spillover effects between firms.[211] Crossley also remarks that a global, national, or regional green energy policy, where not well addressed and constantly observed, may give too much room for state or investor's manoeuvre.[212] Therefore, the absence of strong coordination between national renewable energy support schemes results in variety and incompatibility, which can lead to market failure.

3.4.4 Technology and Government Intervention

The growing use of RE has been heavily dependent on policy guidance, which has been the same for its technologies. This growth (referred to here as global trends in renewable energy) point to the general direction that the world is headed in terms of energy use. This can be gleaned from the attitudes and motivations of the government, people, institutions, and the market towards renewable energy. Thus, global RE trends may come from national, regional, and international policies, laws, objectives, and RED accomplishments. Research has demonstrated the critical importance of specific renewable energy policies (technology push or market pull) in addressing market failures and barriers to new RE technologies as well as the significance of policy choice and design.[213] For the most part, these technologies are not yet cost-competitive with the traditional methods of electricity generation, hence their need for government intervention.[214]

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[211] J., Horbach & C., Rammer, 'Energy Transition in Germany and Regional Spill-Overs. The Diffusion of Renewable Energy in Firms (2018) 121 *Energy Policy* 404 – 414, 406, 412.

[212] (n 4) 96.

[213] (n 211) 16.

[214] J., Loitera & B., Norberg-Bohm, 'Technology Policy, and Renewable Energy: Public Roles in the Development of New Energy Technologies' (1999*) 27(2) Energy Policy* 85—97, 85.

The effect of policy and market design in steering 'digitally' enhanced energy systems has been overwhelmingly efficient with significant advances in power generation – wind and solar and energy demand (electric vehicles and smart homes with demand-side response).[215] Available hypotheses suggest that "growth in renewable energy technologies deployment happens where high policy diffusion and conflation of capacities and investments occur."[216] The hypothesis is consistent with the need for well-designed policies that address specific needs,[217] the push-and-pull effects of solid institutions, the cooperation of private businesses, and carefully crafted regulatory and subsidy support measures, as highlighted in Germany's EEG.[218] Studies have shown that the learning effect from existing institutions and technology capacities can accelerate renewable energy innovations with spillovers.[219] Trends are consistent with the development and deployment of RET, because they increase path dependency, provide learning, create awareness, reveal gaps and accelerate growth, whether for policy, regulatory/support targets, or investment technologies for the energy transition.

The fundamental question, therefore, is how to ensure the coexistence and financing of all types of generation, demand-side response, and storage in a liberalised environment. There is a real possibility that it will never be possible for all renewables for specific technologies to be financed entirely according to competitive market rules, hence the need for government intervention. Nesta et al., has pointed out the importance of policy and heterogenous incentives in the innovation and development of RE sources.[220] The analysis reveals that the extent to

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[215] International Energy Agency, Digitalisation and Energy OECD/IEA (2017)available at: https://iea.blob.core.windows.net/assets/b1e6600c-4e40-4d9c-809d 1d1724c763d5/DigitalizationandEnergy3.pdf last accessed 15/03/23 1- 1888, 15-19

[216] J., Horbach, & C., Rammer, 'Energy transition in Germany and regional spill-overs: The diffusion of renewable energy in firms' (2018) 121 *Energy Policy* 404–414 406-407

[217] D., Ahuja, M., Tatsunati & D., Schaffer, 'Sustainable Energy for Developing Countries (2009) 2 *Survey and Perspectives Integrating Environment & Society*

[218] (n 216)

[219] Ibid.

[220] I., Nesta et al., 'Environmental Policies, Competition, and Innovation in Renewable Energy' (2014) 67(3) *J. Environ. Econ. Manag* 396 – 411, 398, 409.

which policies are effective in RED largely depends on complementary regulatory features that are country heterogeneous.[221]

For instance, the global policy framework recognises that the most significant amount of financing flows for RE was between countries within Europe as there is a robust cross-border market on the continent.[222] These RET investments were mostly private-driven, influenced by technology breakthroughs, available resources, corporate social responsibility, standard and robust markets, capacity, and finances. This highlights the insufficiency of policies alone,[223] emphasising the need for trade, regional arrangements, and the diffusion of RE technologies to ensure a just transition. Therefore, global, regional, and national partnerships level the playing field for the green energy transition by coordinating policies and promoting renewable energy technologies (RETs). They do this through policy convergence, taking advantage of differences in energy access, resource availability, and capabilities.

For developing contexts with improved energy access and security as its emergent goal, research indicates that entry barriers and inequality, negatively impact renewable energy innovation and financial constraints for newcomers due to perceived technology risk.[224] Nascent, immature technologies and energy systems will likely require public support for many years, preferably through research and development (R&D) budgets at the regional or national levels.[225] However, local private financing and regulatory support can ensure their financing for other technologies like onshore wind power, particularly solar photovoltaic installations, which thrive on demand.[226] As will be seen from the case studies, Nigeria lacks RE legislation but has a mini-grid regulation, renewable energy policies and a fused energy regulatory

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[221] Ibid.

[222] Ibid. 63 - International public financial flows to developing countries in support of clean energy decreased in 2019 for the second year in a row, falling to USD 10.9 billion.

[223] (n 214).

[224] (n 216) Horbach et al., 407.

[225] Like Green Hydrogen.

[226] (n 208).

institution. This legislative framework's role in communicating and realising RE policy goals in a nation cannot be overemphasised. For developing countries, energy market liberalisation is only justifiable to the extent it immediately lowers energy prices and moves the financing of schemes to support renewables and other climate action policies from electricity bills to state budgets.[227]

Given the resource potential, regulatory support, and private financing, the country could successfully accelerate off-grid PV technology innovations, irrespective of the sector's lack of local innovations and markets. This has been the case with some SSA countries where statistics show a record high of USD 558 million in off-grid investments in 2021.[228] However, these projects do not thrive or last because of a lack of competition, immature markets, poor management, and ill-advised technical assistance or vandalisation.[229] For industrialised nations where investments and markets are not challenging, RED can be achieved by channelling policies on a level playing field for competitors (auctions).[230] Market price distortions can be removed by removing subsidies and internalising the social costs of burning fossils. Industrialised countries can easily set targets and implement renewable portfolio standards and certificate or emission trading programs.[231] Germany's case study reveals this.

RE technologies cannot reach maturity in developing countries without substantial government intervention in the sector as well as competitive markets and strong coordination. The unstable markets, inadequate technical capacity, privatisation disadvantages, and competition do not

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[227] W., Xiaoming, N., Shangyou & W., Yunshi, 'Special Report 1: A Study of China's Energy Supply Revolution in Shell International B V., The Development Research Center (DRC) of the State Council of the People's Republic of China (eds) China's Energy Revolution in the context of Global Energy Transition' (2020) *Advances in Oil and Gas Exploration & Production* Springer, Cham. https://doi.org/10.1007/978-3-030-40154-2_2

[228] IRENA & CPI, 'Global landscape of renewable energy finance' (2023) International Renewable Energy Agency, Abu Dhabi. Available at https://mc-cd8320d4-36a1-40ac-83cc-3389-cdn endpoint.azureedge.net//media/Files/IRENA/Agency/Publication/2023/Feb/IRENA_CPI_Global_RE_finance_2023.pdf?rev=6213e7fa55ec4991a22514572e7996c5 last accessed 14/03/23

[229] Germany's push and pull methodology of using laws temporarily, while allowing markets to run the sector was successful.

[230] (n 105) 31 - 37

[231] Ibid.

encourage RED and deployment. For these economies, it is argued that reducing fossil fuel subsidies can enhance energy problems by generating internal revenues for renewable energy sector investment, boosting foreign investment prospects, and enabling government development objectives.[232] Fossil fuel subsidies are deliberate policy action by the government that targets electricity generated from fossils. For developing countries, this is the only way to reduce the net cost of energy production and purchase. Based on WTO's definition of subsidies in the Agreement on Subsidies and countervailing measures (ASCM),[233] most support for fossil fuels in developing countries includes budgetary transfers and tax expenditures that provide some benefit or benefit preference for fossil-fuel production or consumption relative to other alternatives.[234]

Interestingly, this is the case with Nigeria. Therefore, reforming subsidy programs and re-channelling them on RE investments would be preferred for developing countries. Growth in renewables justifies the 'benefit conferred' advantage that supports measures brought to the RE sector within a context.[235] Trends show that just as climate change has adverse and unequal effects on every country, the success of the transition will equally involve the participation of every country as well as RE value chains, policies and implications that go beyond the decisions within a country or region. Thus, control of the use of green subsidies by different countries is required to prevent a hindrance to global decarbonization efforts. This is how trade is depicted as a significant player and trend in the global RE agenda.

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[232] L., Merill, et al., 'Learning from Leaders. Nordic and International Best Practice with Fossil Fuel Subsidy Reform' (2016) Nordic Council of Ministers Report, 28 - 29, available at https://www.iisd.org last accessed 1/4/2021.

[233] Agreement on Subsidies and Countervailing Measures, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, 1869 U.N.T.S. 14. Art. 1

[234] OECD, 'OECD Companion to the Inventory of Support Measures for Fossil Fuels' (2015) OECD Pub. Paris

[235] Agreement on Subsidies and Countervailing Measures, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, 1869 UNTS 14. Art. 1

3.4.5 Economic Development

It has been observed that energy is a key driver of economic growth, but not all the energy sources produce the same impact.[236] The different energy characteristics like cost/benefit balance, environmental consequences, state of maturation and technology, and even their production scale can determine each energy source in the economic growth process.[237] Studies on the links between reducing GHG emissions, renewable energy development and economic growth have shown that RE's consumption does not automatically contribute to CO_2 emission reduction.[238] The explanation is grounded in energy storage and the existence of variables. It has been argued that green energy produced locally contributes to self-sufficiency, but renewables may also hamper economic growth, at least for regions with imperfect markets and investments.

Traditional energy sources have been the real drivers of economic growth in the last century, and fossil fuels have played a significant role in developing countries' economic growth. Therefore, investment in renewables implies dismantling or creating excess capacity based on conventional sources.[239] Hence, talking about global activities on renewables and their deployment without considering how 'trade' impacts this will not be wholesome because of the global value chains of these technologies. Therefore, trade is perceived as a distributive platform that can aid 'just' RE technologies' deployment and distribution. Its role depends on the extent to which environment-energy and trade goals are complementary and mutually supportive.[240] Today, renewable energy products are internationally traded, meaning that global activities on renewables and their deployment can impact local development priorities.

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[236] Ibid.

[237] Y., Bilan et al., 'Linking between Renewable Energy, CO 2 Emissions, and Economic Growth: Challenges for Candidates and Potential Candidates for the EU Membership' (2019) *Sustainability* 11 1528.

[238] Ibid.

[239] International Institute for Sustainable Development & United Nations Environment Programme, '*Trade and Green Economy: A Handbook'* International Inst. For Sustainable Development, Geneva (2014)

[240] Ibid.

The International Institute for Sustainable Development recently highlighted the significant trade impacts that support measures (subsidies) could have in upscaling development. To them, trade is neither good nor bad,[241] but its role and relationships are multiple, complex, and essential.[242] Support measures are required to address market failures and promote the growth of renewable energy sources to reduce carbon emissions.[243] However, it has been discovered that these measures promote inefficiency, rent-seeking, and protection and are challenging to remove once established.[244] For example, in oil and gas, consumption subsidies increased the demand for fossil products, which propelled trade for exporters. Thus, the direct trade effect occurs when fossil fuel producers' subsidies affect the markets for energy commodities.[245] For RE, selecting a regulatory support mechanism should rightly include whether a country is subject to the Agreement on subsidies and countervailing measures because of its position on targeted subsidies and their harmful effect on other countries. An attempt to balance this trade-off considering climate protection and energy justice concerns raises tensions that reveal how interests, national concerns, local conditions, and politics have contributed to the complexity of competing agendas in trade.

Groba submits that environmental injustice or energy injustice has become habitually reproduced throughout the society-changing phases – normalisation of pollution, technocratic authoritarianism, and the rise of the Anthropocene.[246] This means that environmental and social consequences of energy projects that operate on industrialisation principles, capitalism, and technology are an expected outcome of economic development and should be addressed

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[241] Ibid.

[242] Ibid.

[243] Luca Rubini, 'Ain't Waistin' Time No More: Subsidies for Renewable Energy, The SCM Agreement, Policy Space, and Law Reform (2012) 15 (2) *Journal of International Economic Law* 529-579.

[244] Ibid.

[245] Ibid.

[246] F., Groba, 'Determinants of Trade with Solar Energy Technology Components: Evidence on the Porter Hypothesis' (2014) *Environmental and Nat. Resource Economics Policy and Management* 503 – 526.

rationally.[247] Energy injustice, on this note, has become a normalised culture. Addressing this requires primarily including local knowledge and decision-making processes in designing and deploying large-scale RE technologies.

The global energy transition shows that as renewable energy grows globally, a diversified energy supply will become an irreversible trend.[248] Because trends show that energy revolutions have always targeted economic development, energy security, and environmental protection, energy security can help satisfy people's energy demands, create new employment opportunities, and reduce income inequality. Trends also show that energy integration with digitalisation can boost technology innovation, which could, in turn, revitalise sustainable energy supply.[249]All these sectors can create impacts that could go a long way in delivering the government's goal of economic prosperity where well managed. Nigeria has adopted both a centralised and decentralised approach to energy supply. The country's RE policy has mainstreamed these options – on-grid, off-grid and stand-alone - to help reduce Nigeria's dependency on other countries for energy, and to lower potential supply risks, thus improving energy security.[250]

3.5 RE Policy Diffusion – A Possible Trend

Theory and practice suggest that policies often spread when one country emulates another country's policy.[251]The concept of policy diffusion speaks of "the interrelated decisions of government that affect other sectors"[252] and creates ripple effects in other nations. It becomes easy to understand when the policy represents common/shared objectives, mutually reinforcing

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[247] Ibid.

[248] (n 215).

[249] Ibid.

[250] (n 113).

[251] E., Baldwin, S., Carley, & S., Nicholson-Crotty, 'Why Do Countries Emulate Each Other's Policies? A Global Study of Renewable Energy Policy Diffusion (2019) 120 *World Development* 29 - 45, 29.

[252] C., Shipman, & C., Volden, 'Policy Diffusion: Seven Lessons for Scholars and Practitioners' (2012) (72) 6 *Public Administration Review* 788 – 796.

or closely interrelated dimensions, values, norms, and development goals.[253] More like a global shared or *erga omnes* responsibility, climate change and energy security affect every country and evoke a similar sense of responsibility and objectives. A broader policy diffusion theory explains that countries are more likely to adopt policies that have proven politically feasible for countries with similar political and economic conditions.[254] Accordingly, following selected case studies excepting Nigeria, Crossley[255] has illuminated why countries legislate to accelerate RE's deployment. To her, countries use RE laws and policies to achieve multiple objectives, but some of these objectives may not always align with the legislative objectives or motivations for regulating the sector.[256]

Crossley,[257] has equally demonstrated how countries have successfully domesticated similar global RE policy objectives in balancing their economic needs while at the same time furthering the cause of decarbonisation. For instance, Renewable Energy Network (REN) states that as of 2018, 146 countries had set up Renewable Energy power targets, 138 countries had support policies directed at renewable energy, and 113 countries had national renewable laws in force.[258] The European Union Green Deal, a set of policy initiatives of the European Commission to achieve climate neutrality in 2050, is another example of a regional policy strategy that seeks to address, in a way, green energy development.[259]

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[253] (n 251) 30, A. Breuer, H. Janetschek, D. Malerba, 'Translating Sustainable Development Goal (SDG) Interdependencies into Policy Advice. '(2019) 11 (7) (2092) *Sustainability*

[254] C., Meseguer & F., Gilardi, 'What is New in the Study of Policy Diffusion?' (2009) 16(3) *Review of International Political Economy* 527 - 543.

[255] (n 4).

[256] Ibid.

[257] (n 4) 99

[258] REN 21 Sect; Renewables 2018 Global Status Rep. Rep, REP Network for the 21st Cent, 2018) Table R8 in P Crossley (n 4)

[259] Kramer Ludwig, 'Planning for Climate, and the Environment: The EU Green Deal' (2020) 17 *Journal for European Environmental & Planning Law* 267-306

Kramer,[260]expresses concerns about the viability of a global green energy policy's ability to reach and fairly affect developing regions. For instance, the EU sought to address this by establishing a just transition mechanism (JTM), to ensure fair delivery of the EU Green Deal and minimize adverse social and economic effects for different countries.[261] However, the possibility of meeting this JTM's goal 'of not leaving anyone behind' has been criticised as an illusion.[262] Sarki et al., following an analysis of the JTM and just transition fund (JTF), reveals that green transition creates the basis for prioritisation, and a European rule may challenge the flexibility to account for local conditions, which leads to the risk of leaving some actors behind.[263] Their analysis shows that JTF's movement of social support from some actors to another could lead to leaving behind of people previously covered by supportive policies.[264]

Therefore, it is consistent to argue that the inherent limitations in ensuring compliance with global/common objectives (like energy transition, climate change, and green energy development) can also lie within the laws and policies. Interestingly, developments in RET or international law alone will not overcome the political, economic, and social reasons behind the transition. This is worthy of note because addressing policy compliance requires a comprehensive and formalised structure to develop rules peculiar to a country's needs and unique issues, fossil and RE endowments, economic development, and awareness. All these factors, to a significant extent, influence a country's REP or its diffusion. For instance, from analysing how policy emulation patterns differ, Baldwin et al., suggested that other factors beyond the globality of objective also drive RE policy diffusion.

The question is whether many legislative objectives or multiple themes can be addressed through a single policy or regulatory mechanism. Findings suggest that "countries tend to

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[260] Ibid.

[261] S., Sarkki, e*t al*, 'Embracing policy paradoxes: EU's Just Transition Fund and the aim "to leave no one behind"'(2022) 22 *Int Environ Agreements* 761–792.

[262] Ibid.

[263] Ibid - Sarki et al, discuss the illusion of equity in the face of limited resources and argue that when resources are limited, everyone cannot be included in varied socio-economic conditions.

[264] Ibid.

emulate the policies of political peers and developing countries tend to emulate donors' policies."[265] Also, because the effect of electricity sector similarities varies by policy type, countries tend to emulate feed-in tariffs of countries with similar electric conditions and emulate quota policies of countries with dissimilar levels of reliance on RE.[266] Following the above and Crossley's observation of differences in regulatory support mechanisms, it will be safe to conclude that policy diffusions are not normative. Nigeria's energy transition policy direction points towards improving energy access and security. Therefore, energy sufficiency and sustainable development become the legislative objective of the country's energy policy.

This means that the country's energy policy direction is tailored towards energy diversification and not primarily decarbonisation. Interestingly, this policy goal or direction does not delimit the possibility or potential of attaining the green energy goal. This is, in fact, the leeway where global energy policy can impact RED in Nigeria. However, the trend must align with the country's goal and strategy for energy sufficiency. Thus, investment in green energy certainly can help accelerate energy sustainability and policy diffusion in a country. However, global trends show that challenges persist in achieving this globally, particularly in developing countries due to their inadequate capacities.

Cooley and Ron have equally highlighted the importance of having policies that respond to user needs and are accountable to users.[267] They argue that there is too much evidence of investment and technical assistance failing victims to perverse incentives.[268] The question, therefore, becomes one of how to balance the local needs of development and energy with the global decarbonisation agenda. Can both objectives be achieved simultaneously? How can Nigeria accelerate energy sufficiency through green energy? Crossley attempts to address these questions when she mentions that because different countries have different needs and are in varying developmental stages, their motivations and objectives will always be framed to reflect

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[265] (n 251).

[266] (n 251)

[267] A., Cooley & J., Ron, 'The NGO Scramble: Organizational Insecurity and the Political Economy of Transnational Action' (2002) 27 (1) *Quarterly Journal: International Security*, 5 – 39.

[268] Ibid

their needs and what best attends to their unique developmental priorities.[269] From this viewpoint, it suffices to say that the energy transition will not happen without attendant challenges because already marginalised regions like the country's rural areas (furthest behind) face the most significant challenges.

It is difficult to talk about RE transition when most rural areas of the country cannot meet basic social development goals: hunger, water, health services, jobs, education, businesses and capabilities. Sarki et al. argue that the EU Green Deal may marginalize fossil-dependent regions, and the Just Transition Fund must support marginalized actors while considering regional characteristics and socioeconomic statuses.[270]

3.6 Trends Collapsing Boundaries for a 'Just' Transition.

It is essential to note that even though global climate change implicates trade, the assessment of subsidies here is not made from the perspective of trade but rather from energy justice, access, climate change, and sustainable energy transition.[271] Interestingly, current RE trends reveal a compelling decarbonisation revolution blurring lines of industries, disciplines and jurisdictions such that sectors are increasingly shifting their principles to create policy spaces for sustainable energy transitions. Even the courts are not immune from the effects of climate change, so their recent decisions regarding how to balance environmental sustainability with economic growth or national energy development are significantly impacting countries' policies towards 'just' transitions.

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[269] (n 4).

[270] (n 261).

[271] However, in the Canada-RE case, the court used a comprehensive approach that considered even the sustainable development goals of a FiT.

The *Canada-RE,*[272] and the case of *Inter-Environnement Wallonie ASBL and Bond Beter Leefmilieu Vlaandersen ASBL v. Conseil des Ministres,*[273] are some landmark cases that have contributed to highlighting these blurred boundaries that exist in matters related to energy justice, development and sustainable transitions. In the case of *Inter-Environnement Wallonie ASBL and Bond Beter Leefmilieu Vlaandersen ASBL v. Conseil des Ministres,* the court acknowledged a breach of environmental obligations while also sustaining Belgium's ability to maintain its current energy security policy. Here, the Court of Justice of the EU (CJEU) detailly considered applying the 'security of electricity supply' exemption within the framework of EU environmental legislation.[274] Cenevska argues that the CJEU judgment balances member States' interests in ensuring electricity supply security with EU law's environmental protection requirements.[275] In *Canada-RE*, the case bordered on determining whether a FiT constitutes a benefit for green goals; the courts avoided deciding whether an environmentally minded programme confers a benefit.[276]

It is argued that the court's interpretation of sustainable energy transition laws has been influenced by trends in renewable energy transition, human rights abuses, and ownership strategies leading to the development of the law regarding sustainable energy transition and energy justice.[277] In the *Canada-RE case*, the court used much more than a market impact test

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[272] WTO Appellate Body Report, Canada – Certain Measures Affecting the Renewable Energy Generation Sector/ Measures Relating to the Feed-in Tariff Program [Canada – Renewable Energy/FIT Program (2013)], WT/ DS412/DS426/AB/R, adopted 24 May 2013.

[273] Case C-411/17, ECLI:EU:C:2019:622.

[274] Ilina Cenevska, 'Environmental Protection Meets Security of Supply: Case C-411/17 Environnement Wallonie ASBL and Bond Beter Leefmilieu Vlaandersen ASBL v. Conseil des Ministres, Court of Justice of the European Union (2021) Transitional Environmental Law 1-18

[275] Ibid

[276] Carolyn Fischer, 'Canada- Renewable Energy: Implications for WTO Law on Green and Not-so Green Subsidies Resources' (2014) Discussion Paper available at: https://www.resources.org/common-resources/canadarenewable-energy-implications-for-wto-law-on-green-and-not-so-green-subsidies/ last accessed 07/03/23. 'In this case, the European Union (EU) and Japan brought a case to the World Trade Organization (WTO) against Canada, questioning the validity of Ontario's decision to combine a generous feed-in tariff (FIT) with a local content requirement (LCR) promoting the growth of renewable energy-related manufacturing.'

[277] In Rebecca Shelton & Hallie Earkin, 'Who's fighting for justice?: advocacy in energy justice and just transition scholarship' (2022) 17 *Environ. Res. Lett*. 1, it was asserted that 'findings illuminate that: (a) energy systems and transitions are governed by processes and institutions that are often inaccessible, (b) advocates often attempt to

and equally considered the government's green and local content objectives.[278] Rubini, says that the position of the law on whether the WTO law recognises green energy subsidies is one of diffuse legal uncertainty that produces a constraint on policy space.[279] He agrees that the issues surrounding the question of green energy subsidies are subject to many vagaries and may offer partial solutions.

Another extrapolated example is the Agreement on Fisheries Subsidies,[280] which marks a significant step forward for ocean sustainability, indicating the WTO's historic turn of support towards the environment.[281] It is, therefore, no longer about offering partial solutions or WTO members having space to implement domestic actions; it is now about proactively using trade, trade policy and trade cooperation to achieve environmental goals.[282] For instance, policy lessons from the United States Inflation Reduction Act (IRA) and the entire government policy programme show how local policies have been used to reduce the delivered cost of hydrogen (green ammonia) and draw investments into the United States (US) and domesticate supply

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affect change using tactics external to such processes and institutions, and (c) issues of environmental degradation are often prominent in advocacy discourse concerning the energy transition'.

[278] (n 189), Courts are equally beginning to look at the environmental costs to vulnerable areas (like the pacific due to the mining for metals required for rechargeable batteries in deep sea environments. See Sue Farran, 'Deep Sea Mining and the potential Environmental Cost of Going Green in the Pacific' (2022) 24(3) *Env. L. Rev.* 173-190.

[279] Luca Rubini, 'Ain't Waistin' Time No More: Subsidies for Renewable Energy, The SCM Agreement, Policy Space, and Law Reform' (2012) 15(2) *Journal of International Economic Law* 525–579.

[280] Agreement on Fisheries Subsidies adopted at the 12th Ministerial Conference (MC12) on 17 June 2022, - Available at: https://www.wto.org/english/tratop_e/rulesneg_e/fish_e/fish_e.htm last accessed 15/03/23.

'The Agreement on Fisheries Subsidies delivers on the mandate from the 11th Ministerial Conference, as contained in the Buenos Aires Ministerial Decision, and on the Sustainable Development Goal (SDG) 14.6, which is part of the 2030 Agenda for Sustainable Development adopted by all United Nations member states in 2015, and affirms the WTO's role in the global fisheries subsidies agenda.' - ibid

[281] Ibid.

[282] Anabel Gonzalez,' WTO Going Green' (2022) WTO available at: https://www.wto.org/english/blogs_e/ddg_anabel_gonzalez_e/blog_ag_19dec22_e.htm last accessed 15/03/23.

chains.[283]The policy implication of the above for global energy transition, despite enhancing RE development/deployment within the US, is the interruption of emission reduction and energy security strategies.[284] This is where trade and the WTO come in as a major or global RE trend influencers because these subsidies enhance energy injustice and inhibit competition for developing countries' foreign-produced supply/value chains.

Crossley acknowledges this view of green energy subsidies being subject to differentiated strategies and, as such, justifies why government responses to green energy should be tailored to the region's needs.[285] She connects this with integrating policy objectives and well-structured RE laws to drive sustainable development.[286] Whether attaining similar RE norms and objectives would be plausible in a constantly unbalanced global terrain remains to be seen. This notwithstanding, it cannot be denied that normative convergence (common goals), courts, technology, subsidies, culture, and the instrumentality of trade and markets will play a significant role in establishing a trend that will accelerate RE deployment and advancement and achieve the climate change objectives in regions and countries.

3.7 Conclusion

Developing countries are most interested in green energy development/deployment due to their need for sustainable electricity access. However, the challenge of transitioning cuts across several barriers that are 'economic, institutional, political, legislative, social and environmental',[287] which "work interactively to hinder the development and diffusion of RE

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[283] Joseph Majkut, 'The Inflation Reduction Act: A Race to the Top or Protectionism in High Gear (2023) Center for Strategic and International Studies (CSIS) available at: https://www.csis.org/analysis/inflation-reduction-act-race-top-or-protectionism-high-gear. Last accessed 15/15/2023.

[284] Ibid.

[285] (n 4) 97.

[286] Ibid.

[287] IPCC, 'Special Report on Renewable Energy Sources and Climate Change Mitigation (SRREN)' (June 24, 2011 ;IPCC-UN Briefing) available at: Special Report on renewable energy sources and climate change mitigation (SRREN) — IPCC last accessed 11 March 2023.

technologies."[288] The trend reveals how the green energy transition pushes local institutions and investors into more significant interaction regardless of their normative starting points or orientations. This chapter has explored the impact of global renewable energy trends on regional and national renewable energy transitions, highlighting the multisectoral landscape and the need for an integrated policy process. This position is reflected in national governments' integration of international and regional environmental protection and sustainable developmental targets into their energy-making strategies, policies, and installations. Trends reveal a policy challenge in enforcing and measuring compliance with regulations, as the metric or standard may be one-size-fits-all, making outcomes difficult to differentiate or achieve. This will be portrayed with the mini-grid EJ-MLP case analysis example in chapters 5 and 6.[289]

[288]M., Adachi, 'Success and Failure of Renewable Energy Policies in the EU: A Comparative Study of Bulgaria and Poland' (2011) A Working Paper, No. 131/2020 -Institute for International Political Economy Berlin 6

Haas, et al., (2011) 186

[289] The developers, regulators, consumers, technologies and local businesses involved in mini-grid electricity will be examined in Chapters 5 and 6.

CHAPTER 4: The Legal and Institutional Framework for Energy Access and Transition in Nigeria

> "A just transition is a period when people go from dirty fuel to clean fuel, noting that a just transition for Africa may be completely different than in wealthy countries. In Africa, there is not enough energy, and you are decarbonising 0.55 per cent (of emissions). What are you decarbonising? What does that mean in the average sub-Saharan country?"[1]

This chapter explores whether the government, in developing effective strategies for the development of the energy transition, across various transition levels (niche, regime, and landscape), and groups, takes into account a multi-level governance approach. The discussion begins with how, in spite of its diversification efforts and diverse actors and needs, the nation's current energy regulatory and institutional policy, which is centred on energy access, security, and development, is ingrained in a homogenous and system-dependent structure. It argues that it is this framing that justifies the choice of the energy legislation, regulations, and policies analysed in this chapter. More importantly, the analysis of legislation, policies, and regulations reveals that the current energy transition legal framework in developing countries favours fossil-based electricity consumption, significantly contributing to carbon emissions. Thus, the chapter sets up the nation's current legislative framework as MLP's dominant meso-level paradigm (regime), which is arguably shaped by the underpinnings of development: states' ownership of natural resources, powerful oligarchies, centralization, energy poverty, lack of access, and a heavy reliance on gas.

Thus, the nation's energy transition strategy is gleaned from the complex legislation and policies, some of which will be discussed in section 4.2. The section will evaluate the country's energy transition framework on whether it considers the socio-economic realities and global

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[1]Damilola Ogunbiyi, 'Ending energy poverty saves lives and the planet' Interview with UNSG of Sustainable Energy for all. available at:https://www.un.org/en/climatechange/damilola-ogunbiyi-ending-energy-poverty last accessed 21 February 2022.

trends, which are crucial for global energy transition and development. It will equally analyse whether the nation's current legislative approach addresses the pressing energy access concerns of the country given that a significant portion of the country, that is, 60%–70% of Nigeria's population, still lacks access to reliable electricity. It is also argued that this focused and differentiated approach, which aims to address current disparities in energy access and transition, may impede the growth of energy resources in the commercial, industrial, and local sectors while promoting cutting-edge low-carbon energy technologies and enabling a just transition. The challenge, therefore, is how the government will balance these competing interests of ensuring energy access and development while also enhancing sustainability, leading to the claim for reforms.

Thus, the chapter's analysis of the nation's current energy regime, framework, and strategies portrays the nation's transition circumstances and options as both a threat and an opportunity, based on the state's response to these challenges and global trends, while reshaping or balancing the competing interests and regimes. This is where the reality of "just" transitions comes in. This question will be thoroughly examined in chapters 5 and 6, using the Mini-grid regulation, 2016, as a case study. This links nicely with the energy justice (EJ) and multi-level perspective (MLP) concept explanation in chapter 2 and the preceding chapter's discussion of how MLP's landscape (global trends and non-state actors), influence national energy transitions and reforms.

4.1 Nigeria's Energy Transition Timeline

History reveals that international and national governments have constantly intervened in Nigeria's energy development, as have landscape – the factors of economics, environment, financial investment and other social objectives. Today, these interventions have become more complex and increasingly integrated, such that the lines of national and international governance: law and policy changes in the energy field are becoming blurry. For instance, the energy transition in Nigeria's electricity sector has been directly impacted by 'changing perceptions and goals, direct government interventions in energy infrastructure provisions, and

market rule changes.'[2] The introduction of steam engines for mechanical work during the industrial era, laid the groundwork for subsequent industry reforms.[3] Before this time, "Nigeria's electricity system's primary motive was lighting, powering the Nigerian Railway Corporation (NRC) workshops, supporting the Tin mines and powering government offices and settlements."[4] This was closely followed by the coal discovery, which significantly impacted energy demand in the country. Discussed below are some of the energy system's transition stages in the country, showing how the drive for 'development' has constantly shaped transitions in the country.

4.1.1 Coal

Ndomah et al. highlight that coal discovery led to increased economic activities, including the construction of coal-fired electrical generation plants, the expansion of railway transportation routes, and the emergence of steam engine industries.[5]During the coal era, the government also recorded plans to develop renewable energy hydropower generation for electricity in the country. The nation was governed indirectly by the colonial powers and a small group of Nigerian elites at this time. As such, despite having energy development as the goal, energy justice was far from driving energy development.[6] Batisda, puts this well when she states that; "during the colonial era, the main motivation for investment was access to supplies rather than

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[2] N., Edomah, 'The Governance of Energy Transition: Lessons from the Nigerian Electricity Sector.' (2021) 40 (11) *Energy Sustainability Soc* 5.

[3] Ibid.

[4] Ibid 6.

[5] N., Edomah, C., Foulds & A., Jones, 'Energy Transitions in Nigeria: The Evolution of Energy Infrastructure Provision (1800 – 2015).' (2016) 484 (9) *Energies* 9.

[6] For instance, Steyn writes, 'In part, this process of foreign domination and lack of local participation ensured that the oil industry retained its enclave character within the Nigerian economy during the independent era. It also ensured the alienation of local oil-producing communities from this valuable resource, who were given limited opportunities to participate in the industry beyond their main role as semi-skilled and unskilled labour. – P., Steyn, 'Oil Exploration in Colonial Nigeria, c. 1903–58,' (2009) 37 (2) *The Journal of Imperial and Commonwealth History* 249 – 274.

economic development."[7]To her, all forms of production at the time were internalized due to the demands of the industrial revolution.[8] Ndomah et al. also mentioned that British colonialists conducted extensive surveys in Nigeria at that time to discover primary energy resources like coal, hydro, crude oil, and minerals.[9]

4.1.2 Hydroelectricity

Due to Nigeria's plentiful water resources, hydroelectricity potential was discovered early on; however, the lack of significant investments to promote development posed a challenge.[10] During this time, the Electricity Corporation of Nigeria (ECN) was established as a statutory public company responsible for coordinating and integrating electric power development and achieving efficiency in the sector.[11] The country generated about 165.2 megawatts of power, increasing transmission lines.[12] Closely following this was the Niger Dams Authority (NDA) of 1962, established to help develop the country's hydro potentials.[13] Primarily, the NDA built and operated power gas stations and transmission lines and sold bulk power to the ECN, while the ECN was mainly responsible for power distribution.[14]

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[7]Ana Bastida, The Law and Government of Mining and Minerals: A Global Perspective (Hart Publishing, 2020) 45.

[8] Ibid.

[9] (n 6).

[10]V., Sharma & A., Sharma, 'Development of Hydropower in Nigeria' (1981) 6 *Energy* 475 – 478.; Edomah (n 5) mentions that since the 1930s, there have been plans to develop hydroelectricity in the country.

[11] Agbamuche-Mbu May, 'Power Supply: Natural Gas, Natural Solution,' This Day, 2016. available at: https://www.thisdaylive.com/index.php/2016/04/19/power-supply-natural-gas-natural-solution/

Last accessed 17 February 2023.

[12] Ibid.

[13] Ibid.

[14] (n 6).

In 1972, under Decree 24, the ECN and NDA were merged to form the now-defunct Nigeria Power Authority (NEPA).[15] The sole ownership of all commercial electric supply operations and the power to generate, transmit, and distribute electricity throughout Nigeria were granted to NEPA by this decree.[16] This action appeared convenient then because, at the time, electricity production in Nigeria was principally through hydroelectricity generation and little from coal production.[17] Following on was the oil exploration and discovery in Nigeria, which increased the demand for energy use, mainly because of the energy infrastructure brought about by the income from oil.[18] At this time, the needs of the industrial revolution also led to the discovery and development of oil and gas.

4.1.3 Oil and Gas

The colonial government granted Shell D'Arcy a joint venture license to exclusively explore petroleum resources on the nation's soil in 1937, [19]and the Petroleum Act was passed in 1969. The Act provided for the exploration of petroleum resources from the country's territorial waters and continental shelf.[20] It vested the ownership of all revenues derived from petroleum exploration in the federal government. [21] It is argued that this was just another manifestation of the nation's "development culture," shaped by the colonial past, which frequently favoured elites and disregarded localism. [22] Today, these elitists within the Nigerian oil and gas ownership portfolios are political and private capitalists who have accumulated wealth and

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[15] (n 6).

[16] National Electric Power Authority Act 1972, s 7 (2).

[17] (n 6).

[18] (n 6).

[19] P., Steyn, 'Oil Exploration in Colonial Nigeria, c. 1903–58,' (2009) 37 (2) *The Journal of Imperial and Commonwealth History* 249 – 274.

[20] Petroleum Act 1969, Preamble.

[21] Ibid – This position is rationalised by the 'state sovereignty and ownership over natural resources theory.'

[22] The colonial masters and their business interests (like Shell D'Arcy), and the administrators in colonies, initially established and benefited from this category of the "elitist few."

power through corruption and colonial-era connections, while the majority of the population faces poverty and limited access to basic services. For example, governments in developing nations often grant concessions to multinational firms for mining or logging operations without considering the needs of local communities that depend on these resources for their livelihood.[23] As a result, these communities are often excluded from decision-making processes, leading to environmental degradation and the loss of their traditional way of life.

Bhambra perceives the state's development culture as an economic growth strategy via "internal commerce" that prioritises private property (capitalism), and investment agreements over efficient resource management.[24] Likening it to colonialism,[25] Bhambra criticises state-managed development culture, calling into question its appropriative processes and emphasising how it marginalises indigenous people who ought to be energy citizens.[26] It is argued that the Crown's control over political and economic relations with indigenous peoples during this period led to the development of racialized colonial structures, thereby redefining imperialism as "economic internationalism."[27] Therefore, the foundational debate on the legitimacy of the welfare state stems from this colonial past, in which the nation's wealth is considered its legacy and should be utilised to improve the lives of its (national) citizens.[28]

This is the idea of the country's constitutional energy system approach, which promotes federalism, centralization, and states' ownership of resources for state development rather than resource ownership for individual units. It is argued that this constitutional position, which is

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[23] The Niger Delta community is an example in this regard.

[24] G., Bhambra, Colonial Global Economy: Towards a Theoretical Reorientation of Political Economy (2021) *Review of International Political Economy* (2021) 28 (2) P 307 - 322 PP 314, 315 and 317.

[25] J., Sainty (ed.), Introduction. In *Office-holders in modern Britain: Volume 5, home office officials 1782–1870* (1975) University of London. British History Online. http://www.british-history.ac.uk/office-holders/vol5/pp1-10 pp 1-10. 'This history, for instance, is founded on the way that the British Secretaries of State in the late eighteenth century, established the Home Office and the Foreign Office as separate organisations, giving the Home Office jurisdiction over the colonies under the heading of domestic, (and not foreign) affairs.'

[26] (n 24).

[27] Ibid.

[28] Ibid.

consistent with the current energy transition regime in the nation, marginalises differentiated (unique) needs and heterogeneous actors by presuming homogeneity and a one-size-fits-all approach.[29] Accordingly, Mann posits that this type of social welfare structure and governance was formed due to increased colonial extraction and consolidated through resource distribution and redistribution within national boundaries.[30]

For instance, oil and gas is currently one of Nigeria's most important and valuable natural resources. Its exploitation accounts for more than 40% of the GDP, 95% of export revenues, and more than 80 percent of government revenue.[31] The largest private oil company in Nigeria is the recently privatised state-owned Nigerian National Oil Corporation (NNPC),[32] which was in charge of locating, exploiting, and exporting the country's natural gas and oil resources. Since the colonial era, private firms have exploited the nation's natural resources for development purposes, claiming control and sovereignty in the names of European kings and the Pope.[33]

Batisda, equally observed that in this era (the late nineteenth century), "small European and North American companies spread across previous colonies using concession agreements as a vehicle to facilitate access and to establish terms and conditions for investment."[34] Particularly in the petroleum sector, Batisda points out that these traditional concession agreements were

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[29] Niels Schenk et al., Meso-level Analysis, the Missing Link in Energy Strategies *Energy Policy* 35 (2007) 1505 – 1516 pp 1513

[30] M., Mann, *The sources of social power: Volume 3, global empires and revolution, 1890–1945*. (2012) Cambridge University Press.

[31] Statista, Contribution of oil and natural gas sector to GDP in Nigeria from the 4th quarter of 2018 to the 2nd quarter of 2023 available at: Nigeria: contribution oil sector to GDP 2023 | Statista last accessed 24/01/2024.

[32] L., Komminoth, Nigeria's NNPC Becomes Private Company African Business July 22, 2022 available at: Nigeria's NNPC becomes private company (african.business) last accessed 24/01/2024.

[33] R., Miller, The legal adoption of discovery in the United States. In R. J. Miller, J. Ruru, L. Behrendt, & T. Lindberg (Eds.), *Discovering indigenous lands: The doctrine of discovery in the English colonies* (26–65). Oxford University Press (2010) 33.

[34] (n 8).

more like 'self-constituted charters,[35] 'lacking fair terms for regulating the relationship between the parties on an equal and just footing,[36] thereby creating "economic, political and legal enclaves within host territories."[37] It is at this time, that the nation recorded increased gas production due to the Petroleum Act's creation.[38] They later established regulatory structures: Nigeria Liquefied Natural Gas Limited (NLNG), in 1989 and the National Petroleum Corporation of Nigeria (NNPC), to help develop the country's oil and gas potential. The commercial discovery of oil boosted energy demand. It drew foreign direct investment to the sector, advancing the nation's energy development goal (more like economic internationalism) but at a cost to indigenous people's safe environment, empowerment, and participation in decision-making processes.

This is what the call for energy citizenship for a just transition aims to achieve, wherein energy transition strategies, treaties, and regulatory frameworks, as well as bilateral and multilateral energy contracts and contractual provisions, comply with local content requirements and market participants, and operators prioritise locals, domestic businesses, and locally produced materials when acquiring goods and services for energy-related operations.[39] This is because governments, companies, and energy systems differ from country to country; hence, they are heterogeneous actors on the international stage, and as such, they have differentiated responsibilities and differentiated nationally determined contribution policies in order to enhance the transition.[40] Locally also, consumers' capabilities, context, cultural background, access to the national grid, and technological knowledge differs, influencing their productive use, all of which impact their willingness to transition. It is argued that this multi-level

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[35] (n 8).

[36] (n 8).

[37] J., Otto & J., Cordes, The Regulation of Mineral Enterprises: A Global Perspective on Economics Law and Policy (Rocky Mountain Mineral Law Foundation, 2002).

[38] Ibid.

[39] D., Olawuyi, 'Local Content Policies and their Implications for International Investment Law' in J., Chaisse and others, Handbook of International Investment Law (Springer 2019) 1-21.

[40] (n 29) 1508.

understanding is crucial for policymakers on how to best frame, incentivize and govern the transition process.

For instance, Nigeria's Niger Delta (oil-rich) region, is in a state of ecocide. The severity of the pollution, poverty, and lack of access to grid electricity in these communities indicate this unjust energy development and management approach that ignores the energy (underclass) citizens – especially those in the rural communities without assess or capacity to afford electricity. It is therefore argued that this "economic internationalism," as a development culture shapes the oil and gas industry and the regime, building upon the institutional political and economic elitist legacies. This is clearly portrayed in the country's legal framework, which currently establishes "gas" as a transitional fuel, despite calls for a global transition to renewable energy (an evolving energy landscape). This dominant meso-level regime continues to navigate how the nation deals with the international system, local realities, and global trends, such as the gradual shift of big oil companies away from oil prospecting towards renewables and new technologies.

Thus, as will be explained in the next section, the majority of the country's energy laws and policies describe a transition that is based upon path dependency, homogeneity and technology lock-in's with subtle reforms seeking to bring on board heterogenous actors and sub-systems. However, these subtle reforms mirroring the incorporation of renewables as niches, are still tethered to oil and gas—the dominant meso-level regime—illustrating how the energy system of the nation is made up of various groups of distinct players who are not all able to be satisfied in the same way. For instance, the nation's mini-grid subsector still distributes its off-grid technologies using oil and gas to off-set for batteries and targets mainly those in the rural communities with no access to the national grid. Thus, due to these disparate starting positions of actors and consumers, the country's dominant oil and gas regime is up against the country's niche development of renewables, mirroring a sustainability vs. just or equitable dilemma for the country's energy transition governance.

4.1.4. Renewable Energy – Mini-grids

Decarbonization and energy security have influenced Nigeria's diversification of its energy mix. The goal has been to find a balance between the government's distribution of the proceeds from natural (energy) resources among the country's many regions, protect the environment and at

the same time, ensure energy security. These goals stipulate the public interest role of the government to ensure equality and access to energy for all. It is in this governance role, due to the country's energy supply insecurity, that the government has opted for mini-grids to target rural communities' electrification. Mini-grids are, therefore, critical themes in the current transition because they use solar – (energy from the sun) and are decentralized. The world bank has expounded on the impact of this decentralized renewable energy option in lighting up Africa through a rebalancing of government and industry roles and interests.[41]

Mini-grids are "an integrated local generation and distributive system capable of serving at least two end users independent from the national grid."[42] The component of the mini-grid referred to in this work (as used in Nigeria) is solar photovoltaic (Solar PV) generation with battery and diesel backup. The rural electrification agency justifies promoting mini-grids: "to electrify unserved and underserved areas *with high economic growth potential*, aimed at serving households, local enterprises and public institutions."[43] This supports the study's position that just transition concerns for the country is inconsistent with those of other nations and that the country's frame of just transitions is development driven.

In addition, because state ownership and governance of resources is development-oriented, it can reproduce energy injustices, social exclusion, and development sacrifice zones. It may also exacerbate human rights violations in the country's energy development sector. Therefore, even though the state's development culture (state ownership and management of resources) may have enormous benefits, it is essential to consider why its policy direction of a seeming heterogenous make up of actors for a multiple energy framed challenge, may pose potential

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[41] The World Bank,' Solar Mini-grids Could Power Half a Billion People by 2030 – If Action is Taken Now' *World Bank Press Release* September 2022, available at: https://www.worldbank.org/en/news/press-release/2022/09/27/solar-mini-grids-could-power-half-a-billion-people-by-2030-if-action-is-taken-now#:~:text=Modern%20solar%20mini%20grids%20now,as%20they%20use%20the%20electricity. last accessed 25 April 2023. Mini-grids have been identified as a core solution for bridging the energy gap in developing countries, but to fully realise this objective, governments and industry must collaborate to carefully identify mini-grid opportunities, lower costs, and remove financing barriers.

[42] REA, 'Project Implementation Manual for the Nigeria Electrification Project Report', (July 2021) 11 available at: https://rea.gov.ng/wp-content/uploads/2021/12/NEP-PROJECT-IMPLEMENTATION-MANUAL.pdf last accessed 24 April 2023.

[43] Ibid 12.

negative consequences for certain communities (actors), thereby inhibiting a just transition. This is because in order to reorganise a policy strategy to tackle a complicated transition process of heterogenous actors and needs, a reorientation is needed to ensure that energy development, even sustainable transitions, are fair and human rights and interests are balanced.

In terms of managing decentralised systems, Soinien and Huhta, agree that the primary complexity-related challenge facing decentralised frameworks is their multiple objectives.[44] Furthermore, as was correctly argued in the previous chapter, it is the broad range of MLP's landscape factors that puts pressure on the establishment of a multi-level governance framework that is objectively laddered. A transition of multiple levels with broad objectives requires a multi-level governance framework, that is useful in preventing potential inequality in decentralised electricity markets and in helping to ensure fair competition for market participants.[45] It also introduces tools to manage and protect against these inequalities, while managing expected and unexpected consequences, because decentralisation, where not well managed, equally has the potential to create uncertainties, injustices for consumers, and risks to energy security.[46] Herein lies the expression of the mini-grid case studies that will be examined in the upcoming chapter. These case studies typically demonstrate how Nigeria's current "development" guiding principle and complex homogenous approaches fail to primarily reflect a space for heterogeneous actors and their decentralised needs, thereby impeding the prospects for a "just" transition. Schenk et al, puts this well when he stipulates how the MLP's meso-level suggests the differential design of policies as they best provide an escape from this energy dilemma of heterogeneity.[47]

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[44]N., Soininen & K., Huhta, 'Chapter 4 Law for Decentralized Electricity Systems: Lessons from Complexity Theory' in *Sustainable Energy Democracy and the Law* (Leiden, Brill; 2021) 78 – 98, 92.

[45] Ibid 92 – 93.

[46] Ibid

[47] (n 29) 1514.

Zacijek, speaks of various mini-grid business models – "a state-run utility; a private developer; a community-owned scheme; or a hybrid approach."[48] Nigeria incentivizes a series of private developers whose operations and tariff pricing are independent of the government. [49]This mini-grid privatization mirrors the electricity sector reforms of the government. It also makes business sense as these businesses could operate with less competition from the electricity distribution companies (DisCos), by targeting communities not covered by the national grid. In two ways, the mini-grid option leads to the privatization of the electricity industry. It addresses social exclusion from rural areas' lack of access to energy by offering a decentralized energy source, allowing communities more control over their electricity supply.

However, the lack of integration of these RE technologies into the current system, as well as their accessibility, availability, use, capabilities, and public recognition and participation in decision-making regarding the regulation of the relationship between developers and consumers, also raises concerns about energy justice and multilevel governance. This is because of the policy instruments which apply best to systems with flexible organization and heterogeneity.[50]By promoting a diverse mix of energy resources from oil and gas, hydro, waste, coal (for grid supply) and mini-grids - for areas not covered by the grid, the country is not only reducing its dependence on fossil fuels but also creating opportunities for job creation and sustainable development. This position indicates the country's policy direction – development and energy security. It is therefore argued that this is the lens of energy justice in the country, where the government strives to ensure that all citizens have access to reliable and affordable energy sources, regardless of their location or socio-economic status. However, this enormous and well-intended objective raises a co-ordination problem which cannot be best achieved by the nature of the nation's current energy legislative framework and policy instruments, and organisational structure as will be discussed below.

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[48] Charlie Zajicek, 'How Solar Mini-grids can bring Cheap, Green Electricity to Africa,' Overseas Development Institute https://odi.org/en/insights/how-solar-mini-grids-can-bring-cheap-green-electricity-to-rural-africa/ last accessed 25 April 2023.

[49] Ibid.

[50] (n 29) 1514.

4.2 Key Legislation, Policy and Regulatory Institution

The overall legal framework for the country's energy access and transition to a more energy-efficient economy includes "the multi-layered framework governing the development of energy resources and the relationships between the stakeholders."[51] The framework also includes "contracts and licenses and the procedures touching on investment, financing, infrastructure, competition, planning, regulation, and management."[52] It also includes rules for ensuring fair competition, labour rights, environmental protection, and the management and development of energy resources in a sustainable manner, as well as their interpretation instruments.[53]

With the main objectives of "bringing modern energy services to the entire population, managing the anticipated long-term job loss in the oil and gas sector, promoting a fair transition in Africa with gas as a transitionary fuel, and streamlining existing and new government-related energy transition initiatives, the country's energy transition plan speaks of lowering emissions and powering development."[54] Achieving this points to using all energy sources, multi-sector collaboration and a multi-pronged approach. The nation's energy sector comprises petroleum, hydropower, and renewables, producing fuels for energy production, and the electricity industry. However, still; oil and gas are the critical energy source of the nation's electricity sector, accounting for over 80% of the electricity supplied to the national grid.[55]

As a result, several legislations and regulations are involved in the country's energy access and transition process, but only a few will be highlighted. Analysing the current fossil fuel regime and its governance is essential when thinking about mini-grids as a niche (a renewable energy

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[51] (n 8) Bastida 139.

[52] Ibid

[53] Ibid 140.

[54] Federal Government of Nigeria, 'Nigeria Energy Transition Plan' (2022) available at: https://energytransition.gov.ng/ last accessed 13 March 2023

[55] Y., Chanchangi et al., 'Nigeria's Energy Review: Focusing on Solar Energy Potential and Penetration,' (2022) *Environment, Development and Sustainability*. 1 – 42.

alternative). Therefore, the choice of laws and policies that are chosen for analysis here are mainly policies and legislation that broadly articulate RE diversification objectives. These are policies and regulations that mention RE and liberalisation or decentralisation goals but are lacking in massive RE incentivization measures, yet very relevant in massive gas investments targeting fossil fuels, which mini-grids aim to destabilise. These targeted policy regulations and legislation, as will be seen, lack context differentiation and improperly articulate or reference local contexts and landscape pressure, resulting in their being unimplemented and restrictive against RE entrance. Some of these legislation and policy regulations include the Constitution, the EPSRA, the Petroleum Industry Act, the Energy Policy, the Electricity Act, the Climate Change Act, and the Mini Grid Regulation.

Given that mini-grid destabilisation threatens the pre-existing fossil fuel framework and could impede the shift to renewable energy sources, policymakers and stakeholders would be better able to address the challenges associated with destabilisation, devise strategies to deal with potential obstacles, and guarantee a smooth transition to a sustainable energy future if they have an organised and flexible institutional framework that is adaptive and interactive. The objective of MLP's meso-level is to achieve this because, in situations where organisations are rigid with heterogenous policies, actors become pressed between the system and policy measures, rendering these policies inapplicable.[56] Therefore, the explanation in this section implies that in situations where heterogeneous actors predominate and an institution is rigid due to path dependencies and lock-ins, a combined strategy of target group-induced system reorientation/coordination is necessary, to ensure that no one gets left behind.[57]

4.2.1 National Energy Policy of Nigeria (NEP)

The NEP policy recognizes the multidimensional nature of energy challenges and actors in the country, and as such seeks the optimal utilization of the nation’s resources and the active

[56] (n 29) Schenk, et al., 1514.

[57] Ibid.

participation of the private sector, for sustainable development. [58] NEP since 2003, has consistently been open and adaptable to broad reforms to address the prevailing and changing energy circumstances nationally and internationally, with its stable overarching guiding principles of national development and energy security, as sustainable development. However, its constant reforms have largely remained unactualized. An analysis of the constant NEP reforms since 2003, reveals how MLP implicates Nigeria's energy transition by pressuring the institutional energy regime of the country through its landscape factors (global climate change, UNFCCC, and NDC's strategies), towards the adoption of new RE technologies.

For instance, NEP's reforms leading up to 2022, have its policy objectives recognize specific groups (gender and rural area dwellers) when it comes to targeting them for energy access needs.[59] This speaks to the policy's recognition of heterogeneity of actors, despite its silence on a flexible organizational strategy to manage these differentiated interests, and the non-express mention of 'energy justice or just transitions' as its guiding principle. It is argued that because recognition of groups belongs in the meso-level analysis, wherein meaningful interactions occur between actors and the past and imagined future energy system,[60] therefore the NEP rightly captures these heterogeneity criteria of the meso-level analysis considered in this work.

It is equally argued, however, that in order to create a basis for action and to balance the competing interests and dilemmas; and a constantly changing energy landscape, a shared operational structure or a formalised policy process, for managing ongoing interactions must be established. Due to the lack of these flexibly organised institutional energy transition structures, the NEP's positive objectives have failed to translate into workable, 'just', and balanced strategies, which further adds to a range of unimplemented policies that complicate the nation's transition strategy. Thus, the NEP's broad policy, despite its good intentions reveals

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[58] Energy Commission of Nigeria, National Energy Policy (2022) CH 1 (i-xv) Available at: FEDERAL REPUBLIC OF NIGERIA (energy.gov.ng) last accessed 24/01/2024.

[59] Ibid, objective XII on targets gender sensitivity and rural energy needs.

[60] G., Fine, Group Culture and the Interaction Order: Local Sociology on the Meso-level (2012) *Annual Review of Sociology* (2012) 38 (1), 159-179.

the complexity in the management of the nation's electricity sector. It shows the MLP landscape factors at work within the nation's dominant meso level regime, pressuring for a shift in energy objectives of the nation towards the adoption of new RE technologies.

The Nigerian government's Energy Commission (ECN), which is in charge of coordinating energy plans and policies amongst various stakeholder institutions, has acknowledged the implications of the country's electricity industry's diverse needs and actors, as well as the effects of landscape factors on national realities.[61] To ECN, these implications mean that some policy areas will unavoidably receive less attention than they currently do.[62] These array of struggling policy areas, reflect the bane of the many ambitious and well-intended energy development plans and policies of the country, that never get actualised. This is due to critical inherent political, social, economic and cultural challenges at play in the electricity industry and in the country at large, of which the Multi-Level Perspective (MLP) theory, captures well.

Sesan et al. highlight the institutional and unrealized policy gap, attributed to political and economic elitist interests, and the lack of evidence for effective post-implementation evaluation of policies and programs.[63] Using the NEP and its institutional body - ECN as an example, Sesan et al., argues that:

> "The relocation of the ECN from its influential position under the Presidency to relative obscurity in the wide-ranging Ministry of Science and Technology alludes to its diminished role within the energy policy landscape and the closure of an important scientific advisory and coordinating mechanism in the energy sector."[64]

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[61] T., Sesan, & W., Siyanbola, "These are the realities": insights from facilitating researcher-policymaker engagement in Nigeria's household energy sector. (2021) *Humanit Soc Sci Commun* 8, 73

[62] P., Cairney, R., Kwiatkowski How to communicate effectively with policymakers: combine insights from psychology and policy studies. (2017) *Pal Commun* 3(37):1–8.

[63] (n 61) Sesan.

[64] Ibid., The ECN, which is the only federal agency created to play a coordination role, has oversight of the government's energy research centres—six of them—making it an important channel for knowledge-policy exchanges. This weakening of the influence of the ECN within the policy landscape means that a vital opportunity for institutionalising an important scientific advisory mechanism in the energy sector is being closed off.

The implication of this highlights the existence of a coordination gap within the ET strategies of the country such that allows for the thriving of policy and privilege interest prioritisation of politically expedient sub-sectors (dominant oil and gas regime) and the relegating of other sub sectors.[65] This lack of coordination in energy policies hinders effectiveness and perpetuates sector dominance. It is therefore argued that the country's ET needs a robust coordinating structure to ensure equal consideration of all sub-sectors in energy strategy development towards a just transition.

4.2.2 The Constitution

The Constitution is the country's primary law source, and the concepts of legitimacy, development, centralism, 'a one size fits all', 'sum of its whole part', and federalism are at its core. It is the "*grundnorm"* of the country, binding on all authorities and individuals, and any law that conflicts with its provisions is deemed unconstitutional.[66] In the case of *Attorney General of Abia State v. Attorney General of the Federation*, the court asserted that "the constitution of a nation is the fons et origo, not only of the jurisprudence but also of the legal system of a nation."[67] The courts have stated further that the Constitution supersedes every statute, and all three arms of government draw validity and functionality from the Constitution. Therefore, every piece of legislation made by the National Assembly or a House of Assembly of a state about energy security, transition, or the electricity sector,[68] draws legitimacy from the Constitution and must adhere strictly to its provisions to be valid.

A critique of the state of the nation's energy system begins from the Constitution, as it defines the federalist cultural nature of the nation, which explains part of the nation's institutional challenges. Federalism was introduced in Nigeria to forcibly unite diverse ethnicities and

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[65] Ibid

[66] Section 4, paragraphs 13 and 14, Part II, Second Schedule to the Constitution of the Federal Republic of Nigeria, 1999 (as amended) [Nigeria], Cap. C 23, (2004) Laws of the Federation of Nigeria, Sec. 1, 3

[67] (2006) 16 NWLR (PT. 1005) 265 at 389 S.C.

[68] Ibid, Nigeria is a federation of 36 States and a Federal Capital Territory.

nationalities, who were previous separate protectorates (unity colony) of the British Empire.[69] Amah, has argued that "this type of federalism is usually susceptible to the divisive influence of centripetal forces, which tend to draw unhealthy loyalty to the component parts rather than loyalty to the national compact."[70] This federalist culture and colonial elitist set up, has shaped the institutional issues of the nation's energy regime and landscape up till now, thereby portraying the constitution as an enabler. Bhambra, puts it well when he calls this kind of development governance, an economic internationalisation that usually fails to benefit the indigenous people.[71] This is the experience of the Niger Delta community, when it comes to their development and access to energy, despite the enormous proceeds of the country's oil and gas from the region.

Nigeria's Constitution and federalist structure provide shared legislative powers between the federal and state governments. The exclusive list falls solely under the federal government's purview, and the concurrent list is shared between states and the federal government.[72] However, should any inconsistency arise between the law enacted by the House of Assembly of a state and any law validly made by the National Assembly under this shared competence, the law made by the House of Assembly to the extent of the inconsistency will be void.[73] 'Shared competency' as prescribed by the Constitution means that the Constitution gives the legislature (National and State) the authority to pass laws governing the generation and transmission of energy throughout the nation. The concurrent legislative list's paragraphs 13 and 14, which comprise *Appendix C1*, describe these shared competencies, which are grounded in a centralist and homogenous ideology, that defeats the feature of the current transition, which is characterized by diversity and decentralization.

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[69] E., Amah, Federalism, Nigerian Federal Constitution and the Practice of Federalism: An Appraisal. *Beijing Law Review*, (2017) 8, 287-310

[70]Ibid

[71] (n 24), Bhambra.

[72] Constitution of the Federal Republic of Nigeria 1999, as amended, Exclusive Legislative List, Second Schedule, Part 1, Item 68 and 69.

[73] Ibid s 4 (5).

The shift towards liberalisation aimed to attract private investments and promote competition in the sector, faced a challenging reality due to this centralised nature of the energy supply industry of the country. Thus, even where privatisation reforms came, the centralised legislative and institutional framework shaped by development and state ownership concepts of vested interests, hindered the successful implementation of market-based reforms. As a result, the country experienced setbacks, with only partial adoption of liberalisation measures and a significant amount of stranded assets from overcapacity.[74] It is argued that it is this state of affairs that engendered Lagos state to seek its emancipation towards the development of its own electricity market, which was only made possible by the recent constitutional reforms of the NESI after years of political lobbying.[75] The political and economic vested interests that shape the electricity industry of the country, is the dominant meso level regime which needs to be destabilised for the niche to emerge. It is argued that this change needs to start from the Constitution. Thus, for any change to occur towards the capturing of heterogenous needs and actors within the nation's energy sector, it is argued that such reforms must flow from the Constitution which determines the validity of every other law or policy strategy of the country.

Therefore, the recent constitutional reforms are indicative of the improved recognition of the country's energy legal framework for a more nuanced approach towards energy development and diversification, such that recognises the complexities of different contexts and interests that calls for tailored solutions. It is important to note that literally within the Constitution, there is no mention of 'energy justice'. However, it is argued that the Fifth Alteration (No. 33) Bill 2022, which amends the Nigerian Constitution, allows states to enact laws governing the production, transmission, and distribution of electricity in areas connected to the national grid.[76] Though its execution is still unknown, it is maintained that the constitutional amendment

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[74] O., Lateef, Liberalisation of the Electricity Sector: The Nigerian Experience *World Journal of Innovative Research (WJIR)* (2020) Vol 8 (3) 69 -75. "In Nigeria on the other hand, the electricity supply was not only erratic but was grossly insufficient when the power sector was unbundled. This among other things accounts for IPP reluctance to make investment in the Nigerian power sector, due to the fear of lack of guarantee for recovery of investment on new plants as a result of improper regulatory framework that exist in EPSR Act 2005."

[75] P., Ekpei, Nigeria: Lagos Set to Get Electricity Independence Within Months, African Intelligence, Friday 26, 2024 available at: Nigeria : Lagos state set to get electricity independence within months - 04/10/2023 - Africa Intelligence last accessed 28/01/2024.

[76] 'The Fifth Alteration (No. 33) Bill 2022 (the "Electricity Constitutional Amendment") effectively amends the Federal Republic of Nigeria 1999 (as amended) (the "Constitution"). 'The amendment seeks to allow States within

emphasises meso-level interaction and policy consensus on decentralisation, particularly in states' management of off-grid alternatives towards the promotion of just transition.

4.2.3 Petroleum Industry Act, 2021

The Act automatically repeals the previous Petroleum Act and all its ancillaries. The Act is now the pivotal legislation navigating the nation's journey to decarbonisation, given that the country relies on gas as its primary decarbonisation fuel. [77] In the just-concluded climate change conference (CoP26), Nigeria committed to a 20% reduction in carbon emissions by 2030,[78]with a conditional target of 47% against the 2015 Nationally Determined Contributions (NDCs).[79] However, despite this recommitment, "financing oil and gas projects is becoming more complicated as banks, multilateral lenders and investors divert capital away from fossil fuels to renewable energies."[80]

In regard to this fossil fuel de-investment, the country's vice president – Yemi Osinbajo, has asserted that the government would not be transitioning at the expense of affordable and

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the Federation to enact laws governing the production, transmission, and distribution of electricity in areas serviced by the national grid system within the relevant State.' Before the Electricity Constitutional Amendment, States could only enact laws governing the production, transmission, and distribution of electricity within their borders in areas not connected to the national grid.' – Templars, 'Nigeria Amends Constitution to Enable Electricity Decentralisation: Key Highlights for Investors and Stakeholders' (23 March 2023) available at: https://www.templars-law.com/app/uploads/2023/03/Recent-Constitutional-Reforms-on-Electricity-Decentralisation-In-Nigeria-Some-Reflections-For-Investors-And-Stakeholders.pdf last accessed 15 April 2023.

[77] Climate Tracker, 'Natural Gas in Africa Why fossil fuels cannot sustainably meet the continent's growing energy demand' A Report; (2022) available in https://climateactiontracker.org/documents/1048/CAT_2022-05_Report_NaturalGasinAfrica.pdf, Last accessed 19 February 2023.

The government has declared this decade to be the "Decade of Gas", with plans to continue investing in gas infrastructure, which brings risks of stranded assets and locking the energy sector into carbon-intensive infrastructure, when it should invest in ever-cheaper renewables.

[78] Ibid.

[79] Climate Action Tracker, 'Nigeria' (2022) available at: https://climateactiontracker.org/countries/nigeria/targets/ last accessed 12 March 2023

[80] Redcliff Energy Advisors, 'Nigeria's Energy Transition Challenges and Opportunities in the Utilisation of Gas as a Transition Fuel' (Ashurst LLP 2022) available at: file:///C:/Users/user/Downloads/Nigerias%20Energy%20Transition%20Oil%20an%20gas%20update.pdf last accessed 12 March 2023

reliable energy for its people, cities, and industries.[81] He argues that reducing capital in energy infrastructure will not result in a just transition and that a critical examination of energy access and poverty must accompany the shift away from the use of natural gas.[82] This government's stance presents the ET policy objective of the country, as well as defining policy objective of the new petroleum Act. An analysis of this legislation reveals the influence of a dominant meso level regime, rooted in political and economic interests, which has consistently shaped the country's energy transitions since the colonial era.

An historical study of the nation's energy transition reveals three historical shifts, realised under two national transitions, that have been directly influenced by colonial antecedents and elitism.[83] These historical shifts include the introduction of state-owned utilities during the colonial period, indirect rule system and the military era, the privatisation efforts in the post-independence and democratic era, and the recent push for renewable energy sources. Colonial antecedents played a significant role in shaping the energy sector, as the colonisers focused on exploiting the nation's natural resources for their own economic benefit. Elitism, on the other hand, was influenced by colonial indirect rule. This system of elitists' decision-making processes, has unintendedly raised political and economic oligarchs, whose sectarian interests and power continue to hinder the development of a more inclusive and sustainable energy system.

Sanchez et al., calls this energy colonialism as opposed to energy citizenship and contends that:

> "Colonial territorial ordering in the 21st century remains asymmetric, deepening to meet growing consumption of Global North metropolises and national corporate energy transition agendas. That extractivism and territorial dispossession in the Global South, despite consuming less energy, intensify socio-territorial conflicts, provoking

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[81] Y., Osinbajo, 'The Divestment Delusion: Why Banning Fossil Fuel Investments Would Crush Africa,' (2021) Foreign Affairs available at: foreignaffairs.com last accessed 12 November 2021.

[82] Ibid. 'Accordingly, the government's view of ET holds that transitioning must be inclusive, equitable, and just, and must provide for multiple routes to net-zero emissions rather than being a fossil-divestment hoax.'

[83] (n 6) Edomah et al.

resistance from indigenous communities and delaying renewable megaproject deployment."[84]

It is agreed that the PIA has made some positive reforms, in aligning the industry with international best practices by separating the upstream, midstream, and downstream. It attempts to establish the regulator's organisational or legal independence by doing this. For instance, the Petroleum Industry Act 2021, in sections 4, 29, and 53, stipulate the roles of these regulators, to make the regulatory procedures transparent and easy to administer. Through this reform, the PIA aims to empower the regulator with clear information about service quality and user satisfaction, with mechanisms to consult the public.[85] The Act also provides that all monies due to the government be transferred to a federal account and all collections done by the Federal Inland Revenue Service (FIRS).[86] It introduced fiscal terms such as the hydrocarbon tax, which replaces the existing petroleum profits tax,[87] and the company's income tax,[88] which was missing in the former Act. The new community and related environmental obligations require the setting up the host's development fund, where each license holder is required to contribute to the trust equal to 3% of their operating costs.[89] The Act stipulates license revocation for failure to comply with host community obligations. Additionally, existing community projects will be transferred to the new Petroleum Industry Act (PIA) established trusts.

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[84] C., Sánchez, R., Matarán, A., Campos-Celador, E., Fjellheim, Energy Colonialism: A Category to Analyse the Corporate Energy Transition in the Global South and North. (2023) *Land 12*, 1241.

[85] Section 45/46 of EPSRA; PIA's 'separation of the upstream and specification of the regulator's objectives in clear terms aims to limit the scope of the regulator's power in exercising their discretion.'

[86] CH 4 PIA, 'With the PIA, the commission recommends granting new licenses and approves the renewal and assignments of licenses and interests. The NNPC has been replaced with the new NNPC Limited, which operates commercially without government funding. The company's role is significant in developing the country's natural gas potential and engaging in renewables and other energy investments.', C.F Resolution Law Firm, Nigeria: Overview of the New Petroleum Industry Act *Mondaq* 21 September,2021 available at: https://www.mondaq.com/nigeria/oil-gas--electricity/1113104/overview-of-the-new-petroleum-industry-act-2021#:~:text=the%20Act%20provides%20that%20all,Inland%20Revenue%20Service%20(FIRS). Last accessed 15 March 2023.

[87] PIA 2021, Sec. 260

[88] Ibid Sec 302

[89] Ibid Sec 260

On analysis, the bulk of PIA's provisions have been criticised for not considering the needs of different actors, sustainable development objectives, social and economic equity, and common energy transitions. For instance, despite global divestment from fossil fuels, the PIA mandates Nigerian NNPC to use profits for oil exploration in frontier basins, instead of providing clean energy or environmental remediation.[90]This reflects that the country's policy direction in the face of global transition, is development at the expense of the people.

According to Animashaun, PIA's policy direction reflects the internal inconsistency within the nation's energy framework, which is partly due to institutional or individual interests and agendas.[91] He specifically attributes PIA's inconsistent policy priorities as well as those of the nation's dominant energy meso level regime, as a product of high political forces.[92] This is due to the fact that the nation's policies and energy development strategies remain uncompleted, and despite global de-investment pressure, neither climate change nor the energy transition were included in the nation's energy transition law and policy.[93] As expressed by a number of policy objectives, one would assume that the dominant meso-level energy status quo of the country reflects the concerns and interests of the marginalised within the Nigerian context. However, the difficulty of helping impoverished populations move up the "energy ladder," is really just a larger problem of political economy that is yet to be fully understood by policy-makers for effective energy governance in the country. This will be further elaborated on, in the following sub sections.

4.2.4 The Electric Power Sector Reform Act 2005 Chapter E7 LFN 2004 (EPSRA)

A look at the Electric Power Sector Reform Act, the then principal source of law and regulation governing electricity in the country, speaks to this dominant 'development' normative of the

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[90] Ibid, Frontier Exploration Fund Administration Regulations Pursuant to Section 9 of the Petroleum Industry Act, 2021.

[91] N., Animashaun, Nigeria's Energy Transitions in a Political Transition Africa's Climate Agenda Policy Brief – Africa's Policy Research Institute September 7 2023. Available at: Nigeria's Energy Transitions in a Political Transition - Africa Policy Research Institute (APRI) (afripoli.org) last accessed 28/01/2024

[92] Ibid

[93] Ibid

country's energy policy framework, especially given the challenge faced by distribution companies after the liberalisation. The Electric Power Sector Reform Act is the principal source of law and regulation governing electricity in the country. This Act lays down the Nigerian Energy Supply Industry (NESI) structure and value chain - electricity generation, transmission, distribution, supply, and trading.[94] It further defines the powers and responsibilities of key institutions in the Nigerian electricity supply industry (NESI). It initiates the breakup of the then-government monopoly held over the electricity sector and the privatisation to create competitive markets and boost consumer electricity supply.[95] More broadly, the legislation provides for the formation of companies to manage functions, assets, liabilities, and staff, develop competitive markets, establish the Nigeria Electricity Commission, and regulate electricity generation, transmission, distribution, and supply.[96]

The Act establishes the Nigerian Electricity Regulatory Commission (NERC) as the electricity regulator or the commission with the primary responsibilities of creating and ensuring the adequacy of electricity supply, [97]overseeing prices and terms of engagement,[98] establishing a national electricity market and the licensing and regulation of persons engaged in the generation, transmission, system operation, distribution, and trading of electricity in the country.[99] The commission is also mandated to regulate the rural systems and determine the contribution rates for the Rural Electrification Fund.

Section 24 of the Act sets out the plans for electricity market reform of the sector. The key mechanisms include establishing six (6) generation and eleven (11) distribution companies for

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94John Chibueze & Eniola Sadare, Electricity regulation in Nigeria: overview Regulatory structure Thomas Reuters Practical Law, available at: **https://uk.practicallaw.thomsonreuters.com/7-584** 2605?transitionType=Default&contextData=(sc.Default)&firstPage=true last accessed 22/02/23

[95] Ibid

[96] Short Title EPSRA

[97] Section 32 (1) a, c

[98] Section 32 (1) d

[99] Section 32 (2)

privatization, leaving the transmission company to be run by the federal government and setting up the market rules. [100] The market rules spell out entry standards and are binding on all persons registered. The objective of EPSRA's licensing regime and the NERC mechanism (afforded by EPSRA) is that a competitive market will emerge from the liberalization process to improve energy access and security in the country.[101]

On analysis, it is the case that the objectives of this legislation have not been fully realized. This is because, even though the EPSRA law made the Nigerian electricity market accessible to private investors, there is still a lack of generation capacity and insufficient incentives for significant capital inflows into the industry. This is why it was previously argued—in reference to the PIA—that the country's dominant meso-level energy status quo represents the interests and concerns of the political and economic oligarchs, who have shaped the country's energy transitions under the pretext of "development" goals, ever since colonialism. These oligarchs are the unseen hands and minds behind Nigeria's energy landscape.

According to Essex and de Groot, the persistence of energy issues in developing contexts, is a result of these powerful political factors rather than technological ones.[102] This is because there is a seeming preference for normative pathways in policy development, which ignores the "energy underclass" and their realities of energy demand and supply by household and economic actors.[103] For instance, the PIA even though it makes gas flaring illegal,[104] has a set of broad exclusions that ensures that the same gas flare regime continues unchecked, with continuing environmental and health harm to host communities.[105] In a similar vein, the

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[100] Section 26

[101] B., Saidu, 'Committing to Legal and Regulatory Reform: An Analysis of the Legal and Regulatory Framework of the Electricity Supply Industry in Nigeria' (2011) 3(29) *Journal of Energy & Natural Resources Law* 356.

[102] S., Essex, J., de Groot Understanding energy transitions: the changing versions of the modern infrastructure ideal and the 'energy underclass' in South Africa, 1860–2019. *Energy Policy* (2019)133.

[103] Ibid.

[104] Section 104 -108 of the PIA, 2021

[105] Homef, 'The Petroleum Industry Act Neglects Community Concerns and Strengthens Oil Companies.' Available at:

EPSRA initially had big plans for liberalisation but ultimately failed to satisfy the DisCos, forcing the government to bail them out several times.[106] Lateef, argues that Nigeria's electricity sector reforms, including the unbundling of NEPA, were influenced by western economies, despite local realities.[107] He explains that the country's electricity supply was not only inconsistent but also grossly inadequate when the power sector was unbundled.[108] This, among other reasons, explained the Independent Power Producers (IPP's) reluctance to invest in the Nigerian power sector due to concerns about the EPSRA's improper regulatory framework, which could hinder investment recovery efforts.[109]

Accordingly, Adeniyi et al. assert that although EPSRA liberalisation exposed the Nigerian National Electricity company to market risks, its wholesale market monopoly resulted in creditworthiness issues and government bailouts, and that while incumbents influenced market outcomes, new generating companies (GenCos) were seeking to gain a competitive edge.[110]This EPSRA-enabled state of affairs in the NESI highlights the diverse interests and actors within the organization, which obscures the country's policy objectives and hinders the effective implementation of policies. To overcome this, Adeniyi et al., emphasise the importance of tailored policies, incentives, and a differentiated energy citizenship opportunity for creditworthy customers, such as affluent households and businesses, who may be able to access a parallel electricity market and buy dependable power directly from GenCos or RE project developers.[111] This note makes the argument that the MLP dominant meso-level regime

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https://homef.org/2021/09/15/the-petroleum-industry-act-neglects-community-concerns-and-strengthens-oil-companies/ last accessed 22/02/23.

[106] Fadekunayo Adeniyi, & Abdulrasheed Isah, Unlocking renewables amid rentierism: Market constraints to Nigeria's energy transition, (2023) Vol.104, *Energy Research & Social Science* 2214-6296.

[107] O., Lateef, Liberalization of the Electricity Sector: The Nigerian Experience. (2020) Vol.8 (3) *World Journal of Innovative Research* (WJIR) P. 69-75. 'For instance, DisCos used "load rejection" to limit wholesale demand and financial obligations, thereby causing liquidity challenges and domino effects in the value chain.'

[108] Ibid

[109] Ibid

[110] (n 106) Adeniyi et al.

[111] Ibid

establishes target-based policy regulation, rooted in a robust institution, constantly updated to accommodate diverse interests in the context. This will necessitate timely targets and enhancement of the underlying structure in light of the context's differentiated interests.

Thus, the need of both monopoly, competition and targeted subsidies within the NESI reflects MLP's meso regime reality that seeks to cater for heterogenous needs. Saidu, has maintained that "although effective competition makes regulation unnecessary, the electricity supply industry, especially in developing countries, requires some significant market monopoly elements, necessary to regulate electricity prices, performance and profits imperative to protect customers and the market,"[112] and that given the country's NESI peculiarity, "not all matters in the electricity supply industry should be left to the operations of market forces."[113] Saidu has further argued that "regulations have to be in place to guarantee matters such as energy security, suitable environment standards, quality of supply, energy conservation and power check and the encouragement of investment/new entrants."[114]

Just like PIA's almost singular or non-mention of RE investments given its gas interests, section 88 (9) is EPSRA's only concern with RE despite the then NEP's overall policy direction towards diversification to RE. The section relates to the country's development, generation, transmission and sale of RE. It stipulates that in consultation with NERC and the minister, the rural electrification agency (REA) shall plan towards renewable energy power generation. Thus, apart from recognizing RE's role in reaching unserved communities with electricity, the EPSRA did nothing to establish structures for RE development in the country. However, the NERC's role in providing for the licensing regime of the nation's electricity is to be the same for RE sourced electricity in the country.

[112] (n 101) Saidu 363

[113] Ibid

[114] Ibid

Pavanelli et al. highlight Nigeria's history of changing electrical policy administration from coal to gas and hydropower, and from the British Empire to the national military rule.[115] They argue that historical social, economic, and political factors still shape the nation's electrical industry, in spite of the World Bank's attempt to limit these elitist preferences at the constitutional level.[116] Thus, this is why modern energy access still remains unattainable for most of the population, despite various energy policies. The use of the Multi-Level Perspective (MLP) theory in analysing the nation's dominant meso level regime highlights the importance of social and cultural factors in energy transitions, with niche technologies competing with incumbent regimes.[117] Understanding how MLP's niche strategy can shape dominant levels is crucial for enabling transitions. Thus, the MLP's regime policy efforts' have had a significant impact, necessitating further examination of energy policy formulation, including the involvement of actors and the historical role of evidence. However, the nation's current dominant meso level seeks to keep things in statusquo, due to path dependence and underlying political and economic interests.

Osunmuyiwa, has held that "many developing countries (Nigeria inclusive) may have been 'boxed to a corner' to hastily commit to net-zero carbon transition without first unbundling their peculiar socio-technical regime complexities, as to guarantee an all-inclusive transition.[118] Thus, most low-carbon transition strategies in most developing countries are top-down driven, without sufficient consideration of the energy underclass."[119] This work therefore agrees that power relations within and between countries and the political economy of energy ultimately shape energy systems and the same holds true for the mini grid-based energy transition in the

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[115] J., Pavanelli et al., An Institutional Framework for Energy Transitions: Lessons from the Nigerian Electricity Industry History (2023) *Energy Research & Social Science*. 1 – 41.

[116] Ibid.

[117] F., Geels, The multi-level perspective on sustainability transitions: responses to seven criticisms 1 (1) (2011), *Environ. Innov. Soc. Trans.*, 24-40

[118] O., Osunmuyiwa, Applying the Multi-level Perspective on Socio-technical transitions to Rentier States: The Case of Renewable Energy Transitions in Nigeria (2017) 20(4). *Journal of Environmental Policy and Planning* 1-14.

[119] Ibid.

country.[120] It is argued that specifically in Nigeria, these exogenous actors and regime incumbents wield power to prevent energy and RE development in the energy underclass, thereby continuously bleeding the fossil-based energy system.[121] Thus, the country's energy dominant regime employs delayed tactics, political patronage networks, and corruption to hinder energy transition, or defensive strategies like privatisation, institutional structures, and discursive tactics to frame environmentally degrading technologies as RES alternatives.[122]

For instance, Animashaun has maintained that, when it comes to the PIA and the nation's energy transition policy, the nation's divided elites are always managing crises and seeking easy fixes.[123] This is due to the lack of stable political settlements and discipline for long-term structural improvements in the energy transition, which hinders their ability to implement deep structural reforms.[124] It is therefore submitted that it is the poor infrastructure in a country's socio-cultural and economic context that allows for capital flight and economic internationalization. Thus, without energy infrastructure, liberalization prospects and grand policy objectives will constantly be hijacked or impaired by these powerful forces within the energy system. Thus, apart from recognizing RE's role in reaching unserved communities with electricity, in section 88 (9), the EPSRA did nothing to establish structures for RE diversification in the country.

4.2.5 Electricity Act, 2023.

It was earlier stated that the 1999 Constitution's Paragraph 14(b), was amended to allow states to generate, transmit, and distribute electricity within their own states. This amendment's non-alignment with the Electric Power Sector Reform Act (EPSRA) of 2005, which only allowed for a single national electricity market, led to the reform of the Act (EPSRA) 2005 to the

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[120] Ibid.

[121] Ibid.

[122] Ibid.

[123] (n 91) Animashaun.

[124] Ibid.

Electricity Act, 2023 (hereinafter referred to as the Act). A major feat of this Act when it comes to the MLP governance is the recognition and decentralised opportunity it grants for energy citizenship. For instance, the law allows individuals to build, own, and operate electricity-generating, transmission, distribution, supply, and sale enterprises within a state but does not permit inter-state or transnational distribution.[125] It allows authorities to licence private investors to operate mini-grids and power plants.[126] This promotes innovation and competition by helping to meet Nigeria's increasing energy needs.

On analysis, it is interesting to note that alongside a regime of permits to states and national actors,[127] the EA's licencing regime permits individuals to operate or construct electricity-generating or distribution undertakings without a licence, provided the total capacity is not over 1 MW or 100 KW and the operation does not exceed inter-state and transnational electricity distribution.[128] According to Ezekwesiri et al., the main goal of the Act was to create a comprehensive integrated policy plan that acknowledged all parties involved in the production, transmission, and distribution of electricity, as well as the incorporation of renewable energy sources into Nigeria's energy mix.[129] Thus, the Act's recognition and empowerment of various actors, including federating states, licenced and non-licenced actors, despite the commission's tight tariff control, is indicative of the industry's shift towards diversified target policy regime.

With the re-establishment of the Nigerian Electricity Regulatory Commission (NERC), as the apex regulator of NESI, the Act promotes renewable energy and sustainability with NERC equally regulating this sector. NERC supports this by incentivizing a simplified licencing

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[125] Section 63 (2) (b), EA, 2023.

[126] Part V (Sections 34 – 63)

[127] Section 63 (1)

[128] Section 63 (2).

[129] Section 164, E., Ezekwesiri, F.Ogini, & I., Adeyemo, A Review of the Electricity Act, 2023 - Impact and Major Issues Arising (September 4, 2023). Available at SSRN: https://ssrn.com/abstract=4560855 or http://dx.doi.org/10.2139/ssrn.4560855

regime for renewable energy service companies.[130] Furthermore, the Act establishes the National Hydroelectric Power Producing Areas Development Commission (N-HYPPADEC) for hydroelectric power production,[131] the Rural Electrification Agency for rural electrification,[132] and the Nigerian Electricity Management Services Agency (NEMSA),[133] to oversee operations in rural, underserved, and unserved areas, ensuring access to electricity. This, if well implemented, could lead to unprecedented private investments in the sector, making electricity more accessible and affordable to consumers, and promoting renewable energy citizenship projects.

However, critiques following past reforms of the NESI, have held that liberalisations and private investments in the sector, might not necessarily translate into accessibility and affordability of electricity services, due to underlying concerns of capabilities or what Sovacool et al, calls existing '*intersectionality's*.'[134]For while full deregulation and the removal of energy subsidies could potentially save government costs, allowing for energy citizenship empowerment, it is argued that some consumers may still face cost issues where 'just' structures and targeted policies are not put in place. For instance, following the recent constitutional reform for decentralised NESI's which means the recognition of wide themed licenses, Ezekwesiri et al., have argued that:

"There is a risk of overlap and duplication of licenses where an electric power company operates within a state but relies on a part of the national grid. This could occur when power flows into a mini-grid and flows through the national grid before or after it. The Constitution does not qualify the legislative powers of states in the manner sought to be done under the Act. The only requirement to trigger regulatory oversight is that the electric power company must

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[130] Section 164.

[131] Part VIII (Sections 82 – 107)

[132] Part XVI (Sections 127 – 163)

[133] Part XVIII (Sections 172 – 184)

[134] B., Sovacool, S, Bell, C., Daggett, C., Labuski, M., Lennon, L., Naylor, J., Klinger, K., Leonard, & J., Firestone, 'Pluralizing energy justice: Incorporating feminist, anti-racist, Indigenous, and postcolonial perspectives,' vol 97 (2023*) Energy Research & Social Science*, 102996,

be operating solely within the borders of the relevant state. Thus, a mini-grid power system can still be considered operating within state borders when connected to or relying on any part of the national grid."[135]

This thesis responds to these gaps in policy legislations and the non-participatory way energy decision-making is undertaken in the country, without free and informed consent of energy citizens, and oblivious to the context in which such policies will be applicable. The country's electricity system's regimes and laws are reactionary and unworkable, and without much holistic change, that target the existing regime's destabilisation. Thus, the regime in this context is a way of doing that transcends laws, policies, and systems and instead reaches deeper into a culture that has been moulded by strong oligarchies, a deeply rooted historical culture of marginalisation, and path dependencies. These factors have made any development or transitional policy challenging to implement. Thus, a continuous formalised policy process of weaning, is necessary before any policy can be truly workable.

It is therefore argued, that the MLP's goal is to ensure the identification and interaction of these different stakeholder groups over an enlarged period of time in order to, understand, build alignments and rightly target policy to needs or groups. Therefore, the Act, along with other national energy provisions, focuses on the MLP's meso-level targeting of historically defined contract and policy terms, structures, and actors in the electricity industry without requiring a shift in perspective or awareness of emerging trends.[136]For instance, the Act by restructuring the operations and management of the nation's Rural Energy Electrification Agency,[137]recognises the marginalised locked up within the rural communities without access to electricity.

By this recognition and restructuring, it seeks to streamline the Rural Energy Electrification Agency's operations, fostering collaboration between the Agency and state agencies to

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[135] (n 129) Ezekwesiri et al.

[136] 'This shift in perspective, includes retraining, or an awareness of emerging trends, knowledge co-production, reskilling, technology, and policy strategies that are better adapted to changing conditions or the emerging kinds of energy citizen consumers.'

[137] Generally, Part XVI of the Act.

establish local government committees for rural electrification strategies.[138] These points are important to keep in mind when analysing the extent to which this recent legislation adopts the MLP. This is because, despite this rightly observed overlaps within policy legislation, which can be curbed by a merge of compromise within a formalised policy process after a recognition of diverse interests, the normative 'development' underpinning of the nation's meso-level regime,[139] is yet again reflected in this Act. This begs the question of what the underpinning normative structure behind the nation's meso-dominant level is, when it comes to the electricity industry. Adeniyi et al., have surmised that it is the political-economic configurations in Nigeria with regards to the structure, conduct, performance, and regulation of electricity markets that affects energy transition in the country.[140]

4.2.6 Renewable Energy Targeted Policy Regulations

The Nigerian Renewable Energy and Energy Efficiency Policy 2015 (NREEEP) is one of the renewable energy themed policies developed to target RE on-grid and off-grid alternatives, with an 18 per cent target for renewable energy in 2020 and 20% in 2030.[141] It seeks to achieve this goal by integrating different renewable energy sources – hydropower, solar, and wind. For instance, it proposes that hydropower should contribute about 10 per cent to electricity generation through increased local participation in the planning, design, and construction of hydropower stations. [142] It proposes that local production of energy conversion and development of storage technology and accessories be incentivised for solar energy.[143] The

[138] Sections 152 and 153 of the Act.

[140] F., Adeniyi, & A., Isah, Unlocking Renewables amid Rentierism: Market constraints to Nigeria's energy transition, (2023) Vol. 104 *Energy Research & Social Science*, P 2214-6296,

[141] Federal Ministry of Power, Nigerian Renewable Energy and Energy Efficiency Policy (2015):36 - available at http://admin.theiguides.org/Media/Documents/NREEE%20POLICY%202015-%20FEC%20APPROVED%20COPY.pdf last accessed 02/03/23

[142] Ibid, Reg. 11

[143] Ibid, Reg. 15

policy acknowledges the necessity for energy efficiency through a competitive energy mix and aims to eliminate barriers that hinder the use and competition of renewable energy.[144]

It governs everything on RE relating to supply, utilisation, pricing and financing, legislation, regulation and standards, energy efficiency and conservation, RE project implementation, research and development, planning, and environmental and policy implementation.[145] The policy, despite being targeted by RE, has been criticised for being non-evidence-based, and it is for this reason that it has been blamed for its unsuccessful implementation in the country.[146] The Mini Grid Regulation, the Feed-in-Tariff for Resourced Electricity, 2015 (REFIT) Regulations, and the Estimated Billing Methodology Regulation, 2012 are additional regulations that the NERC developed under the EPSRA to encourage RE sources investment in the electricity business, focusing on wind, small hydroelectric facilities, biomass, and photovoltaic solar power plants.[147]

4.2.7 The Climate Change Act, 2021

The Act provides a framework to achieve low greenhouse gas emissions (GHG), inclusive green growth and sustainable economic development.[148] The Climate Change Act indicates the government's strides towards mitigation and adaptation with energy justice considerations, mainly because it embeds "climate actions in line with national development priorities and sets a net-zero target for 2050-2070."[149] It also approves instruments for a 5-year cycle plan and measurement to check consistency with budget goals,[150] and provides for climate change funds

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[144] National Renewable Energy and Efficiency Policy 2015 (NREEEP), Para. 1.4

[145] Ibid Para. 1.6

[146] Ibid (n 61)

[147] Ibid s 4 (i) (a), (b), (ii) (a)

[148] s 1 Climate Change Act, 2021

[149] Ibid (a) – (f)

[150] s 19 - 21

and administration.[151] More importantly, the Act makes it actionable to bring an action for failure of the administrative council to regulate offences and penalties for noncompliance with climate obligations imposed.[152] In *Centre for Oil Pollution Watch v NNPC*, the supreme court expanded access to bringing an action of unlawful environmental activity to everyone and NGOs by eliminating the previous locus standing limitation.[153]However, the realisation of the objective of this legislation and its implementation remains to be seen, in the face of gas as the nation's transitionary fuel.

4.3 Understanding Nigeria's Electricity Framework – A Meso-level Analysis.

When the features of particular networks, groups, and organisations at the meso-level of analysis are examined, what is sought is an understanding of how to determine the relationship, interaction, and continuous coordination across multiple distinct actor roles at the same time.[154] This kind of inquiry is trite for the nation's current transition strategy especially as it will help highlight how social connections influence actors, the reasons behind behavioural shifts in collective settings, and how these connections either permit or restrict certain transformations.[155] By doing so, this section aims to make clear the normative underpinnings of the nation's energy culture and collectives, as well as how they reinforce interdependencies. In this meso-level regime analysis, distinct, recognisable oligarchs versus the energy underclass have been classified that is, the 'served and underserved,' according to the language of the mini-grid regulation.[156] Even though not all of these people are depicted in a face-to-face context, they can all be characterised within a social framework that reveals how the underclass

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[151] s 15

[152] s 3 - 4(f)

[153] [2019] 5 NWLR (Pt. 1666) 518

[154] Van Wijk, J., Zietsma, C., Dorado, S., de Bakker, F. G. A., & Martí, I., Social Innovation: Integrating Micro, Meso, and Macro Level Insights from Institutional Theory. (2019) *Business & Society*, 58(5), 887-918.

[155] Ibid

[156] Mini grid regulation, 2016. Section 3

and oligarchs' power are intricately linked through political, temporal, historical, and economic tools.

The liberalisation and privatisation of the nation's energy sector began with the formulation of the National Electric Power Policy in 2001 and the Electric Power Sector Reform Act in 2005. [157] These reforms provided a legal framework for the commercialization and liberalisation of the industry and were comprised of two main components: restructuring and privatisation.[158] The goal was to break the government's monopoly over the sector, attract investors, inject capital and expertise into the sector, improve service delivery, and ultimately increase access to electricity for all Nigerians.[159] Pallavi et al., based on extensive interviews with key informants in the sector have opined that:

> "privatisation failed to achieve the desired outcomes because of structural distortions including 1) technical inefficiencies and underinvestment in the sector, 2) problematic contract design that led to the selection of politically-connected investors, and 3) the selection of reform strategy that was not suitable for the political settlement in the sector."[160]

They maintained that it is these factors that have contributed to significant operating deficits and financial illiquidity in the sector over the last decade.[161] In an endeavour to comprehend the normative foundation underlying these unaltered realities of the meso-dominant regime paradigms of most Sub-Saharan Africa (SSA) developing contexts, despite an abundance of regulations and strategies, particularly in relation to rentier states like Nigeria, Adeniyi et al. articulates that:

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[157] P., Roy, M., Watkins, C., Iwuamadi, & J., Ibrahim, Breaking the cycle of corruption in Nigeria's electricity sector: Off-grid solutions for local enterprises, (2023) Vol. 101. *Energy Research & Social Science,* 2214-6296.

[158] Ibid.

[159] Ibid.

[160] Ibid

[161] Ibid

> "there are three key characteristics of in relation to the adoption of clean technologies that hamper energy development and transition in rentier states, all of which are interconnected, empowering the other. First is that rentier nations; earns a rent premium due to the uneven global distribution of fossil fuels deposits, which informs their approach to the energy transition. Second, that the reliance on commodity earnings limits the accountability of political institutions to citizens and environmental activists. Third, political elites control the extraction and management of rents, which trickle down to the population through subsidies and social transfers. This presents a challenge for phasing out fossil fuel subsidies because they are deeply embedded in the social contract of society."[162]

From the EA's analysis, it can be seen from the Act that there is a rich sustainable development language and awareness of government of the need to transition to renewable energy, as evidenced by various energy-related laws and policies of the country. This includes a recognition of the various actors that make up the country's energy industry as well as the landscape pressure from the international community to transition to renewable energy. From the legal framework's analysis of licensee's regime that seeks to depart from the traditional one size fits all scenario; by recognising states and unlicensed actors, we can see how the country's energy regime is characterised by differentiated actors and their heterogenous interests. Thus, a meso-level analysis of the nation's Electricity Act, reveals inconsistencies that call for coupling to enhance interdependencies within the regime.[163]

4.4 Why Govern Energy Transitions

The governance of energy determines how an energy transition occurs, how different actors are involved and how they are all treated.[164] Energy governance can facilitate top-down or bottom-up transition initiatives as well as the protection of the most vulnerable, the

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[162] (n 106) Adeniyi et al.,

[163] (n 29) Scheinek.

[164] A., Nordholm, & A., Sareen, 'Scalar Containment of Energy Justice and its Democratic Discontents: Solar Power and Energy Poverty Alleviation' (2021) *Front. Sustain. Cities* 2

advancement of equality, and the averting of injustice. The multiple transitions that have to occur on different levels across various contexts present a challenge to the governance of the energy transition both locally and globally. The multiple energy justice challenges here include the different voices defining energy justice and the transition, the processes and with whom the energy transition laws and agreements are made.[165] It also includes what forces are at play (like technology, politics, finance, knowledge) and whether the justice is just about the green transition, intergenerational, procedural, economic, distributional, recognition, political, restorative and cultural justice (s) combined.[166] These dynamics frame the energy governance structure of the nation. This section addresses the role of government agencies, such as the Nigerian Electricity Regulatory Commission (NERC), Rural Electrification Agency (REA) or the Ministry of Power, in the governance and implementation of energy access and transition policies.

4.4.1 Regulatory Institutions and Stakeholders

Under Section 31 of the EPSRA, Nigeria's electricity regulatory commission (NERC) was established as the independent power sector value chain regulator. NERC's mandate includes developing consumer protection and licensee performance standards,[167] and monitoring the power sector to increase competition.[168] By so doing, the commission prevents and mitigates the abuse of market powers and enhances equality. In this role, NERC has issued several regulations and guidelines regulating NESI – the Meter Asset Provider Regulations 2018, Guidelines on National Content Development for the NESI 2013, NERC Local Content Regulations, NERC Application for Licenses (Generation, Transmission, System Operations Distribution and Trading) Regulations 2010, NERC License and Operating Fees Regulation 2010, NERC mini-grid regulations 2016, and Multi-Year Tariff Order for Determination of the

[165] UCL Institute for Innovation and Public Purpose, 'Global Governance of the Just Transition (December 2022) available at: youtube.com/watch?v=b0HLLZAx1sl (transcript) last accessed 17 February 2023

[166] Ibid

[167] Section 80 EPSRA

[168] Ibid, Section 24 (2)

Cost of Electricity Generation, 2018. NERC, equally conducts orders and quasi-judicial functions and further imposes administrative penalties.[169]

Nigerian Bulk Electricity Trading company (NBET) plc, is the primary administrator of NESI's electricity pool. At the same time, NESI comprises generation companies (GenCos), transition companies (TCN), NBET, and distribution companies (DisCos) that make up the energy sector. [170] Other stakeholders include the Rural Electrification Agency, tasked with implementing the electrification agenda of the government to unserved rural communities. The Agency was set up following reforms in the electricity sector in 2006 and received financial interventions and funding to implement the government's electrification agenda. The federal Ministries – Power, Petroleum, Water Resources & Environment are also part of the sector. They carry out supervisory and oversight functions by granting the required authorizations to generate, produce, and transmit energy production (electricity) in line with their portfolios and supervise environmental and technical measures. Multilateral development corporations, donor agencies (investors), also play a role in the sector. The role of suitable investments in energy development, efficiency, and decarbonisation agenda cannot be overemphasised.[171]

For instance, the current non-cost reflective electricity tariff regime, which is essentially an electricity subsidy, is argued to be inefficient because it subsidises the entire market, including credit-worthy consumers who cannot only pay a cost-reflective tariff but are frequently willing to do so.[172] This results in entrenched marginalisation for some who cannot access electricity and benefit from subsidies because NESI cannot connect them to the grid due to costs. For renewable energy off-grids, donor agencies' financial aid has helped develop the country's solar

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[169] Ibid, Section 81

[170] Currently, the sector runs on six GenCos, and eleven DisCos with a TCN that is owned and controlled by the government - NERC, The Nigerian Electricity Supply Industry (NESI) Available at: https://nerc.gov.ng/index.php/home/nesi last accessed 02/03/23.

[171] N., Edomah, N; Ndulue, G; Lemaire 'A Review of Stakeholder and Interventions in Nigeria Electricity Sector' *Heliyon* 7 (2021) 9

Arguably, 'the interests of some development agencies have traditionally been aimed at providing new markets and expanding the reach of local businesses of their country origin'

[172] Ibid

infrastructure. The United States Agency for International Development (USAID), the European Union and World Bank have supported the development of many of these power initiatives. Consequently, these influences have led to the government's investor-friendly design of the NESI and, at times to the detriment of the consumers and citizens.

The electricity consumers are the end-users of the electricity produced in the country. They consist of– individuals, households, businesses and industries. The EPSRA recognises consumers as significant stakeholders of the NESI. The Act has therefore set up the NERC to regulate and constitute panels to settle consumer issues. Through its MYTO order, NERC has also been empowered to consider specific criteria to determine pricing orders for different consumers.[173] This stipulates a function of NERC to cut out sector marginalisation by meeting the energy needs of even the vulnerable. Edomah,[174] has identified four (4) major electricity consumer categorisations – consumers who are willing but unable to pay, capable consumers, unwilling consumers, and vulnerable consumers. All energy consumers have also benefitted from the long-standing subsidy regime.[175]

4.4.2 EPSRA and its Regime of Control – NERC

The liberalisation of the electricity sector was aimed at developing a competitive power sector with NERC as an independent regulator. When discussing NERC's regime of control, section 62 of EPSRA stipulates that a license issued by NERC is required to distribute power in the country. The basis of the requirement is to safeguard consumers' interest's vis-a-vis the general development of the industry. [176] For instance, by regulation 16, NERC can suspend a licensee's

[173] Ibid 6 -12

[174]Ibid 9 - 10

[175] Ibid 9

[176] Section 80, EPSRA

license on the grounds of a complaint by an unsatisfied customer.[177] Ayodele[178] has noted that where the licence relates to transmission and distribution, NERC must exercise due diligence regarding the company's relevant capacity to transmit and distribute electricity safely. Thus, NERC is responsible for safeguarding the environment and ensuring that money is available to cover liabilities from using any rights or powers required to produce, transfer, or distribute electricity.[179]

Upon establishment as the independent regulator of the power sector and its entire value chain, NERC operates as a body corporate with perpetual succession, which can sue and be sued.[180] This outlines the delegation and acceptance of responsibility for maintaining a fair and efficient supply industry for all stakeholders.[181] For instance, EPSRA empowered NERC to make further regulations, thereby attributing clear responsibility to institutional stakeholders in the supply industry and establishing customer rights.[182] EPSRA, through the setting up of NERC, has clarified how the privatisation of the NESI opens up a shared responsibility for energy justice between the industry and the government. Here, "companies and regulators have legal obligations, and so does the government for the overall energy policy landscape and the justice implications of broader energy decisions."[183]

However, the holders of these licences have resisted competition within the geographical area, and NERC's licences are now operationalised as exclusive rights to distribute power within

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[177] NERC, Customer Complaints Handling: Standards and Procedures made Pursuant to Section 96 (2) (c) & (d) Electric Power Sector Reform Act 2005

[178] A., Oni, 'The Nigerian Electricity Market: Understanding the Transnational, Legal and Policy Issues' (Ciplus Limited 2021) 81.

He further states that open access is provided to all users with transparent and non-discriminatory prices.

[179] Ibid

[180] Section 31 (1) EPSRA, 2005

[181] Ibid 32, 34 EPSRA

[182] Ibid

[183] K., Jenkins, D., McCauley, & C., Warren, Attributing Responsibility for Energy Justice: A Case Study Hinkley Pont Nuclear Complex' *Science Policy* 16

geographic zones. The primary objective of liberalising the industry, enhancing freedom of enterprise and choice, and equal access for all is severely hampered by this.[184] In *Enugu Electricity Distribution Plc & Anor v Ariaria Market Energy Solutions Ltd, Ariaria Independent Energy Distribution Network, Nigerian Electricity Regulatory Commission & 2 Ors*,[185] the plaintiff sued NERC and two other parties over the licence issuance by NERC and sought to prevent NERC from extending licences over their operation's coverage area to any other companies.[186] According to the court's literal interpretation of section 71(6) of the ESPRA, which was upheld in this case, the plaintiff's licence was not exclusive. As such, NERC was not legally prohibited from awarding a licence to another DisCo within the same geographic area.

Iweze, contends that this decision is a step in the right direction for just transition because it clarifies the process for issuing distribution licences, allowing for competition and interdependence necessary for regime's destabilisation.[187] Before the decision, there had been an incorrect assumption that the distribution licences NERC granted to DisCos were exclusive simply because they covered specific geographic areas.[188] Because of this presumption, investors have been reluctant to invest in these areas for fear that their actions will be viewed as violating already granted licences, even though the existing DisCo coverage over the area was inadequate and left many people without access to reliable electricity.[189]

The EPSRA legislation is also lacking in recognition of the role of RE in ensuring energy security as it is silent on key provisions empowering NERC to regulate the generation,

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[184] N., Edomah, C., Foulds, & A., Jones, 'The Role of Policy makers and Institutions in the Energy Sector: The Case of Energy Infrastructure Governance in Nigeria' (2016) 8, *Sustainability* 829

[185] Suit No FHC/UM/CS/51/1

[186] O., Iweze, Judicial Interpretation of Section 71 (6) of the Electric Power Sector Reform Act 2005 (2021) IBA, Available at**:** https://www.ibanet.org/judicial-interpretation-electric-power-reform-act last accessed 02/03/23

[187] Ibid

[188] Ibid

[189] Ibid

transmission, and sale of RE in the country. More often than not, the government's failure to regularise a sector means that the market forces are at play in navigating the sector. For a developing country with an immature market, the case usually favours those with the required economic power to benefit supply. The lacuna in the EPSRA Act is revisited in the policy guideline, which recognises the role of RE in achieving energy security, particularly in the local region without the grid.

Therefore, the Renewable Electricity Policy Guideline (REPG) empowered NERC in Para 7.3, 5.3.2, 6.0 – 6.2.4 REPG, to establish the Rural Electrification Agency (REA), extend the primary grid and develop isolated, mini-grid systems and renewable energy for power generation. It is argued that EPSRA was designed to be an all-encompassing statute for reform of the electric power sector in Nigeria. Interestingly, it seems that EPSRA was short-sighted because the most detailed provision of EPSRA regarding the development, transmission, and sale of RE is section 88 (9) - which links the use and development of RE to rural electrification. Despite the indirect recommendation of RE by the Act, the Act falls short of providing a detailed plan for developing RE sources in Nigeria.[190]

4.4.3 Mini Grid Regulatory Structure

Apart from NERC, the regulator in this electricity sub-sector, the NEP, through its project monitoring unit, plays the active role of mini-grid project implementation alongside REA and NERC. The project management unit (PMU) also interfaces with other stakeholders like REA, project developers, federal ministries (finance, power, environment, local planning), technical review and investment committees, and multi-donor agencies or non-state actors.

4.4.4 NERC’s role in balancing competing interests.

By being an institution that manages general issues of complaints and grievances in the industry and conducting appeals, NERC is ordinarily perceived to function in the consumers' best interest. However, NERC being a governance institution, plays the role of balancing

[190] The EPSRA's foresight in recognizing the benefits of RE and off-grid solutions is commendable. However, EPSRA lacked foresight in setting up the structures necessary to uptake investments, generation, and electricity transmission in the RE sector.

differentiated interest (developer, distributor and consumer). For instance, by receiving complaints about low-quality installations, poor service delivery, and breach of electric power supply obligations, NERC may have prejudices in favour of the powerful investors despite an unequal treatment of the energy underclass. In *A&P Foods Limited v Exusia Power & Gas Ltd*,[191] parties, among other issues, sought a determination by the court under section 62 (1) (e) of the Electric Power Sector Reform Act, 2005 – on whether a company can trade in electricity without license, irrespective of the quantum of electricity sought to be traded. NERC commission gave a ruling ordering the respondent to apply to the commission for a trading license, thereby enabling its sale of electricity. Therefore, the commission conducts proceedings, consultations, and hearings, making final decisions, orders, commands, directives, in accordance with section 46 of the EPSRA. It should be noted here that NERC, like other regulatory bodies, was set up to function free from political direction and to be appropriately accountable by a prompt, adequate, and effective appeal process.[192]

On the awareness of the diversity of values regarding energy legislations and their regulatory bodies, it appears that there are no boundaries and that the principle of state's ownership/governance over resources cuts across/interfaces with the constitutionality, rights and legitimacy standards without enforceable checks, hence the very little litigation in the sector. [193] Critically engaging these loopholes reveals the system's lack of a multilevel governance approach to the transition. Thus, issues relating to access and just considerations are scattered across legislations with no coherence or concreteness, thus leading to institutions not speaking to each other and the inability to link policy impact to policy legislation.

4.4.5 Institutional Framework and MLP

The legal and policy framework analysis presents a variety of strategies, tools, and capacities, as well as management and leadership, innovation and digitalization, models, and frameworks—all aimed at resolving the nation's energy security and transition issues. Some of

[191] NERC/14/0001

[192] Section 45, 50, and 96 EPSRA and Chapter II, NERC Business Rules

[193] Even the courts have rarely pushed these limits

these include subsidies for specific groups, elimination of unfavourable ones, taxation on energy use, solar production, early adopters, low-catch-up areas, and transitioning to gas despite fossil fuel de-investment. Thus, the nation's energy legal framework, as outlined in policy documents like the NEP and EA, provides guidance for a somewhat orderly transition. This is because these policies recognise the country's need for diversification, decentralization, liberalisation, and energy citizenship, leading to the establishment of the National Renewable Energy and Efficiency Policy, [194] and the recent Energy Transition Plan.[195]

The country's meso-level regime recognises the multidimensional nature of energy transition and its importance for economic development; hence, it incorporates interconnectedness and interdependencies across micro, meso, and macro levels.[196] It is argued that this understanding of the interconnectedness between the broader institutional contexts, social dynamics, and technological advancements is crucial for supporting the nation's transition to RE. However, the analysis reveals a lack of strong institutions and a formalised policy process, resulting in 'development shaped policy making' being too disconnected from the heterogenous needs of actors, leading to the non-implementation of policy regulations.

Arguably, these stakeholder engagements could be deepened to reduce overlaps, but the verdict of the nation's energy challenge, as replicated throughout the discussion, reveals the incapability of transforming grand policy objectives and engagements into positive outputs. The MLP's analysis of the nation's legal framework highlights the need for symbiosis between natural and behavioural factors for successful policy implementation, which is what the MLP looks out for as evidence-based interactions for just transitions. Thus, because the energy poor are neglected in transitions due to their inability to control or influence dynamics, and for this gap, these set of actors could be targeted with subsidies. Consequently, integrating feedback

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[194] Federal Ministry of Power, Nigerian Renewable Energy and Energy Efficiency Policy (2015):36 - available at http://admin.theiguides.org/Media/Documents/NREEE%20POLICY%202015-%20FEC%20APPROVED%20COPY.pdf last accessed 02/03/23 Reg 11, 15. Paras 1.4 & 1.6., 'which aimed to improve energy supply and use of renewable energy sources, particularly in rural areas'

[195] FGN, Nigeria's Energy Transition Plan (2022) available at: https://energytransition.gov.ng/ last accessed 07/02/2024.

[196] T., Ahmadov, S., Durst, W., Gerstlberger, *et al.* SMEs on the way to a circular economy: insights from a multi-perspective review. (2023) *Manag Rev Q* 1-34.

from failed policies and past engagements, [197] can improve development and policy implementation in the sector and address poor institutions, leading to the structure of a RET formalised policy process.

4.5 Conclusion

Therefore, a closer look at Nigeria's energy legal system reveals that it is dynamic and driven by interactions between actors and 'different' types of actors. This is why traditional energy policies don't work. Thus, it is argued that it is the meeting point of these heterogenous actors and the prevailing dynamics that will bring about the success of implemented policies in the country. Accordingly, the question becomes not one of just 'policies', but a revelation and an understanding of who the heterogenous actors in the NESI are, their needs, and the dynamics that shape them, as well as a strong institutional platform that admits the entrance of these differentiated actors, and a formalised policy process that constantly brings them together. It is

maintained that it is at this melting pot that strong oligarchies can be identified, the interests of the underclass in terms of development and energy can be acknowledged, and as a result, practical strategies, focused policies, and concessions can be made to articulate a just transition. The sector therefore isn't the sum of its parts, a one-size-fits-all or a governance of the few over the large. The NESI is a system bridled with the responsibility to serve the citizens and their businesses, and as such, its legal and governance framework should reference a multi-levelled posture in order to drive just transitions.

[197] (n 40) Schenk et al. '(organisations, governments, and energy systems, or different customers based on variables like money, education, cultural background, environment (rural vs. urban), or worldview)'

Chapter Five: Energy Justice and Multi-Level Perspective Assessment

5.1 Brief Overview

The preceding chapter discussed the legal and institutional framework on energy transition (ET) in Nigeria, this chapter considers the difficulties faced in the introduction of mini grids as a result of the existing dominant meso level culture of the country's energy system. It utilizes relevant case studies to show this, thereby assessing the efficacy or otherwise of the existing laws and policies on ET in Nigeria.

5.2 Case Study Presentation

Using mini grids as a case study, the section presents for analysis the 2016 mini grid regulation and some mini grid solar based projects in some Niger Delta communities. The goal is to emphasize the social impact of transitions, the value of people, and people's engagement and empowerment in addressing human, environmental, and economic challenges in a complex transition. It starts by identifying difficulties faced in the introduction of mini-grid systems and where the policy regulations deviate from MLP and energy justice principles.[1] The case studies further illustrate the dilemma of how Nigeria's reliance on fossil fuel subsidies violates energy justice and environmental law principles, harming vulnerable communities and future generations.[2] However, fuel divestment, the country's withdrawal of electricity, and fuel subsidies equally put the masses on yet another rigid footing that turns on energy justice concerns. The question then becomes a complication of how the country can simultaneously

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[1] E., Baker, Energy Justice: Who Gets Listened To? (August, 2021) available at:http://www.ted.com>talks>erin_baker_energy_justice_who_gets_listened_to?language=en

date accessed 27/06/2022. 'This highlights the importance of targeted policymaking, considering contexts, and empowering marginalized individuals and communities as energy citizens in the nation's current ET culture. It equally demonstrates how essential it is to think about who gets to ask energy questions, who gets to answer them, and whose questions get heard.'

[2] D., McCauley, 'Energy Justice in the Transition to Low Carbon Energy Systems: Exploring Key Themes in the Social Sciences' (2018*) Applied Energy* 2-3." 'It further emphasizes 'the importance of considering past, present, and future energy development of all types across the energy life cycle, and their key questions as they relate to energy for whom, for what, and at whose cost.'

address sustainable energy transition and help Niger Delta (vulnerable) communities.[3]According to Goldemberg et al.,[4] a critical goal for any country should be to attain energy self-sufficiency before pursuing any other goal because none of the other goals can be accomplished until the current uneven supply in energy distribution and management is resolved.

A successful ET therefore necessitates regulations, developers, and financial incentives to encourage private sector involvement. However, to succeed, these well-managed policies and markets must be based on quantitative analysis.[5] It is this conundrum of competing policy goals, disparate players and interests, a deeply ingrained culture of system dependency, mindsets and practices hinged on the old that are resistant to destabilizations, that this work aims to highlight (through case studies) to initiate workable policy reforms.

5.3 Mini-Grid Policy and regulatory framework

The mini grid regulation clarifies legal operations and specifies the types and conditions of subsidies, for mini-grid development in the country.[6] Mini grids are energy supply systems with a power generation capacity of 0 kw to 1 mw, supplying electricity to multiple consumers

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[3] V., Nalule, 'How to Respond to Energy Transitions in Africa: Introducing the Energy Progression Dialogue' In: V., Nalule, (ed.) Energy Transitions and the Future of the African Energy Sector. (Palgrave Macmillan; 2020) 22

[4] J., Goldemberg, T., Johansson, A., Reddy, R., Williams, *Energy for a Sustainable World'* Wiley Eastern Limited (1988) 236., Ibid., 'Nalule, correctly states that the developing country's primary focus will be on access security and economic development using all available energy options and technologies.'

[5] R., Nersesian, *Energy Economics: Markets, History and Policy* (Routledge, 2016) 7., D Yergin D., *The Quest: Energy, Security, and the Remaking of the Modern World* (Penguin Books, 2011)540, 542. 'Yergin's narrative highlights US and German solar market growth largely due to government subsidies and feed-in laws, highlighting the importance of targeted economic basis for modern renewables.'

[6] USAID, 'What are the Elements of a Regulatory Framework for Mini-Grids?' (2021) available at: usaid.gov/energy/mini-grids/regulation/elements last accessed 24/02/2022.; Z., Yang, R., Khandelwal, & J., Pumarejo, 'Mini-grid Regulations Allowing Private Investment are Necessary to Reduce the Energy Access Gap in Sub-Sahran Africa' (2021); James Rogers, Energy Access Project Duke available at: https://energyaccess.duke.edu/mini-grid-regulations-for-private-investment/ last accessed 2 April 2023.

'Accordingly, Yang et al., and the World Bank has identified five key areas for every mini-grid regulation to focus on market entry, tariffs, technical specifications, service standards, main grid expansion and competition with national utility companies.'

in isolation or connected to a distribution licensee's network.[7] The key regulatory features focus on:

• technology standards and compatibility,[8]
• affordable and reliable service,[9]
• environmental impacts,[10]
• planning with an interconnection to the main grid,[11]
• customer service and quality, and
• contractual agreements.[12]
• The regulation includes compensation mechanisms to prevent grid encroachment and cost-reflective pricing for uniformity and standardization in the mini-grid business.[13]
• The policy encourages mini grid investments, reduces risks, facilitates private sector activity in the nation's energy market, and increases profitability in loss-making areas through grid extension.[14]
• Relevant Institutions: The National Energy Policy (NEP), the National Energy Regulatory Commission (NERC), and the Rural Electrification Agency (REA).

[7] Nigerian Electricity Regulatory Commission Mini-Grid Regulation, (2016) Reg.3.

[8] NERC Mini-grid Regulation section 14.

[9] Ibid section 15.

[10] Ibid section 17.

[11] Ibid section 19.

[12] Ibid section 20.

[13] (n 3).

[14] Section 4.

Table 5a Source: Mini grid Regulation, 2016

Nigeria's 2016 mini-grid regulation policy aims to accelerate rural electrification and energy transition, addressing energy poverty, access, and security issues in the country. However, its current progress is more ambitious in promoting energy justice and sustainable development.[15] For instance, Zebra *et al*, opine that the institution of the REA and its work with international donors has significantly impacted the deployment of mini grids in Nigeria and Tanzania.[16]

On this note, reports show successful implementation of mini-grid projects in various local government communities in the country. For instance, A4&T Power signed a deal to supply 230,000 solar grids over two years, while Husk Power Systems installs six solar hybrid mini grids in Nasarawa state, targeting 25,000 beneficiaries.[17] However, with international oil corporations said to be leaving Nigeria and moving their portfolios towards green energy,[18] more is required to be done.[19] Nigeria, therefore, has an enormous need for this new mini-grid access connection.[20] Thus, various regulatory support mechanisms and government

[15] The REA collaborates with the World Bank, African Development Bank, and other donor organizations to construct mini-grids, stand-alone systems, or solar home systems in unserved areas.

[16] E., Zebra , V., Windt , G Nhumaio & A., Faaji, 'A review of Hybrid Renewable Energy Systems in Mini Grids for Off-Grid Electrification in Developing Countries' (2021) 144 *Renewable and Sustainable Energy Reviews*

[17] 'Rural Energy Leader Husk Power Systems Launches Solar Hybrid Mini grids in 6 Nigeria Communities; Targets More Than 500 Mini grids by 2026' Press Release: Husk Powering Possibilities available at: https://huskpowersystems.com/rural-energy-leadeir-husk-power-systems-launches-solar-hybrid-minigrids-in-6-nigeria-communities/ last accessed 27/03/2023.

[18] M., Kyari, 'Why Oil Majors are Selling their Assets and Leaving Nigeria' (2022) *Premium Times* available at: www.premiumtimesng.com last accessed 01/03/2022. 'Seplat Energy has acquired Mobil Producing Nigeria Unlimited's oil and shallow water assets from Exxon Mobil, following Royal Dutch Shell's plans to sell its Nigerian assets for green energy transition.'

[19] IEA, 'Energy Access Outlook 2017: From Poverty to Prosperity' OECD/IEA, Paris, available at: www.iea.org/publications/freepublcations/publication/WE-O2017SpecialReport_EnergyAccessOutlook.pdf. Last accessed 23/11/2021. 'Renewable energy sources will power 60% of new access connections by 2030, with mini-grids accounting for 40%.'

[20] A., Elia, et al 'Impacts of Innovation on Renewable Energy Technology Cost Reductions. (2021) 138 *Renewable and Sustainable Energy Reviews* 1 – 31, 3. 'For instance, Mini grids are a global success due to cost reductions, technological advancements, markets, policy regulations, and diffusion.'

intervention will be required to regulate its social conduct and market failures over time.[21] As a result, the government faces challenges in channelling subsidies to private sector mini-grid utilities while ensuring sustainable efficiency without impacting the public's interest duty of electricity distribution.[22] The case analysis therefore reveals conflicts of interest in pursuing rural electrification, and the transfer of burden onto mini-grid developers to ensure profitability and affordability of services.[23]

5.3.1 Analysis of the Mini-Grid Regulation

The table below provides a step-by-step procedure for implementing mini grids in the country.

• Project site identification, contact and negotiation with the local people.[24]
• Signing a 12-month exclusivity agreement.
• Permit collection from the state's ministry of the environment,
• Application to NERC for permits, registration, or tariff approval.[25]
• Commissioning

[21] IRENA, 'Policies and regulations for private sector renewable energy mini-grids' (Abu Dhabi, 2016) 1 – 112-3, 49-55 'Regulatory support is crucial for mini-grid commercial development and ensuring stakeholder trust in tariff pricing, access security, and investment certainty.'

[22] USAID, 'Unlocking Africa's Mini Grid Market' (2021) Final Report, USAID Scaling Up Renewable Energy Program (SURE) available at: https://pdf.usaid.gov/pdf_docs/PA00X8SK.pdf last accessed 28/06/22.

[23] V., Bandi, et al, 'The paradox of mini-grid business models: A conflict between business viability and customer affordability in rural India' (2022) 89 (102535) Energy Research & Social Science 1- 16, 1, 11

[24] Mini grid regulation section 7. 'the project site, which must be outside DisCo's approved expansion plan'

[25] Ibid. 'Following a successful contact and negotiation, the community must sign a 12-month exclusivity agreement. The developer proceeds to collect permits from the state's ministry of the environment and then a subsequent application to NERC for a permit or registration, as the case may be, as well as a tariff approval'

• Decommissioning[26]
• No licensing for isolated mini grids.[27]
• Note: the negotiation stage is crucial for stakeholder engagement due to financial, social, land, ecological, and capacity implications.[28]

Table 5b: Source: Mini grid regulation, 2016

It should be noted that the negotiation stage is essential for the engagement of stakeholders in the transition process and to enhance negotiations, the mini-grid regulation stipulates three permission levels: unsolicited mini grid's ability to adjust a cost-reflective tariff (Sec 8.1), the requirement to negotiate agreements with local stakeholders, and explicit regulations for the grid's entrance.[29] Thus, a properly completed application form, a contract between the community and the mini-grid developer, a NERC evaluation, and written consent from the DisCo of the intended area stipulating where the proposed area is located within its five-year exemption plan, as well as a proof of land acquisition and assets are among the permit requirements.[30] Wherever further permits are required, documentation, including tariff evaluation using the MYTO approach and a health and safety assessment, are also needed. For an interconnected Mini grid, the implementation requires a tripartite contract between the community, developer, and distribution licensee for an interconnected mini grid.[31] This contract must include site selection, an exclusivity agreement, and a network usage charge and

[26] Mini grid regulation section 14. 'there is the commissioning and running of the system and, finally, the decommissioning'

[27] Mini grid regulation section 7 (1).

[28] K., Kohli & M., Melon, 'The Tactics of Persuasion: Environmental negotiations over a corporate coal project in coastal India' (2016) 99 *Energy Policy* 270 – 276.

[29] USAID, Unlocking Africa's Mini Grid Market (2021) Final Report, USAID Scaling Up Renewable Energy Program (SURE) available at: https://pdf.usaid.gov/pdf_docs/PA00X8SK.pdf last accessed 28/06/22.

[30] Section 7 & 8 NERC Mini grid Regulation (2016).

[31] Section 9

limitation contract. The process also includes obtaining NERC approval or a permit, installation, commissioning, and operation, and NERC has supplied a form for this in the mini-grid regulation.

At the negotiation stage, developers engage in the tactical persuasion of the local people based on price, energy access, market mechanisms, and decarbonisation.[32] Kohli *et al.* argue that the negotiation stage is a precautionary stage where an in-built procedure regarding the alignment of policy regulation to a context happens.[33] Thus, negotiations should consider environmental impact assessments, past injustices, communal land rights, and livelihood impacts,[34] with mechanisms for retrospective review of past injustices and future impacts,[35] thereby aligning policy regulation with the context's experience. Negotiations are typically involved in the project development phase,[36] however, given the many sectoral and deployment approaches, periodic reviews or post project negotiations are crucial to keep up with rural communities' energy landscape and trends.

The mini-grid regulation protects community, developers, and regulators on the initial consultation,[37]but addressing ongoing collaborations is crucial and the regulation is lacking strong coordinating structures to implement this. To address this, the thesis recommends

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[32] (n 28) Kohli & Melon 270-276.

[33] Ibid.

[34] Ibid 276.

[35] Ibid., R., Hughes, 'EIA and Stakeholder Involvement' International Institute for Environment and Development Paper, (1998) 11 *Environment Planning Issues* 1 -11 'Effective environmental impact assessments (EIAs) tend to promote more impactful environmental assessment processes and, as a result, development that produces more positive environmental and social effects. Evaluations that incorporate a range of stakeholder groups, including those from local communities, have a better chance of drawing from a larger pool of information sources and, in some cases, from years of accumulated experience with their immediate surroundings. EIAs that were not inclusive, on the other hand, frequently had less of an impact on planning and implementation, which in turn resulted in higher socioeconomic and environmental costs.'

[36] (n 30) 'Negotiations are typically considered pre-project implementation, involving activities such as site selection, community contact, demand projection, mini-grid system design, legal framework analysis, administrative approvals, corporate structure, and financial models.'

[37] Ibid.

community representatives, [38] regulatory liability obligations addressing social and environmental issues, balance between investors and consumers,[39] and the establishment of cooperative dialogue hubs and frameworks. It is maintained that for an energy transition to be successful and sustainable—benefitting society and the environment,[40] —it is imperative to establish a multilevel governance structure to address challenges, target vulnerabilities, and maintain stakeholder participation and communication throughout the mini grid cycle.

When it comes to developers, negotiation of appropriate financial compensation is a crucial contract term because the mini-grid regulation only protects investors' interests by about 60%,[41] but only to a 30% effectiveness,[42] after main grid encroachment.[43]This is due to the lack of a public price-finding mechanism and the unclear determination of the fair market value of assets and businesses.[44] Thus, access issues are the state's and the local people's concerns, while private investors are attracted to investing in mini grids for their protection and fair market value. This illustrates the need for balancing and targeted or multi-level governance of transitions.

It is therefore the Nigerian Electricity Regulatory Commission (NERC), that is tasked with this responsibility of governing the nation's power sector, enabling mini-grids for both grid-

[38] (n 28), (n 30) 'For instance, negotiation issues in mini-grid projects may arise due to unequal power dynamics, particularly in foreign-owned firms. Strong governance mechanisms can protect locals from oppressive contract terms. Thus, ongoing negotiations can focus on maintaining/balancing favourable terms, in light of economic development, climate change, environmental management, and changing business models.'

[39] Ibid

[40] Ibid.

[41] Ibid.

[42] Ibid.

[43] C., Mambwe, 'Benchmarking and comparing effectiveness of mini-grid encroachment regulations of 24 African countries: A guide for governments and energy regulators to develop effective grid encroachment regulations' (2022) 1 *Solar Compass*, 1-9, 5.

[44] Ibid.

connected and off-grid systems.[45] It regulates rates for grids with over 100 kW distribution capacity. Mini-grid developers can apply for permits for capacities under 100 kW.[46] The NERC and REA provide capital cost subsidies, promoting growth through financing and cost reduction. For mini grids with hybrid ownership, the federal government supplies the funds, while local governments give the land and oversee the site's security.[47] Nigeria's mini-grid regulation therefore allows customers to participate in negotiation processes before finalization, promoting to an extent, energy citizenship and energy diversification. The connection between investment and profitability is often influenced by factors such as affordability, location, and potential returns, with rural areas often being less favourable. Thus, the regulation acknowledges community involvement and social justice but lacks effective coordinating structures for achieving these goals.[48]

5.3.2 Ownership Models

In Nigeria, mini grids have been effectively established through a range of ownership structures, including grants, loans, private financing, and subsidies from different sources.[49] As a result of some of these shared ownership structures and standards,[50] environmental impact assessment (EIA) processes have been followed, leading to few project-site related violations of human rights. Some of these successful mini-grid pilot projects include a 3.0 MW solar-hybrid power plant at Michael Okpara University of Agriculture, a 60KwP mini-grid in Okangha Nkpansi,

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[45] 'Section 31 of the Electric Power Sector Reform Act (EPSRA)empowers NERC to independently regulate the nation's power sector. It regulates mini grids alongside REA and PMU'

[46] Section 3 Mini grid Regulation, 2016.

[47] T., Sadfar, 'Business Models for Mini Grids' (2017) Technical Reports 9 Smart Village Cambridge available at: http://test.e4sv.org/wp-content/uploads/2017/05/TR9.pdf last accessed 21/06/2022.

[48] Ibid.

[49] (n 30) 'corporate, government, and multinational sources'

[50] IRENA, 'Policies and Regulation for RE Mini Grids'(2018) 1-88, 28 available at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2018/Oct/IRENA_mini-grid_policies_2018.pdf. Success of pilot projects have been traced to the mandatory environmental and social impact assessment (ESIA) required for any development project in Nigeria, including mini-grids.

and a 55kW mini-grid in Green Village, Ele.[51] It is noted here that the government is utilizing various energy technologies, including solar PV, hydropower, biomass, wind, and hybrid systems, to achieve specific energy goals, promoting integrated electrification.[52]In order to improve energy access, the government's electrification plan under the Rural Electrification Agency (REA) has given rise to a variety of ownership and business models,[53] that highlight energy citizenship and the multi-level governance nature of the transitions. Thus, mini-grid projects can improve energy access in countries by involving both the community and private sectors, system maintenance, well-designed pricing, and flexibility despite local variations. However, a strong coordinating or governance system is necessary to drive this.

5.3.3 Tariffs and Financing Mechanisms

There can be no transition to green energy without access rules, especially for developing countries. As a result, the renewable energy transition is centred on market access strategies based on regulatory support mechanisms. Because rural residents cannot afford a price that reflects the total cost of electrification, regulators are tasked with ensuring that private mini-grid operators can operate sustainably and recover their costs while providing consumers with affordable and high-quality services.[54] Feed-in-tariffs, grants and auctions are essential for the trade of renewable energy and technology goods and services because they can affect investment, the economy, and the attainment of sustainable development goals positively and negatively.[55] Taxes can also be used by the government to control the market for the advantage

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[51] REA, 'Nigeria Electrification Project-Rural Electrification Agency Reports' (2020) available at https://rea.gov.ng/rural-electrification-agencys-impact-report/ last accessed 27/06/22. 'In Ele, 652 households and micro, small, and medium enterprises (MSMEs) were connected.'

[52] Ibid.

[53] Like the use of mini-grid initiatives to power universities, hospitals, and small-' For instance, so far the REA-Energizing Education Programs has completed Phase 1 of the 37 universities and 7 teaching hospitals project implementation' – rea.gov.ng.

[54] IRENA, 'Policies and Regulation for RE Mini Grids'(2018) 1-88, 28 available at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2018/Oct/IRENA_mini-grid_policies_2018.pdf .

[55] Mini Grid Investment Report (2018) available at: https://rmi.org/wpcontent/uploads/2018/08/RMI_Nigeria_Minigrid_Investment_Report_2018.pdf last accessed 29/06/22.

of consumers or to rebalance the scales in favour of the most vulnerable.[56] This pertains to the liberalisation debate and the significance of establishing a policy space for green-related technologies to develop. It is worth noting that the Electric Power Sector Reform Act of 2005, which liberalised the energy sector, created a solid platform for Nigeria's off-grid sector development but this was lacking effective coordination.[57]

While the country has made significant progress in rural electrification initiatives because of mini-grids, the industry has been criticised for inequitable targeting, overly commercialised, and lacking in improving linkages,[58] leading to fears of marginalisation and energy injustice. First, privatising the country's energy industry has been perceived to promote the growth of mini-grids and, as a result, an increase in electrification, particularly in rural areas.[59] This is applaudable because investment is key to offset the cost of renewables. Statistics help to clarify the business case for rural area electrification agenda: Nigeria's population is expected to reach 210 million by 2022.[60] With nearly 93 million people living without electricity, the country's energy access rate is 54.4 per cent.[61] The electrification rate in urban areas is 86.6 per cent, while rural electrification is 22.6%.[62]

The market is underpinned by the most appealing commercially viable and de-risk sites in Africa which should further cost reductions.[63] Also, the nation's enormous but underdeveloped

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[56] Ibid.

[57] Section 31 & 88 EPSRA 2005 – NERC and REA are given the authority to design, promote, and maintain efficient industry and market structures in order to ensure the most efficient use of resources for the provision of electricity services.

[58] (n 54) 63.

[59] Section 7

[60] T., Lemondzhava, 'World Bank Stakeholder Workshop Report on Nigeria Electrification Project – Energizing Education Phase II' (2020) –World Bank Group - REA, NERC available 1-8, available at: https://rea.gov.ng/EEP-PhaseII-Stakeholder-World-Bank.pdf last accessed 23/06/22.

[61] Ibid.

[62] Ibid.

[63] REA, Mini Grid Investment Brief (2017) 1- 43, 31, 32. .https://rea.gov.ng/Nigeria_MinigridInvestmentBrief_171202-V2.pdf last accessed 23/06/22.

mini-grid industry is estimated to have a revenue potential of 2.8 trillion naira annually.[64] When it comes to commercial investment in the sector, project reports show that the industry competes with alternatives such as diesel and petrol investments.[65] For funding mechanisms, the developer must first apply for pre-qualification status to be considered for grants, then proceed with site selection, community engagement, and other pre-construction operations.[66] The developer then goes through the REA application procedure, which includes consultation and signing a grant agreement, followed by construction and operation.[67] After a confirmation that the mini-grid has provided stable power for three months, REA awards the developer a performance-based reward of $350 per connection.[68] Another funding mechanism (which has an auction format) is the REA minimum subsidy tender, in which developers submit bids on attractive bundles of REA diligence sites. REA award's good locations for mini-grid development after a successful auction conclusion.[69]

As a result, the Nigerian mini-grid sector has experienced exponential expansion, with current opportunities pointing to a stable regulatory environment and a strong subsidy plan. Aklin, puts it well when he states that, "reliable legal institutions are a prerequisite for the emergence of a dynamic off-grid energy market."[70] For instance, it is reported that "the mini-grid development sector is more crowded in Nigeria than elsewhere, reflecting that the market has significant

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[64] Ibid.

[65] Ibid.

[66] R., Dhingra & M., Oristaglio , 'Championing Mini-Grids to Shrink Nigeria's Energy Access Deficit' Clean Energy Education Empowerment : A presentation available at: https://static1.squarespace.com/static/5aa038113917eedcf3312352/t/60085592eb6bdb7e21e5b5b4/1611158947179/Dhingra%2C+Remy_Championing+Mini-Grids+to+Shrink+Nigeria%E2%80%99s+Energy+Access+Deficit.pdf 1-11 at 5 last accessed 21/06/22.

[67] Ibid.

[68] Ibid.

[69] Ibid.

[70] M., Aklin, 'The Off-Grid Catch -22: Effective Institutions as a Prerequisite for the Global Deployment of Distributed Renewable Power' (2020) 3.

potential to provide electricity access and displace existing diesel generators."[71] This regulatory environment and overwhelming energy demand have necessitated the World Bank to make significant financial commitments for several mini-grid projects in the country.

As a result, the Nigerian mini-grid electrification regulation and initiative aims to accelerate investment in rural electrification. The rationale is that mini-grids must first be commercially feasible to attract private-sector investment. The regulations and policies have therefore been designed as an economic support scenario through cost-reflective tariffs and a spread of subsidies for investors to pay project development, investment, equipment, operations, maintenance, and management costs and achieve a reasonable rate of return.[72] Permit holders' tariffs are computed using the multi-year tariff order (MYTO) technique and are susceptible to technical and non-technical losses of up to 10% each, according to the regulation.[73]

NERC has created a web-based tool to help developers speed up the mini-grid registration procedure and a downloadable simplified MYTO Excel-based model to assist developers in determining cost-reflective rates to charge end-users.[74] The mini-grid sector has benefited from this modern technology since it has boosted openness and the capacity of developers to verify their prices. The regulation also includes standards for accounting, environmental protection, health and safety, insurance, reporting, technical concerns, and remuneration for mini-grid developers by Disco.[75]

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[71] IEA/IRENA, 'Nigerian Electricity Regulatory Commission Mini-Grid Regulation 2016'; (2017) IEA/IRENA Renewables Policies Database available at https://www.iea.org/policies/6375-nigerian-electricity-regulatory-commission-mini-grid-regulation-2016. Last accessed 21/03/23, IRENA, 'Policies and Regulations for Renwable Energy Mini-Grids' (2018) 17, available at: https://www.irena.org/-Media/Files/IRENA, last accessed 21/03/23.

[72] Mini Grid Regulation, 2016. Section 7

[73] Rural Energy Leader Husk Power Systems Launches Solar Hybrid Mini grids in 6 Nigeria Communities; Targets More Than 500 Mini grids by 2026 Press Release: Husk Powering Possibilities available at: https://huskpowersystems.com/rural-energy-leadeir-husk-power-systems-launches-solar-hybrid-minigrids-in-6-nigeria-communities/ last accessed 27 March 2023

[74] Ibid.

[75] Mini-grid Regulation, 2016 section 14, 16, 17, 19 (5-6).

However, because electricity is a public good, it necessitates some structures in addition to economic instruments to ensure that competition does not elevate injustices above and beyond the essential goal of providing electricity, particularly to the most marginalised or vulnerable members of society. Therefore, well-designed policies and regulations are necessary to maximise the economic and social benefits of mini-grids and make them sustainable.[76] Although there is an inherent trade-off, a one-size-fits-all approach to policy may not successfully enable the full range of technological, management, and financial options.[77] Oni, puts this elaborately when he states that "the future development of the Nigerian electricity sector should consider the design of network access pricing to ensure that all developers are treated fairly and in a non-discriminatory manner while potentially reflecting costs unto end-users."[78]

5.3.4 Regulatory Challenges

As highlighted in Chapter four, the country has gone on several reforms and energy policy revisions. However, despite the series of reforms, a robust regulatory regime and having one of the largest oil and gas proceeds and the second-largest potential mini-grid market in the world,[79] with an estimated value of 8 billion dollars as of 2020,[80] there are still challenges, many of which portray issues about unequal access and energy injustice. These issues relate to the nature of the energy system. It is argued that the underlying concerns of generation capacity limitations, development culture, citizens' capacity, powerful oligarchies and a system structured in the old, are some of the underlying challenges that shape the nations' energy

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[76] (n 54) IRENA 13,16.

[77] (n 54) 13.

[78] A., Oni., The Nigerian Electricity Market: Understanding the Transactional, Legal and Policy Issues (Ciplus, 2021) 156-157.

[79] The largest in Africa – USAID, 'POWER AFRICA: Nigeria Power Sector Program Off-Grid Market Intelligence Report' (2021) available at: https://pdf.usaid.gov/pdf_docs/PA00ZB5X.pdf last accessed 17 March 2023.

[80] Bloomberg NEF, 'Mini-Grids Partnership State of the Global Mini-Grids Market Reports' (2020). Available at: https://www.seforall.org/system/files/2020-06/MGP-2020-SEforALL.pdf last accessed 17 February 2023.

structure, which have hampered the successful introduction and dissemination of the niche (RE based mini grids) in the country.

For mini grids development, the challenge include uncertainty regarding the DisCo expansion plans and grid extension for future demands, and an inadequate compensation mechanism.[81] There are also issues about several finance, debts, developer experience and knowledge, future maintenance, subsidies, permits for land, EIA ambiguity and generality of environmental protection provisions, inconsistencies between the regulation's technical requirements, delays, and the Nigerian Electricity Management Services Agency (NEMSA) guidelines.[82] An example that best illustrates these difficulties with regards to the poor implementation of RE niches, will be the performance-based grants and REF mechanisms that come with risks for developers because of the requirement to secure pre-financing throughout project preparation, and this may be particularly disadvantageous to local developers.[83]

Also, despite Nigeria's MYTO tool on cost-reflective tariffs, consumers still cannot pay due tariffs because they are not cost-reflective or truly affordable to rural dwellers, mostly made up of retirees and the aged. The lack of additional incentives like rural industrialization to enhance profitability makes mini-grid businesses struggle to break even.[84] Thus, regulatory frameworks for mini-grids need to play a balancing role between protecting the investors' interests and those of consumers and their environment.[85] Achieving the right balance between public

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[81] Rural Energy Leader Husk Power Systems Launches Solar Hybrid Mini grids in 6 Nigeria Communities; Targets More Than 500 Mini grids by 2026 Press Release: Husk Powering Possibilities available at: https://huskpowersystems.com/rural-energy-leadeir-husk-power-systems-launches-solar-hybrid-minigrids-in-6-nigeria-communities/ last accessed 27/03/2023

[82] Ibid.

[83] Ibid.

[84] A., Wearne & B., Tiwari, 'Nigeria Financing Instruments for the Mini Grid Market.' GET Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (2021) available at https://www.get-transform.eu/wp-content/uploads/2021/08/Success-in-Rural-Electrification-Case-Study_Nigeria.pdf last accessed 31-3-2023

[85] (n 54) 49.

interest and private investment requires an in-depth understanding of different mini-grid deployment models' specificities and the policy and regulatory needs (or sensitivities).[86]

An understanding of these mini grid deployment issues is not far removed from the nature of the energy system, which faces challenges such as generation capacity limitations, development culture, citizens' capacity, powerful oligarchies, a past structure that is hinged on subsistence by resource exploitation, and economic internationalization.[87] This serves as an example of how national energy policies that are at odds with the specifics of the situation hinder transitions because they do not have varied implementations and because powerful political or economic actors frequently work to preserve the status quo, thereby resisting change.

The energy system's dependency on fossil fuels has led to environmental degradation and vulnerability to global oil price fluctuations. To destabilize this energy culture and the dominant fossil regime, governments should prioritize renewable energy investments, promote technology research, and encourage public participation. This participation means the consideration of the other unalike actors in the system: the oligarchs, the businesses, the developers, the decision-makers, the different types of consumers, the location, contexts, and interests, as well as the predominant RE resource easily assessable in the area.

The goal of this is the balancing of these many options, actions, and interests, which, as discussed in chapter 4, will require knowledge and understanding of the heterogeneous actors that make up the energy system. Therefore, it becomes very evident that transitional arrangements must from the outset consider context, needs, engagement, and previous policies. Nigeria's diverse and intersectional nature, combined with development-focused state ownership theories, necessitates a targeted policy. Since mini grids provide remote areas with inexpensive, decentralized electrical connections, this study looks at them as niches in Nigeria.

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[86] (n 54) 16.

[87] G., Bhambra, Colonial Global Economy: Towards a Theoretical Reorientation of Political Economy (2021) *Review of International Political Economy* 28 (2) P 307 - 322 PP 314, 315 and 317. 'Bhambra, makes a historical analysis of how this culture has shaped the country's energy system since its colonial era.'

They are viewed as cutting-edge approaches to combat energy poverty and advance sustainable development; and as such ought to be able to undermine established centralized systems and possibly topple fossils. The case study explores some mini-grid electrification initiatives in rural ND communities, highlighting challenges and the need for niche innovation. It emphasizes evidence-based, context-specific, and participatory policymaking and suggests a comprehensive MLP legal framework with EJ standards.

5.3.5 Mini-grid-based electrification – An MLP Analysis

Mini-grid-based electrification is a rural scheme that seeks to provide access to areas uncovered by the national grid. This utility involves a national monopoly component, "a form of control necessary to ensure investment and consumer protection, reporting information and incidents, and monitoring service quality."[88] Cook has "found that rural electrification schemes have not provided high universal access to support industrialization and have been unaffordable for the bottom of the pyramid.[89] His findings indicate that 'connection charges, inefficient load and electricity tariffs were the major barriers for the poor to access electricity."[90] It is agreed that, just like with any energy or public interest project, prices are crucial for the success of the mini-grid deployment in Nigeria; however, setting a price which satisfies the consumers and investors remains a challenge,[91] and this is where the contemplations of competing interests - justice, goals and fairness come in because the questions of whose lens of justice should be considered become apparent. The regulators have devised the multi-year tariff order (MYTO) structure to standardize charges, dependent on a cost-benefit approach.

The implication of including the justice concept into primary laws, policies and regulations for mini grids is justified "because of the role laws, policies, and regulations play in the promotion

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[88] S., Bhattacharrya (ed), Rural Electrification Through Decentralized Off-Grid Systems in Developing Countries (First edn Springer, 2013).

[89] P., Cook, 'Rural Electrification and Development' in Subhes Bhattacharrya (ed) *Rural Electrification Through Decentralized Off-Grid Systems in Developing Countries* (First edn Springer, 2013) 13 – 38.

[90] Ibid.

[91] S., Bhattacharyya & D., Palit, 'Mini grid Based off-grid Electrification to Enhance Electricity Access in Developing countries: What Policies May be Required?' (2016) 94 *Energy Policy* 166 – 178.

of social justice and in creating an enabling environment for the thriving of different actors and in attracting private investment and consumer protection."[92] Thus, energy justice is even more important in mini-grid governance - project planning, siting, implementation, maintenance, use and even decommissioning because this technology and its decisions can disproportionately affect and even harm under-represented groups. Sharma et al., has argued that the failure of solar photovoltaic-based mini-grids is frequently due to important socioeconomic factors that have not received enough attention.[93]

Like other energy utilities, mini-grids are public utilities – underscored with a social policy. It is a sector that the federal government agencies regulate – (NERC and REA) "who govern the prices utilities charge, the terms of their service to consumers, their budgets and construction plans, and their energy efficiency programs."[94] Since mini grids are implemented to improve rural access to electricity, energy efficiency and transition, the public interest dynamic cannot be far removed from its development and management.[95] It is this interest, especially those of the vulnerable within this unserved or underserved pyramid, that the EJ-MLP framework intends to protect.

Therefore, "two broad, fundamental principles justify government oversight of this sector. First, the provision of essential services for the well-being of society – both individuals and businesses, given that it is an industry affected by the public interest,"[96] and differentiated interests." Secondly, electricity, including mini-grids, is a natural monopoly, requiring a few

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[92] (n 89) Cook.

[93] K., Sharma, P., Mohanty, M., Gujar, & D., Palit, 'Approach for designing solar photovoltaic-based mini-grid projects: a case study from India' in S Bhattacharyya, D Palit (Eds.), *Mini-Grids for Rural Electrification of Developing Countries*, (London Springer, 2014) 167-201 at 167 'such as the promotion of livelihoods or the creation of strong local institutions that can own, operate, and manage the project over its lifetime.'

[94] M., Mosca, 'On the Origins of the Concept of Natural Monopoly: Economies of Scale and Competition' (2008) 15 (2) *Euro. J. History of Economic Thought* 317 – 353, 318.

[95] European Parliament, D.-G. for R. and Camenen, F.X. (n.d.). *Public undertakings and public service activities in the European Union - European Parliament Library*. Working Document 24. [online] link.europarl.europa.eu. Available at: https://link.europarl.europa.eu/portal/Public-undertakings-and-public-service-activities/DLiCBspj2TI/# last accessed 26 May 2022.

[96]Ibid.

providers to control services, prevent competition, restrict output, and set prices above economic justification.[97] John Stewart Mill believed that all utilities were natural monopolies and recorded that.,

> "(a) Gas and water service for instance, could be supplied at lower cost if the duplication of facilities by competitive firms were avoided; and that (b) in such circumstances, competition was unstable and inevitably was replaced by monopoly."[98]

This has been the foundation of most electricity sectors, including Nigeria's, until its reforms. The new policy reforms have emphasised the role of competition in achieving energy efficiency and transition. However, NERC's oversight of the utility sector, despite competition among generators, is crucial due to its critical role as an electricity infrastructure and trade. [99] This is equally the case for mini grids. Thus, public service sectors are large services whose importance to the public justifies government oversight. They also rely on bulky permanent infrastructures that require land occupation privileges (public land and easement rights),[100] and can lead to "natural monopolies."[101]The Egbeke case study portrays this below.

The mini-grid sector is primarily designed/regulated to protect the "public interest," which is good. However, what this public interest role may be, comprises many issues, dimensions, or theories as there are differentiated stakeholders. The practicalities involved in '*public interest'* in the face of many perspectives/lenses or complexities cannot be fully appreciated in this study, as it is indefinite and constantly changing.[102] Initially, it meant restraining the monopoly power of utility companies, where regulators focused their activities on setting rates and establishing

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[97]Ibid., M., Mosca, 'On the Origins of the Concept of Natural Monopoly: Economies of Scale and Competition' (2008) 15 (2) *Euro. J. History of Economic Thought* 317 – 353, 318.

[98] Ibid 325-326.

[99] (n 96), Mini-grid regulation, 2016.

[100] (n 95)

[101] (n 96) Public Undertakings and Public Service Activities in the EU 33.

[102] R., Swartwout, 'Current Utility Regulatory Practice from a Historical Perspective' (1992) 32 Nat. Resources J. 289, 295–314.

service standards.[103] Today, environmental protection, sustainability and economic needs expand the public interest.[104]At face value, it appears that public interest is antitheta to market openness and seems to thrive more without competition; however, this thesis believes that both objectives can be complemented for economic development, which can accelerate the SDGs.

Drawing from the experiences of developed countries as it touches on electricity as a public interest, the US Supreme Court case of *Munn v. Illinois*,[105] held that a utility becomes public interest when used in a way that affects the community, requiring property owners to submit to public control for the common good.[106]This becomes the challenge of the DisCos and mini grid developers who have an interest (technology, skills, investments or finances), and require profit such that expatiates the need for their interests to equally be protected by the law, alongside other interests. With the decreasing cost of batteries, the feasibility of generating electricity through mini-grid systems has become a viable option in terms of affordability.

As a result, regulations have become about the orderly regulation of this terrain in the face of the traditional electric utilities, [107] and the attendant management of technology and development monopolies that will arise from it. The emergence of mini-grid systems has therefore raised concerns about the potential disruptions to existing electric utilities. For instance, the recent EA 2023, has clearly precluded the operation of mini-grid utilities outside of states as a way of maintaining the centralised enabled monopoly of the NESI while also empowering states to develop and operate their own states' electricity industry, whether with RE (mini grids) or other traditional energy options.

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[103] Ibid

[104] Ibid

[105] 94 US 113, 126 (1877).

[106] (n 96) "Thus, 'when one devotes his property to a use in which the public has an interest, he, in effect, grants to the public an interest in that use and must submit to be controlled by the public for the common good."

[107] S., Corneli & S., Kihm 'Electric Industry Structure and Regulatory Responses in a Distributed Energy Resources (DERs) Future: Is the Utility of the Future a Natural Monopoly?' (2016) *Electric Markets & Policy*, available at: https://emp.Ibl.gov>news>utility-f Last accessed 30/06/22. "some regulators to consider whether an electric utility still has a natural monopoly in technological advancement alternatively, the future of oil and gas investments in the face of the green energy transition."

This shift in regulation and policy direction, despite being reflective of a growing recognition of the potential for rural electricity access and the consequent decentralisation or state empowerment in this regard, may not fully embrace renewable energy sources, potentially keeping the energy system in the old. This is because the policies and recent EA legislation in electricity, despite the empowerment of states to develop their NESI, have in the constitutional provision precluded these state utilities from selling services outside of states. The implications of this are argued to be reclusive for state actors seeking to keep the continuation of fossil fuel-based energy systems and centralised politics and monopolies in play.

This is interesting because oil and gas is the dominant meso-level paradigm of the NESI, and as such, the entrance of niches to this construct would need a governance strategy quite different from the old. Sesan et al. agree that such a structure, in order to be successful, has to be evidence-based, targeted, integrated, context-specific, and reflective of the interests of the diverse actors and the heterogenous needs that make the NESI successful in incentivizing new niches while transitioning away from gas.[108]Thus, this is a great example of one of the tactics of powerful oligarchies behind the NESI to keep the meso-level dominant paradigm against the infiltration of niches. Therefore, Ezekwelisi et al. argue that addressing this constitutional provision is crucial to promoting renewable energy and achieving a more inclusive and sustainable energy future.[109] A distribution company's (DisCo's) compensation for investment following a mini-grid permit holder's project within the said area covered by the DisCo, in sections 20 and 21 of the mini-grid regulations and the Akipelai case study, portrays this.

Experts have predicted that natural monopolies in the electricity distribution industry will radically change as more businesses provide less expensive alternatives and competition from independent power producers (IPP) like the mini-grids.[110] Theoretically, more distributional energy management, storage, and production advancements would boost competition and

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[108] T., Sesan, & W., Siyanbola, "These are the realities": insights from facilitating researcher-policymaker engagement in Nigeria's household energy sector. (2021) *Humanit Soc Sci Commun* 8, 73

[109] Ezekwesiri, F.Ogini, & I., Adeyemo, A Review of the Electricity Act, 2023 - Impact and Major Issues Arising (September 4, 2023). Available at SSRN: https://ssrn.com/abstract=4560855 or http://dx.doi.org/10.2139/ssrn.4560855

[110] Ibid.

lessen monopolies.[111] This entails the development of new regulatory paradigms and business models capable of enhancing the grid's benefits while continuing to deliver public energy services.[112] This is what this study points at – "an innovation which is at the intersection of energy technology and policy with the full involvement of marginalized context to be most effective."[113] Simply put, a multi-layered/leveled perspective consideration of the country's energy access and security problems.

When it comes to mini grids, the public interest argument has found expression in the flexibility and diversity of new business models and the commercialization of the sector. However, despite being a private business "*affected with a public interest*," it is still subject to supervision/regulation because of the publicness of interest. The social and economic factors notwithstanding, mini grid as a competitive system may still be insufficient to support economic development and energy transition goal. Public utility speaks of "*universal service*," "*just and reasonable*" prices, and *"non-discrimination*" in energy access.[114] Accordingly, Welton and Eisen argue that a cleaner energy economy doesn't necessarily lead to a more just one, as it may not address wealth and power inequalities, as costs may fall on rural communities and non-adopters of new technologies, thus exacerbating inequality while greening the grid.[115]

This argument coincides with that of Mcharg,[116] Sovacool, Heffron, and other energy justice scholars who emphasize that *simply decarbonising the status quo* is not energy justice,[117] and

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[111] Ibid.

[112] Ibid.

[113] (n 2), Baker E., Energy Justice: Who Gets Listened To? (August, 2021) available at:http://www.ted.com>talks>erin_baker_energy_justice_who_gets_listened_to?language=en date accessed 27/06/2022

[114] S., Welton, & J., Eisen, "Clean Energy Justice: Charting an Emerging Agenda" (2019) 43 *Harv. Env't L. Rev.* 307

[115] Ibid.

[116] A., McHarg, 'Energy Justice: Understanding the 'Ethical Turn' in Energy Law and Policy', in Iñigo del Guayo and others (eds), *Energy Justice and Energy Law* (18 June online edn, Oxford; 2020)

[117] K., Jenkins, 'Setting Energy Justice Apart from the Crowd: Lessons from Environmental and Climate Justice' (2018) 39 *Energy Research and Social Science* 117, 119.

this is where this thesis finds expression among the works of other scholars in this field as it brings on board the lived experience of the Niger Delta region in Nigeria in this regard. The Niger Delta case study fits all four of the sustainable energy transitions, energy security, economic development, and energy justice debate. By storytelling the Niger Delta's past pollution experiences and reflecting on how this past energy transition impact affects the current mini-grid implementation in the context, this thesis argues that the transition to low carbon energy (from the mini-grid lens) ought to be treated as an opportunity to rectify the injustices of the fossil fuel economy on the region.[118] To not do so or to allow the inequalities to continue is a continuous perpetuation of an energy injustice cycle.

The Mini-grid case study provides a basis for checking the reflection of the EJ-MLP in the nation's mini-grid technology case study projects (being the niche), law and regulation (being the mini-grid regulation 2016 – as the regime), in the face of global trends, financial investment and externalities (as the landscape). The EJ analysis of the Mini-grid regulation and projects will therefore be carried out on McCauley and Heffron triumvirate tenets of EJ, which are: Procedural Justice (PJ), Recognition (RJ) and Distributive Justice (DJ) in chapter six.

5.4 Case Studies

Nigeria's current rural electrification strategy relies on decentralised solar and diesel-powered mini-grids (hybrid solar systems) with a market-based implementation approach.[119] These solar systems are like the newer version of industrial development predicated on past transitions; oil and gas – and characterised by many inequalities such as unsustainable processes, local content issues, the concentration of corporate power and profits and externalised waste and pollution.[120]

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[118] Ibid

[119] REA, 'Decentralised Renewable Energy Supply for Industries - with focus on Solar PV Solutions: A Presentation On Nigeria's Off-grid Renewable Energy Market & Investment Potentials REA' 1-26 available at: https://www.german-energy-solutions.de/GES/Redaktion/DE/Publikationen/Praesentationen/2018/181120-iv-nigeria-ohiahre-rea.pdf?__blob=publicationFile&v=3.

[120] A., Brock, *et al,*'Volatile Photovoltaics: Green Industrialization, Sacrifice Zones, and the Political Ecology of Solar Energy in Germany'(2021) 111((6*) Annals of the American Association of Geographers* 1756-1778.

The Mini-grid regulation presents basic problems balancing energy transition costs for unserved and marginalized people, particularly those less capable of engaging in or accessing the new renewable (solar) mini-grid technology. Jefferson is of the view that, while a competitive market is the most efficient resource allocator and capable of offering high levels of consumer service and satisfaction, it cannot be expected to address the needs of the most vulnerable populations, safeguard the environment, or assure energy security on its own.[121] Bhattacharyya and Palit's study on mini grid-based rural electrification highlights challenges such as limited application scope, user maintenance burden, income-generating opportunities, and high installation costs.[122] This observation demonstrates that the degree to which energy transition facilitates access, energy security, and economic development depends on the sector's governance and the general public's incentive to proceed.

This is because without proper governance, even subsidizing the RE development costs for initial market entry may reproduce long-term unaffordability and unsustainability of the mini-grid option in the long term. [123] This is the case with oil and gas: the subsidies for this sector have not improved the country's energy access capabilities. This has led to several protests and different government deadlines towards removing fossil fuel subsidies. When it comes to securing the market entry of mini-grids, regulating operation, reasserting justice, minimizing effects, and improving capacities towards accessing mini-grids, the law is used as a tool for balancing RE transition and social justice.

Regarding mini-grids, Bhattacharyya and Palit,[124] noted that one imbalance is the difficulty experienced by users in these unserved areas in having the necessary knowledge and ability to

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[121] M., Jeffersen, 'Energy Policies for Sustainable Development in United Nations Development Programme (UNDP), World Energy Assessment: Energy and the Challenge of Sustainability' (2000) 417 available at: https://www.Undp.Org."

[122] S., Bhattacharyya & D., Palit (eds.) Mini Grids for Rural Electrification of Developing Countries: Analysis and Case Studies from South Asia (2014) Springer Pub P 4

[123] C., Nweke-Eze, The Nigerian Electrification Project – An example of a successful rural electrification design? RIFS PotsDam available at: https://www.rifs-potsdam.de/en/blog/2022/01/nigerian-electrification-project-example-successful-rural-electrification-design last accessed 27/03.23

[124] (n 122) 4.

maintain such advanced technologies. Though these mini-grid projects are directed at the heart of economic development, they also iterate inequalities that deny the vulnerable the benefits of accumulation, technology assess and use, production and consumption.[125] This unevenness reflects the configuration and impact of global energy transition trends and sustainability on the developing climes and regions, thereby producing localised sacrifice zones that entrench injustices at different stages of the mini-grid development process, from the planning to the decommissioning.[126]

On this note, this case study section finds that the mini-grid regulation has failed to target well the differentiated actors and interests as well as balance energy access and economic development objectives ethically. The EJ-MLP analysis of mini-grid regulation and projects will reveal the social and economic cost of the energy transition, the impact on welfare, and the inability of most vulnerable people in unserved areas to buy these services.[127] The analysis will also reveal the problem of uneven targeting, the lack of industrialization in these rural areas, and the commercialization of mini-grid projects.[128] This is the trade-off to the attainment of the government's goal of energy transition, economic growth, and energy security.

It is also argued that a one-sided approach or a one size fit all policy cannot deliver these goals. This is why the mini grid needs to be used as a tool for development that goes beyond incentivising developers for profit or meeting the basic needs of rural and urban poor people but to one that integrates economic development and treats existing marginalization's.[129]It is argued that finding this balance requires a multi-level perspective and governance approach.[130]

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[125] Ibid.

[126] Ibid.

[127] Ibid.

[128] Ibid.

[129] J., Goldemberg, *et al., Energy for a Sustainable World (*Wiley Eastern Limited,1988) 236.

[130] This means looking at both soft and hard law, market, and public service approaches, as well as the needs and context of the differentiated actors that make up the NESI. It is argued that this multi-governance approach leads to a diverse, multidisciplinary, and balanced energy justice approach that can ensure energy efficiency, economic growth, and a zero-carbon future.

This means that, to be most effective, this approach should be framed with prudence, with innovation at the intersection of energy technology and policy, and with the full involvement of the marginalized community.[131] Doing so will prevent sustainability from becoming unjust to low-income and vulnerable groups or the opportunity for energy efficiency and economic development from becoming lost.

Following from the chapter's brief review and analysis of the key features of the mini-grid regulation, as well as its strategy design for stakeholders and impact, this section examines and evaluates the energy justice (EJ) goals of the mini-grid policy and the various ambiguities, interpretations, contestations, and conflicts via case studies. Furthermore, the case study analysis assesses how the policy regulation frames and implements the EJ's distributive, procedural, and recognition tenets, particularly in terms of target categorization for a subsidy, mini-grid siting, cost, and tariff determination, and increasing public participation, knowledge, and awareness in decision-making processes.

It also analyzes the availability or not of equal opportunities for underrepresented groups and individuals when it comes to mini-grid co-benefits as well as the challenge in introducing the mini grid within an oil and gas or existing meso-level dominant culture and politics. Renewables can accelerate economic development and a just transition;[132] however, the issue is how these RE laws and policies are established and how stakeholder interests are balanced across the project process, economic development, energy security, and transition objectives.

5.4.1 Energy Justice and Multi-Level Perspective (EJ-MLP) Framework in Case Studies.

The energy justice and multi-level perspective framework is used here to analyze the mini-grid implementation projects in their niche, regime, and landscape level. The mini grid is the innovative technology referred to as the niche whose introduction into the NESI is opposed by

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[131] E., Baker, 'Energy Justice: Who Gets Listened To?' (August, 2021) available at:http://www.ted.com>talks>erin_baker_energy_justice_who_gets_listened_to?language=en date accessed 27/06/2022.

[132] A., Lovins, 'Energy Strategy: The Road Not Taken (1976) 55 *Foreign Aff.* 65; Emily Prehoda Energy Justice and U.S Energy Policy: Case Study Applications Exploring U.S Energy Policy Through an Energy Justice Framework,(Master's Thesis, Michigan Technological University, 2016) available at: https://doi.org/10.37099/mtu.dc.etdr/243 P 8 last accessed 03/03/2022

the existing dominant electricity framework (the regime) which is shaped by centralization and marginalization. The global sustainability supply chain and trends, international support, and government subsidy intervention are the landscape. As will be seen from the case studies, the challenges of energy access, providing a gap that needs to be filled in by oil and gas, technology know how, skills and capacities as well as targeted decision making reflect the challenges faced in the development of niches. Thus, in addition to the development of mini grids in the country being analyzed on these layers, it is equally considered through the legal foundation of the notion of fairness and equity as the EJ frame.

The MLP framework utilized in this research merely points to the several layers where injustice may occur within the energy transition process. So, based on the three MLP levels—niche, regime, and landscape—the EJ framework offers standards for identifying and assessing critical justice concerns in the energy transition. The research, therefore, uses the mini-grid regime and landscape to show how sector externalities, challenges the comprehensive legal framework of the NESI which should cater to all actors and interests in order to ensure a good diversification towards a just transition. A transition that is implemented through this lens is the goal of the EJ-MLP framework.

Because of the centralized planning function of the federal government in the allocation of public resources to the benefit of all in society versus the role of market forces in the setting of prices and investment and production decisions in the energy sector, the use of an EJ-MLP framework for the analysis of mini-grid is equally critical.[133] This concern is justified because electricity is a public good and service with a general interest requirement to be made available for all, irrespective of the different layers of differences or vulnerabilities. The EJ-MLP's analysis of mini-grid regulation, projects, and strategies will therefore provide normative and evaluative assessments of how dominant frameworks impacts against niche innovation (mini-grid option), as well as portray how these past patterns interact, inform, or revalidate new injustices within the current transition. This analysis seeks to expose who is marginalised and ignored in the current mini-grid usage/transition, questioning the fairness of the mini-grid

[133] D., Helm, J., Kay & D., Thompson, 'Energy Policy and the Role of the State in the Market for Energy' in P Stevens (ed) *The Economics of Energy* (Edward Elgar Pub. Ltd, 2000) 414.

transition process thereby raising input for proper targeting and a comprehensive legal framework.

5.4.2 Case Study 1 - Green Village Electricity Projects Limited (Ltd)

Green Village Electricity Projects (GVE) is a multi-phased rural electrification scheme that provides clean energy to off-grid rural communities in south and southeastern Nigeria.[134] The company is a local '*developer*' and Nigeria's largest solar mini-grid provider that has successfully supplied electricity to six states, with two from the ND - Akwa Ibom and Rivers states.[135] The company has a project scope of providing mini solar PV plants between (34kWP – 100kWp) to metered homes, businesses and artisanal outlets and won a seed grant of 44,521 dollars from the IEEE foundation as its initial investment capital, which helped in the setting up of it pilot project in Egbeke, Rivers state.[136] The energy from this project can be used for lighting, food processing, phone charging, irrigation, TV and refrigeration.[137] It does not power heavily industrialized activities.[138] The average consumption rate per user is 0.5kWh – 2.5kWh.[139] The company has a 39% return on investment in a five-year projection, and has a share or an external investor buyout as an exit strategy.[140] In a recent survey, out of a 100kwh targeted energy capacity, the developer delivered 17.8MW of electricity within the average tariff/metered rate of 120 naira per kwh, which is equivalent to 0.6 dollars, with an average household spending of about 2,871 naira – an equivalent of about 15 dollars monthly.[141] Below are some of the niche projects implemented by the GVE.

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[134] P40 GVE Projects Ltd. Nigeria – ECREEE http://www.ecree.org>other last accessed 30/06/2022.

[135] Ibid.

[136] Ibid.

[137] Ibid.

[138] Ibid.

[139] Ibid.

[140] Ibid.

[141] Ibid.

Table 5c: The Developer, Green Village Electricity. Source: ECREEE

The next table is a presentation of some of the niche projects implemented by the GVE.

5.4.2 GVE Project - Umuokwu Egbeke Community Solar Grid – EN520500291

The Etche Local Government of Rivers State's hamlet of Egbeke is the site of this 0.009 MW local grid metering and power distribution facility. GVE Projects Ltd., USADF, USAID, and GE are the project's developers and owners.[142] This project had an initial cost of 60,000 US dollars for a 9kwh capacity to provide electricity for about 720 people, create 36 employments, and cut household energy use by 45 per cent.[143]It is noted below that the project did not provide energy to the community's five settlements. Thus, no one from these five villages could use the electricity to refrigerate food, pump water, or carry out ironing activities. [144] This mini-grid system only provided electricity for streetlights during the day and was cut off at night.[145]

Table 5d GVE Project, Egbeke. Source: International Centre for Investigative Reporting (ICIR)

According to the International Centre for Investigative Reporting (ICIR),[146] the Umuode community owned the property where the solar panel was erected. Umuagwu was one of the

[142] A., Chijioke , 'Inside Story of Niger Delta Communities Powered by Solar Energy' ICIR Nigeria, available at https://www.icirnigeria.org/how-nigerian-govts-solar-project-is-providing-regular-power-supply-to-niger-delta-communities/ last accessed 30/06/2022.

[143] Ibid.

[144] Ibid.

[145] Ibid.

[146] Ibid.

five communities shut off from the Egbeke mini-grid power. Umuode's residents allegedly made initial contact with the company. They ought to have benefited from the electricity or participated in the decision-making process of the electricity distribution. It is further reported that these villages went through marginalization for a while. As a result, the Egbeke site was finally shut down.[147] However, the developer benefited from the Nigerian federal government's performance-based grant (PBG). With the help of this subsidy, the developer moved the project from its previous location to the community's market square, where there was enough space for the upgrade. As a result, a new 55kw mini-grid was created in Egbeke, and metres were provided to all users.[148]

The non-engagement of Umuagwu and the other four villages in decision-making and the non-targeting and recognition of all the settlements within the Egbeke community, particularly the Umuode, who made contact, and on whose land the panel was built, raises questions about distributive, procedural, and recognition justice. Concerns over pricing and disparities in subscription rates are another EJ issue with this project. It has been noted that users have reportedly complained that the power they receive is not commensurate with the amount paid.[149]

A study on the economic analysis of the PV system found that the solar power system is one of the most straightforward, affordable and dependable ways to provide electricity to the rural areas of the Niger Delta, where the national grid was not operating.[150] The study considered the essential loads in a clustered Niger Delta household.[151] The study equally reports that mini-grids could, however, not enhance extensive industrialization and economic development owing to the low power base of these mini-grid projects in rural areas, and this can be attributed

[147] Ibid.

[148] Ibid.

[149] Ibid.

[150] C., Epelle, C., Idoniboyeobu & S., Brai, 'Improved off-grid PV System for a Small Community in Niger Delta Case Study obo Town in Rivers State (2021) 12(1) *IJSER* 695, 705.

[151] Ibid.

to cost and rural dwellers' capacity. For instance, the study held that 11,490kwh energy is about the energy required for a typical Niger Delta community-dwelling with lighting.[152]

It is argued that the mini-grid alternative was specifically introduced to meet the objective of energy security, creating access to many rural community dwellers who are either unserved or underserved. In achieving this goal, EJ requires that the benefits of access and burdens of (costs) should be evenly distributed, and this manner of distribution should be a major concern for any society that aspires to be fair and just.[153] According to McHarg,[154] achieving this presupposes the rejection of neo-liberal policies that holds that good energy decisions can be made through impersonal market forces. This is therefore where multi-level governance comes in regarding the balancing of competing interests of actors within the NESI. This governance becomes a great tool in the incorporation of justice within the transition. Just transition, therefore, points to the importance of human decision-making and the capacity of the values of fairness and equality to guide decision-makers to deliver an effective and balanced, long-term energy system at all levels.[155]

The basis for viewing the country's energy transition challenges as a justice concern is the notion of justice as a universal right. However, the challenge is determining what and whose kind of justice is needed for this evaluation, as there is no uniform definition of energy justice or what it aims to achieve.[156] This is perceived from the GVE Project Egbeke case with respect to the diverse interest of the developer and varying communities. With the mini-grid regulation, the authorities pursue the vital objective of electricity access, which ought to be guaranteed. However, the developers emphasise productive uses for business sustainability and the bid to

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[152] Ibid.

[153] A., Mcharg, 'Understanding the "Ethical Turn" in Energy Law and Policy, Energy Justice, and Energy Law' in Iñigo del Guayo, *et al (*eds) *Energy Justice and Energy Law* (OUP,2020).

[154] Ibid

[155] B., Sovacool & M., Dworkin, Global Energy Justice: Problems, Principles, and Practices (CUP, 2014).

[156] McCauley, Heffron, Stephan, and Jenkins' EJ framework, discusses access to reliable electricity, affordability, and improved capabilities as justice.

recover costs.[157] Due to the lack of forward linkages, the developer is less keen to invest in RE projects in rural communities, which makes rural RE businesses more expensive. The developer needs strong tariff regulation and forward linkages to drive mini grids' viability and sustainability. [158] The rural consumer also requires these linkages for a considerable increase in capabilities, productivity, income, and livelihoods—all of which impact the affordability of energy, water, health, and food.[159]

Therefore, regulatory frameworks for mini-grids must balance protecting the investors' interests and those of consumers and their environment.[160] In addition to procedural problems with mini-grid that might obstruct justice, distributive and recognition justice standards are also impacted by rural communities' unserved targeting, capabilities, and low service levels. For instance, the mini-grid regulation is not subject to the statutory provisions for producing ordinary goods and services. [161] Although the developer does not need the authorities' permission to start the mini-grid activity and carry out the same as a going concern, they must comply with any rules applied to that activity because the sector is a creation and an intervention of public authority. [162] Thus, a thorough grasp of the particulars, policy, and regulatory requirements (or sensitivities) of various mini-grid developers and deployment strategies as well as the location of siting is necessary to strike the proper balance between investors and public interest.[163]

This is because as seen with the GVE Project Egbeke case study, this public interest objective becomes transferred onto the mini-grid developer or operator: who is incentivised to provide the service to everyone within the catchment area. Even though it comes with a cost (usually a

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[157] (n 54) IRENA 21.

[158] Ibid 56.

[159] Ibid 62.

[160] Ibid 49.

[161] Ibid.

[162] (n 96) Public Undertakings in the EU.

[163] Ibid 60.

fixed price), this service duty is affordable, indicating equity however with competing interests.[164] Thus, the competing interests weighing for a society that seeks a just transition are the importance of access to adequate electricity and the circumstances necessary to generate, transmit and distribute enough energy capable of meeting these demands. These complex decision-making processes, trade-offs, technological and economic constraints, and values of people and their contexts dominate discussions on energy justice and sustainable transitions.

5.4.3 Case Study 2 – Renewvia Energy Corporation

• This international solar development company was established in 2008 and is based in the US. It carries out solar energy projects with the largest footprints in the US and has a presence on four continents.[165]The company entered Nigeria in 2015, and the Nigeria Renewvia subsidiary was established in 2017.[166]
• Renewvia is a US-based global solar development company founded in 2008. Entered Nigeria in 2015 and launched a Nigeria Renewvia subsidiary in 2017.
• Their work in Africa is concentrated on some of the most challenging terrains, such as the Lake Victoria area in Kenya and the Niger Delta creeks in Nigeria, with over 22 mini-grid installations serving over 6,000 subscribers within these communities.[167]
• According to the mini-grid regulation, Renewvia conducted a feasibility study of four states in the Niger Delta region of Nigeria prior to operations and discovered that, given its geographic location,[168] the Niger Delta creeks were the most difficult terrain in the country to electrify.

[164] Ibid 35.

[165] Renewwvia Energy -available at: https://www.renewvia.com/ last accessed 27 October 2022

[166] T., Jarrad, 'Powering the Niger Delta with Solar Mini Grids Nigeria info FM podcast (Dec 2021) #*Power Solutions* available at: http://nigerianinfo.fm/lagos/player/ , https://www.youtube.com/watch?v=bOlZD8xVbzE last accessed 28/06/22.

[167] Ibid.

[168] A., Chijioke 'How Nigerian Govt's Solar Project is Providing Regular Power Supply to Niger Delta Communities' (2022) ICIR, available at: https://www.icirnigeria,org> last accessed 28/06/2022.

• The company also discovered that these states had a latent need for rural electrification and a requirement for rapid technical knowledge, expertise learning, and local knowledge transition.[169] These characteristics influenced the company's regional targeting and investment decisions.
• Over the past five years, the company has installed eight mini-grids in the Niger Delta states of Rivers, Cross River, Akwa Ibom, and Bayelsa, serving over 2,100 customers and directly affecting about 10,000 people.[170] The company has invested $1.2 million in an all-solar developer to electrify villages in the Niger Delta.[171]
• Renewvia reports a significant market in the region, despite the challenges in transacting mini grids in any form.[172]
• The company constructed two mini-grids in Oloibiri and Akipelai, Nigeria's first oil discovery sites, which were previously underserved by the national grid until 2020.[173]
• Renewvia states that 'in Oloibiri and Akipelai, it had projected to provide electricity to 400 customers, but its current regional subscribers are approaching 700.[174]
• The company reported a surge in subscriptions after initially facing public skepticism due to trust deficit concerns with past oil and gas firms.[175]

Table 5e: Source: Renewvia

[169] Ibid.

[170] S., Salau, 'Renewvia Connects 2,000 Households to Solar Power in Niger Delta' (2022) The Guardina Newspaper, available at: https://www.guardian.ng>business-services last accessed 28/06/22.

[171] Ibid.

[172] (n 168) Chijioke.

[173] Energy Capital & Power, All On and Renewvia Build Mini Grids to Power Niger Delta Communities (2020) available at:https:///energycapitalpower.com last accessed 29/06/22.

[174] (n 168) Chijioke.

[175] Ibid.

5.4.3 (a) Renewwia Project - Oloibiri

Before 2020, Oloibiri residences, one of the settlements in Bayelsa State's Ogbia local government area where oil was first discovered, relied on a generator given by a well-known son of the village.[176] Moreover, what kept the generator running was the community's monthly contributions for diesel, which only powered the generator for 12 hours from 6 p.m. to 6 a.m. Two solar hybrid mini-grids have been successfully developed in Bayelsa state by the Renewvia Energy Corporation, following Performance-Based Grants (PBG) from the REA through the NEP supported by the World Bank.[177] The two solar hybrid mini-grids were installed in the Bayelsa State villages of Akipelai and Oloibiri, having a combined capacity of 134.64kW for both villages. These two systems comprise 134.64kW of solar PV, 180kWh of lithium battery storage, and two 100kva diesel generator sets.[178] According to estimates, the 67.32 kW solar hybrid mini-grids in Oloibiri and Akipelai would connect 364 homes and generate seven permanent jobs in addition to 170 construction ones.[179] These mini-grids are made to scale as residential and communal power consumption rises and use lithium-ion battery storage to provide steady electricity throughout the night.[180]

Table 5f (i) Renewvia Project Oloibiri Source: Renewvia

Electricity theft and the low subscription rates among community sections were problems with the services in these contexts.[181] Poor diesel supply times, the need to run the backup generator at night or when solar output is low, and the rise in diesel prices because of poor returns all raise questions about cost and how subsidies affect the country's power infrastructure. It is

[176] (n 168) Chijioke

[177] NEP, '67.32KV/Solar Hybrid Mini Grid at Oloibiri, Bayelsa State', available at: https://nep.rea.gov.ng/67-32kw-solar-hybrid-mini-grid-at-oliobiri-bayelsa-state/ last accessed 28/06/22.

[178] Ibid.

[179] Ibid.

[180] Ibid.

[181] Ibid.

equally unconvincing to argue that eliminating subsidies for fossil fuels will increase competition and encourage the growth of mini-grids (green energy) in these contexts because of the critical role fossils play in running the mini-grid backup system. Customers expressed genuine dissatisfaction that their bills were higher than the energy they received and that the load they contract periodically falls short due to cost.[182]

5.4.3 (b) Renewvia Project – Akipelai

• Renewvia Energy Corporation also built a 67.32 KW solar system in Akipelai, Ogbia LGA.
• The 20-year solar system project in Akipelai, Ogbia LGA, was halted in December 2021 due to a contract breach and uninterrupted power supply.[183]
• The community reneged on the agreement because of the supply of a 500 kVA diesel-based generator and diesel supply from AGIP, which was inconsistent to the agreement entered into with Renewvia, leading to the community's broad acceptance of the solar system.[184]
• The community suggested new contract terms to Renewvia Energy to the effect that "*they should have the generator at night since they cannot reject the free diesel while the solar system runs during the day, but the company insisted that was not part of their agreement*."[185]
• Given their situation with the diesel-based offer, the community allegedly offered to construct a post-paid month-end plan. However, Renewvia insisted on a prepaid strategy and closed the business because it was starting to lose money.[186]

[182] Ibid.

[183] Ibid.

[184] Ibid.

[185] Ibid.

[186] Ibid.

Table 5f (ii): Renewvia Project – Akipelai Source: Renewvia

Considering the above renegotiation stance of Akipelai, the regulation is spot on in this regard, as Annex 9 stipulates a complaint procedure guideline under section 24 of the NERC mini-grid regulation for customers to report complaints. From this case study, it becomes essential to question Akipelai's awareness of the availability of the structures of access to achieving redress as provided by the regulation. Subsection 2 (2) of the annexure requires the developer to establish a customer complaint unit with a duty to notify its customers of this unit/process availability.

This expresses the value of access to information and understanding of the structures behind technologies and, by implication, the ethical and political roles of the operator in achieving energy justice. It also reiterates the procedural justice criteria of eliminating the bias on the part of the developer and decision maker when it comes to the technical and structure knowledge gap of the aggrieved customers. It is necessary to report here that the Akipelai scenario has clarified the importance of good information sharing and engagement with the community on the issues of what the company stands for, what it does, how it runs and how these influence the cost and business operations before mini-grid commissioning.[187]

Annex 9, subsections 8 and 9 further stipulate the procedure for handling complaints by a forum (a provision of the NERC customer's complaint's handling standards and procedures). Upon the non-acceptance of the forum's decision, the aggrieved customer or community is, in Annexure 9 (10), entitled to an appeal to the NERC. Annexure 10 is under section 25 on the mini-grid dispute resolution mechanism (DRM).

5.4.4 Government Intervention as Energy Justice – Renewvia Energy Corporation case study

From the above case study, it is agreed that government's intervention in the sector leads to a just transition, through investment environment provided by mini grid regulation, as seen from the Renewvia's entry into NESI which has led to the electrification of over 400 subscribers.

[187] Ibid.

Thus, it can be seen that Nigeria has a relatively liberalised power sector. When the country started on mini-grids, the government first took on a public-private partnership approach and later migrated to a full owner-operator model.[188] However, operating a purely private ownership model does not rule out government intervention in the business or government and donor agency subsidisation of the industry to ensure lower costs and promote accessible, inexpensive power. Hence, through the REA, the government offers performance/output-based grants (PBG) to help cover the viability gap between the cost of mini-grid service and the rural customer's ability to pay.[189]

The financial mechanisms provided by the government to developers are solely for the good of the community. This is due to the nature of rural consumers and the mini grid cost, which is sometimes expensive, especially since these areas are not industrialised. Customer base, commercial consumers, population density, distance, and lack of skills and human capital are all factors that raise investment risk in these rural places.[190] The government's start-up cost interventions are valid here because they incentivize developers to prioritise these regions while enabling the government to meet its energy access goal. These interventions result from the government's acknowledgement of the risk of investing in these places, which is both "*an energy justice- differentiated targeting and economic/commercial decision*" that aims to provide a balance or alignment in the case of energy access for people experiencing poverty.

Sovacool and Dworkin put this well when they surmise that energy poverty is the worst aspect of the global energy system. According to them, lack of access to electricity is the most common way of conceptualizing this,[191]hence the importance of energy justice. This situation represents the case of the Niger Delta community of Nigeria – Renewvia's target site, as it ranks one of the highest in this cadre of deprivation and poverty. As rightly expressed,

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[188] REA, 'Nigeria Electrification Project (NEP) Technical Workshop Report; (2019).

[189] Ibid

[190] S., Bhattacharyya, 'Mini Grids for the Base of the Pyramid Market: A Critical Review' (2018) 11 *Energies* 813-816.

[191] K., Jenkins, B., Sovacool & D., McCauley, 'Humanizing sociotechnical transitions through energy justice: An ethical framework for global transformative change' (2018) 117 *Energy Policy* 66-74225. 196

"decisions or indecisions today will certainly impose high costs on the present and future societies but *especially* on certain groups of the society."[192] Furthermore, because of these realities, merging the reality of energy transition with economic development and intervention is justifiable.[193] Nsafon et al. agree with this view because any 'just' transition to clean energy must take into account the many issues affecting a nation's access to affordable energy, economic development, and energy security.[194]

The work of REA is very profound in this regard as seen in Renewvia's entry into NESI. First, section 3 of the mini grid regulation designates target areas within which developers conduct site selection and thus circumscribes the business of mini-grids within its objectives of ensuring a fair distribution of electricity as a public service. The REA risk-proofs the problem of unequal access by providing designated sites before site selection and offering subsidies and financial mechanisms to developers based on this equal footing. Secondly, the mini-grid regulation does not mention '*just*' transition as an objective, nor does the EPSRA – which is the parent Act. However, the approved REF operational guideline stipulates that the government's goal is promoting off-grid electrification solutions 'evenly' in an unelectrified ruTral area.[195]Meeting this goal involves the active participation of the private sector. This highlights the role of electricity access as a public service undertaking, projecting the elements of government intervention in the sector.

With mini-grids, Nigeria, under its Nationally Determined Contributions, 2015, proposed the development of 13 GW of off-grid solar PV as part of its contributions towards reducing emissions.[196] Under its Sustainable Energy for All Action Agenda 2016, the country proposed

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[192] Ibid 24.

[193] Ibid

[194] B., Nsafon, N., Same, A.,Yakub, D., Chaulagain, N., Kumar, & J-S Huh, 'The justice and policy implications of clean energy transition in Africa.' (2023) *Front. Environ. Sci*. 1-13

[195] Rural Electrification Agency, 'Operational Guideline for the REF 2017' available at: http://rea.gov.ng/wp-content/uploads/2017/11/Approved-Operational-Guidelines-for-the-REF-2017-v3.pdf last accessed 28/07/2022.

[196]Nigeria intended nationally determined contribution. Available at: http://www4.unfccc.int/ndcregistry/PublishedDocuments/Nigeria First/Approved Nigeria%27s INDC_271115.pdf (2015) accessed 27 march 2023

a 30GW RE target, of which 30% is to be derived from renewables, including solar PV.[197] In line with these targets, the Nigeria Electrification Project (NEP) plans to electrify 300,000 households and 30,000 small and medium enterprises via 1,000 mini-grids over a five year period.[198] Thus, the government's intervention in the sector cannot be overemphasized.

It is acknowledged in this work that the multi targeted sector reforms leading to public and corporate investments in the off-grid sector (which mirrors the gains of liberalization), can be re-imagined as energy justice because it broadens the possibility/goal of achieving access hitherto just circumscribed to the intervention of government. The continued government intervention in this sector, apart from security of access, can equally, in a way, further the case of EJ and that of the global transition towards a low-carbon energy system.

It is argued that it will be advantageous that (Renewvia) company operates joint ventures in a region like Nigeria. Joint ventures between local off-grid companies and foreign manufacturers "offer a symbiotic win-win situation, with local companies providing context, intelligence, and market access, and foreign manufacturers providing skill and technical expertise."[199]This leads to critical knowledge production necessary to embed and drive the RE transition locally. Forecasting is also advantageous to Renewvia because the mini grid has rigorous regulatory requirements. Notably, the ND rural communities balance capital expenditure with how much electricity they are projecting to sell due to the lack of industrialization in the area and the community's desire for and consumption of energy.[200]

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[197] Ibid.

[198] Ibid.

[199] N., Larsen, '*Why joint ventures may be the future of renewable energy projects*.' (2019) available at: https://www.obton.com/en/news/why-joint-ventures-may-be-the-future-of-renewable-energy-projects/. Last accessed 24 November 2022

[200] T., Jarrad, 'Powering the Niger Delta with Solar Mini Grids Nigeria info FM podcast (Dec 2021) #*Power Solutions'* available at: http://nigerianinfo.fm/lagos/player/ , https://www.youtube.com/watch?v=bOlZD8xVbzE last accessed 28/06/22.

One cannot build too sizable mini-grid capacity or too little since this could lead to a drastic financial underperformance or the provision of limited customer services.[201] For instance, Nigeria's residential and commercial entity uses a 40% load base than Kenya, and these different demand profiles affect demand projections and how installations are built or designed.[202] When it comes to the industrial versus commercial indices, the Nigerian market is more economically efficient than those of industrialized countries like the United States (US).[203] This is because fuel is quite expensive, and the market in Nigeria has very unreliable sources of electric utility power. Industrial and commercial mini-grid investments are strongly subsidized with tax benefits for the developed market.[204] There is very little storage and minimal diesel offset for projects because of the strict environmental, social, and governance (ESG) corporations and policies. The US market, for instance, gets heavily subsidized with tax benefits, and that is why the transitioning works there, but this means less market attractiveness and no quick returns.[205]

A few of the difficulties encountered in conducting business in the country include inadequate coordination between federal and state agencies in terms of policy flexibility and retraining of these governing agencies in terms of changing terrain and model, design, and business trends.[206]This speaks to the place of dominant regime in opposing niche introduction. Also, the time, complexity, and expense of importing goods into the country at predicted rates constitute challenges and this is where targeted policies on taxes can help address mini grid development barriers. It has been suggested that "exempting solar products from import duties and VAT can

[201] Ibid.

[202] Ibid.

[203] Ibid.

[204] Ibid.

[205] Ibid.

[206] Ibid.

reduce their final cost by up to 40%, making them more affordable and potentially increasing FGN revenue through increased economic activities."[207]

The value of education/knowledge, reskilling and training cannot be overstated, especially considering the need to defend consumer costs and transitioning to RE due to job loss in oil and gas sector. To ensure clients comprehend who the company is, what it performs, what is involved, and how this connects to the price being charged before the commission, it is essential to engage with them frequently through public education. When it comes to impact as seen, Renewvia is yet to measure impact and success beyond economic returns because they are still in its niche stage. However, the company collects data from subscribers, prepping operations, and risks, and this is where it can gather evidence-based operations to ensure contexts' peculiarities are recognized in the transition. Renewvia, acknowledges that theirs is an impact business, with plans to measure gender equality, health, safety and environment, productivity and economic viability to determine impact and make informed decisions.[208]

5.4.5 Renewvia Projection Growth Targets for Niger Delta

The mini-grid regulatory structure enables Renewvia's forecasting and demand projections. As a result, the company is projecting to serve over 70,000 people in Nigeria from over 200 communities by 2025.[209] Regarding the underlying rationale for mini-grids in the region, the challenge is not necessarily a lighting coverage that appears to be the denominator of most mini-grids in the country's rural areas; the goal is economic development and sustainable energy transition. EJ's goal for the region is to be served with clean energy instead of constantly being exposed to pollution by fossils. Thus, the load to be served is equivocal in this region's design, siting and implementation of mini-grids. Mini-grid is an actual utility, and the storage of mini-grids depends on the cost, which can be scalable as lifestyles changes.[210]

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[207] Ibid

[208] Ibid.

[209] Ibid.

[210] Ibid.

Renewvia and other developers admit benefitting immensely from the regulatory policy. They state that the policy regulation provides confidence for capital markets to invest in off-grid in Nigeria.[211] The REA governance and policy structure drives the progression in the sense of being efficient and economical in obtaining a permit and being able to forecast and move quickly in agreement with the community.[212] The subsidy gives confidence to capital providers – encouraging investment and providing a basis for investors to get through the economic risk of commitments.[213] Renewvia has heralded the mini grid regulation 2016 as a policy that is superior to any other policy in any other country in the continent because of its 20-year exclusive licenses.[214] The ability to charge cost-reflective tariffs and the efficiency of economic structure gives the private sector the confidence to make commercially and sustainable, viable investments.[215] The company have not expressed any practical concerns from the state government. However, they have expressed that the FG mini-grid regulatory structure, licensing and compliance is the key driver of investor certainty in the sector.[216]

[211] Ibid.

[212] Ibid.

[213] Ibid.

[214] Ibid.

[215] Ibid.

[216] Ibid.

5.4.6 Onyen-Okpon Project.

Onyen-Okpon of Cross River State, a Niger Delta community is another mini grid project considered. This context plays host to about 500 households and is 7km away from the nearest electrified town. The reliability of grid connection of the closest town from Onyen-Okpon was low with just a few unpredictable hours of electricity per day.[217]The context of this town is made up of medium-high income community at the center of commerce with 100 kw self-generation used in the processing of agricultural products. This site had a consumer base load of 300 households and commercial base load of 200 productive businesses.[218] The willingness and ability to pay existed primarily for businesses and few households who self-generated electricity. For example, most residents paid about $0.43kWh for petrol generation and $0.52kWh for diesel while unelectrified households spent $6/month for kerosene, candles, rechargeable torches, etc.[219] Thus, many mini grid businesses come onto an already prepared advantage of latent demand and a strong willingness to pay for effective alternatives where they are affordable.[220] This is the same for household and commercial businesses.[221]

Table 5g – Onyen Okpon Mini Grid Project Site – (Source: RMI interviews and analysis).[222]

The Rural Electrification Agency (REA), one of the institutional governance organisations of the NESI-mini grid sector, developed the off-grid electrification strategy with the aim to improve access to electricity for rural and underserved clusters, as well as accelerate development efforts in order to attain the overall goal. The Onyen Okpon mini grid project is one of its rural electrification test projects in the Niger Delta; hence the choice of this project

[217] REA, Nigeria Mini Grid Investment Brief (2017) available at: https://rea.gov.ng/Nigeria_MinigridInvestmentBrief_171202-V2.pdf last accessed 30/06/2022.

[218] Ibid.

[219] Ibid.

[220] Ibid.

[221] Ibid.

[222] Ibid.

as a case study here to portray the possibilities and challenges faced in the introduction of mini grids into the sector. The Onyen Okpon community has been historically marginalised despite sitting in the Niger Delta community close to the national grid but lacking access to basic services. By showcasing the successes and obstacles encountered during the implementation of a test mini grid project in this community, the case study projects the case of marginalisation within the transitions from the lens of competing interests and differentiated actors as well as the challenges posed to it by the existing regime.

According to RMI, REA sought to gather useful information and lessons during the development of this project in order to apply them to future mini-grid initiatives,[223] that will ultimately bring sustainable development and better living conditions to rural areas throughout the Niger Delta. They also sought to learn about the resistance the current regime poses as well as the various interests that further complicate the sector's governance. This project's development process as presented by REA is indicative of the fact that community leaders and residents are willing to pay for and contribute to capital costs for a local system, with most paying $0.43/kWh for petrol and $0.52/kWh for diesel but requiring profit.[224] The RMI report reveals that unelectrified households spend around $6 per month on kerosene and other utilities and the cost-saving option that mini-grid offers against petrol and gas. The $1 million mini-grid solution offers optimised operations, remote monitoring, and revenue collection, with potential savings of up to $0.12/kWh and 95% system uptime.

Despite these possibilities even with REA and donor partnership, RMI reports challenges in mini-grids installations due to cost and decentralization, hence the recent constitutional and policy change with regards decentralisation of the NESI. The Onyen-Okpon test project due to these challenges of cost and productive base targeting failed to achieve its goal of empowerment as the Onyen Okpon dwellers had no capacity to afford investor prices.[225] The project highlights the need for immediate, flexible funding for REA activities, pilot projects,

[223] Ibid

[224] Ibid

[225] Ibid.

technical assistance, and capacity building for regulators and government. It is argued that it is these challenges that have locked up the system in the past with very little will to make progress.

5.4.7 Case Study - Ikot Ada Udo

Ikot Ada Udo is a village located in Ikot Abasi Local Government Area of Akwa Ibom State of Nigeria, one of the country's ND states in the south-south region. The area's climate is humid tropical, with loamy and sandy surfaces susceptible to erosion.[226] The production of cassava, for instance, is a major source of food employment and income generation for farm families in the area. However, following the oil spill recorded in the area in 2013, research showed that crude oil from this spill has significantly increased the levels of heavy metals in the soils of this community and plants, including cassava, which is the area's most important staple food crop.[227]

Table 5h – Ikot Ada Udo Case Study Facts Source:Friends of the Earth

Another study carried out to assess the environmental damage caused by the crude oil spillage from the corked well, Ibibio 1, located at Ikot Ada Udo in Ikot Abasi LGA shows that owing to a large volume of the oil spill, the whole farmland wherein the cork is has been highly polluted and the crops, weed and plants in the farm area were destroyed. [228] The physicochemical characteristic of the soils and water in the area proved that they were affected

[226] U., Harrison S., Osu & J., Ekanem, 'Heavy Metals Accumulation in Leaves and Tubers of cassava Grown in Crude oil Contaminated Soil at Ikot Ada Udo Nigeria' (2018) 22 (6) *J. Appl. Sci. Environ. Management* 845 – 851, 845.

[227] Ibid.

[228] Ibid.

by the pollution.[229] The water and fish in the pond were highly polluted with heavy metals.[230] The levels of lead (PB), calcium (Cd), Mercury (Hg), Manganese (Mn) and Nickel (Ni) found exceeded the levels in the drinking water guidelines of the World Health Organization (WHO).[231]

More importantly, it is also the case that this community has not accessed electricity since 2018 despite being connected to the national grid in this highly polluted and vulnerable area.[232] Therefore, it is argued that vulnerable contexts like this, should be recognized in targeting the Nigerian environment with mini-grid options. Accordingly, communities like this have become swaths of sacrificial zones in every state, making up the ND geopolitical areas. The "duty of care" in environmental and energy law, which includes the handling of waste, is represented by the Ikot Ada Udo case study in its broadest sense.[233] Waste must be appropriately handled by anyone who creates, imports, maintains, stores, transports, treats, or disposes of it. Every energy or environmental component project must meet this procedural justice criterion as a transition governance goal.

Therefore, the regulation in sections 11, 16, and Annex 6 provides the standards and guidelines for the required equipment and environmental impact assessments (EIA). In contrast to the developed market's mini-grid functional architecture, which relies on little storage and few fossil fuels, Nigeria's mini-grid is a hybrid system that heavily relies on large battery storage

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[229] Ibid.

[230] Ibid.

[231] E., Udo, 'Environmental Impacts of the oil spill at Ikot Ada Udo in Akwa Ibom State, Nigeria for Environmental Rights Action and Friends of the Earth' (2008) 3-5 available at https://en.millieudefensie.nl last accessed 27/06/22.

[232] Federal Ministry for Economic Cooperation and Development, 'Expanding the use of Solar Energy' (2023, Deutsch Press) available at: https://www.bmz.de/en/countries/nigeria/core-area-responsibility-for-our-planet-climate-and-energy-55716 last accessed 17 March 2023. Recent research features this community as one of the three-quarters of rural people in Nigeria not connected to the national grid. This community only recently benefitted from a decentralised Solar powered project by Germany in partnership with Nigeria.

[233] V., Ellingham & A., Lorenz (eds) *Beyond Petroleum Fair Planet (2019)* available at: https://www.fairplanet.org/wp-content/cache/wp-rocket/www.fairplanet.tv/dossier/beyond-petroleum/index-https.html_gzip.

devices and diesel.[234] Strong ESG policies at corporations promote successful transitions. However, the availability and cost of batteries impact the nation's investment in pure solar technologies, contributing to its reliance on diesel. Strong legal and regulatory policies and compliance frameworks are best to safeguard customers and the environment from pollution challenges. The mini-grid regulation, 2016, in sections 11, 14, 15, 16, and 17, stipulates that the developer is entirely responsible for managing and maintaining this system throughout its life cycle.[235]

This requirement includes the polluters pay principle and the procedural justice requirements of system maintenance, inspection, and prompt response, as well as those of free and informed consent for the siting of this project in these communities.[236] The Ikot Ada Udo case scenario emphasises the necessity of overthrowing the NESI regime, which tolerates injustices and pollution, and emphasises the significance of multi-level governance in opposing the status quo, assisting the marginalised, and fostering the development of niches within the national context through decentralised and targeted strategies.

5.4.8 Case Study - Dooh's Village of Goi – A group's case for Recognition Justice

Dooh's village is an island community in Goi Rivers state, Nigeria. This community stands about 130 km from the state capital.[237] Forests and plantations surround the village, and its distance from the closest grid infrastructure is about 15 km.[238] This Niger Delta village is almost inhabitable due to swaths of oil pollution that are yet to be remediated, and sadly, it

[234] (n 200) Jarrad.

[235] The Mini grid Regulation, 2016.

[236] Sections 9, 10, 11 and 14 of the Mini grid Regulation, 2016.

[237] 'Milieudefensie' Shell Lawsuit (re oil Pollution in Nigeria)', available at: https://www.business-humanrights.org/en/latest-news/shell-lawsuit-re-oil-pollution-in-nigeria/ last accessed 30/03/22.

[238] Ibid.

still sits in darkness without the inhabitant's capacity to afford the grid, owing to the loss of means of livelihood to pollution.

Table 5i: Dooh's Village of Goi Source: Milieudefensie;Craig.

In addition to farming and fishing occupations, some individuals have small business establishments. Craig, reports that:

> "In 2004, a Royal Dutch Shell pipeline built in the 1960s had sprung a leak, and the community reported this to the Police station since attempts to alert the pipeline operator proved abortive. Shell and the Nigerian subsidiary had largely abandoned oil operations in Goi, a decade earlier owing to local uprisings, which are traceable to the issues of incapacities and social responsibility. After the operators acknowledged the issue, things continued deteriorating, leading to an oil spill in the creek and the neighbouring mangroves catching fire. After investigations identified the source of the leak, Shell temporarily repaired the pipeline using wood chips and a clamp. Shell could not halt the flow of oil at the site of the leak, so more than 23,000 litres of oil spilt, leading to about 40 acres of mangrove forest burned and the contamination of the nearby land, fishponds, and rivers."[239]

According to Amnesty International, the oil company has come under severe legal scrutiny for its negligent and criminal practices in Niger Delta.[240] These practices include Shell selling off all its remaining onshore oilfields in Nigeria, citing challenges with community unrest,

[239] Ibid.

[240] Amnesty International, 'No Clean Up, No justice: Shell's Oil Pollution in the Niger Delta' (2020) available at: https://www.amnesty.org last accessed 30 June 2022.

sabotage, and a companywide refocus on green energy.[241] It is, however, the argument that this move is equivalent to Shell's avoidance of responsibility to clean up after itself.

Doo's victory at the Hague does not evince a change of status quo because Niger Delta remains one of the most polluted places on the planet. This note motivates the need to consider recognition justice in determining mini-grid siting and implementation for energy service access in this region. It also highlights the importance of developing linkages and capabilities for assessing RE electricity, RE technology use, and job opportunities to safeguard against local artisanal measures that could result in a cumulative effect that risks an environmental catastrophe where the costs outweigh the derived short-term economic or energy access benefit. Apart from being polluted, and delayed in terms of justice, when it comes to the cleanup and remediation, it is argued that energy justice should consider this region vulnerable and attempt to compensate it with energy access. The dimensions of this narrative score closely with sustainable development and a just and equitable transition.

Thus, the Niger Delta has an overawing rationale as to why the region should be targeted not only from the perspective of future and present justice but also for the need to re-address historical energy transition injustices, necessary to ensure remediation and a sustainable energy transition. This argument as portrayed by these case studies has been eloquently illuminated by Sovacool et al; when they state that, "current transitions are not accounting for past marginalisation's that aided the development of powerful oligarchies, whose past injustice have become the basis for the management of current transitions today."[242] It is argued that this situation is not just a global dilemma but also a national one where past colonial elites or transition political and economic oligarchies' own oil wells, and now investments in mini-grids as a reason of initial investment resources based on past wealth accumulation. Thus, these case

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[241] Ibid*;* D., Baazil & L .,Hurst, 'Nigeria: In Win Against Shell, Dutch Court Finds Shell Nigeria Liable for Oil Spills & Shell Parent Company has a Duty of Care to Prevent Future Spills' (2021) Business & Human Rights Resource Centre, available at http://www.business-humanrights,org last accessed 30/06/2022.

[242] B., Sovacool, S., Bell, C., Daggett, C., Labuski, M., Lennon, L., Naylor, J., Klinger, K., Leonard, & J., Firestone, Pluralizing energy justice: Incorporating feminist, anti-racist, Indigenous, and postcolonial perspectives, (2023) *Energy Research & Social Science*, Volume 2214-6296

studies portray that a just transition includes re-addressing these past marginalised groups within the current transition. Munoz and Vega Araujo put this well when they opine that:

> "Even though a just and equitable energy transition represents, a transition from current fossils dominated energy system to one dominated by renewable energy sources where both the process and the end state effectively address justice and equity concerns, that energy transition must also be just from a principled and pragmatic approach - where mini-grids depend on the support of the public whose perspective of justice is sacrosanct as such can deal or halt the planned development…"[243]

As will be seen in the next chapter's EJ-MLP analysis of these projects, the Akipelai case study equally mirrors these concerns, given that the developer, the governance structure (NERC) and the community negotiated a tripartite contract with rights and obligations accruing to the community and the developer. However, in the event of a change in circumstance; for which the regulation had no cover, the developer refused a renegotiation of terms and stopped operations. It is, therefore, essential to construct a policy that considers the transition concerns of the communities, given the importance of energy as a public interest and the energy progression of the people. With oil and gas, the several MNCs operating in the country only employed indigenes of this region as cleaners and janitorial workers to meet the local content percentage requirement of doing business in the country.[244]The full time, permanent/contract, employees and board of directors' roles were mostly played by foreigners and elite Nigerians hence the poor development and economic capacities of the dwellers in these communities.

The coming of the Nigerian oil and gas industry content development Act (NOGICD) 2010, emphasized the importance of deriving backward linkages and value from energy resources.[245]The same is true for mini-grids. Recently, the Petroleum Act 2021 has sought to mitigate this with respect to oil and gas. It is argued that the successful running of the sector

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[243] C., Munoz & J., Vega-Araujo , 'Considerations for a Just and Equitable Energy Transition' (2022) *Stockholm+50 Background Paper Series*. Stockholm Environment Institute 4.

[244] Combine reading of sections 2, 13 and 28 of the Nigerian Oil and Gas Industry Content Development Act (NOGICD) (2010) Act No 2 Cap P10 LFN 2004.

[245] Ibid, Sections 1, 2 & 3.

ought to ensure the recognition, targeting, development and appropriation of market opportunities to derive value and backward linkages for host communities necessary for economic development and sustainable energy transition.[246] Climate change equally deepens the need for these co-benefits, given the challenge it throws to the already polluted and poor archipelago nature of the Niger Delta zone.

5.5 Conclusion

From the legislative analysis in chapter 4 and the case study analysis of the Mini Grid Regulation 2016 in the sections above, it is clear how the country's energy system's dominant meso-level culture makes it hard for mini grids to enter the market. The legislative analysis revealed a lack of clear regulations and policies regarding mini-grids, making it difficult for them to thrive in the energy sector. Furthermore, the case study analysis of the Mini Grid Regulation 2016 highlighted the challenges faced by mini grid operators, such as high upfront costs, low profits, and limited access to financing. These factors contribute to the resistance faced by mini-grids in the country's energy system, as the dominant culture favours centralised and traditional energy sources. So, this section reveals how these problems of mini-grid entry are shaped by larger concerns of cost, energy access, landscape concerns, skills, and differentiated interests and policy objectives, all of which can be resolved by an integrated institutional framework.

It is argued that the question of energy citizenship becomes paramount within this transition and requires strict capture within policy regulations for a 'just' transition. This is because a just transition to renewable energy sources requires the effort of collectives, which can be incentivized through policies. Thus, by defining interdependence of actors and systems (oil and gas versus mini grids) as well as energy citizenship in policy regulations, governments can ensure that everyone has access to affordable and clean energy and that the benefits of the transition are distributed equitably. This means including marginalised communities in

[246] A., Adedeji, A., Sidique, S., Rahman, A., Law, & F. Taghizadeh-Hesary, 'Mediating Effects of Indigenous Oil Firms' Participation and Backward Linkages on the Relationship Between Local Content Policy and Job Creation: Insight from Nigeria' (2018) 5(1) *Cogent Business & Management* 5.

decision-making processes and providing them with the necessary resources and support to actively participate in the renewable energy sector.

Thus, the nature of energy citizenship in Nigeria delves deeper into the specific individuals or groups directly involved in the energy sector, such as workers, investors, or consumers. Understanding the dynamics and identities of these energy citizens is crucial for effective policy-making and the equitable distribution of benefits. It is on this note that the thesis responds that because of this differentiation, energy citizens should not be designated in binaries: 'those with access and those without access,' or forced onto a certain universal standard. This is because a one-size-fits-all categorization of targets defeats the purpose of decentralisation and just transitions as it marginalises existing inequalities within contexts, thereby excluding certain actors and their needs because they do not fall into either of the policy-defined categorizations. This is the experience of the Akipelai community, representing the Niger Delta case concerns as captured above, wherein their location within the national grid obscured them from the initial rollout of mini-grid projects, as will be discussed under the recognition, procedural and distributive justice analysis in the next chapter.

It is argued that the use of MLP can yield positive outcomes through evidence-based and participatory policymaking, targeted implementation strategies, and reference of sectoral dependencies that are acknowledged and targeted based on varying criteria and interests. It is in this coordinated space that a just transition can find expression within the distributional, recognition, and procedural justice tenets in the nation's transition to RE (mini grids). Thus, these EJ tenets will be evaluated across the current institutional framework revealing the challenges and gaps in Nigeria's current regulatory framework using the Niger Delta mini grid case studies projects as examples.

The section draws on chapter 4's analysis of the energy access and transition framework of the country. By showing the underpinning concepts and normative values behind the current governance of the nation's energy sector, this section explores Nigeria's energy sector governance, challenges, legal framework, and policymaking role in achieving 'just' transitions, emphasizing the need for rebalancing competing interests, via a strong coordinated system.

6.1 Introduction

As demonstrated in the preceding chapters, the legal framework for Nigeria's energy transition is characterized by multi-scalar challenges involving government and social forces, highlighting the need for significant interactions to overcome these obstacles.[1] This is because the energy crisis exacerbates already-existing disparities and intersectionality's. Additionally, Nigeria's energy sector is complex and, as such, necessitates coordination and cooperation between the national, state, and local governments, as well as a range of stakeholders, including energy companies, communities, and civil society organisations. Thus, the necessity of a smooth transition to greener and more sustainable energy sources, along with security concerns about energy infrastructure, emphasises how crucial it is that these numerous entities and connected sectors participate deeply. Only with broad and comprehensive involvement will

[1] S., Jaglin, Urban Energy Policies and the Governance of Multilevel Issues in Cape Town (2014) *Urban Studies*, Vol. 51 (7) 1394 – 1414.

Nigeria be able to effectively manage its energy challenges and ensure a safe and sustainable energy future for its people.

However, having multiple sectors and multilevel actors involved in different aspects of the transition can generate complexities in the arrangement, coordination and operation of projects.[2] This is due to the fact that, rather than steady cooperative processes, these multilevel systems of action often reflect complicated and unstable patterns of power and resistance.[3] Thus, "a multilevel governance approach is used as a starting point to understand where and how multilevel interactions emerge in the energy system, as well as which issues are causing political disagreement and the ensuing implications for the governance of these multiple sectors, actors and energy policies."[4]The case study serves as an example of this, demonstrating the impact of conflicting objectives and policies at different governmental levels on the distribution of efforts at different scales. These case studies further demonstrate that "democratising the energy sector,"[5] entails constant interest rebalancing and dynamic compromise negotiations between various organisations and powers, thereby elevating the transition issue to a political one.

This chapter makes references to the challenges at various government levels, the roles of actors, triggers for private participation, and barriers causing delays in project implementation when it comes to the ET. The chapter also looks at how well Nigeria's energy regulatory systems work and what changes need to be made for a 'just' transition. With reference to the institutional and coordination gaps highlighted in chapter 4, as well as the offshoot of these mechanisms when it comes to the application of energy justice principles in the mini grid project planning, regulatory, and implementation stages, as discussed in chapter 5, the chapter examines the effectiveness of Nigeria's energy regulatory mechanisms and the need for

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[2]A., Akhmouch, Water governance in Latin America and Caribbean a multi-level approach (2012) (OECD Regional Development Working Papers, 2012/04).

[3] (n 1)

[4] (n 1)

[5] R., Worthington, Cheap at half the cost: coal and electricity in South Africa, in: McDonald D. (Ed.) *Electric Capitalism: Recolonising Africa on the Power Grid*, (2009) P. 109–148. Pp 135. London: Earthscan.

institutional reforms for a just transition. To achieve this goal, the chapter is divided into three major sections. This section briefly introduces the chapter. Section two analyzes Nigeria's current energy sector institutional framework, using EJ tenets to analyze relevant case study examples presented in Chapter 5, highlighting the gaps within the current energy sector institutional framework of the country. Section four concludes the chapter with a proposed institutional framework needed to advance MLP in the country.

6.2. Challenges Facing Nigeria's 'Just' Transition

As explained in chapter 2, the MLP framework highlights the importance of considering multiple sectoral and actors' interests in transitions, "identifying alternative transition paths and technologies,"[6] and influencing past systems and state organizations, making it a relevant framework for tackling Nigeria's multidimensional energy and development problems. This is the concept of MLP used herein in the context of energy justice analysis of projects in this study. It argues that the multi-level perspective understanding of the Nigerian energy concerns and transition requires a multi-governance approach, which is crucial in promoting energy justice norms and ensuring equitable access to clean energy for all groups within the Nigerian social context. Thus, it refers to a multi-level governance approach as:

"The concept of decision-making process that involves the simultaneous mobilisation of public authorities at different jurisdiction levels as well as that of non-governmental organisations and social movements. The governance approach is increasingly becoming relevant due to weakening state power, increased international and private interdependencies, and public service generation."[7]

Pattioni, argues that "multi-level governance arrangements, characterised by a loosely coupled structure, are able to secure coordination among public and private actors at different territorial and jurisdictional levels and reduce the risk of falling into the "joint decision trap,""because of

[6] A., Genus & A., Coles, Rethinking the multi-level perspective of technological transitions (2008) *Research Policy*, Vol 37(9) 1436-1445.

[7] S., Piattoni, The Theory of Multi-level Governance: Conceptual, Empirical, and Normative Challenges (2010; Oxford online edn.)

their flexibly structured nature. [8] Pattioni's use of multi-level governance (MLG) in three policy settings, including distributive-redistributive, regulatory-distributive, and regulatory-constitutional policies, in addition to its contribution to the overall democracy of the European Union,"[9] highlights its importance in coordinating multi-dimensional issues or perspectives. This approach is suitable for use in the Nigerian energy transition context because of its distinctiveness, and capacity to recognise historical, jurisdictional, and conceptual perspectives, as well as the heterogeneity of actors and their interests. The approach emphasizes strong coordination in energy transition strategy, policy, and restructuring, acknowledging the multidimensional nature of development and dynamics that challenge traditional, jurisdictional and territorial boundaries.

This thesis therefore advances the use of this approach in tackling the institutional challenges of the NESI, when it comes to the successful implementation of its numerous laudable policy objectives, and for a 'just' transition. This is because, even though the provision of electricity is a public issue, several institutions, sectors, and organisations (public and private), at the local, international, and national levels, are involved in this field, which causes the governance of electricity to be fragmented and variable. These circumstances alongside the variety of resources from which energy can be generated from, make it difficult to formulate and carry out energy reform in a straightforward way, especially within a context that has been liberalised. Thus, "understanding and managing the issues associated with governing across a range of boundaries are paramount to achieving positive public policy outcomes in today's multifaceted energy transition environment."[10]

It will be recalled that the basis of the case studies in chapter 5 was a presentation of mini grid regulation and mini grid projects of some Niger Delta rural communities. Projects from the Niger Delta were utilised due to their unique interests in transition, as they are located near the

[8] Ibid (Joint-decision trap is referred to as a singular or one size fits all decision making in this work).

[9] J., Pan, The Theory of Multi-level Governance: Conceptual, Empirical, and Normative Challenges: Book Review (2012) *Political Studies Review*, 10(2), 296-297.

[10] Daniell K., & Adrian A., (eds.), Multi-Level Governance: Conceptual Challenges and Case Studies from Australia. (2017, ANU Press).

national grid yet without electricity and as such not captured under the regulatory classification of 'served or underserved.' Thus, residents in this region were barely served with electricity access largely due to the region's last mile lying and creek nature. Also, the Port Harcourt Electricity Distribution Company (PHED), the national grid DisCo, serving Bayelsa, Rivers, Akwa Ibom, and Cross River, only received 6 % of the daily generation, which meant a low supply for the region.[11] Following the 15 km proximity to the national grid, the ND qualified better for national grid electricity. However, the nation's major mini-grid projects inadvertently targeted mostly the Northeast and Northwest regions. The mini-grid case study's presentation in the ND demonstrates whether the regulation is framed towards marginalized (underserved communities). These case studies analyses make it possible to assess whether the regulation takes the recognition, distributive and procedural justice tenets into account in mini-grid development and deployment in Nigeria.

6.2.1 Rebalancing Competing Interests: A Recognition Justice Analysis of Past Marginalisations

Desertification in the North impact's climate change, making the North a vulnerable area. The Northwest and Northeast parts of the country are poorer and more rural than the Southern parts and barely connected to the national grid hence their intense targeting of mini grids. Nonetheless, while being closer and occasionally connected to the grid, the south is vulnerable in some ways due to historical injustice as a sacrifice zone and the archipelagic nature of the creek area that prevents grid connections. Therefore, the question here is how to carry out the energy transition in a way that works for all marginalised communities without leaving anyone behind.[12] Interestingly, this question is the same globally and regionally. Critical to this process are the questions of whose interests would be taken into account and whose interests would be rebalanced towards another goal (development, centralization, or even decarbonisation), that is., energy transition according to who, what, when, and why. It is

[11] Stakeholder Democracy Network & Nextier Advisory, 'Access to Energy Policy for the Niger Delta: Recommendations for the Way Forward' (2016) available at: https://www.stakeholderdemocracy.org> last accessed 22/06/22.

[12]E., Baker, 'Energy Justice: Who Gets Listened To?' (August 2021) available at: http://www.ted.com>talks>erin_baker_energy_justice_who_gets_listened_to?language=en date accessed 27/06/2022.

therefore important to address issues of social justice and equity in order to ensure that the benefits of the energy transition are distributed fairly among all communities. Ultimately, the success of the energy transition will depend on how effectively these issues are addressed and how well all voices are heard and represented. This therefore presents a case as to why the energy transition is a question of justice.

The mini-grid regulation defines mini-grid targets for unserved and underserved areas. It identifies the energy poor as an unserved and underserved population and the access and affordability problems as energy justice concerns. Even though some parts of the Niger Delta (ND), is connected to the national grid, the region still qualifies as a target area given its underserved circumstance. The effect of a solar hybrid mini grid on the socio-economic development of local enterprises and welfare is also considered in these case studies, as well as how this could promote economic development and facilitate sustainable transitions in the region. These case studies further bring to bear the various dimensions of justice, their harmonious coexistence, or tensions.[13] They also reflect the importance of whose idea of justice is considered in the development of RE policy and strategies and the need for constant rebalancing for the attainment of social justice.

The government has demonstrated commitment "to including RETs in its energy mix through the National Renewable Energy and Energy Efficiency Policy (NREEEP)."[14] However, the penetration rate is still rather low, with RETs accounting for only 13% as opposed to the targeted 30%.[15] This illustrates the enormous disconnect between policy goals and actual outcomes. The Niger Delta region faces a unique energy dilemma due to its rough natural geography, climate change, and pollution sacrificed zone, with its rural areas being the worst affected.[16] An ESMAP study revealed that "as of 2017, about 70% of Niger Delta rural

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[13] A., Mcharg, 'Understanding the "Ethical Turn" in Energy Law and Policy, Energy Justice and Energy Law' in Iñigo del Guayo, *et al* (eds) *Energy Justice and Energy Law* (OUP,2020) 22

[14] E., Diemuodeke, & T., Briggs, 'Policy Pathways for Renewable and Sustainable Energy Utilisation in Rural Coastline Communities in the Niger Delta Zone of Nigeria' (2018) 4 *Energy Reports* 638-644.

[15] Ibid.

[16] Ibid.

communities had no energy access."[17] Addressing this gap through mini grid framing on targeting uncovers the goal of distributive and recognition justice analysis.

The Niger Delta (ND) region of Nigeria is a region within the delta of the Niger River directly on the Gulf of Guinea of the Atlantic Ocean in Nigeria - made up of (8 states) namely: Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Rivers, and Ondo states. This region has become notorious over the past forty years as an area rife with ecocide and as a sacrificial zone for the economic development of Nigeria, as they account for about 90% of the country's economic revenue. The region became the focus of oil and gas multinational corporations' (MNCs) activity and investments due to its abundant oil and gas resources. It is also renowned for its pollution from oil exploitation, platforms, and temporary housing for expatriates, making it one of the world's most polluted sites.[18]

The thesis therefore argues that the Niger Delta region requires a just and equitable energy transition that addresses historical injustices and ensures reparations. Smooth transitions and the development of backward connections are impeded when historical exclusions that facilitated powerful oligarchies are ignored. This poor targeting equally impacts capacities, productive purposes, and the region's attractiveness to investors and their businesses, among other things. Because investments in mini-grids will continually be shaped by these underlying issues, the thesis advocates recognition justice to rebalance and compensate past marginalizations in the region.

Nigeria is attempting to massively industrialize through natural gas and improve its energy access using various technologies. REA mini-grid implementation reports show that solar mini-grids have mainly targeted the Northeast and West of the country.[19] These projects take on

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[17] Foundation for Partnership Initiative in the Niger Delta (PIND), 'An Energy Access Model for Off-Grid Communities in the Niger Delta, A Report' (2019) available at https://pindfoundation.org/energy-access-model-off-grid-communities-niger-delta/ last accessed 29/06/2022.

[18] F., Oliver, N., Rosina, & M., Tonderayi, Impact of artisanal refining activities on bacterial diversity in a Niger Delta fallow land. Scientific Reports *Springer Nature (February 16, 2024) available at:*. https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6BBT-V571-F129-P0JP-00000-00&context=1519360. Last accessed 20/02/2024.

[19] 'Mini-Grid Market Opportunity Assessment: Nigeria' (2018) SEforALL Africa Hub African Development Bank 16, 27 available

indicator consideration of mini-grid population and market sizes. In a 2018 assessment, the south-south out of 13,558 unelectrified homes targeted 166 mini-grids, about 12.1%.[20] This connotes that the south-south had about 13,5999 non-elected population and a plan to upgrade this by 2025 by targeting 163 mini grids.[21]

As earlier expressed, the Nigerian government sought to address the energy access, poverty and security issues using the mini grid. There are also references to tackling energy transition and economic development in the mix of this regulatory policy. From a recognition justice analysis of case studies, the thesis deducts that imbalances and injustices are cutting across areas like the ND and vulnerable contexts (with low affordability and incapacities). For instance, the argument against the non-targeting of the ND with the mini-grids option is because of the closeness of this region to the national grid and its access to electricity. However, closeness to the national grid and access does not necessarily result in electricity services. This becomes the basis for multilevel governance of the ET agenda (mini grid planning and implementation), given the competing target objectives as well as the importance of recognising the needs of differentiated actors within the NESI.

The issue of capacities and under-service despite connection to the grid, equally fits the primary definition of the lack of access to modern energy services for the ND communities. This agrees with Mcharg's argument for a shift in regulatory targeting and governance to focus on those excluded from the transition, those unable to access the grid, or those excluded from benefits.[22] The case studies of the ND, especially of Oloibiri and Ikot Ada Udo, who have borne the country's economic burden since 1906, have been excluded from the benefits of electricity through fossils or mini-grids. The Egbeke mini-grid case study particularly demonstrates the

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at:https://greenminigrid.afdb.org/sites/default/files/minigrid_market_opportunity_assessment_nigeria_june_2018.pdf last accessed 31/03/22.

[20] Ibid.

[21] Ibid.

[22] (n 13) McHarg. "those that would be left behind by the transition, those excluded from its benefits and bear a disproportionate share of its burdens or those who are affected by new energy lines but are unable to access the grid.

challenges of five villages in their exclusion from electricity benefits, "and their lack of involvement in decision-making processes."[23]

These case studies portray Hernandez's belief that "the relationship between poverty and energy" offers unexplored opportunities to pursue justice and equity for those who have sacrificed for the country's energy development.[24] A redistribution of mini grids to reach these groups as well as the incentivising of their access through subsidies can be corrective, procedural, or recognition justice for these five villages. This is what the thesis advances as a multi-level governance approach for a just transition in the NESI, focusing on policy coordination, institutional framework understanding, and targeted incentives. Interestingly, mini grids implementation have promoted energy transition and sustainable development, benefiting those who need it most in terms of strategy and siting. However, prioritizing energy development and access has proven to be a challenging policy objective to balance alongside economic development, given the different groups, their needs, historical, geographical, and political arrangements that make up the Nigerian context. Additionally, the centralized and decentralized strategies as well as the jurisdictional and sectoral implications for actors complicate the necessary interactive or negotiating processes, necessitating a multigovernance approach.

For instance, before mini-grids, major energy access projects undertaken in the country thrived on rendering some areas sacrificial zones. And now, those communities are abandoned, unrecognised, and left without remediation, with MNCs divesting from the country.[25] Thus, these previously sacrifice zones become less recognised and untargeted by the federal government's agenda for mini-grid deployment. This is a major planning and coordination problem that unravels just transition concerns. On this note, it is argued that distributional and recognition justice have not been met by the nation's mini-grid target determination by the

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[23] D., Hernández, 'Sacrifice along the Energy Continuum: A Call for Energy Justice' (2015) *Environ. Just*. 8(4) 151-156, 152.

[24] Ibid.

[25] M., Bello, Nigeria - Shell's Divestment Plan Sparks Debate. *Deutsche (January 18, 2024, All Africa News) available at: Welle.* https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6B4P-3WC1-DY15-S003-00000-00&context=1519360. Last accessed 20/02/2024.

REA. Even though the REA means well by instituting a mini grid plan that best targets the region furthest from the national grid, it is argued that the concept of 'target' and 'vulnerability' is a justice concept that takes up differential perspectives and as such, needs to be better engaged with, via a multilevel governance approach. For the ND to still be without electricity services, despite being the nation's oil and gas host community and a sacrifice zone for economic development, points to a specific layer of vulnerability and marginalization that defines this area, stemming from centralization and the development culture of the country. As a result, this area should be eligible for a special rural area mini grid targeting and recognition.

However, the failure of the REA to recognize this region's type of vulnerability and interest, distinguishing same away from other underserved areas within the mini-grid regulation and distribution strategy, portrays the recognition and distribution of justice concerns as well as the institutional and coordination gap of the nation's NESI when it comes to mini-grid regulation and projects in the country. Thus, achieving just transitions in the Nigerian mini-grid industry is therefore due to a number of complex problems, the primary ones being the lack of adequate resources and, more significantly, the absence of a renewable energy law in the nation, which, albeit arguably intentional, gives politicians and the government the freedom to politically unbalance the energy transition plan. Without a renewable energy law in place, there is no clear framework for promoting the deliberation of favourable standards in the politics of transition across all groups within the country. This creates uncertainty for investors as well as regarding mini grid project implementation and as such, hinders the growth of the mini-grid sector. This is a major institutional and coordination challenge that impacts widely on a just transition.

Another recognition and distributional justice issue is the link between mini-grid development in vulnerable communities and the inability to afford these services. This brings up the concept of energy citizenship and the question of who the nation's energy citizens are and how the energy underclass (those in these extractive regions) are disproportionately affected by environmental and health risks associated with gas extraction and consumption, clearly indicating the lack of capabilities and the creation of sacrificial zones within the transition. These communities, often lacking political influence and financial resources, are left to bear the negative impacts of the energy transition, highlighting the unequal distribution of benefits and burdens in the pursuit of sustainable energy. Even with the low carbon option of mini-grid, the same is the case as the fossil fuel issues because the context's environmental, land planning

and socio-economic conditions become intertwined with the changing multiple government policy objectives. The competing interests reveal the contradictions in the moral economies of energy development. Hence the regulation is framed with so much laxity and gaps to show how the government expects to groom innovation during the niche stage to the regime stage in the energy transition. It is argued that this kind of framing encourages injustice and poor socio-technical responses. Thus, the thesis stipulates that regulation should instead focus on multilevel governance strategies to help ensure just transitions by coordinating and balancing the policy goals and competing actor interests with pressure from the regime and the landscape as well as new entrants' concerns. Accordingly, Ahmed agrees that accomplishing the global climate targets necessitates strong governance support within national development priorities, encouraging the private sector and community involvement.[26]

Recognition and distributive justice can equally manifest in the resentment of privatization or decentralization strategies that are not well managed, given that these ventures will always elevate the profit-making approach against a public interest objective. This is demonstrated in the case study of the GVE and Renewvia developers and the projects they completed. In connection with the mini-grid business process, these case studies give a framework for explaining what justice means to the participants, and as expected, these set of actors' interests (business/developers) refer to clear regulatory permits and licenses for investment certainty.[27] These case studies also point to the view "that globalization and capitalism will only increase the volatility and inequality of local supply chains and manufacturing clusters connected to them."[28] Thus, revealing that context matters in understanding energy injustices.

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[26] A., Ahmed, Is the global climate target feasible in Africa using bioenergy pathway? Evidence from a local perspective in Ghana. (2020) *Sci Afr* 9 e00544

[27] T., Jarrad, 'Powering the Niger Delta with Solar Mini Grids Nigeria info FM podcast (Dec 2021) #*Power Solutions* available at: http://nigerianinfo.fm/lagos/player/ , https://www.youtube.com/watch?v=bOlZD8xVbzE last accessed 28/06/22.

[28] W., Bello, Counterrevolution, the countryside, and the middle classes: Lessons from five countries.' (2018) 45 (1) *The Journal of Peasant Studies* 21–58; J., McCarthy, Authoritarianism, populism, and the environment: Comparative experiences, insights, and perspectives (2019) 109 (2) *Annals of the American Association of Geographers* 301–313; A., Brock, B., Sovacool, K., Benjamin and A., Hook, 'Volatile photovoltaics: green industrialization, sacrifice zones, and the political ecology of solar energy in Germany' (2021) 111 (6*) Annals of the Association of American Geographers,* 1756-1778.

The EJ-MLP analysis of the mini-grid regulation and case studies reveal that some personal costs directed towards projects could reduce energy injustices. However, project acceptance depends on several factors, including the perceived importance of recognition, just distribution of resources and whether the energy system exhibits procedural justice.[29]The targeting criteria of the mini-grid projects, which seek to mitigate the distributive concerns of access that arise predominantly in the Northeast and Northwest of the country, end up exacerbating recognition justice issues of the ND because of demand. Therefore, the REA-Project distributive criteria must disseminate energy services' benefit and cost fairly. The ND group fares even worse despite being close to the national grid and as a vulnerable/sacrificial zone. The regulation and the REA should be more concerned with recognizing past sacrificial zones by the new energy transition and who will pay such transition costs. This is where policy regulation and institutional governance can be more targeting and strategic in the rebalancing of these competing interests towards a just transition for all.

McCauley et al state that a recognition-based tenor of justice should reflect deeply on where injustices emerge with regards to the impact on parts of society.[30] Furthermore, that decision-makers often overlook the actual impact of policies on neglected sections of society in their policies.[31] This is typically the case with the ND. It is the proposition that before 2020, the ND had been forgotten in the energy transition strides of the government when it came to the targeting for mini-grids implementation. Furthermore, even now, the targeting is low when compared to the mini-grid implementations in the North. It is recognized that the formula for targeting falls short of embracing the ND vulnerabilities within the groupings of heterogenous actors, given the mini-grid target area calculation based on the closeness to the national grid. This thesis proposes that this targeting formula can be revisited by evidence-based reforms in order to enhance a ‘just’ transition.

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[29] D., Evensen, C., Demski, S., Becker, and N., Pidgen, ‘The Relationship Between Justice and Acceptance of Energy Transition Costs in UK’ (2018) *Applied Energy* 451.

[30] D., McCauley, *et al*, ‘Energy Justice in the Transition to low Carbon Energy Systems: Exploring Key Themes in Interdisciplinary Research’ (2018) *Applied Energy* 5.

[31] Ibid.

6.2.2 Rebalancing Competing Interests and Distributional Justice (DJ)

The term "distributive justice" refers to the equitable distribution of energy damages and services, ensuring fairness for contexts, vulnerable individuals, and future generations.[32] Practically, "it entails an assessment of where key impacts are located."[33] In the Nigerian RE mini-grid case, DJ analysis examines marginalized Niger Delta groupings where polluting energy forms,[34] as well as past and present electricity access deprivation are prevalent. This fits in under the MLP's framing that analyzes how past transition impacts the current one. It will show how the DJ is expressed within the niche; (mini-grid siting and implementation), the regulation itself and the consequences, which indicate the significance or otherwise of the government's policy objective on just transition when it comes to reaching their goal of energy access, security, and transition.

Remarkably, the DJ analysis in the Nigerian context (particularly for the ND group) entails an assessment of how these instances of past pollution and lack of access to electricity are interlinked. It portrays that this interlinkage is due to social incapacities. It has enfolded in the framework analysis of other elements of justice such as affordability, access, accountability for wrongful acts (polluters pay), energy citizenship, public participation, procedural justice, fairness and due process.[35] McCauley et al., concur that the development of low-carbon energy (mini-grid) "is closely linked to the dismantling of old fossil infrastructures."[36] The scenario here is not only peculiar to the transition to low-carbon energy. The argument is that this has been the case with past transitions wherein rural communities, especially in the Niger Delta region, play host to multinational corporations, hosting their oil production platforms in their communal lands and waters (source of livelihood).

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[32] B., Sovacool & M., Dworkin, Global Energy Justice: Problems, Principles, and Challenges (CUP, 2014) 373.

[33] D., McCauley, V., Ramsar, R., Heffron, B., Sovacool, D., Mebratu and D., Mundaca, 'Energy Justice in the Transition to Low Carbon Energy Systems: Exploring Key Themes in the Social Sciences' (2018) *Applied Energy* 4

[34] Ibid

[35] (n 32) 373.

[36] (n 33).

However, these companies treat with levity the agreement and welfare of these communities, making them primarily polluted sites lacking in development and access to electricity; as they sacrificed their land and resources for its production.[37] The Niger Delta rural poor communities are domiciled in rugged coastline terrains that do not support grid-connected electricity supply.[38] The energy problem with these communities is inadequate distribution meters and transmission lines; hence, most are grossly underserved despite sitting on massive gas infrastructures. With just 8.5% rural electrification and 42.8% blackouts, these rural communities have become socially backward and heavily polluted, deprived of the fruits of their economic potential.[39] There is, therefore, a strong DJ justification for the mini grids to be accessible and affordable to these rural dwellers. The effect of this identification falls to politics and criteria of mini grids distribution and the goal of just transitions will be to equally address these existing distributional inequalities systemically.

6.2.3 Distributive Justice and the Mini-grid Regulation

The Nigerian government aims to increase 30GW of electricity generation capacity by 2030, with 30% renewable energy.[40] This plan intends to restrict per capita emissions to about 2 tonnes by halting gas flaring, improving the electricity grid, promoting climate-smart agriculture and reforestation, and deploying efficient gas generators.[41] The country's electricity deficit is owing to a lack of generation capacity, transmission, and distribution infrastructure, resulting in low efficiency and an inability to cover expenses.[42] According to NERC, most rural electrification initiatives, largely focused on grid extension, have been abandoned, resulting in

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[37] T., Moses, 'Relocate your hqtrs to A-Ibom or…, Militant Group warns Mobil' (2016) Vanguard Newspaper, available at https://www.vanguardngr.com/2016/08/relocate-your-hqtrs-to-a-ibom-or-militant-group-warns-mobil/ *last accessed 31/02/23.*

[38] (n 14) Diemuodeke & Briggs.

[39] The World Bank,'Nigeria-General Household Survey, Panel 2015-2016 Wave 3' (2018) available at: http://microdata.worldbank.org/index.php/catalog/2734 last accessed 22/04/2022.

[40] (n 19) {Mini-Grid Market Opportunity Assessment: Nigeria (2018) 16.

[41] Ibid.

[42] Ibid 17.

transmission losses of roughly 7.4%.[43] Interestingly, the Niger Delta region is to be served by these grid extensions because of the closeness of their location to the national grid. The situation is similar for distribution companies, resulting in most Nigerian households self-generating electricity using diesel generators.[44]

The mini-grid regulation and REA mapped the mini-grid potential in Nigeria and identified potential customers based on population density and proximity to the existing transmission and distribution network. The analysis conducted using the current and planned power network up to 2025 revealed that, as of 2016, the transmission company operated a network of 5,525 km of 30 kV transmission lines and 6,800 km of 132 kV transmission lines.[45] Moreover, these lines have provided nearly all of the country's energy availability, which currently stands at over 60% nationwide and 34.1% in rural areas.[46] This evidence revealed that the North West states had the lowest electrification rates, while Lagos state had the highest electrification rate at 98 percent.[47] **Figure 2** below is a map of the country, showing a percentage distribution access to national grid electricity by different states.

[43] Ibid.

[44] Ibid 17.

[45] Ibid.

[46] Ibid.

[47] Ibid. 27.

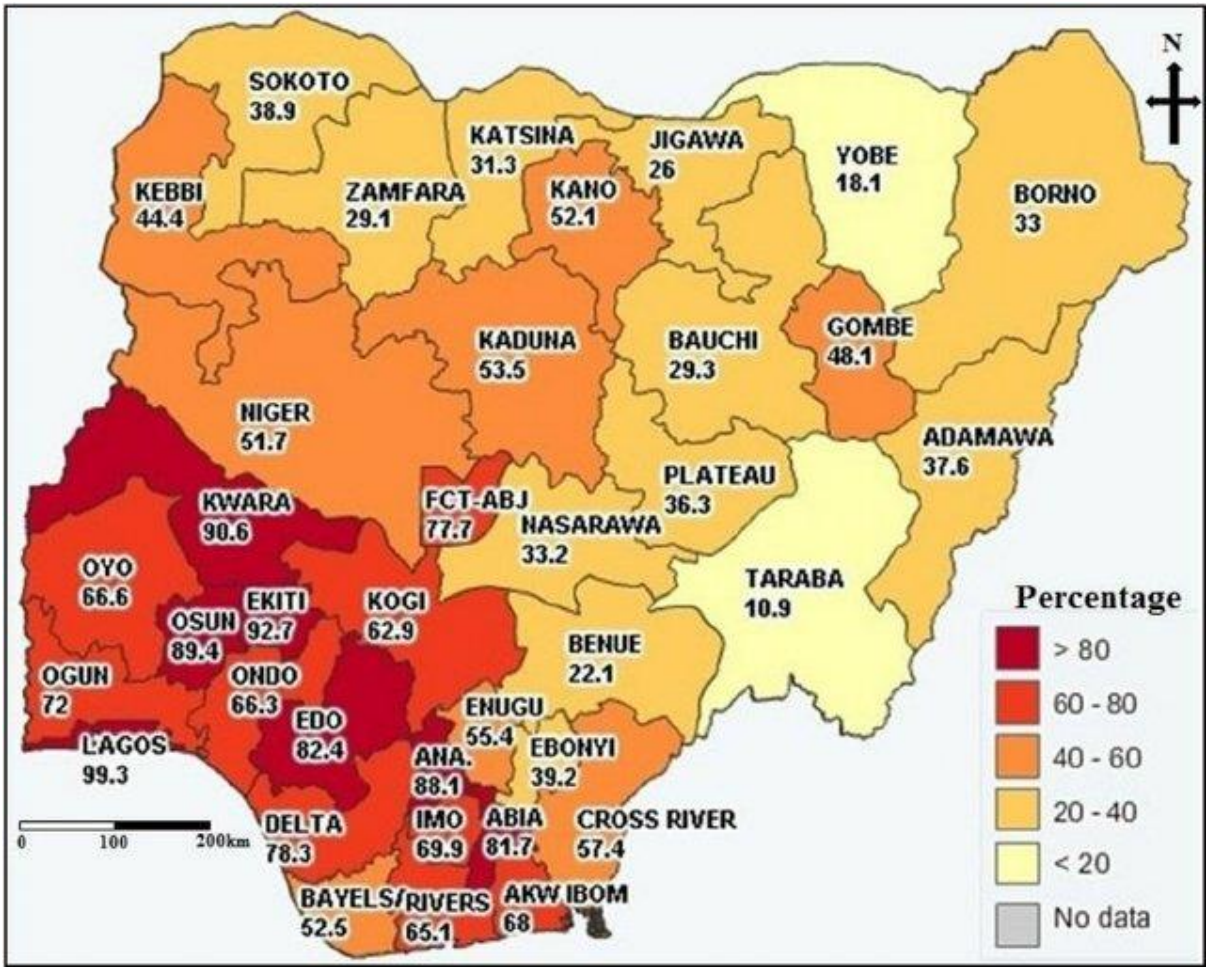


Figure 2. Access to grid electricity. Source: National Population Commission.[48]

Based on this analysis, it is clear why Nigeria aims to achieve its 2030 goal through off-grids, mini-grids, and national grid electrification, thus utilizing hybrid solar PV and diesel generators for household and productive use.[49] Accordingly, REA divides states by region and best-suited

[48] National Population Commission, 'Nigeria Demographic and Health Survey 2013 from National Population Commission' (June 2014) 7, available at: http://www.population.gov.ng/images/ndhs_data/ndhs_2013/2013_ndhs_final_report.pdf ; PDF, 'Technology Options for Increasing Electricity Access in Areas with Low Electricity Access Rate in Nigeria'available at: https://www.researchgate.net/publication/277959845_Technology_Options_for_Increasing_Electricity_Access_in_Areas_with_Low_Electricity_Access_Rate_in_Nigeria#fullTextFileContent [accessed Mar 30 2023].

[49]S., Ohaire, 'Financing Rural Energy Projects in Developing Countries:A Case Study of Nigeria" (DPhil thesis, *De Montfort University 2014)* 126 'Off-Grids, a hybrid of solar PV and diesel generator for household and productive use; ii) Mini-Grids type is a diesel generator plant with low voltage (LV) supply for all types of demand (productive, household, social infrastructure,) and national Grid Electrification'

technology option. A report stipulates that mini-grid solutions will best serve 13.6 million people in Nigeria, and solar home systems will best serve 6.2 million people (6 per cent of the non-electrified population). Grid extension will best serve 86.2 million people (81 per cent of the non-electrified population) based on proximity to the existing grid.[50] Moreover, it further stipulates that by 2030, 28.5 million households, or 125 million people, will be electrified.

This means that the REA using the mini-grid option has successfully distributed access via mini-grids to targeted regions based on their pre–evaluation and analysis. Thus, the choice of this distribution is cost. Ohaire, makes this clear when he points out that "despite not being the most expensive to electrify, Kano state has the most significant proportion of unpowered households."[51] Also, that "while electrifying Borno state costs US$2.9 billion, it costs US$73 million in Edo state and each Nigerian state would cost more than $1 billion to electrify."[52] He adds that the distance from existing grid infrastructure, topography, and population size affects grid-based electrification costs in different regions.[53]

It is argued here that there is a coordination and institutional gap as well as a DJ concern with how the REA delineates mini grid target sites based on grid proximity. This is because of the existence of past system inequalities and differentiated actors and interests within the NESI. For even though most Niger Delta settlements meet the criteria for improved access via national grid extension,[54]research shows that most of these communities are still without electricity despite their closeness or connection to the national grid. The mini grid would therefore best serve the region's interests in terms of their solar and hydro potential, lack of electricity access, energy justice, energy transition and environmental protection rather than electricity from the grid. This is due to the already polluted and unremedied nature of the land that does not require

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[50] (n 23) {Mini-Grid Market Opportunity Assessment: Nigeria (2018) 27.

[51] (n 53) 133.

[52] Ibid.

[53] Ibid 133.

[54] (n 14) Diemuodeke & Briggs. 'For instance, the Federal Government of Nigeria (FGN) has acknowledged this criterion given its plans to add 4774 MW of electricity to the national grid as part of the independent power project to serve the Niger Delta region.'

any more fossils as well as the group's past input as the economic base of the country. Also, the region's topology and geography equally deepen the preference for mini-grid electricity option because the area's archipelago nature complicates the grid's operationality, leaving the region mostly underserved.

Diemuodeke and Briggs, have stated that the rugged coastal terrains in which the Niger Delta region is domiciled do not support grid-connected electricity.[55] As such, the region, despite connection and closeness to the grid, still records only 8.5% rural electrification and 42.8% blackouts.[56] The archipelago nature of these towns, nestled in wetlands and only reachable by water, hinders the region's connectivity to the grid.[57] Recent figures reveal that access has increased, but not service, because these populations are still underserved. Irowarisima, notes that most regions' geographical settings make connecting to the national grid through transmission and distribution lines exceedingly expensive, adding to the region's inability to tackle the energy access dilemma.[58]

Being underserved and lacking the purchasing power to access modern energy services is still a form of energy poverty, especially where the said access is not powerful enough to drive industrialization. Consequently, the case for mini grids should identify this gap as an adequate opportunity to address the country's modern energy access problem, re-address past energy injustices, enhance the remediation and cleanup of the vulnerable and past sacrificial Niger Delta zones, particularly given mini grids' potential to reach rural communities that are underserved or cannot be linked to the grid. The REA calculates the mini-grid access qualification for states furthest from 15km from the national grid.[59] The analysis reveals that

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[55] Ibid.

[56] Ibid.

[57] T., Giwa, 'Energy Access Model for OFF-Grid Communities in Niger Delta (2019) A Vanguard Viewpoint' , Vanguard Newspaper, available at https://www.vanguardngr.com/2019/05/energy-access-model-for-off-grid-commnities-in-niger- delta/amp/ last accessed 08/06/2022.

[58] M., Irowarisima, 'African Energy Challenges in the Transition Era: The Role of Regional Cooperation in V Nalule V (ed), *Energy Transitions and the Future of the African Energy Sector* (Palgrave Macmillan, 2021) 57

[59] (n 23) {Mini-Grid Market Opportunity Assessment: Nigeria (2018).

this criterion favors the Northwest, with a total mini-grid market size of approximately $994 million in annual revenue, with 92% of the mini-grid market in the northern regions.[60]

By this criterion, the Niger Delta region being an already vulnerable area in terms of oil and gas activities fails to qualify for large targeting of mini-grid implementation or clean energy. Brock, Sovacool and Hook expounded this when they analyzed green industrialization, sacrificial zones, and the political ecology of solar in Germany.[61] They argue that after decades of stagnation, high unemployment rates, and political exclusion, the solar sector offers a chance to overcome the effects of deindustrialization and a promise to catch up with advances in western Germany.[62] This could be the case for the Niger Delta of Nigeria if remediation included the implementation of mini-grids to serve the Niger Delta rural communities that are lying heavily polluted and without access to modern energy services. On this note, the mini grid regulatory and institutional framework can play a coordination and institutional role, utilizing multilevel governance to enhance mini grids' entry into the ND community, thereby ensuring a 'just' transition.

6.2.4 DJ Evaluation of Mini Grids Costs

Distributive justice concerns both the "distribution of costs or dissemination of the hazards and externalities of the energy system throughout society,' and the distribution of benefits, or access to modern energy systems and services."[63] In the face of insufficient supply, the distributive patterns of mini grids will have significant implications for social justice. Accordingly, Sovacool and Dworkin have argued that "since physical security is a basic right, so are the conditions that create it. Hence, people deserve minimal energy services for their wellbeing,

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[60] Ibid.

[61] A., Brock, B., Sovacool and A., Hook, 'Volatile Photovoltaics: Green Industralization, Sacrifice Zones, and the Political Ecology of Solar Energy in Germany' (2021) 111 (6) *Annals of the American Association of Geographers* 1768.

[62] Ibid.

[63] B., Sovacool et al, 'Energy Decisions Reframed as Justice and Ethical Concerns' (2016) 1 *Nature Energy* 1,4.

without which other forms of inequality may be exacerbated: such as economic, social, and political inequality."[64]

As a result, a lack of access to reliable power would equal a lack of other chances for growth and development.[65] Accordingly, just transitions require equitability in energy service provision, considering economic and political power gains and social costs, and ensuring balance in energy distribution patterns. Evensen et al., puts it well when they stipulate that "environmental and social costs should be consistently incorporated into the estimating possible energy transition strategies."[66] This means that straightforward questions need to be asked before the public accepts mini-grids: who pays for clean energy (mini-grids), and are these implementations circumscribed by justice, public interest objectives or economic objectives? This thesis argues that this is the responsibility of institutions, and where appropriate actor recognition and engagement happens in the process of finding the answers to these issues, appropriate implementation and targeting of policies will follow.

6.3 Distributive Justice as Public Interest: A Coordinating Challenge

The consideration of access to modern energy as a public service is justified as an activity that should be developed and regulated by public authorities. As such, it is subject to varied degrees or regimes of control, regardless of whether a public or private entity carries it out.[67] Interestingly, the assumptions about public service apply to the country's energy transition objectives to be met by mini grids. The primary hypothesis is the demand for a generality interest, emphasised by '*commonality*' and '*essentiality*.'[68] The rationale behind this assumption is that the private sector cannot or will not take on such duties due to the need for profit; hence,

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[64] B., Sovacool & M Dworkin, Global Energy Justice: Problems, Principles, and Practices (CUP, 2014) 370.

[65] Ibid.

[66] D., Evensen, *et al*,'The Relationship Between Justice and Acceptance of Energy Transition Costs in the UK (2018*) Applied Energy* 222, 452.

[67] European Parliament Directorate General for Research, 'Public Undertakings and Public Service Activities in the European Union' Working Paper Series W-21' (1996) available at: https://www.europarl.europa.eu/workingpapers/econ/w21/sum-toc_en.htm last accessed 03/4/22.

[68] Ibid 35.

the government should take this role. The discussion of access to electricity as a human right is enmeshed within regional and global goals like the EU's public undertakings, public service standards, and the UN's Sustainable Development Goal 7. Its universality and essentiality interest is inclusive of all.

On this point, the critical principle for mini-grid distribution should be equality or universality at a uniform cost and with continuity and adaptation.[69] However, because of the existence of differentiated actors and interests, a one-size-fits-all distribution strategy may not equal justice, especially within a context like Nigeria where there are varying degrees of differentiation based on historical marginalisation, existing intersectionality's and vulnerabilities, differentiated actors, powerful interests, and sectors, as well as competing interests that all require rebalancing or a multi-level governance. It is on this note that this thesis argues for a just and equal distribution of mini grids, following ample coordination across stakeholders—including governmental organisations, the commercial sector, and civil society. This coordination platform will enable a development of an evidence based or customised distribution plan that takes into account the economic, social, and historical elements that contribute to inequality.

Costs and benefits are the criteria to determine whether the mini-grid alternative is available and affordable in unserved locations. When it comes to costs or benefits, the mini-grid regulation, in its interpretative section, has not defined what costs or benefits are. Throughout the regulation, the word "*cost*" and "*tariff*" have appeared "three" and "four" times, respectively.[70] Pedro et al.,[71] have stated that cost estimations are critical in planning and implementing systems. Since one of the key roles of regulations is to set and approve tariff levels, it is incumbent on mini-grid regulators to first verify the value of the mini-grid option to the context and to further acknowledge costs that are acceptable to both parties as well as the government's mini-grid policy objective. This is what Sesan et al., refer to as evidence-

[69] Ibid.

[70] See Sec 12 (1) (c), Sec 13 (3) and Sec 19 (4) for 'costs and Sec. 13 (3) (b), (4-6), Sec 19 (2) (m), (2) 4 for 'tariffs.'

[71] C., Pedro, S., Lumbreras & A., Gonzalez-Garcia., 'Network Cost Estimation for Mini Grids in Large Scale Rural Electrification Planning' (2021) 14 (7382) *Energies* 2.

based energy transition strategy and policy making.[72] As a result, one of the first variables to examine is the costs incurred during the mini-grid implementation process and how these costs and profits will be allocated and divided among participating groups. In this regard, the nation's mini-grid governance successfully serves the interests of various, distinct stakeholders within the NESI by giving developers a price-based mechanism to sell electricity at a cost-reflective price, encouraging fair competition, and taking costs into account, all of which lead to a more economical and sustainable energy solution.

Evensen et al. stated that the costs to be considered in the case of a multi-layered energy transition should be one associated with; "the costs of increasing low-carbon energy options, helping vulnerable populations pay for energy, reducing energy use and increasing energy security."[73] Given the strategic importance of energy transition to the global sustainable development agenda, this thesis argues that an accurate assessment of the distributive cost and benefits of mini-grids must also consider the burden and harm of past injustices on some regions of the country, particularly the economic, social, cultural, and environmental costs of oil pollution, as well as the role and responsibilities of investment bodies, Nigerian oil companies, and the government in the remediation of these past injustices.

This massive suffering and marginalisation could have been a side effect of fossil fuel profiteering. However, for the gains of a 'just' transition, it would have to be evaluated against the mini-grid option. Thus, the regulatory framework's appropriateness in maintaining equality in mini-grid alternatives and addressing past inequalities is crucial for distributive justice, aligning with the MLP's analysis of past transitions and marginalized users' perspectives of just transitions. Sovacool and Dworkin suggest that a supportive regulatory framework for renewable energy institutions should focus on cost-effectiveness. Poor coordination impacts

[72] T., Sesan, & W., Siyanbola, "These are the realities": insights from facilitating researcher-policymaker engagement in Nigeria's household energy sector. (2021) *Humanit Soc Sci Commun* 8, 73

[73] (n 66) 452.

upon costs,'[74]revealing gaps in national regulatory frameworks that fail to protect various actors' needs.

According to the REA-approved operational guideline 2016, mini-grid projects are financed through grants and tariffs, which are cost reflective.[75] The problem here is that since mini-grid locations tend to be remote, have low population density, and are unelectrified rural areas with a low customer base, securing grants for mini grid projects does not get to cover the cost of business hence the need to still charge consumers for operating cost and usage fee. It is therefore the goal of just transitions "to prevent lower-income households from spending disproportionately more on energy services compared to higher-income groups."[76] This poses yet another coordination issue.

Section 20 (3) of the Mini-grid Regulation stipulates that the registered mini-grid operator, in line with the multi-year tariff order (MYTO) calculation tool, determines retail tariffs and other charges. For instance, smart metering and variable tariffs lead to unfair cost distributions, negatively impacting lower-income groups with limited flexibility by forcing them to shift their energy use.[77] Although it has been determined that consumers bear some of the cost, it is evident that the NERC has attempted to restrain developers' unilateral cost control through the MYTO tool so that the cost charged can be reflective. By an agreement between the operator and the community, such overextended costs with the NERC's intervention may be curtailed.[78]

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[74] (n 64) Sovacool & Dworkin. 'It is evident that the distribution of profits and expenditures among mini-grid users could impact energy affordability.'

[75] A., Yakubu, E., James, & Sherwood Olu Aruike, ' Olu Rocky Mountain Institute Sachiko Grabe, Minigrid Investment Report: Scaling the Nigeran Market' (2018) 1-40,13, available at:https://rmi.org/wp-content/uploads/2018/08/RMI_Nigeria_Minigrid_Investment_Report_2018.pdf last accessed 02/04/22.

[76] C., Miller, A., Iles & Christopher Jones, 'The Social Dimensions of Energy Transitions' (2013) 22(2) *Science as a Culture* 135-148.

[77] G., Powells & M., Fell, 'Flexibility Capital and Flexibility Justice in Smart Energy Systems' (2019) 54 *Energy Research & Social Science* 56-59.

[78] Section 20 (4) (b) Mini Grid Regulation, 2017.

The Mini-grid regulation in Section 13 provides for inspecting the mini-grid permit holder's account for adjusting tariffs and ascertaining depreciated value. The inspection will seek to verify if the mini-grid permit holder's actual revenue aligns with their tariff definition with the commission during permit application or tripartite contract approval.[79] By section 13 (6), even the community, on account of ensuring the accuracy of tariffs with cost, may request an inspection of the permit holder's account statement.[80] Secondly, to prevent excess retail tariff charges from the developers, Section 9 of the regulation encourages an interconnected mini-grid option wherein DisCo shares distribution infrastructure with the mini-grid operator, removing infrastructure costs from the tariff costs.[81] The mini-grid alternative offers a financial impact to DisCo by solving the problem of DisCo; because DisCo's revenues are not sufficient to cover costs, DisCo's losing revenue by not serving customers.[82] The problem is that demand is not meeting supply.

Accordingly, the Mini Grid regulations in Section 9 (1) (b) allow operators to charge a cost-reflective tariff and install metering solutions. Cost-reflective tariffs are the most effective option for incentivising private investment in mini grids as it maximises developers and regulators' ability to ensure adequate cost recovery.[83] A uniform tariff price may not be stated in the regulation however, the MYTO tool provides a standard for framing cost and an equal baseline for its measurement. The draw-back of this is that cost reflective pricing is most likely to result in having different rates for customers of varying electricity providers.[84] It is argued here that, in spite of its potential, a cost-reflective electricity tariff is unable to guarantee fair cost distribution and is swayed by an untrue economic efficiency versus equity dichotomy,

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[79] USAID-NARUC, Practical Guide to the Regulatory Treatment of Mini Grids (2017) 1 – 242, available at: https://pubs.naruc.org>pub last accessed 27/06/2022.

[80] Ibid

[81] Ibid.

[82] Ibid.

[83] National Association of Regulatory Utility Commissioners (NARUC), Practical Guide to the Regulatory Treatment of Mini grids (2014) 1 – 242, 64 available at: https://pubs.naruc.org/pub/E1A6363A-A51D-0046-C341-DADE9EBAA6E3 last accessed 04/03/22.

[84] Ibid.

resulting in ineffective and socially inequitable tariffs. For instance, pilot trials show cost reflective tariff model may reduce peak demand, but only for a small minority of customers, requiring higher electricity prices compared to traditional flat rate models.[85]

Mini grid regulation has, on this note, ignored vulnerabilities, marginalized groups, increased energy costs, and as such, disproportionately affects poorer households' welfare. This is because, the country's accessibility objectives may not be met due to poor households having to allocate more of their spending to meet energy costs. It is submitted that the effectiveness of rules and regulations in promoting a just transition to low carbon energy is influenced by compliance levels and 'curativeness', which measures social impact. Thus, the balancing of innovation costs in previously marginalized contexts is an excellent example of how DJ can be framed in a regulation to help with the issues of energy transition and energy justice. Thus, distributive justice emphasizes the importance of mini grids for marginalized communities, ensuring their accessibility, affordability, and respect for indigenous sovereignty and siting decisions.[86]

6.3.1 Accessibility – An EJ-MLP Analysis

Whether the mini grid regulation makes energy more accessible raises many questions touching on capacity, costs, siting, norms, and benefits. It is my research that a one size fits all answer may not exist to these questions because equality of resources cannot be calculated as abstract from backgrounds and local contexts or circumstances, and this is where a multilevel governance approach becomes necessary.[87] The mini grid regulation and case study projects presents that the private-sector and the government (REA) develops and manages mini grid in the country. The regulation therefore allows private companies to develop projects and sell

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[85] E., Hobman, & S., Meikle, 'Uptake and Usage of Cost-Reflective Electricity Pricing: Insights from psychology and Behavioral Economics' (2016) 5 *Renewable and Sustainable Energy Reviews* 455 - 467.

[86] The DJ mini grid analysis thus considered the environmental impact of electricity production via mini grids, especially since Nigeria uses a diesel-solar hybrid model (a non-strictly RE option). It asks who bears the cost of decommissioning the battery end-of-life as waste, what the cost implications for managing these are, and whether these costs are included in tariffs or are borne by the government, the environment/community, or the developer.

[87] Ibid.

electricity to customers.[88] Access to these mini grids is through the payment of tariffs,[89] which presupposes on face value that it is the capable consumer that bears the cost and benefit of mini grid distribution.

However, on a closer look at the cost implication, government-controlled support is being granted to the developers by donor agencies. Interestingly, this engenders the point that 'distributional justice (in terms of costs and affordability) cannot be continuously realized without a differential treatment and the continuous interference with people's lives.[90] This is the bane of a multilevel governance in this study, given its ability in embedding justice norms throughout the transition coordination process, using targeted policies to rebalance interests and compensate groups within a context. Thus, maintaining a DJ pattern will require periodic tariff targeting and tariff removal, and "the periodic taking from some person's resources that others for some reason chose to transfer to them."[91] This is the coordinating role of a just transition.

This study reveals that Nigeria's oil and gas governance system is fragmented and top-down,[92] with unclear leadership among key actors within a tightly controlled, top-down regime.[93] The reliance on gas as the nation's transition fuel reiterates the lack of political will

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[88] Section 13 Case Study – Nigeria-Mini-Grids Partnership (2020) State of the Global Mini Grids Market Report. Available at: https://minigrids.org/wp-content/uploads/2020/06/Nigeria_Case_Study.pdf last accessed 18/04/2022.

[89] Ibid.

[90] (n 64) Sovacool & Dworkin 274-275.

[91] Ibid 275.

[92] "Type II MLG, a somewhat 'newer' governance form, is distinguished by overlapping, policy focused jurisdictions operating at shifting numbers of levels that are more flexible and inevitably messier than traditional federal type multi-level structures." D., Curry, Intra-European Movement: Multi-level or Mismatched Governance? In: P., Scholten, M., Ostaijen (eds.) Between Mobility and Migration (2018) Springer: IMISCOE Research Series.

[93] G., Aigbe., L., Stringer., & M., Cotton., Gas Flaring in Nigeria: A Multi-level Governance and Policy Coherence Analysis (2023) *Anthropocene Science* 2:31–47

to end gas drilling and the continuing marginalisation of the Niger Delta as a sacrifice zone.[94] This is also attributed to the federal government and other stakeholders' continued economic interest in fossil fuel extractivism.[95] It is argued that this dynamic creates a complex web of power dynamics and conflicting agendas within Nigeria's dominant energy (oil and gas) sector and niche (mini grids).[96] As a result, these dominant and competing interests frequently impede efforts to increase transparency, accountability, and sustainable transitions in the industry.

For instance, Aigbe et al., find that political partisanship, poor governance, regulatory compliance issues, and policy conflict between environmental protection and economic development have slowed policy coherence around gas flaring.[97] Beginning with "the 1999 Constitution, which is the first factor that shapes the Nigerian coordinating structure, the Nigerian energy governance structure is lopsided, with loopholes, overlapping policy domains, fragmentation, and enclaving. For instance, developers and the private sector operate independently, outside national regulatory jurisdiction.[98] This state of affairs raises questions about whether the government is genuinely committed to 'just' development and transitions due to its development objective that eschews rights of indigenous communities to energy access, distributive justice and healthy environment.[99]

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[94] A., Akinola, & H., Wissink, 'Public sector Performance in the Nigerian downstream oil sector: a critical reflection' (2018) 53 (3) *J. Asian Afr Stud.* 476 - 490

[95] G., Iornumbe, 'The State, lack of Political will and Persistent Gas Flaring in the Niger Delta' (2019) 13 (2) *Int. J Soc Sci.* 114 – 126.

[96] (n 93) Aigbe., et al.

[97] Ibid

[98] A., Ackah-Baidoo, 'Enclave development and "offshore corporates social responsibility": implications for oil-rich sub-Saharan Africa.' (2012) 37 *Resourc Policy* 152 – 159. Beginning from "the 1999 Constitution which is the first factor that shapes the Nigerian coordinating structure, to highly incoherent energy access and transition policies and legislation; is the succinct revelation of the lopsided energy governance structure and operation with massive loopholes, overlapping policy domains, fragmentation, and enclaving, whereby developers or the private sector (extractive industries) operate in a self-governing manner outside of national regulatory jurisdiction."

[99] For instance, the nation's reliance on gas as its transition fuel and the attendant implications, coupled with the non-attendant care in policy coordination or interest rebalancing in the remediation of previous sacrifice zones, and the addressing of these implications point to the inadequate nature of the current institutional framework in

Apart from this 'development' objective that supersedes all other policy objectives in the balance of competing interests, is the nation's normative culture, which focuses on the concept of the state's ownership of natural resources and federalism, leading to sacrifice zones and unjust energy systems despite reforms. For instance, beginning with the recent Constitutional amendment on shared competency with which states, and the federal government make legislation on energy, alongside other federal legislation and regulations on energy access and transition, it is argued that:

> "Federal legislations make it extremely difficult for the regional, state, and local governments to interact directly with the Federal Government, including on issues concerning energy transition, even though the access, security, pollution, siting of these grids and their management occur primarily within the various states' jurisdiction within these groups like the Niger Delta. States before 2023, had little or no power to do so, as mini grids distribution was within the exclusive purview of NESI. Therefore, groups are reliant upon federal-scale top-down policy implementation and enforcement through parastatal actors, and hence lack a 'voice' in the processes of good environmental/energy governance."[100]

Furthermore, as expressed in chapter four, Nigerian energy access and transition politics are incremental rather than transformative and it is argued that this situation is as a result of the challenges of partisan federal politics. Tracking the historical trend of Nigeria's transition story reveal that current and successive military governments and colonial regimes are characterised by dictatorship, rent-seeking, development, corruption, elitism, and personal rule.[101] These factors favour centralisation as they concentrate political power in the federal government (Abuja) in a 'top-down' policy framework, failing to address environmental, energy access, and transition injustices in several groups like the Niger Delta.[102] These political and economic

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addressing a 'just' transition.[99] World Bank (2002) Nigeria: State and Local Governance Reform Project – PID. 24477 d Bank 2002; available at: World Bank Document last accessed 12 January, 2024.

[100] Ibid

[101] Ibid

[102] Ibid

elites insufficiently recognise the adverse impacts of past transitions on sacrifice zones, suffered by host communities yet continue to benefit from gas production.[103] The concentration of political power further diminishes state and local governance capacities to influence positive transition outcomes from within the fragmented coordinated system, and this complicates a just transition exercise.[104]

For instance, a study reveals that policy goals and stakeholder preferences are not aligned due to policymaking being further away from groups, making it non-evidence-based and hindering their implementation.[105]With the PIA, where the president is the minister of petroleum, and the ministry acts as a proxy, oil, and gas supply decisions as well as those of the transition are still under the purview of strong political and economic influence from the government. This creates a significant challenge for implementing effective decarbonisation policies and transitioning to a more sustainable energy system. The same concerns go for the Rural Electrification Agency (REA), and the National Electricity Regulatory Commission (NERC), who equally are not independent but act for the government and as such, cannot implement DisCo's charges due to political and economic power imbalances.[106]

This highlights a disconnect between policy commitments and actual implementation, emphasizing the need to address systemic issues within the fossil capitalist economic model. The federal restructuring every four years also hinders long-lasting policy commitments, [107] and implementation of decarbonization strategies within the fossil capitalist dominant model remains unclear. Thus, the relative importance of cost of 'project development' in the context of low carbon energy, without the consideration of the impact that the transition might have on

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[103] Ibid

[104] Ibid

[105] (n 93) Aigbe et al. 'The Federal Government's tight political control in Abuja, coupled with a governance structure lacking autonomy for federal institutions, leads to policy incoherence and poor implementation'

[106] A., Ibrahim, & C., Egboboh, 'N47bn Debt: AEDC Threatens to Disconnect Aso Rock, 85 Others.' *Business Day* (February 20, 2024,Tuesday) available at: AEDC threatens to cut supply to Aso Rock, others over N47bn debt - Businessday NG last accessed 22/02/2024.

[107] (n 93) Aigbe et al.

the rural community's ability to assess, or from limiting another's assess is a manifest inadequate balance of relevant considerations when it comes to the way the Nigerian context frames and qualifies the questions of energy access.

The judicial approaches have demonstrated the need for balancing renewable energy and climate change statutory and policy considerations with just capabilities.[108]This is gradually becoming a global trend with national diffusion implications. Thus, a successful mini grid deployment in the country would involve as much participation by the public sector as the private sector.[109] Addressing these issues will require not only strong leadership but also a commitment to prioritising the long-term well-being of the environment and the Nigerian people over short-term economic gains.[110] This is one of the most important energy transition policy conversations that is worth having in the case of a just transition.

Furthermore, it is clear that the government addresses the energy problem of the country from both the perspective of increasing universal access to electricity and the financial viability of the mini-grid that is providing the service.[111]Agreeably, the transition drive towards clean energy infrastructure is global, presenting itself as landscape pressure on nations hence the strong donor support and establishment of a rural electrification fund for off-grid development.[112] However, apart from the coordination gap, targeted persons do not have the capacity to meet these costs. Similarly, regarding off-grid renewable energy electricity (OGRE) development in China, Ole,[113] reports that the imperatives for the optimal development of

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[108] *North Lowther Energy Initiative Ltd v Scottish Ministers* [2021] CSOH 104 , *North Lowther Energy Initiative Ltd v Scottish Ministers,* J.P.L. 2022, 5, 586-616, 615.

[109] USAID, 'Unlocking Africa's Mini grid Market: USAID Scaling Up Renewable Energy Program (SURE)' (2021) Final Report, 44 available at: https://pdf.usaid.gov/pdf_docs/PA00X8SK.pdf last accessed 01/04/2022.

[110] Ibid

[111] Ibid 36.

[112] The Rural Electrification Fund [REF] was established by virtue of the section 88 (2) of the Electric Power Sector Reform Act of 2005 – REA, Rural Electrification Fund available at: https://rea.gov.ng/rural-electrification-fund/ last accessed 01/03/2022

[113] N., Ole, 'The Role of Renewable Energy Law 2005 in Supporting the Development of Off-grid Renewable Electricity in China (2008*) International Energy Law Review*

OGRE were also associated with the twin issues of energy security and environmental protection. She equally reported that apart from international pressures to transition to clean energy, China equally faced electricity shortages due to population growth, necessitating alternative energy sources like OGRE to meet unmet demand, particularly in rural households, despite international pressures to transition to clean energy.[114]

It is on this note, similar to the present concerns of Nigeria's energy and economic sector that Heffron et al states, that "there is a clear conflict, in sub-Saharan countries especially, between economic and social development, and the reduction of emissions."[115] He further held that government priorities are skewed towards alleviating poverty and lifting their economies to become middle-income countries by 2030, evidenced by the language of the INDCs submitted in 2015 that stressed the need to take cognisance of the prevailing national circumstances in these countries.'[116] By adopting targets to increase the proportion of electricity generation produced from renewable energy sources, these countries have typically accompanied these targets with conditions and a package of incentives (tax benefits, feed-in tariffs, preferable tariffs) necessary to drive an up-take in renewable energy development.[117]

It is possible to argue that marginalized persons capacities have been articulated in the framing of transition policies and regulation through the spreading of costs of the development of mini grid in rural areas – which would be explained using the polluters pay principle. The application of this principle on mini grid options is based on the pressure on oil industries to reduce their carbon footprints and remediate the established pollution of the Nigerian community by MNCs.[118] However, the mini grid regulation does not make it clear if remediation has occurred because the disadvantaged consumer still has to pay for access to electricity. Although

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[114] Ibid.

[115] R., Heffron *et al*, 'The Global Future of Energy Law' (2017) 8 *I.E.L.R.* 291-302.

[116] Ibid.

[117] Ibid 3.

[118] 'This could be articulated as polluters pay principle accrued towards the costs of RE uptake in the nation's sacrifice zones.'

international donors are investing in mini grid access, it is argued that this is typically not felt by the marginalized. This is because subsidies' do not always target the intended audience instead of benefiting the most vulnerable customer groups, all customers benefit, limiting its effectiveness.[119] This situation again highlights the extent to which the nation's energy access and transition framework articulates the multilevel perspective or governance in the country.

To understand why mini grids costs and affordability are perceived disproportionate to previous sacrifice zones and marginalized communities who lacked access to electricity grid, one needs to understand fuel subsidy withdrawals and/or reforms. Atela et al., suggest that it is crucial to emphasise how price rises lower citizens' purchasing power and income, which may already be low, making them practically worthless and leading to inflation.[120]Additionally, inflation negatively impacts small businesses, causing public dissatisfaction and highlighting the complexity and opaqueness of the energy sector requiring rebalancing.[121] However, the cost of remediation even where paid by the MNC's will not be acceptable to the people as being reflected in low cost options where transition are encouraged.[122] For mini grids, subsidies represent a significant amount of project cost and are lightly regulated by the REF.[123]These subsidies significantly contribute to the development of mini grid projects in the country, cushioning costs and making them affordable for rural customers. [124]

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[119] (n 109) USAID 4.

[120] M., Atela, et al. 'Demanding Power: Struggles over Fuel Access in Nigeria, Institute of Development Studies, IDS Working Paper 554, (Brighton 2021) available at: ids.ac.uk

[121] For instance, the oil and gas industry is a complex landscape influenced by markets, government, and international interventions, with the polluter's pay principle which should help alleviate transition cost for sacrificed zones.

[122] (n 120).

[123] World Bank, Energy Sector Management Assistance Program Mini Grids in Nigeria: A Case study of a Promising Market' (World Bank, 2017) 29 available at: https//openknowledge.worldbank.org/handle/10986/29016 last accessed 29/06/22.

[124] Ibid.

Fuel and gas electricity subsidies are framed as funds depleted from important service sectors that benefit the population that will ultimately cost lives.[125] Achieving both commercial viability and expanding universal access to energy therefore requires new business and financial models along with subsidies for capital and operational expenditure subsidies.[126]The Nigerian government first introduced subsidies in 1970s after the oil boom, to buffer the harshness of international oil prices at the domestic level and poverty.[127] Subsidies have stayed on due to corruption and oil production inabilities and IMF has advised that the removal of subsidies would reduce income inequality leading to affordability and capacity solutions.[128]

According to the IMF, if the removal of implicit subsidy is combined with targeted transfers, say into low carbon infrastructures, then this could result in a decrease in the poverty gap while leaving fiscal space for other productive expenditures. However, it is argued that because the mini grid industry is still in its infancy, the position with regard to subsidies is fundamentally different.[129] The country has a mini grid potential of roughly $8 billion USD, however it is too underdeveloped to meet consumer needs.[130] The country therefore needs tariffs and subsidies especially for the service of customers in the rural areas, because a track record of slow mini

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[125] IMF, 'Climate Change: Fossil Fuels Subsidies' available at https://www.imf.org/en/Topics/climate-change/energy-subsidies last accessed 23-03-2023

[126] (n 109) USAID 30.

[127] O., Zaccheus, 'Understanding Oil Subsidy in Nigeria' (2013) 2 *The Spectrum: A Scholars Day Journal*, 10 available at: https://digitalcommons.brockport.edu/spectrum/vol2/iss1/13.

[128] IMF Blog, 'Fuel for Thought: Ditch the Subsidies (2019) Climate Change' available at: https://www.imf.org/en/Blogs/Articles/2019/08/14/fuel-for-thought-ditch-the-subsidies last accessed 03/04/2022.

[129] A., Wearne, 'Success in Rural Electrification Regulatory Case Studies: Nigeria Financing Instruments for the Mini-Grid Market' (2021) GET - Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH P 11, available at: https://www.get-transform.eu/wp-content/uploads/2021/08/Success-in-Rural-Electrification-Case-Study_Nigeria.pdf last acessed 02/04/22 :- 'Even with the private owner-operator model and cost reflective tariffs, Nigerian mini-grid projects are still subsidised by government and donor organisations to ensure lower tariffs and promote affordable access to power.'

[130] Ibid 4.

grid deployment and subsidies in other contexts (fossils) discourages mini grids developers and investors, thereby reducing impact.[131]

6.3.2 Rebalancing Mini Grid Cost as Justice through Energy Citizenship

It is argued that the MLP as a governance approach, can through rebalancing, reduce investment costs from gas projects to offset mini-grid costs, thereby promoting economic growth and sustainable transitions. This follows from the energy citizenship concept. What this means is that through a well-coordinated multilevel governance approach, mini grids access and costs concerns as well as its benefits could be shared broadly and these could be reframed through considerations like polluters pays principle, ability to pay, co-ownership, common but differentiated principle and other business models that allow for ample participation of citizens in the benefits and burdens of mini grid development in the country as well as in the decision making and distribution of mini grids. In economic terms, this could be referred to as the "internalisation" of "negative environmental externalities."[132]

For example, the Polluters Pay Principle (PPP) could be used to re-balance the costs of mini grids as a form of justice. This would make polluters pay for mini-grids, including measures to stop and control pollution with hybrid mini-grids that use gas, so oil companies could interact with the niche (mini-grids) and invest in them while shifting their gas business towards renewable energy.[133] In this way, they are responsible for the negative environmental externalities, not taxpayers.[134] Pollution generates significant costs to citizens and so does pollution prevention because it comes at a cost. For instance, clean-up costs for pollution in

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[131] Ibid.

[132] Ibid.

"The Polluter Pays Principle (PPP) was adopted by the OECD in 1972 to ensure environmental preservation. PPP's scope was initially based on pollution prevention and costs before it was broadened to encompass the costs of the steps authorities made to deal with pollutant emissions." European Court of Auditors, 'The Polluter Pays Principle: Inconsistent application across EU Environmental Policies and Actions' (2021) *Special Report EN* 6 available at: https://www.eca.europa.eu/Lists/ECADocuments/SR21_12/SR_polluter_pays_principle_EN.pdf last accessed 06/08/22.

[134] Ibid.

Nigeria's Niger Delta, are high and may likely take 25 to 30 years to accomplish.[135] The UN Environment Programme (UNEP) recommended a $1 billion initial financial investment from oil companies,[136] and the government to clean up *'just'* Ogoniland, which is only 1/70th of the entire Niger Delta.[137] The cost of cleaning up the entire region impacted by oil spills can therefore be estimated expensive in terms of both time and money.[138]

It can be argued that the PPP has been articulated in the country's policy initiatives for growing its mini grid sector due to the Federal Government of Nigeria's de-investment in fossil fuel infrastructure and gas electricity subsidies. However, this will not be convincing enough for the citizens without proper coordination that incorporates evidence and local citizens' participation, especially the previously marginalised into the law and policy-making exercise. Sections 6 (2), 7 1 (a) - (e), 8, 9, 10, 13, 15, 16, and 17 of the mini grid regulation reflect a regulatory effort to guarantee that local communities are effectively involved and have a voice in the mini grid contract process, not the development or transition planning.[139] The mini grid regulation's sections 20, 21, and 22 aim to provide customers with a fair and transparent power service that is both economical and dependable.[140] It specifies the tariff and charge structure, the exclusive development plan for site reservation, and the mechanism for ensuring

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[135] United Nations Environment Programme, 'Environmental Impact Assessment of Ogoniland' (2011) 12, 211 available at: https://postconflict.unep.ch/publications/OEA/UNEP_OEA.pdf last accessed 19/04/22.

[136] Ibid 15.

[137] Ibid 20-22: - Niger Delta is made up of 9 states over an area of 70,000 km2 and Ogoniland is only about 100km2.

[138] M., Ele, 'Cleaning up the Oil Spill Mess in the Niger Delta with Insights from the Contaminated Land Regimes in the UK and the US' (2021) 7 *I.E.L.R.* 129-140, 130.

[139] Meister Consultants Group, Inc., 'Practical Guide to the Regulatory Treatment of Mini Grids(2017) USAID *Project* 33, available at: https://pubs.naruc.org/pub/E1A6363A-A51D-0046-C341-DADE9EBAA6E3 last accessed 19/04/2022.

[140] Ibid. 33.

compliance with the permits or tripartite contract, as applicable. It even includes templates for how these contracts should be written.[141]

Thus, the mini grid regulation's tariff section addresses high tariffs, developers' recovery costs, and service quality issues, aiming to balance access and rural energy security with market and economic development costs. This mirrors to a great extent, the crux of the distributive justice challenge. Throughout transitions, the trade-off between clean energy and energy security has been cost and cost of technology. Accordingly, Granqvist stipulates that:

> "the question of who pays for clean energy infrastructure sits in the context of rising levels of income inequality and in order to judge whether or not the distribution of costs and benefits of clean energy is fair especially as it concerns the distribution of emission rights between states and within local contexts, it needs to be clear according to which principles we can plausibly judge fairness in the context of renewable energy policy"[142]

Thus, because the trade-off between clean energy and energy security is cost and technology, Heffron et al has suggested that "legislation is necessary to incentivize the industry, ensure access to the electricity network, and reform the development of electricity grid networks." [143]Throughout Africa, legislation must address two key challenges: demand (whose African Development Bank (AfDB) target cost of universal electricity access by 2025 is $60 billion a year), and that of transmission and distribution.[144] The African Development Bank (AfDB) aims to add 130 million new grid connections by 2025 but estimates that 75 million off-grid connections would be required to achieve its universal access objective.[145] The issue posed

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[141] See Annex 12: on the Contract template between Isolated Mini Grid Operator and Community and Annex 13, Mini Grid Regulation, 2006: Being the Mini Grid Customer Template

[142] H., Granqvist & D., Grover., 'Who Should Pay for Clean Energy?'(2015*) GG KP Distributive Justice Perspectives* 1.

[143] R., Heffron & K Talus, 'The Development of Energy Law in the 21st Century: A Paradigm Shift?' (2016) 9(3) *The Journal of World Energy Law & Business*189-202, 192.

[144] D., McCauley, R., Grant & E., Mwathunga, Achieving Energy Justice in Malawi: From Key Challenges to Policy Recommendations' (2022) 3-4 *Climatic Change 170*.

[145] AfDB, 'Light Up and Power Africa: What is the New Deal on Energy for Africa?' AfDB (2019) available at: https://www.afdb.org/sites/default/files/2019/07/05/high_5_light_up_africa.pdf last accessed 03/08/2022.

here is, therefore; "how one can bring sustainable and affordable energy into the poorest, most inaccessible areas, which are often not connected to the electricity grid?"

Renewable energy mini grids appear to be the best solution to this problem. Still, these mini grids come at a cost to those who contributed almost nothing to the climate change ordeal but bear the consequences, those who have been marginalised and did not benefit from previous energy transitions and still cannot afford cleaner energy.[146]According to Nozick,[147] these trade-offs will require a constant rebalancing such that involves an interaction of varying standards. For no distributive justice can be continuously realized without continuous interference in people's lives (like giving things to other people, things the transferees are entitled to under the distributive pattern).[148] To him, regarding equality of resources when it comes to costs and benefits, one must constantly interfere to periodically take from some person's resources that others for some reasons chose to transfer to them.[149]In the case study, the person that does this taking to redistribute is the state/institution (which will be REA/NERC) or global institutions like UNFCCC, EU [150] etc. Who, through the principle of Polluters pay, common but differentiated responsibility principle (CBDR) fund green transition and sustainable development projects in developing countries.

The givers would be the developed world, the world bank and other international donor agencies, who; under a justification acceptable to them, such as climate change, net zero transition and energy justice, loss, and damage etc provide financial investment for the sustainable energy transition.

Phillippe Sands has suggested that:

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[146] Ibid.

[147] R., Nozick, 'Distributive Justice' in Clayton M & Williams A., *Social Justice* (Blackwell Pub, 2004) 94.

[148] Ibid.

[149] Ibid.

[150] The Polluter Pays Principle underlies EU's environmental legislation and is a key tool for delivering Europe's environmental objectives in an efficient and fair manner.

> "the PPP is open to interpretation particularly in relation to the nature and extent of the costs included and the circumstances. That the interpretation and application of the PPP is closely related to the rules governing civil and state liability for environmental damage, the permissibility of certain forms of subsidies, and the acknowledgement in the various instruments of developed countries, the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment as well as the financial and other consequences that flow from these acknowledgement"[151]

Thus, a framing of the polluters pay principle in the transition to renewable energy can be seen in the developed society's emission reduction targets, time frames for decarbonization, financial contributions to climate change mitigation, and financing of mini grid projects in developing countries.

Pinto-Bazurco,[152] puts it well when he states that principles of environmental protection when integrated, can contribute to sustainable development. It is this integration role and the ability to reframe targets and strategies towards balancing differentiated policy objectives that this thesis highlights the significance of multi-governance approach to a just transition. This is in light of its ability in coordination and calculation of costs in terms of loss and damage, and in terms of climate change and the movement towards net zero climate.[153] It is therefore my thesis that the practical implications of PPP in mini grid development cost calculations or subsidies may not be clear, however, it has led to Nigeria's de-investment of gas electricity and financial support from donor agencies. This situation highlights the importance of good coordination and clear structures in guiding and enhancing participation, awareness, and people engagement towards engendering energy citizenship and 'just' transition.

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[151] P., Sands, et al, Principles of International Environmental Law (CUP, 2012) 228-229. cf. 1992 Rio Declaration, Principle 7.

[152] J., Pinto-Bazurco, 'How to Enforce the Polluter-Pays Principle' (2022) *IISD Policy Brief No31* available at: https://www.iisd.org>articles>po last accessed 02/09/2022.

[153] Ibid.

6.3.3 A Multi-level Perspective Reframing Corresponding to Just Transition – Role of Multilevel Governance.

It is my thesis that UNFCCC, SD, and other development strategies admit many interpretations for the just articulation and actualisation of sustainable development and just transition, and so can the MLP governance tool given the heterogeneity of its actors and competing interests that needs rebalancing. For the UNFCCC's one of the tools used to encapsulate several framings towards just transitions is CBDR, whose language stipulates that:

> "Parties should protect the climate system for the benefit of present generations of humankind, based on equity and by accordance with their common but differentiated responsibilities and respective capabilities."[154]

According to Sands, the principle includes two elements that can be relevant for distributive justice considerations. As discussed earlier in this thesis, these elements are: "the state's responsibility for environmental protection and the need to take account of differing circumstances, particularly about a state's contribution to the creation of a particular environmental problem and its ability to prevent, reduce and control the threat."[155] This requires that the burden of mitigation be distributed among all actors as feasibly as possible.[156] This is not achieved by adhering to a single standard; rather, it calls for the involvement of strong coordination that comprehends the context, its diverse groups, justice perspectives and interests, and the normative, centralised structures and dominant energy system that are in place. This coordination is able to destabilise all of these old structures, establishing a new forum for stakeholder interaction and meetings where needs are best understood, actors are heard, compromises are made, and actors are empowered to participate in evidence based decision-

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[154] United Nations Framework Convention on Climate Change, May 9, 1992, S. Treaty Doc No. 102-38, 1771 U.N.T.S. 107 Art. 3.1.

[155] (n 151) 233.

[156] This may be done based on varying criteria that allows for a convolution of these principles within an integrated policy to help address the transitioning as well as the unwarranted social cost implications it may have on heterogeneous groups depending on their peculiar circumstance. - Principle 23, Stockholm Declaration on the Human Environment, in Report of the United Nations Conference on the Human Environment, UN Doc. A/CONF. 48/14, at 2 and Corr. 1 (1972)

making process of the energy transition and targeted measures. It is argued that this is the kind of multilevel governance that is needed to improve a just transition.

For instance, the ability to pay principle (ATPP) stipulates the distribution of the burden/cost of the green energy transition on those who have the means and capabilities to do so most. The challenge of this is that ATPP coincides with PPP and its applicability in the global context. However, when it comes to the national context given that the urban areas connected to the grid are more capacitated than those in the rural areas, the electricity cost is still more expensive than the connection to electricity grids. But then this becomes more complicated because electricity concerns are not just sensitive to income and wealth but to other demographics.[157] Beneficiary pays principle suggests that "where people engaged in activities which jeopardized other people's fundamental interests by emitting excessive greenhouse gases, then they should bear the costs of their actions even if they were excusably ignorant of the effects of their actions, if they have benefitted from those harmful activities and their costs should correspond to the benefits they have derived."[158]

The act of donor agencies funding green energy transition projects touches the convolution of these principles as most funding's can be articulated and interpreted on the basis of PPP, CBDR, BPP or ATP. It should be known that what underlies all these principles is the concept of remediation, compensation, and redistribution of costs of energy transition from the environmental (climate change) context. PPP has been interpreted and applied in a prevention and mitigating context especially towards green transitions. It has been argued that the fossil fuel industry takes significant economic responsibility for past, current and future harm since they cannot all be calculated.[159] Economics has identified climate change as the greatest market

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[157] S., Jessel, S., Sawyer & D., Hernández, 'Energy, Poverty, and Health in Climate Change: A Comprehensive Review of an Emerging Literature' (2019) *Frontiers in Public Health 7*.

[158] S., Caney 'Climate Change and the Duties of the Advantaged' (2010) 13(1) Critical Review of International Social and Political Philosophy 203–228, Pp 210.

[159] Friends of the Earth, 'Making the Polluters Pay for the Transition to Net Zero' (2019) 14 available at https://policy.friendsoftheearth.uk/insight/making-polluter-pay-transition-net-zero last accessed 07/08/22

failure because externalities have not been internalised.[160] It is, therefore, the thesis analysis here that the mini grid regulation in the vertical interaction with international climate and sustainable energy development commitments uses this PPP for the actualisation of its EJ strategies to the extent that (energy security and transition) are calculated to be relatively achieved if the externalities are internalised and retrospectively charged on past pollutions and channelling of that to the energy tariffs of previously marginalised.

Correcting energy injustices in the form of environmental externalities is necessary, yet more is needed because of the complication of calculating cost and attributing responsibility. This is why most international organisations have interpreted the PPP in several other ways, some of which allow for the articulation of PPP in the funding of orphan pollution clean-ups,[161] or funding clean-ups where the national authorities have failed to enforce environmental legislation and make polluters pay,[162] or where funding has been provided to cover liabilities where there was lack of financial security, to prevent such risks from being borne by taxpayers.[163]

Developing countries now aim to accumulate wealth to solve urgent developmental needs with renewable energies. Still, they cannot mobilise the necessary funds to this end alone and consider it fair to require funding from rich countries as compensation for greenhouse and other undesirable industrial gas emissions.[164] This is a pointer to the larger debate of capacity and ability to pay. However, this global discussion ripples down to national policymaking concerns regarding the recognition or targeting for mini grid distribution and their affordability requirements, wherein means of livelihood have been previously destroyed. It also raises

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[160] Ibid 9, 210., A., Bowen, S., Dietz, & N., Hicks, 'Why do Economists describe Climate Change as a Market Failure?' (2014) LSE available at: **https://www.lse.ac.uk/granthaminstitute/explainers/why-do-economists-describe-climate-change-as-a-market-failure/** last accessed 07/08/22.

[161] (n 128) IMF Blog 30

[162] Ibid 31.

[163] Ibid 32.

[164] S., Manga, 'Post-Paris Climate Agreement UNFCCC COP-21: Perspectives on International Environmental Governance' (2018) 26(3), A.J.I.C.L. 2018, 26(3), 309-338 312, 316.

concerns about reskilling for jobs related to the new RE technology following the transition, as well as the challenges of global mini grid value chains and the need for knowledge co-production.

Interestingly, the attractive feature of all these considerations (be it PPP, ATP, CBDR) resonates with contractual relations. The mini grid regulation presupposes a contractual relationship between the developer, regulator, and the customer/community. The regulation stipulates specific responsibilities and consequences on the developer and the customer. It envisages that the failure of these responsibilities would attract consequences such as the cost of accurate and initial installations and the costs for remedying its faults and damages. This speaks to the importance of a policy in shaping contractual relations and mini grid investments by considering social, economic, human rights, job, knowledge and technology development, and international law implications within the current energy transition. For instance, inherent in the mini grid regulation is the contractual responsibility charged to the developers throughout the mini grid life cycle. This resonates with EU's PPP standard that extends the producer's responsibility to the point in their product's lifecycles where the product confers a burden to the environment as a waste.[165] Thus, be they local or multinational mini grid developers, there should be the responsibility framing of loss and damage incorporated into the project development within a community. However, these framings must first be gleaned via evidence for there to be possible application and enforceability. This can be attributed to the fact that, as demonstrated in the case studies of Akipelai and Egbeke, the Mini Grid Regulation 2016's enforceability standards regarding failed projects and contracts were largely ignored. This highlights even more the lack of implementation of the regulations and the problems with coordination regarding the country's mini grid policies and regulations.

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[165] Regulation of the European of the European Parliament and of the Council: European Commission, Regulation of the European Parliament and of the Council on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC. Brussels, (2022) COM (2022) 677 final 2022/0396(COD).

"Most stakeholders considered that technological, economic, and social developments justified the creation of a new regulatory framework for packaging covering the whole life cycle of packaging and the entire value chain. Many stakeholders considered that this framework should include stricter common rules on the sustainability of packaging to include waste hierarchy with measures incentivising packaging waste prevention and re-use."

6.3.4 Mini Grids Distribution as Benefits: Economic, Social, Health and Environmental Justice

When it comes to benefits, the analysis becomes whether the regulatory policy considers economic, social, and health benefits of mini grid distribution for unserved communities. Innate in the benefits consideration is how the mini grid regulation remedies prior and present harms faced by communities negatively impacted by energy systems. The distribution tenet addresses the fair distribution and impact of the mini grid projects in a region. From the case studies of Akipelai and Oloibiri, Renewvia's 67.32kW solar hybrid mini grids in Akipelai and Oloibiri was estimated to connect 364 households and create 170 jobs while developing the infrastructure, construction phase and seven permanent jobs.[166] The regulation does not stipulate these added benefits requirements, but it requires in sections 14, 15, 16, 17, and 18, that the mini grid takes cognisance of safety, health, and environmental considerations in the mini grid business. With regards to these derived benefits for the community, the mini grid is yet to experience full blown issues in the dimensions of the oil and gas but the case studies examples of Akipelai and Egbeke reveal teething benefit challenges that needs to be addressed by NERC.

The benefit requirement of DJ also considers the criteria for the distribution, siting, choice of technology and implementation of projects. It equally assesses the regulation to distil out what it says with regards to benefit sharing and determination and questions how profit is divided among participating households.[167] The benefits derivable from mini grids in these areas include: job accessibility programs and opportunities, incentives, hiring/workforce, funding, certifications, etc. Thus, there is a strong case for looking at how internalisation of externalities in public funding of mini grid development is framed in the mini grid regulation. The regulation as it implies tariff prices through costs, thereby makes mini grid costs to be borne by households. Secondly, the widening gap of tariff prices faced by households and businesses

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[166] NEP, '67.32KW Solar Hybrid Mini Grid at Oloibiri, Bayelsa State' available at: https://nep.rea.gov.ng/67-32kw-solar-hybrid-mini-grid-at-oliobiri-bayelsa-state/ last accessed 30/06/22.

[167] C., Bolon, et al., 'Justice in 100 Scorecard: Evaluating Equity in 100% Renewable Energy or 100% Clean Energy Laws' (2021) *Initiative for Energy Justice* available at https//www.iejusa.org

only exacerbates the efficiency cost of mini grid regulation. Applying distributive energy justice standard when it comes to social, labour, health, and community benefits, is to ensure that the tariff price is not wholly dependent on the costs of energy as it is because the developers are enjoying incentives and support intervention. The tariffs charged therefore should not be the same but should take into consideration differences in social, health, labour, and other capacities or vulnerabilities. This would entail the local interpretation of the CBDR principle and would call for strong coordination and a multi-level perspective arrangement in the prosecution of just calculations of costs and benefits when it comes to the accessibility and distribution of mini grids.

The monetary criterion is another perceived justice issue in public funding of mini grid projects. For instance, the EU-wide national governments and the European Commission World as well as African development banks fund 85% of these projects. In Nigeria, these two sources make up 80% of the total mini grid investment.[168] In the evaluation of justice regarding public funding and knowledge sharing, findings show a clear pattern across all cases: funding developer's cost should be justified if knowledge gained from the project is shared externally so that pilot projects deliver learnings for a future sustainable electricity system.[169] Government subsidies are thereby considered necessary to incentivize innovation and small-scale experimentation with niche technologies.[170]

In the evaluation of how Renewable Electricity Fund (REF) finances developers, Renewvia's case study reports how performance-based grants (PBG) has been very beneficial in the provision of project output. Additionally, Renewvia also stipulates how during a feasibility study to ND, they picked up on quick local knowledge transfer such that encouraged the

[168]F., Gangale, J., Vasiljevska, C.,Covrig, A., Mengolini and G., Fulli, Smart grid projects outlook 2017: Smart grid projects outlook 2017, JRC science and policy reports available at: https://doi.org/10.2790/22075 Google Scholar; C., Milchram, R., Künneke, N., Doorn., G., van de Kaa, R., Hillerbrand, 'Designing for justice in electricity systems: A comparison of smart grid experiments in the Netherlands,' (2020) 147 *Energy Policy*

[169] Ibid.

[170] Ibid.

establishment of the Nigerian subsidiary in 2017. Milchram et al., reports on the importance of "evaluating the extent to which knowledge gained in a mini grid pilot project is shared with the wider public."[171] It is however submitted here that mini grid development in the region is still in its niche level hence measurement of impact beyond economic viability is yet to happen and as such cannot yet be measured. But it will be interesting to see how the governance structure will employ the local content development policy within the mini grid sector to glean on the benefit of knowledge transfer and other backward linkages.

Another layer of DJ analysis based on cost intervention is incentives. From a policy perspective, renewable energy that is deployed via mini grid qualifies for incentives made available by the National Electric Power Policy (NEPP), and the National Renewable Energy and Energy Efficiency Policy (NREEEP). These incentives include free custom duties for two years on the importation of materials and equipment used in renewables and energy efficiency projects.[172] The incentives also include access to soft loans and special low-interest loans from the Renewable Electricity Fund (PBG), preferred pricing rates as well as tax incentives (five-year tax holidays for manufacturer,[173] five-year tax holiday on dividend incomes from investments).[174]All these incentives are seeking to nudge mini grids to commercial viability in the country. However, the huge swath of community/household demand with limited income or commercial opportunities raises questions of subsidies for cost, and this is where the Nigerian mini grid objective is critiqued for being overly ambitious in terms of energy citizen empowerment and for failing to gather sufficient evidence from local communities from pilot projects.

The regulation proposes a commercially viable objective as well as quality rural electrification. The core challenge here is that the articulation of the regulation seems more tipped in favour

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[171] Ibid.

[172] FGN, 'National Renewable Energy and Energy Efficiency Policy Approved by FEC for the Electricity Sector (NREEEP)' (2015) 37-38 available at: http://admin.theiguides.org/Media/Documents/NREEE%20POLICY%202015-%20FEC%20APPROVED%20COPY.pdf last accessed 28/06/22.

[173] Ibid.

[174] Ibid.

of commercial investment than on justice considerations; and because it has been designed to achieve both objectives, the framing of regulations like this may fail in achieving either. It is therefore the analysis of this thesis that despite the several considerations and objectives to proliferate mini grids in rural areas by subsidization of many mini grid projects, there is need for the improvement of local capacities within these communities. Development goes hand in hand with access, and subsidization alone will not create empowerment. Training and technology capacities are required to function in the labour market of these installations and development. This is the shortcoming of the mini grid regulation/policy, as the RE transition programme lacks a legislative framework that should address this labour standards, quotas necessary to host mini grid in communities.

It is true that free enterprise can help competition and growth of mini grids in Nigeria, thereby accelerating energy access, security, and transition goals especially in the unserved/underserved regions. However, it is important to involve stakeholders intentionally and strategically (the marginalised people in this context) in the development of the mini grid sector to prevent tenancy of development in the rural communities and to strategically cut down on the rural-urban migration and provide growth and equality across the rural and urban settlements in the country. In Nigeria, even the cost reflective tariffs are not affordable by these rural communities and as such, governments have had to further take up most of these costs and this is a clear case of capabilities not matching developments.

Achieving this becomes much more than a market process – as portrayed by the regulation, this becomes a goal of an integrated market or a social and politically managed process, with the development of people's capacities at the centre. This connects to the larger debate of how multinational commercial projects hold a development and sustainable objective to improve the capacities and livelihood of the poor in third world countries alongside the investments received from various donors.[175] It is this thesis's position that, in order to facilitate transitions that are just and equitable without leaving anyone behind, a multi governance approach is

[175] J., Kangave 'A TWAIL Analysis of Foreign Investment and Development-Induced Displacement and Resettlement: Lessons from Uganda's Bujagali Hydroelectric Project' (2013) *CanLIIDocs* 153, 218.

necessary to strengthen the coordination required for the identification of these vulnerabilities and the management and balancing of heterogenous interests and objectives.

6.4 The Procedural Justice Analysis

Sovacool and Dworkin consider procedural justice as how decisions are made in pursuit of societal goals and who is engaged and has influence in the process.[176]They hold that without any proper sense of justice, energy access, security, transition and policy can become a contradiction in terms. [177] The procedural justice case for mini grids regulation and implementation in Nigeria is strong on many layers from the planning for, implementing and regulating the life cycle of mini grids and even to the relationship between the developer, the community and the customer.

McCauley et al, refers to procedural justice (PJ) as the right to fair process and a demand for involvement in delivering a more equitable outcome.[178]Procedures are, therefore, processes whereby people come to have entitled benefits.[179]Scholars have offered many frames for understanding of PJ; however, this research focuses on the procedural dimension of justice that is based on the siting and technical aspects of a new low carbon infrastructure. PJ will therefore take on remarkable similarities with the PJ in the environmental justice context, aligning them to the issues of energy (in this case, mini grids) and its due process.[180] Due process here refers to free prior informed consent for the siting of energy projects, fair representation in energy decision making and environmental impact assessment (EIA).[181]

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[176] (n 64) Sovacool, & Dworkin 11, 13.

[177] Ibid 29.

[178] (n 30) Mc Cauley 6.

[179] Ibid.

[180] (n 64) 13.

[181] Ibid.

The mini grid regulation encapsulates the information regarding the *form* and *design* of the mini grid. Beginning from the mini grid implementation and planning stages to the licensing and regulatory standards, project siting, tariff and service delivery, environmental and technological requirements, dispute resolution, reconnection to the main grid and even the decommissioning of the grid. The regulation sets out the procedures and obligations put in place to achieve adequate engagement, participation, and involvement of all stakeholders to reach the energy security and transition objective. A procedure is a set of tests, conditions or mechanisms that is required to be fulfilled for the emergence of a certain outcome. And littered in the regulation are sets of procedures and obligations to be carried out by stakeholders with regards the said project. When it comes to the role of procedures in achieving energy justice, Miller,[182] holds that:

> "there is a justice of procedures which is independent of the outcomes to which these procedures lead; and it is an important requirement of justice that a society's institutions and practices comply to this"*[183]*

The above informs a larger debate as to whether justice must only be understood as a property of procedures, not substantial; or one based on outcomes. Creutzfeldt et al, frames the concerns of access to energy justice (using EU case studies), as being dependent on procedures, when she stipulates that:

"there's an access to justice challenge in the EU sectors, where the gap between ideal and reality is accentuated by the creation of a liberalized energy market and misplaced reliance on the individual but active consumers as a regulatory device."[184]

She, alongside other authors, finds in the lived reality of consumers experiences an impoverished form of access to justice that is currently limited to a narrowly procedural

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[182] D., Miller, *Principles of Social Justice* (Harvard Uni. Press, 2001) 93 -94.

[183] Ibid.

[184] N., Creutzfeldt, et al., (eds) *Access to Justice for Vulnerable and Energy Poor Consumers* (Hart Publishing, 2021) 17 – 40.

concept of legal justice. Accordingly, from the data gathered for the evaluation, Creutzfeldt,[185] revealed that achieving even legal justice when it comes to the inequalities of access was a sham and that even the '*process*' towards attaining substantial justice in the EU energy sectors were equally problematic and without appropriate "*form* and *design.*" For instance, the research revealed that the National Energy Poverty Observatory's indicators and French law (law 2010-788), 6.7 million persons in France, or 11.6% of the total population, were living in "energy poverty" (précarité énergétique) in 2018.[186] This is since customers used more than 8% of their income to pay their energy expenses. This scenario best paints the demographic experience of the Nigerian energy sector, with specific relevance on the access of electricity through the mini grid for the Niger Delta people.

On the flip side of this, Miller notes that procedures of course, come with competing claims or qualities that recommend outcomes that may be unjust but nonetheless gives equal opportunities to all claims.[187] Equality, openness, accuracy and dignity are all the key standards of an effective just and efficient procedure.[188] Thus, PJ argues that any distributive outcome whatever its shape, might be considered *'just'* so long it had arisen in a procedurally correct manner.[189] There is therefore a relationship between a procedure and an outcome even though it can equally be critiqued that other factor like cognitive fallibility and external conditions might influence a designed procedure into producing unfair outcomes.[190]

6.4.1 Procedural Justice Analysis of Mini grid Regulation

Procedural justice analysis here would be enquiring into the Rural Electrification Agency (REA) protocol required for the installation of a mini grid service in a target area as stipulated

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[185] Ibid 1.

[186] M., Cornelis., 'Access to Justice and Energy Poverty in France' in N., Creutzfeldt et al (eds) Access to Justice for Vulnerable and Energy Poor Consumers (Hart Publishing, 2021) 239-256.

[187] (n 182) Miller 99.

[188] Ibid 99 – 100.

[189](n 159) 94.

[190] Ibid 95.

by the regulation. It also involves the long-term engagement processes between the target community and other stakeholders such as the state (regulatory body), the community, developer, the main energy utility Discos, the customer, the technology and environmental protection structures and the funding body. On this note, the analysis will be discussed under the four (4) principal elements of PJ as provided by Sovacool and Dworkin: access to information, meaningful involvement in decision making, lack of bias by decision makers, and access to legal process for redress.[191] A PJ analysis of case studies in chapter 5 reveal the importance of multilevel governance in Nigeria's transition towards a low-carbon economy. For instance, the Egbeke, Akipelai, Oloibiri, Ikot Ada Udo and Onyen Okpon projects highlights challenges and opportunities for local decarbonisation strategies, emphasizing coordination concerns of competing interests as well as those between actors and governance levels.

The drive for a multi-layered perspective on the current transition is not peculiar, relevant, or limited to the Niger Delta group alone. It is a United Nations call in response to the global and multidimensional implications of decarbonisation. For instance, United Nations stipulates that:

> "The United Nations Development Programme (UNDP) emphasizes the importance of systemic thinking in energy planning, addressing complex challenges. UNDP has been working to improve access to clean cooking, equip rural health centres with solar PV systems, and promote low-carbon transport in cities. Governments should provide facilitative coordination and demonstrate strong collaboration between institutions. A multi-stakeholder approach is needed, ensuring policy decisions reflect broader positions and create an enabling environment for research, innovation, and implementation. Society-wide action is needed to engage all stakeholders, including the private sector, civil society, individuals, families, communities, academia, media, and voluntary associations, to understand the urgency of shared responsibility. Empowering

[191] Ibid 12.

communities to participate in energy production, distribution, storage, and use is crucial."[192]

6.4.2 Access to Information and Information Exchange

Access to information and knowledge is important in the context of transitions because secrets and patents, and even decentralized systems can exclude people,[193] and their ability to participate in the benefits of the new technology, either due to cost, skill, or job opportunity and capacity. Although a decentralized system, the mini-grid technology has marginalized the Niger Delta context regarding the right to access electricity because of how it operates;[194] and because NERC, the regulator, operates under a centralized governance structure. The main evaluation here is how mini grid regulation defines access to mini grids, what processes are involved from siting through remediation and dispute management, and if these framings, processes, target principles and procedures of access are known and understood by all stakeholders.

The argument is that the mini grid regulation stipulates equitable information standards by capturing clear license-granting procedures. It again constrains developers or signal consumers through obligations and permission standards. The regulation's interpretative section mentions target sites and defines registration as a mini grid operator submitting a registration form for one or more 100 kW distributed power systems per site.[195] The regulation provides information that could improve the electricity market and requires that the commission and its authorized representatives have access to information.[196]

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[192] World Economic Forum, Transitioning to Renewable Energy: Three Governance Approaches that can drive change (Report; May 10 2023) available at: Transitioning to Renewable Energy: 3 Governance Approaches That Can Drive Change | World Economic Forum (weforum.org) last accessed 10 June, 2023

[193] Ibid.

[194] OECD, Making Decentralisation Work A Handbook For Policy makers (2019) Policy Highlights available at: https://www.oecd.org/cfe/Policy%20highlights_decentralisation-Final.pdf 10.

[195] Mini grid regulation, 2016. Section 4.

[196] Ibid section 11 (4).

By section 12, the developer is expected to provide records and accounting statements which include costs, assets, liabilities, revenue and reserves relevant to the business. Section 13 requires access to information related to tariffs and documents that can ascertain business value. The regulation equally adds the rationale for this as the said information is to help the fulfilling of the tasks assigned to the commission under the Act and the regulation. According to Helm et al., the absence of this information can be detrimental to business efficiency, because if the regulatory authority knew what level of costs constituted efficient enterprise performance, it would be able to structure the regulated price ceiling accordingly.[197] This presupposes the importance of information to the efficiency of the mini grid market and the attainment of policy objectives (improving access rights) whether by a centralized or decentralized energy system. However, Renewvia's project in Akipelai, whose customers were left for years after the mini grid stopped functioning, serve as an example of how the regulation is silent when it comes to the knowledge and skill needed for the developer or the consumer to use and service these technologies.

6.4.3 Access to Information on Costs and Tariffs

Sovacool and Dworkin have maintained that "*access to information*" can sometimes take the form of the public and private's grant of access to study audits, inventories or developer's accounts.[198] With the mini grid regulation, tariffs are regulated under the information required in sections 11, 12 and 13 of the regulation, which stipulates that "*the mini grid permit holder shall grant access to any information relevant to fulfill tasks.*"[199] Here, the customer or permit holder upon request,[200]can inspect the provider's accounts with the commission to adjust tariffs and access depreciated value.

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[197] D., Helm, J., Kay, and D., Thompson, 'Energy Policy and the Role of the State in the Market for Energy' in P., Stevens (ed.) *The Economics of Energy* (II, Elgar Publishing, 2000) 428.

[198] (n 64) Sovacool & Dworkin 214.

[199] Section 11 (4).

[200] Ibid, section 13 (5) – (9).

Section 6 emphasizes the procedure of permit grant to the operator after procedural contractual standards have been met. The regulation, by delineating target sites and stipulating a tripartite contract, has specifically based the grant of permits on the successful tripartite negotiation. It is at the negotiation stage that information on costs is required to be made known to the community to ensure an informed decision is reached. Section 20 (4) (b) stipulates the procedure by which a tariff shall be agreed upon, and this consists of "*a minimum of electricity customers representing 60% of the electricity output of the same community*." Section 10 (3) clarifies the role of the MYTO calculation methodology in determining tariff and the role of the customer and commission in inspecting the developer's book to justify the tariff charged.[201]

Section 18 (3) further stipulates that:

> "the tariff and the billing model of Mini grids operated under a permit shall be described in the standardized contract between the Mini grid operator and the customers in the community as proposed in Annex 13."

The further provision of templates, including ones for the tripartite contract, indicates a furnishing of information. It is, however, one thing for information to be made available and another thing for the said information to be adequate. Sovacool and Dworkin have surmised that better information disclosure and auditing must be observed to the degree that utility prices and underlying costs are not shrouded.[202]

6.4.4 Information on Financial mechanisms Made Public.

When it comes to whether the regulation provides information on financial compensation and other support mechanisms, the argument is that because of the nature and goal of mini grids, knowing the exact information on financial compensation and other support mechanisms is important because it will help the community understand how far the government has gone to

[201] Mini Grid Régulation, 2016. Section 13.

[202] (n 64) 212.

provide access. Access to affordable energy is key to Nigeria's social contract. Decentralized mini grids are the government's proactive measure to uphold energy access as a right available to all. The government's failure to provide is usually seen as a breach of security and the social contract leading to protests. In a report on affordability and availability of energy/fuel in Nigeria where the federal government attempted to remove subsidies to fossil fuels and gas electricity, one participant said, "The government is treating the matter wickedly."[203]

In the report, an energy expert explained that "if you remove subsidies, many citizens will believe you've broken the social contract…"[204] He further contended that under-development and poverty, and *the lack of understanding of subsidy impact studies* exacerbate residents' emotional attachment to inexpensive fuel and electricity which is hinged upon subsidies.[205] Information on electricity subsidies, their time spans, and projected outcomes is crucial so customers know what they agree to in terms of cost. A tariff structure left to the developer's calculation and judgement or the government, unknown to the community, would undoubtedly affect the community and the government when it has to make critical decisions like subsidy removal.

Another report stipulates that Nigeria spends 30 billion naira monthly as electricity subsidy in spite of the privatization of the electricity sector.[206] It is the argument that several billions of naira have been spent on subsidies and cross subsidies without any commensurate improvement, thereby encouraging corruption and inefficiency in the energy sector. [207] Asymmetric information causes market failures and impedes competition, but it does more to energy transition and economic development because it impairs the social acceptance of communities of an energy project. Nigeria only recently removed electricity subsidy, and this

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[203] M., Atela, *et al*., 'Demanding Power : Struggles over Fuel Access in Nigeria' (2021) *IDS* Working Paper 554, Brighton: Institute of Development Studies.

[204] Ibid.

[205] Ibid.

[206] A., Oni., 'Thoughts on FG's plans to end Subsidy in Electricity and Downstream Petroleum Sectors' .(2021) available at https://legal.business.businessday.ng> last accessed 2/6/2022.

[207] Ibid.

came after a recent timeline was communicated but without ample public understanding of the subject.[208]

NERC raises the importance of information dissemination but leaves same as the duty of developers. It is Sovacool and Dworkin's believe that public hearings for most energy projects are rushed and brief, leaving customers with numerous unanswered questions.[209] To them, public participation often falls short in procedures because industries are not legally required to share *information* about the project's exact costs and environmental and safety dangers.[210] This thesis agrees with this, but the mini grid regulation is different in that it has minimally categorized information requirements within the regulation. This cost information cannot be immediately credibly proven to warrant an explicit mention in the regulation because the sector is a niche with only trial projects that lack clear reflection on what the tariff of access should be. Again, the difficulty of expressing clear information within a regulation is further complicated by the problem of widening gaps between regions that feel marginalized and sacrificed by previous transitions, like the Niger Delta, and those that are better placed by technologies and market trends, to benefit from mini grid projects - like the North with plenty of solar light.

It is the REF and NEP that cover funding instruments, not mini grid regulations. The REA is involved in mini grid financial mechanisms so that the information available can be briefly discussed. Most Nigerian mini grids will need capital subsidies, grants, or concessional loans and the Nigeria electrification project (NEP) has two funding windows: minimum subsidy

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[208] P., Nwachukwu, 'NERC Confirms Removal of Electricity Subsidy' Channels Television (17 March 2022) available at: https://www.channelstv.com/2022/03/17/nerc-confirms-removal-of-electricity-subsidy/. last accessed 02/06/2022.

[209] (n 64) 200.

[210] Ibid.

tender and performance-based grant.[211] The REA provides market intelligence on selected sites, and developers must do their own due diligence and submit an offer to receive a grant.[212]

Market intelligence data gathered from selected sites by the REA, including site surveys, customer segmentation and self-estimated consumption, validation that they are fully off grid, and geo spatial analysis of high potential sites, must be made available to all bidders through an electronic GIS platform called Odyssey.[213] This performance-based grant is disbursed only after the mini grid is built and successfully connected for the customers' benefit. With REF, this is done via open, public tenders.[214] Thus, most mini grid financial mechanisms are public.

Once the developer approves his site, information on exclusivity arrangements is not publicly communicated.[215] Section 21 stipulates documentation that the developer must present to the commission and community for the grant of an exclusivity period, however, the regulation does not provide for the compulsoriness or otherwise of such grant. Wearne and Tiwari have argued that the non-communication of exclusivity arrangements has a complicating side effect as this agreement provides exclusivity rights to developers to prepare a project prior to receiving an operational permit.[216]Hence such information ought to be visible to other developers assessing the potential project sites. [217]

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[211] A., Wearne & B., Tiwari , 'Success in Rural Electrification Regulatory Case Studies: Nigeria Financing Instruments for the Mini Grid Market' (2021) *Africa Energy Portal* 5-9, available at: https://africa-energy-portal.org/sites/default/files/2022-03/Success-in-Rural-Electrification-Case-Study_Nigeria.pdf . last accessed 02/06/2022

[212] Ibid.

[213] Ibid.

[214] Ibid.

[215] Ibid 6.

[216] Ibid.

[217] Ibid.

6.4.5 The Mini Grid Regulation and the principle of free, prior, and informed consent.

The procedural analysis of the mini-grid regulation's general goal is to determine how/whether unserved populations have meaningfully participated in the policymaking/project implementation process with adequate support. Meaningful involvement includes information exchange, effective communication, accessible meetings, consultations, education and awareness, inclusion in hiring and operational practises, government oversight, accountability, response to public engagement, funding, and free, prior, and informed consent.[218] Sovacool and Dworkin have considered free prior informed consent as:

> "the establishment of conditions under which people exercise their fundamental right to negotiate the terms of externally imposed policies, programmes and activities that directly affect livelihoods or wellbeing, and to give or withhold their consent to them making it distinct from mere negotiations and consultations."[219]

The obligation to consult is mentioned in the regulation and this principle of prior informed consent has achieved widespread support in environmental protection provisions. Agreeably, mini grids have low carbon emissions, however we recall that Nigeria uses a hybrid business model that allows diesel gas usage to offset for battery and as such, requires a full disclosure. On another note, the mini grid uses batteries who's end-use and decommissioning require clarity in regulations. Thus, there is an international environmental principle of the obligation to consult and obtain prior informed consent based on all detailed information.[220] The mini grid regulation is a regulatory document with a legislative and enforcement tenor, demanding strict compliance by parties. Here, the regulation in Section 9 incorporates the language of prior informed consent during consultation. This is further clarified in the Annexure, wherein templates for the contract have been provided. According to Section 7, 8 and 9, the application

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[218] (n 30) McCauley, et al.

[219] P., Andersen,' Free, Prior, and Informed Consent' *in* REDD+*: Principles and Approaches for Policy and Project Development.* (2011) available at: https://www.recoftc.org/publications/0000210, Sovacool and Dworkin (n 66) 220.

[220] The ICJ's opinion in Lac *Lanoux arbitration,* 24 ILR 101 (1957) at 128 and the *Fisheries Jurisdiction* cases (1974) ICJ Reports 3, 31.

for a tripartite contract must be submitted '*as agreed'* by the Disco, and the community. Such agreement presupposes a consultation process, offer, and acceptance of terms and considerations.

The regulation and the tripartite agreement recognise the right of communities to develop and implement their own law and respect indigenous land rights as well as the community's obligation to lease the property. In place of planning, funding, and dispute processes, the NERC and the REA have been named as the government regulators of the mini-grid project to assure governance for energy and environmental justice protection for these underserved communities. Local communities have been made co-beneficiaries and owners of the project by their inclusion as an essential party in the contract agreement – supplying land, security, and tariffs, as opposed to the government, as in other investment contracts.

The government's incentivising of the project through the NEPP and REF focuses on solutions that involve the empowerment of local private developers – a sign of an investment solution that meets the localizing of sustainable development goals. This demonstrates the connection between SDGs 7 and 13 as they are framed within the energy justice concept in this work. The connection speaks to how policy/laws and its governance attempt to balance the transition of RE energy between a profit-making paradigm and public interest-seeking to ensure rural electrification developments and equitable access to mini-grids - SDG 7, while also taking action against climate change (SDG 13). The regulation places the standards for consultation, participation, and involvement, as well as the concern of full accessibility, inclusive or local contexts as grounds for the grant of permits.

Practically, when it comes to the implementation of projects, case studies of Egbeke mini grid project exemplify the issues of a failed involvement and consultation process with regards the project. It points to the incident of procedural injustice wherein some villages within the project coverage were excluded from benefitting from the project despite providing the land for the mini grid siting. The case study of Akipelai equally mentions teething procedural justice concerns of the community reneging from an initial contract and seeking renewal based on new terms. With the shutting down of operations in Akipelai, Renewvia (the developer) had made clear the importance of adequate information sharing regarding the company, what they do, how their operations are funded and how this information affects their contract, subscription, and tariff before the mini grid commissioning.

Thus, it was important that the community understood the terms and implications of the tripartite contract and kept to terms with the contract to protect the business of the developer as well as access electricity. However, it can also be argued that this is a procedural justice issue where duties/obligations are stated explicitly in legislation without a corresponding declaration of rights, as laws should be written in a way that is precise, not just aspirational, but one that considers local context, change, and socioeconomic conditions. The Annexure 11 provides the tripartite contract format that makes clear the terms, obligations, duties and rights of parties. And when it comes to commencement and termination of terms, the contract stipulates that:

> "3.1 The Agreement shall commence on the Effective date of the Commission's Approval (initial term).
>
> 3.3 And that upon expiration of the initial term, this Agreement will be automatically renewed for a period of 20 years (subsequent term)
>
> 3.4 EXCEPT where the parties agreeing otherwise…. or a party provides to the other party with notice not to renew at least a year prior to the expiration of the subsequent term…"

In this case study, Akipelai sought to renegotiate a running contract due to an intervening circumstance. It appears that the community did not understand the terms and implication of the said contract. It is also the argument that a twenty-year contract on a mini grid implementation cost is too long due to the constant changing of RE technologies, market and model.

> 'On Availability of the Distribution Network*:*

'8.1 The DisCo undertakes to the mini grid operator that the main grid shall be available at the minimum … times per week between the hours of … am and … pm for at least the …. Hours

8.3 Where the average monthly availability of the Distribution grid is lower or greater than the value contracted for, above, more than three months in a row, the interconnected community shall have the right to contact NERC for a change in tariffs.'

Still on the Akipelai, it is argued that the abrupt closure of operations at Akipelai by Renewvia based on the contract appears fair because the company was losing money. However, neither party followed the channels specified in the contract agreement by which it might breach its responsibilities; as a result, both parties violated the terms of the agreement because the DisCo did not make the intervention. Thus, it is important to state here that by these contract terms, Renewvia has a clear case of breach of contract by Akipelai and Akipelai representatives need to be aware of these rights and obligations. This scenario exposes the importance of procedures in the energy transition process protecting the developer, DisCo and community interest. The case study equally stipulates the importance of engagement, energy citizenship and the need for education and understanding of developer structure, operations, roles, rights, and dispute mechanisms. Sovacool and Dworkin have stated that consultation and involvement can take a variety of forms including public meetings or advisory panels chosen to represent stakeholders.[221]

The importance of adequate dispute resolution processes and structures in the mini grid process as a procedural justice issue is equally trite in the Akipelai, Ikot Ada udo and Egbeke case studies. Cornells has equally argued for a more prominent role of alternative dispute resolution (ADR) in the energy sector.[222] For the Nigerian context, the mini grid regulation has provided in its Annex 9, a complaints procedure guideline under its Section 24. The guideline requires every developer to set up a customer's complaint unit (a dispute resolution body) within its business unit for access by the community. The regulation has placed the obligation of informing the customer of the availability/access to this dispute resolution process and unit on the developer. Annexure 9 sub section 7 particularly states; 'Duty of the Mini grid operator to Notify*…'*

[221] (n 64) Sovacool & Dworkin 212.

[222] (n 186) M., Cornelius 239 – 256.

"Each Mini grid operator shall notify and bring to the notice of its customers by **Public notice**, the existences, and details of the Customer's Complaints Unit and the Forum for hearing customer's complaints…"

It is therefore necessary to ensure that communities are familiar with the procedural arrangements placed by the regulation for their benefit and those made available in these companies. The lack of knowledge of these arrangements will enhance injustices as with the ND case studies considered. Additionally, regarding the case studies, the regulation mandates that awareness and information dissemination be carried out via public notices. Because the regulation is ambiguous in this regard, it is important to consider what measures of public awareness strategies would fit the context of rural areas. Would it be television and radio-based announcements, house by house pasting of notices on the walls, or village town crier, etc. It is on this note surmised that for vulnerable contexts, '*adequate involvement'* is a procedural justice issue that requires evidence and a fit to circumstance/context framing, whose arrangement may be different from one context to another.

6.4.6 Meaningful Involvement in Decision Making.

The regulation provides for a tripartite contract and highlights the grounds of a successful negotiation as the basis for the grant of permits or licenses. It is argued here that the regulation scores positive on the grounds of framing the element of involvement of the 'unserved and underserved' in the mini grid decision making. By stipulating section 1 in the drafting of the policy regulation, it is optimistic that the policy makers considered the importance of clearly stating the essential element of meaningful involvement in the decision making and, as such, clarified and made available relevant information about this via the regulation.

Within the regulation, section 13 equally embodies meaningful involvement. Here, the regulation requires reporting and notification once every two years by a certified template – Annex 6. Also, the developer is expected to render all necessary assistance with the inspection of its accounts. Even the community in section 13 (8), is allowed to carry out checks of the developer's accounts with the commission to clarify that the tariffs charged are reflective of costs incurred. The ability of the inspection of the developer's account, to trigger an adjustment of tariffs, is a positive instance of a meaningful involvement in decision making. The mere stating of these in the regulation, places the developer on adequate notice of the obligation and

rights towards the community and becomes the basis for the consequent negotiation. However, whether the rural community users of these mini grids make use of or are aware of this information option remains to be seen, as this accentuates the concerns of policy implementation when it comes to mini grid projects in the country.

The mini grid policy might equally be critiqued on the basis of whether the regulation or mini grid project implementation and strategies promote public participation in rule making or provide initiatives for increasing diversity, equity, and inclusion of heterogenous interests in decision-making. Through the lens of energy citizenship, this is understood to go beyond simple initial engagement or democratic ideals and instead involve ongoing engagement with various actors to identify gaps or needs in the energy system. PJ is oriented with the process of ensuring this as well as the spotting of who is recognized, who gets to participate and how power is distributed.[223] From the mini grid regulation and the NEP and REA structure, states have been removed from the mini grid law making process. The apparent decentralized structure bypasses the state and local government but recognizes local communities. The regulation, in its interpretative section, defines communities as;

> "a group of people within the same geographic location organized under a local leadership structure or a legally recognized corporate entity and in both cases capable of entering into contracts and being capable of suing and being sued"[224]

It does not go further to stipulate who represents or counts as a stakeholder in the community.

The mini grid is a federal government regulatory strategy establishing centralized governance frameworks to oversee project development and decision-making among the 36 states that comprise the country. Because of its federal framing, the practicalities of the policy and the limits of the governance arrangements in states, makes a case of inequitable project procedure on siting and targeting. The Constitution places energy generation, transmission, and

[223] Ibid 209.

[224] Mini Grid Regulation, 2016 Section 3.

distribution on the concurrent legislative list, which means that the federal and state governments have legislative authority over these issues.[225]

However, section 14 (b) of the Constitution stipulates that: "A House of Assembly may make laws for the state concerning - …(b) the generation, transmission, and distribution of electricity to areas not covered by a national grid system within that state."[226]The fact that the law stipulates for rural electrification to be covered by the state and the current mini grid governance structures – to which NERC and REA are only federal in nature, portrays a procedural issue. As expressed in chapter two, an energy justice and multi-level perspective framework accounts for and can provide ample cover for distributional, procedural and recognition justice inequalities. In the Nigerian ET case, it is argued that the procedural inequalities here pertain to the inequalities that limits the exercise of states in light of mini grid development and strategies, and that this flows from the political governance arrangement of the nation. However, the current electricity bill has raised this issue.

This work agrees with Oni, that Nigerian component states as a result of this constitutional provision, have the power to create rural electrification agencies in their different states.[227]The justification for this comes clear after the Constitutional amendment specifying the operations of decentralized states NESI as these states (groups) within the context are the best determiners of delineators of unserved and underserved areas. They are the holders of land titles required for mini grid projects and they are the best allocator in recognizing who the marginalized and vulnerable target groups are, or the pattern of energy policy design that re-entrenches inequality in their respective states. This position is even made clearer in the recent Electricity Act.[228]

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[225] The Concurrent Legislative List in Part II of the Second Schedule to the 1999 Constitution.

[226] The Constitution of the Federal Republic of Nigeria (1999) CAP. C23 L.F.N. 2004.

[227] A., Oni, The Nigerian Electricity Market: Understanding the Transactional, Legal & Policy Issues (CIPLUS Ltd, 2021) 54.

[228] The Electricity Act, 2023.

According to Ukponu et al.,[229] federalism requires states to promote and regulate electricity within their territories without impeding the central government's role. He agrees that the current electricity regulatory framework gives states the power to regulate electricity but takes it back through the EPSRA and its subsidiary regulations like the Mini grid regulation.[230] Section 14 (b) of the concurrent legislative list allows state legislatures to pass laws for electricity generation, transmission, and distribution in areas not covered by the national grid.[231] However, Ezekwesiri et al. argue that centralization hinders clarity in state-themed permits due to federal NESI's limited capacity, exacerbating ambiguity and obstacles for individuals seeking these permits.[232] Additionally, the lack of uniformity across states in the requirements for obtaining these permits creates confusion and additional barriers for applicants.

NERC and REA's delineation of unserved areas in component states allegedly violates the constitution. Ukponu et al argue that these unserved locations are within the turf of states who deserve to be collaborated with in the pursuit of rural electrification through mini grids. NERC's statutory authority to issue licenses for off-grid electricity projects is queried in this regard.[233] The REA and NEP's pursuit and strategies while valid by law, falls short of procedural standards of states' involvement in decision making in the mini grid sector. This aligns well with Renewvia's desire for more flexibility and collaboration between the ND states and the REA federal governance structures. One may argue that the mini grid regulation stipulates in section 17 the relevant role of developers' compliance with environmental legislation and meeting suitable environment, safety, and health requirements before the grant of permits as enough involvement, but the thesis disagrees because it is not the said components' state

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[229] M., Ukponu Y., Sulayman, & K., Oyibo, 'Role of Law in the Energy Transitions in Africa: Case Study of Nigeria's Electricity Laws and Off-Grid Renewable Energy Development in V., Nalule (ed) *Energy Transitions and the Future of the African Energy Sector: Law, Policy, and Governance* (Palgrave Macmillan, 2021) 156.

[230] Ibid 145.

[231] Ibid 155.

[232] E., Ezekwesiri, F., Ogini, & I., Adeyemo, A Review of the Electricity Act, 2023 - Impact and Major Issues Arising(September 4, 2023)SSRN: https://ssrn.com/abstract=4560855 or http://dx.doi.org/10.2139/ssrn.4560855

[233] Ibid 156.

ministry that handles electricity policy. Thus, using the PJ framework, the regulation and REA have failed to provide for ample participation of states in the decision-making process of mini grid implementation projects in their states as well as the designation of stakeholders in the local community. This regulation equally falters on the grounds of the lack of prior and informed consent in this regard.

Oni puts forward another justification that, states REA can substantially improve rural electrification and enhance rural dweller's economic capacity via electrification, thus there is need for a collaborative effort between Nigerian component states, local communities and the federal government on rural electrification projects and strategies.[234] This is the goal of a multilevel governance for a just transition. It is thus stated that the lack of federal legislation pertaining to renewable energy, which is in violation of procedural and distributive justice principles, is the reason for the unclear coordination across governance levels in the distribution of mini grids. Due to the lack of a RE legislation, Nigeria's deeply ingrained fossil capitalism economic paradigm is maintained, and inequality is made worse. It complicates the challenge of RED and the transition to sustainable energy provision because different states have distinct RE potentials that would be better developed, understood, and useful to the state where such potential exists in plenty. States' inability to manage their energy issues stifles long-term energy development. Therefore, the nation's current off-grid renewable energy structure contradicts the procedural energy justice.

6.4.7 Environmental Impact Assessment (EIA) as Procedural Justice

The PJ argues that any distributive outcome, whatever its shape, may be considered 'just' if it was procedurally correct. There is a relationship between a procedure and an outcome although external factors may influence a designed process to yield unfair results. This is because people assess fairness primarily using the criteria or procedures that are made available to all participants.[235] Accordingly, there is an obligation under customary international law to carry

[234] Ibid 55.

[235] T., Tyler, 'Social Justice: Outcome and Procedure' (2000) 35(2) *International Journal of Psychology* 117–125.

out an environmental assessment before the implementation of a project and as necessary after operations have started and throughout the project's lifecycle.[236]

With mini grids, the regulation only states that:

"All mini grid operators shall comply with existing environmental legislations"[237]

However, in the annexures, it would be interesting to note that, especially in Annex 6, health and safety guidelines and environmental protection recommendations are provided. These recommendations touch upon identification at an early stage, the environmental effect and impact of the proposed project and a further EIA to be undertaken as applicable.[238] On the above, it is my argument that the non-stipulation of EIA requirements in the mini grid regulation makes the said regulation procedurally flawed because any requirement or standards not reduced into regulations may be probative but cannot be said to confer any obligation on the developer. Section 16 further states that *"all operators shall apply safety guidelines as described for the design, construction, commissioning, operation and maintenance of their generation and distribution assets."* It again leaves out the mandatory requirement of EIA.

According to Sands et al, EIA describes a process that produces a written statement to guide decision makers with information on environmental consequences of proposed activities, programs, and policies, with a mechanism for ensuring the participation of potentially affected persons in decision making.[239] Interestingly, The ICJ in the *Pulp Mills case* concluded that EIA was now a requirement under international law.[240] A wide range of international instruments, including the world bank and other multilateral lending institutions, have developed their own EIA procedures as requirements of bank-financed projects, establishing general obligations requiring prior EIA of projects, even if the scope of any assessment remains to be fully

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[236] (n 148) Sands 621.

[237] section 17.

[238] The mini grid Regulation Annexure 6.

[239] (n 148) Sands 601.

[240] (2010) ICJ Reports Para. 203.

determined.[241] This position has gained customary international law traction, and the *Gabcikovo Nagymaros,*[242] and *Pulp Mills,*[243] judgements confirm this.

With mini grids, since the regulation only stipulated that the operators, *comply with existing environmental legislations,* this thesis cautiously questions whether this regulatory provision turns on a competent treatment of social, welfare and environmental justice when it comes to mini grids as a niche. It is argued that the regulation has not considered a possible environmental impact assessment protocol for mini grids, primarily since they are modelled as hybrids and use fossils and batteries throughout their life cycle and decommissioning. Many mini grid local developers are not technically savvy and are learning while doing and as such it might be too early to tell with trial projects what environmental assessments to perform.

However, this does not deduct from the policy makers the need to provide EIA standards for any energy and environmentally related project because this is an international requirement. The EIA guideline in Annexure 6 falls short of comprehensive protection and as such cannot be adequately enforced. It does not only lack a conferred obligation, but also fails to consider social issues, human rights, and the negative impact of projects on transboundary communities. Thus, the regulation is fundamentally flawed on PJ in this regard.

6.4.8 Access to Legal Process for Redress

Procedural justice stresses the importance of institutions and mechanisms and equally stresses the fairness of the processes and outcomes from these relationships, strategies, and institutions. It is consistent with these relationships to have power plays. Thomas Nagel believes that without the necessary institutional mechanisms, it makes little sense to speak of justice.[244] To help administer these procedures and standards, the EPSRA had outlined the institutional

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[241] Ibid. 617 – 622.

[242] (1997) ICJ Reports 7, Para. 35.

[243] (2010) ICJ Reports Para. 203.

[244] T., Nagel, 'The Problem of Global Justice, Philosophy and Public Affairs' (2005) 33 *Making the Ethical and Philosophical Case* 115.

landscape of the mini grid sector involving the NERC, REA, NBET, FMWPH, NEP, etc.[245] These institutions have clearly defined roles and responsibilities towards the maintenance and smooth running of the sector and they are instrumental for the failure or success of the sector. They even ensure the fair and just conduct of activities in the sector. It is for this reason that the regulation stipulates procedures for securing compliance with permits, proceedings before commission complaints procedure – Annexure 9 and dispute resolution to ensure fairness in mini grid operations between the stakeholders. However, these institutions are mainly federal structured. Thus, the EPSRA legislation lacks clarity on how federal structures can meet state and local standards at project sites without state experts or ministries, especially when federal structures are involved. A coordination plan is therefore crucial for effective implementation and avoiding duplication of efforts, especially in light of the recent Constitutional amendment that grants states mini grid licenses in the NESI.

6.5 PJ Analysis of Mini grids Case Study Projects

The project phase of the mini grid development begins with site identification and assessment,[246] and primarily involves stakeholders' participation. The mini grid regulation delineates its targets as the 'unserved' and 'underserved' areas in the country. The regulation defines an '*underserved area'* as an area within a Distribution Licensee's Network with an existing but poorly supplied or non-functional distribution system.[247] It further defines an '*unserved area'* as an area within a distribution licensee's network without an existing distribution system.[248] The regulation recognizes the right of the people in these *areas* to access mini grid energy option as an alternative to the grid.

In its section 6, 7, 8 and 9, the regulation states clear procedures for the permits for the developer and further expatiates the contractual nature of the developer's investment in terms

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[245] Section 22, 23, 24, and 25.

[246] RMI, Minigrid Investment Report: Scaling the Nigerian Market (2018) 33, available at https://rmi.org/wp-content/uploads/2018/08/RMI_Nigeria_Minigrid_Investment_report_2018.pdf last accessed 24/04/2022 .

[247] Section 3 Mini Grid Regulation.

[248] Ibid.

of the community and user charge with the DisCo. It defines the '*tripartite contract'* as the contract between an interconnected mini grid operator, distribution licensee and connected community, which shall be as agreed between the parties or as provided in the form of a contract template in Annex 11 and approved by the commission.

During this stage, developers evaluate current energy demand and anticipate future load, determined by *engagement* with the community to understand their needs.[249] This qualifies the role of information exchange. If successful, it leads to the design and planning stage wherein assessment of available energy resources, feasibility studies and decision making about the mini grid system structure and model is undertaken.[250] It is this assessment stage that the regulation stipulate procedures for obtaining permits and licenses. It is certain that at this stage, the value of the grid in that area is qualified, and competing interests align in the design of these projects. Section 7 (c), (d), (e) and (f) embody most of the processes of the siting assessment, information exchange and deliberation, negotiation, consultation, and environmental and social impact (ESIA).

The importance of engagement is equally clear at this stage. Information exchange at the design stage becomes a strategic procedure to determine informed and participatory decision making with regards to planning and design of the regulation behind the implementation of mini grids. Just as the obligation to report or notify certain information outside the context of emergency is a regular feature of international environmental agreements, it is equally relevant for the grant of world bank funding in respect of mini grid investment for developers.[251]

Annex 5 of the Mini grid regulation specifically stipulates a step-by-step process that must be undertaken in the establishment of mini grid in an unserved and underserved area. The first step for an unserved mini grid is the identification of the eligibility of unserved area following conditions such as: Is the area unserved? Has the area been hitherto assigned to an independent electricity distribution network operator or any other mini grid developer? Or is the area part

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[249] Annexure 11, Mini Grid Regulation & Section 9, 10, 11 & 14.

[250] Ibid.

[251] (n 151) Sands 629.

of an already existing 5-year development plan of a DisCo? Where the area fulfils all the requirements above then the process of contract with the community can commence. At this stage, information sharing and consultation or reports with the REA, the community and the NEP is vital, to prevent double permit or licensing.

Any developer requiring such license must meet these procedures and standards; these set of procedures or processes to be evaluated will help to determine a business model/economic case for investment in light of securing financing for project, meeting operability and environmental and social impact (ESIA) standards. It is at the design stage that multiple perspectives and integrated consideration of competing interests/values are deliberated upon and balanced in order to meet the SD goal 7 and 13. Section 10 (2) of the regulation stipulates that a permit shall only be issued pursuant to meeting the requirements of section 7. The regulation standards are superimposed over and above even a contractual arrangement between stakeholders, for where contractual proceedings between the stakeholders (developer, community, and consumer) deviates from the regulation; the regulation shall prevail.[252]

An assessment of potential mini grid sites in Africa conducted by RMI revealed that Nigeria has the most significant and attractive off-grid opportunity in Africa and has one of the best locations in the world for mini grids.[253] For instance, an evaluation of specific sites revealed a strong mini grid business case with thousands of high potential sites.[254] One of those sites is the onyen-okpon site in Cross River state as well as the Akipelai site. The Akipelai project site is within a busy town located in Ogbia LG in Bayelsa state; a ND region of the country, surrounded by thick forests and slow tidal rivers with more than 250 households, businesses, schools, and churches. The solar mini grid in Akipelai has a capacity of 67.32KW that utilizes lithium-ion battery storage to power throughout non-daylight hours and is designed to scale as individual and communal power demand increases, without financial burden to the

[252] Mini grid Regulation, 2016 section 10 (2)

[253] REA, 'Nigeria Mini-Grid Investment Brief' (2017) 1 available at https://rea.gov.ng.

[254] Ibid.

community.[255] Thus, the individual can buy more power when needed, as opposed to using (diesel generators).[256]

Renewvia shut down its operations in December 2021 in this site, following the decision of the community members to renege on the contractual agreement with the project developer. The community wanted to reduce the number of hours of electricity supply from the Renewvia Mini grid which runs on a pay as you go basis, and this went contrary to the contract originally held between the community and the developer. According to the case study, the community wanted to diversify its source of electricity from Renewvia to a diesel generator so that it could have 24-hour access to electricity with daytime service provided by Renewvia and 12-hour night access of free diesel provided by Agip.[257]

ICIR reports that Akipelai's site manager for Renewvia Energy, stated that the company needed funds to pay off staff salaries and maintain the system to ensure sustainability. As noted, the mini grid regulation allowed for reneging from contract with developers. This is a clear case of competition between gas and mini grids (existing dominant meso level paradigm and niches) and how familiarity with technology and the incentives employed with regards to oil and gas will hold the attention of the people over and above the mini grid. From the case study, this community held that the electricity from diesel-based generators powered more of their home appliances than those of the mini grid and this is due to subsidized diesel cost. According to the ICIR report:

> "Despite benefitting from the performance-based grant of the Nigerian electrification project (NEP), electricity theft and low subscription rate by some community members disrupt services. Also, the issue of expenditure exceeding capacity occurs, creating subscription affordability issues. Issues of corruption and differences in tariffs also crop

[255] Renewvia Energy, 'Operating Mini Grids' available at: https://www.renewvia.com/minigrid-sites last accessed 10/01/2023.

[256] Ibid.

[257] A., Chijioke, Inside Story of Niger Delta Communities Powered by Solar Energy – ICIR Nigeria https://www.icirnigeria.org/how-nigerian-govts-solar-project-is-providing-regular-power-supply-to-niger-delta-communities/ last accessed 30 June 2022

> up as people complain that the power received did not commensurate with the amount paid. And in other nearby communities, reports abound that the mini grids projects do not last beyond a year after commissioning because companies fail to do a load and energy analysis of communities and other areas before they deploy solar systems. As such, the mini grid packs up because energy demand outweighs the system. There are also operation and maintenance complaints that equally affect the sustenance of the said mini grid projects given the lack of technical know-how of the users."[258]

Based on the PJ analyses of the case study implementation strategy and projects, the thesis argues that mini grids (niches) were not properly integrated into the current regime. This made it harder for niches (mini grids) to interact with the gas regime and for stakeholders to interact with each other. As a result, the potential benefits, and opportunities that mini grids could have provided were not fully realised. For example, the Akipelai case, which should have prompted this, was impeded by Renewvia's contract, which mandated the strict use of mini grids despite the people's inability to pay for a full cover. This ultimately resulted in the project's closure rather than in the integration and potential simultaneous interaction of the people with the mini grid and gas regime, which could have eventually led to a diversification and destabilisation of the gas regime in the area. In order to maximise mini grids' potential and guarantee more effective stakeholder collaboration, it will be imperative to better integrate mini grids into the current energy framework. This is the basis for the recommendation of a multilevel governance approach to bring about this strong coordination, thereby promoting a transition that is just and capable of destabilising dominant regimes.

6.5.1 PJ Problem Analysis

The rural electrification agency (REA), in collaboration with the World Bank and the RMI, conducts assessment and site selection/evaluation and mini grid implementation processes in alignment with international best practices before granting licenses, because of the sponsorship from the World Bank. [259] REA also screens for baseload demand like schools and

[258] Ibid

[259] Ibid. 3

population/energy density and productive use. It also partners with the world bank to line up finance, streamline competitive tendering and provide technical assistance.[260]

The RMI,[261] reveals that it is at the design and planning stage that discussions on cost, benefits, system efficiency, maintenance requirements and other externalities are calculated, deliberated upon, and balanced. It is basically for reasons like these that the event of outputs from such procedures may become unjust. For instance, the ESIA provides a formal procedure by which decision making is reached concerning the social and environmental impacts of a project. It is at this design stage, that procedure plays a role of sifting inefficient developers, wrong business models that are incapable of driving the market and investment, thus neglecting the goal of social and environmental justice.[262]

Procedures here also reduce unjust practices that could produce other forms of injustice, like environmental protection; hence, they must be well framed to reflect these, and it is the role of governance in making these processes clear. However, this is not the case for the mini grid regulation because apart from the contractual provision with the community, the community (mostly those without adequate information) cannot tell wrong business models apart from correct ones.[263] The argument here is that mini grid developers are better placed on the relationship ladder when it comes to the way the regulation frames access in the tripartite contract. Specifically, developers have information, voice and process, and capabilities advantage that outweighs that of the communities. So, though the distribution of gains may be somewhat stipulated in the contract, the procedure is not so much.

A high procedure has a positive effect on stakeholder's trust and relationships therefore there is a need to constantly address the shared perceptions of procedural justice in any project. The mini grid regulation in a way of maintaining this procedure has stipulated for the tripartite

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[260] Ibid. 5

[261] Rural Electrification Agency, 'Nigeria Mini Grid Investment Brief', available at https://rea.gov.ng last accessed 21/05/22.

[262] Ibid.

[263] Ibid.

agreement and grant of permit to be procured from the NERC. An environmental and social impact assessment certificate is equally required and is to be obtained from the federal ministry of environment.[264] The developer is equally mandated to comply with the metering code, and all other technical codes/requirement of NERC.[265] All of these are put in place to project clarity of information into the system for the benefit of the project's objective and the community.

However, there is a widespread concern about the federal location of these ministries and structures given that they are mostly far away from states and local communities where these projects are sited. Also, there is limited effectiveness of language on information exchange when it comes to consent for a mini grid contract with the community. Sustainable energy development and energy justice require promotion and cooperation and a full, open, and prompt exchange of pertinent technological, technical, socioeconomic, and legal information related to the implementation of a project. As well as the economic, maintenance, and social consequences of such projects. The REA has established formal institutional arrangements and procedures for information exchange such as the rural electricity user co-operative society (REUCS), to guide knowledge dissemination, create awareness and maintain contractual partnerships.

However, the case studies of Akipelai and Egbeke show that these structures are far from being used practically. On the issue of adequate participation, this study critiques the regulation for reducing access to the mini grid option to a contractual decision with inadequate checks, as exemplified in the Akipelai project, in which a contract was made for 20 years without adequate protections for users who might have to select less expensive options. It is argued that this monitoring gap and inadequate flexibility in the contract terms can lead to the exploitation of consumers by the mini grid operators. Additionally, it could restrict competition and innovation in the market, as users are locked into long-term agreements without the ability to switch providers easily.

[264] Annex 6.

[265] Annex 7.

Also, the customer categorization is unclear, and how the tariff price is calculated for the varying household, energy need, and load, is also unclear. It is argued that the regulation fails to categorize communities across a certain criterion. It also fails to factor in the standard for the remarkably incapable members of these unserved areas who are poor and would be incapable of paying for the mini grid connection or even those vulnerabilities of past transitions and sacrifice zones. It is, therefore, procedural justice to provide a mechanism through which households are *included in decision-making* regarding system design and the collection and use of household data. Guerreriro et al.,[266] acknowledges that participatory decision making has a significantly positive impact on the adoption of smart metering and related services.

Renewvia has argued that this will be the case in future for the company in terms of measurement of impact but that currently, it is still computing list of subscription users and as a niche project it can only measure economic viability.[267]Just as researchers have criticized the lacking user participation and engagement in smart metering rollouts and smart grid experiments,[268] the mini grid regulation here analysed makes no reference to issues of participation other than the requirement in section 6 and 11 for the developer to operate a tripartite contractual agreement with the community and licensee. How the opinion of these various households that constitute that community will count, the knowledge/ negotiating power or skill, and whose opinion counts remains unanswered in the regulation.

It has also become necessary to assess how the mini grid itself allows *user participation and control relative to the degree of technical know-how.*[269] Mini grids can allow users to take a more active role in controlling their electricity use.[270] Because technology is increasingly

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[266]S., Guerreiro, S Batel, M Lima, & S Moreira, 'Making energy visible: sociopsychological aspects associated with the use of smart meters' 8 (2015) *Energy Effic*1149-1167,

[267] (n 27) Jarrad.

[268] F., Gangale, & A., Mengolini, 'Energy poverty through the lens of EU Research and Innovation projects' (2019) EUR 29785 EN, Publications Office of the European Union, Luxembourg 1 – 72.

[269] Ibid.

[270] D., Geelen et al., 'The use of Apps to Promote Energy Saving: A Study of Smart Meter-related Feedback in the Netherlands' (2019) 12 *Energy Efficiency* 1635 – 1660.

becoming an integral component of sustainable energy transition (SDG7 and 13), smart RE initiatives should be aligned to SDGs to prevent exclusion.[271]

Regarding *transparency*, the energy justice framework considers to what extent the mini grid operator enables users to understand the relationship between their energy-related behaviour and their electricity use (and consequently their bill). How households receive feedback regarding energy use, generation, and system functioning, matters for procedural justice, because the information is a key enabler for capitalizing on demand flexibility.[272] Additionally, energy justice stipulates a criterion on the extent to which households have *transparency over the collection and use of their energy-related data*. Although smart grids can make energy more visible, the functioning of IT systems, algorithms, and the way they use data are often opaque for users.[273]From the regulatory and case study analysis, the mini grid regulation does not practically cover this, mostly because the technology is still in its niche stage. However, there are teething issues that reiterate the importance of these criteria of transparency in the use of data, as the Renewvia company stipulated towards the measurement of impact.

Because the mini-grid regulation is a policy regulation rather than legislation, how the procedural justice principle is used in the evaluation process is essential. The procedural analysis of the mini-grid regulation's general goal is to determine how/whether unserved populations have meaningfully participated in the policymaking/project implementation process with adequate support. And it is this study's evaluation that practically, this has not been the case for the ND case studies. For instance, with the obligation to consult as mentioned

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[271] Y., Dwivedi, *et al.,*' Climate Change and COP26: Are Digital Technologies and Information Management Part of the Problem or the Solution? An Editorial Reflection and Call to Action (2022) 63 *International Journal of Information Management* 102456.

[272] J., Gaspari, *et al.,* 'Energy Transition at Home: A Survey on the Data and Practices that lead to a Change in Household Energy Behavior' (2021) 13(9) *Sustainability* 5268.

[273] S., Kloppenburg, & M., Boekelo, 'Digital Platforms and the Future of Energy Provisioning: Promises and Perils for the next phase of the Energy Transition' (2019) 49 *Energy Research & Social Science* 68-73.

in the regulation, some of the case studies have expressed an exclusion in the process, and same is the case for state governments who are not participating in the REA's project in their states.

The regulation and the tripartite agreement recognise the right of communities to develop and implement their own law, respect indigenous land rights as well as the community's obligation to lease the property. In place of planning, funding, and dispute processes, the NERC and the REA have been named as the government regulators of the mini-grid project to assure governance for energy and environmental justice for these underserved communities. Local communities have been made co-owners of the project by their inclusion as an essential party in the contract agreement – supplying land, security, and tariffs, as opposed to the government, as in other investment contracts. The government's incentivizing of the project through the NEPP and REF focuses on solutions that involve the empowerment of local private developers - a sign of an investment solution that meets the sustainable development strategy as well as energy citizenship. However, a RE law will most effectively drive the implementation of these policy objectives and articulate the realisation of these linkages (such as the one between SDGs 7 and 13 within policies).

6.5.2 Procedural Regulatory Gaps

As part of the procedural justice standard, the community ought to participate in the procedure setting standard for developers. This is where the procedural justice tenet gets tricky. Meaningful participation involves participation in process and standard/policy setting. Perception of procedure and standards shared by all parties have a stronger positive link with just outcomes than individual's party unilateral perception of standards. In this case, there is a gap when it comes to the meaningful participation of these standards for choosing developers.

One might argue that participation in the setting of standards and procedures isn't necessary. After-all, these standards are duly published for the developer and community to assess information. The argument might suffice to the extent that the developer isn't the target of the rural electrification objective, and neither is he the unserved. Procedural justice demands that the community to be affected by the policies participates in the decision-making process regarding the choice, subsidies/tariffs, and implementation of the said mini grids. Where the REA undertakes all the preliminary evaluation and selection processes, and awards grants for the upstart of projects based on site selection and proposal - the procedure lacks the

community's meaningful participation element either by a representative decision-making process or town hall forums.

It is argued that this is an offshoot of the lack of a RE legislation which if made would allow for states to speak to the kind of standards that best suits their different groups/states. In the *Pulp Mills' case*, the court opined that "*the obligation to notify is intended to create the conditions for successful cooperation between parties*."[274] On further analysis of this position, it is critical to observe here that the goal of information was to enable cooperation and for parties to assess the impact of a project based on the information available. However, the availability of information is one thing, the development of standards for reporting this information is another, and cooperation is yet another thing. It is argued here that the consultation steps alone do not place the community at the forefront of decision-making process given that the bulk of the work is done by the REA. In the ND case, the objective of procedural justice will be to give previously excluded groups power over resources and allowing the developer and governing bodies to interact with them in the planning and development of the mini grid in their communities. The NESI has over the decades, failed to provide electricity for these areas and justice demands that participating in decision making will mean that community members are empowered to participate in mini grid siting decisions, but this has not been the case for the ND communities.

The mini grid regulation has not expressly shown the requirement for the leadership of the unserved communities' participation, in the developer selection and project siting stages. The regulation mentions community but has not referenced the role of the leadership and accountability to the community. In the RECUS, there is a provision for community meetings over the mini grid project implementation. However, the issue of convenience and accessibility, as it concerns consultation, has been glossed over during contracts as seen in Akipelai case study. Meaningful participation entails a responsiveness to feedback and a system of accountability. The case studies discussed demonstrates how this is absent from the contract cycle and project implementation.

[274] (2010) ICJ Reports (Apr. 20).

The loosed framing of the requirement of consultation or informed community's consent in the mini grid regulation is equally critiqued. The principle of prior informed consent stipulates the importance of the elements of knowledge/information, consultation, and consent. All these steps make up the procedure and cannot be obtained in one consultation exercise – and this role should not be determined solely by the NERC but by the community. Another regulatory gap is the EIA ambiguity and generality of environmental protection provisions. Section 17 states that all operators shall comply with the existing environmental legislation. Though this is made clearer in Annex 6 which contains environmental protection recommendations, it is queried that there are many environment protection provisions some of which are context specific, unimplemented and many of which are conflicting. For instance, the Niger Delta given its polluted state has specific environmental protection standards like prevention, and polluter pays and impact assessment standards etc. However, apart from the fact that many of these standards/provisions are unenforceable by the government, it is argued that the region's justice case is that of remediation – making it a strong target to mini grids which are sadly, still supplemented by fossils.

6.6 What is 'Just' about the Electricity Sector Laws, Policies and Reforms: The Way Forward.

The nature of institutional reforms throughout the EPSRA and, more recently, the PIA and the Electricity Act has led to the liberalisation and further decentralisation of the NESI in addition to targeted regulations towards mini-grid diversification, incentives, and the elimination of electricity subsidies. All these developments are positive shifts towards more inclusive energy sector governance in the country. However, a critique of the legal and institutional frameworks' adoption of MLP and the gaps as revealed by the case studies analysis has shown the loosed level with which the country has adopted the multilevel perspective. The analysis reveals progress in achieving justice in transitions through legislative reforms but suggests that policy changes alone won't resolve imbalances.

Thus, what is needed is a continuous strategy involving ecological, socio-economic, and technical aspects for evidence-based policy measures, requiring constant interaction of the niche with the regime and with actors, as isolator processes will not bring about a successful destabilisation of the old or consolidation of the new regime. It will be recalled that chapter 2 discussed some associated theories that are interlinked with each other and the MLP in the promotion of a just transition. Some of these connected concepts include energy citizenship,

participatory development, and critical knowledge production. It is argued that these concepts must be coordinated across policy formation and mini-grid project planning, from distribution down to implementation, in order to enhance a just transition. The next section discusses the institutional framework needed to advance MLP for a just transition in Nigeria.

6.6.1 Multi-level Governance for A 'just' Transition

The Nigerian ET case of mini grids demonstrates that mini grids need to be understood in terms of their interdependence with the regime rather than as isolated formations.[275] This interconnected view highlights the importance of integrating mini grids into the larger energy infrastructure in order to fully leverage their potential benefits. By considering them as part of a broader system rather than standalone entities, policymakers can better address challenges and regulatory barriers such as skill, use, job, tariffs, and financing constraints. Ultimately, this holistic approach can lead to more sustainable and effective energy transitions that leaves no one behind and this is the gain of a multilevel governance.

It will be recalled that this thesis uses MLP to explore different transition perspectives, emphasizing resource mobilization, sectoral, public, and private linkages, and identifying niches within these relationships and regime practices for a 'just' transition. Because transitions are complex socio-spatial problems that require a focus on broader spatial and political contexts, scholars frequently concentrate on niche actors and emerging technologies without taking the coherence and stability of the dominant socio-technical system into consideration.[276] This is the situation with Nigeria's mini grid transition; in spite of reforms, as it has not been able to establish coherence and integration, which has resulted in gas supremacy and ongoing marginalisation. The challenge here lies in comprehending the socio-technical processes of mini-grids emergence and reproduction, and the impact of mini grids on regimes. It is argued that this cannot be done by the isolation of mini grids from the existing dominant gas regime.

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[275] S., Chandrashekeran, Multidimensionality, and the multilevel perspective: Territory, scale, and networks in a failed demand-side energy transition in Australia (2016*) Environment and Planning* Vol. 48(8) 1636–1656

[276] Ibid.

The policy consequences that arise with these heterogenous transition pathways, actors and interests are enormous with attending ethical considerations that call for a multi governance that coordinates across existing differences and roles towards the transition. Especially with regards the current energy consumption levels and security needs in the country, and the dominance of fossils. This is the bane of strong coordination and multilevel governance in this thesis. The value of a successful ET requires integrated options, political constructions, and innovative democratic processes to prevent niche technologies from being pushed back.[277] What this means is that the integration of economic, institutional, and technical analysis is crucial for developing efficient policy measures to achieve goals. [278] Thus, because transitioning to mini grids requires addressing institutional conditions, resistance from fossil regime, and adjusting tariff principles, it requires strong coordination of multi-level governance.

6.6.2 Multilevel Governance Framing in Nigeria's Energy Transition

Globalisation is transforming political authority, promoting nongovernmental actors in governance, and driving a shift towards pluralistic governance, where citizens play a larger role in shaping global and national energy transition discussions.[279] This is one way in which a multilevel perspective via a multilevel governance is expressed in this work. Thus, multi-level governance by involving actors at various levels of government, as well as non-governmental organisations and community stakeholders, decision-making processes highlights the value of cooperation and strategic coordination while acknowledging the interconnectedness of global, national, and local activities and impacts when it comes to energy, as well as policies and actions. Its utility in this thesis is its ability to offer a pathway towards a more resilient and equitable energy future for all. Initially, multi-level governance was described as a "system of continuous negotiation among nested governments at several territorial tiers—supranational,

[277] F., Hvelplund, Innovative Democracy, Political Economy, and the Transition to Renewable Energy. A full-Scale Experiment in Denmark 1976-2013 (2014) 66 *Environmental Research, Engineering and Management* P 5

[278] Ibid.

[279] R., O'Brien et-al Contesting Global Governance: Multilateral Economic Institutions and Global Social Movements (2000, Cambridge University Press)

national, regional, and local," that was distinctive of European Union structural policy.[280] However today, in the context of energy transition, multilevel governance is the interplay and non-hierarchical coordination of decarbonisation actions at all scales, varying based on national contexts.[281]

Encapsulated within informal decision-making differences and overlapping policy networks,[282] multi-level governance has gained attention, but is lacking consensus on its organisation.[283] Multi-level governance can be broadly classified into two categories: the first involves the delegation of authority to general-purpose and task-specific jurisdictions that intersect with one another, while the second type is made up of specialised jurisdictions that are both flexible and functionally specific.[284] These jurisdictions can be large and operate at varying scales, and decision-making powers are dispersed across jurisdictions but bundled into a few packages.[285]

It is argued that the first kind enables better coordination of decision-making amongst various governmental levels, but the second kind could cause rivalry and conflict between different authorities.[286] For instance, Nigeria's current ET falls under the type II MLG. The implication of this is fragmentation of varying policies without great coordination in place. Hooghes et al., opine that:

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[280]L., Hooghes & G., Mark. Unraveling the Central State, but How? Types of Multi-level Governance. *American Political Science Review*. 2003;97(2):233-243.

[281] Cyria Emelianoff, Local Energy Transition and Multilevel Climate Governance: The Contrasted Experiences of Two Pioneer Cities (Hanover, Germany, and Va¨xjo¨ , Sweden) (2014) *Urban Studies* 51(7) 1378–1393.

[282] A., Christopher, The Networked Polity: Regional Development in Western Europe Governance (2000) 12 303-33

[283] (n 280) Hooghes & Mark.

[284] Ibid

[285] Ibid., "Particularly prevalent in Europe, where local government exercises general-purpose and a wide range of functions" - A., Norton, Western European Local Government in Comparative Perspective Local Government in R., Batley and G., Stoker (eds.) Europe: Trends and Developments (London Macmillan; 1991) 22

[286] (n 280) Hooghes & Mark.

> "the type II governance, engenders a case where multiple, independent jurisdictions fulfil distinct functions.[287] This leads to a governance system where "each citizen is served not by 'the' government, but by a variety of different public service industries."[288] The type II MLG plays the coordination role by dividing public good provision into numerous discrete jurisdictions, each designed to address specific problems.[289] …That the study of decision-making in these networks helps comprehend the allocation and use of power in intricate political systems as well as illuminate the challenges and opportunities that arise when authority is dispersed across multiple levels of government. [290]

Hooghes et al., have also argued that some of the main issues raised by this dispersal of decision-making away from the central government are coordination and context conceptions, which have led to several studies that have argued for flexible jurisdictions in governance of public goods, "thereby challenging the efficiency of monopolistic, territorially fixed, and nested governments."[291] According to Hooghes and Mark,

> "many of these literatures share a basic hypothesis, that dispersion of governance across multiple jurisdictions is more flexible than concentration of governance in one jurisdiction, and that efficient governance adjusts jurisdictions to the trade-off between the virtues and the vices of centralization."[292]

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[287] Ibid

[288] Ibid

[289] These jurisdictions are task-driven, conditional, and extrinsic, with low barriers to entry and exit to encourage competition among them. This is the case with the current mini grid regulation from 2016, as it was drafted to be investor-friendly and hailed as the best mini grid regulation in Africa.- S., Onyekwulu, Nigeria's investor-friendly mini-grids regulations rank best in Africa (Business News March, 2021) **Nigeria's investor-friendly mini-grids regulations rank best in Africa - Business day NG** last accessed 29 December 2022

[290] (n 280) Hooghes & Mark.

[291] C., Barry & R., Weingast, Elements of a Theory of Jurisdictional Change Politics and Institutions in an Integrated Europe in Barry Eichengreen Jeffry Frieden Jürgen von Hagen New York/Heidelberg Springer Verlag (1995) 15.

[292] (n 280) Hooghes & Mark.

The gains of these kinds of multi-level jurisdictions can be drawn from international organisations' success in development, enabling economies of scale in the provision and redistribution of public goods, efficient taxation, and territorial security. However, multi-level jurisdictions can become bad when they impose a single policy on diverse ecological systems or territorially heterogeneous populations. This is why UNFCCC operates on the CBDR principle. One criticism of centralized governance is its disregard for policy efficiency and for its conception of power as an independent, passive activity, rather than a result of interactions between actors.[293] This thesis therefore suggests that the current nation's ET multi-level governance strategy is primarily influenced by centralization, which:

> "exerts authority by creating proximity and distance with regions, while think tanks, consultants, and policy groups gain leverage by reaching regional assemblages, thereby cutting across existing hierarchies of government decision-making. It is argued that it is these social interactions that create power effects that hold a network of actors together."[294]

Thus, the use of MLG here portrays the intersection of different lines of authority, negotiation, and engagement,[295] and therefore suits the multidimensional nature of Nigeria's energy access, security, and transition objectives, in that it allows an understanding of the various challenges facing the country's energy sector from multiple perspectives. Thus, the MLG ultimately offers a roadmap for Nigeria's energy transition that is inclusive, efficient, and environmentally sustainable; however, it is argued that the current ET governance structure, apart from the coordination and implementation gaps, lacks an integrative process, a platform, and an enabling legal framework.

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[293] (n 275) Chandrashekeran.

[294] Ibid

[295] J., Allen & J., Cochrane, Assemblages of State Power: Topological Shifts in the Organisation of Government and Politics (2010) Antipode Vol. 42 (5) P 1071 – 1089 pp 1077

For instance, though the current institutional and regulatory framework situates transitions within rural areas and states,[296] revealing possible variations in regimes, it does not provide a platform for niches to interfere with existing regimes, thus limiting the potential for innovation and 'just' transitions. Without opportunities for niche actors to challenge and disrupt the status quo, rural areas may struggle to adapt to changing conditions and capitalise on emerging opportunities. In order to truly enable rural transitions, policymakers must create space for niche actors to experiment and collaborate with existing regimes in order to foster discursive niches,[297] and niche formation opportunities,[298] capable of shaping renewable energy projects and end-user markets. The Akipelai's case study with Renewvia, portrays this.

Thus, even though the nation's current MLG offers scale flexibility, it faces a coordination dilemma where policies from one jurisdiction have spillovers or contradict other policies. For instance, the nation has different sets of policies on climate change mitigation and RE development, as well as recent policies on the Petroleum Act and new investments in new oil frontier exploitation with heavy involvement in gas flaring management, that do not speak to each other. These different policies are diverse, and sometimes the conflicting interests of these stakeholders contribute to the complexity of the nation's energy landscape, thereby highlighting the coordination challenge associated with MLP. This coordination issue also entails the management of human activity across institutions, and these also aggravate cost given the varying jurisdictions of power and control.

The mini grid case study sample identifies participation issues, regulatory language on targeting and distribution, recognition, procedural, cost, and affordability obstacles with reference to the transition to renewable energy and projects in rural areas. Overall, the case study stresses how challenging it may be to implement renewable energy solutions in rural areas and the significance of considering a variety of considerations. The importance of clear

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[296] J., Murphy, & A., Smith, Understanding transition-periphery dynamics: renewable energy in the Highlands and Islands of Scotland. (2013) *Environment and Planning* A, 45 (3). pp. 691-709 – "showing how renewable energy projects are shaped by their specific locations and vice versa."

[297] P., Späth, & H., Rohracher, Local demonstrations for global transitions—dynamics across governance levels fostering socio-technical regime change towards sustainability (2012) *Eur. Plan. Stud.,* 20 pp. 461-479.

[298] (n 275) Chandrashekeran.

communication, community involvement, financial assistance and the integration of multiple sectors, issues and approaches is emphasized in order to guarantee the success and sustainability of such projects. However, the thesis also recognizes the coordination challenges associated with MLP framing, competing aims and heterogenous actors and interests. To address this, the thesis envisages an integrated ET framework via a formalised policy process and platform, as the multi-level governance framework best suited for the context's 'just' transition.

Thus, an integrated policy framework is crucial, and, on this note, Coop Energy writes that to initiate this:

> "A collaborative space is crucial for policy revision and implementation, involving a formalized process identifying regional authority needs, stakeholders, participation levels, and common vision. This facilitates clear coordination, governance, engagement strategies, decision-making, and evaluation.[299]

It is argued that a formalized policy-making process offers this opportunity for the achievement of this integrated energy policy framework, which allows the procedural, distributive and recognition justice, and other related issues to be properly managed to achieve a diversified but centralized purpose. In this context, a formalized policy process is defined as the assembly of all parties and sectors involved in the country's RE (electricity) transformation process including the external influence.

6.6.3 Formalised Policy Process – A Distributive, Recognition and Procedural Justice Requirement.

A formalized policy process encapsulates a structure larger than the REA's project monitoring unit (PMU), as it should involve governments, markets, non-state actors (non-governmental organizations), international organizations, vulnerable representatives, private investors and

[299] CoopEnergy Consortium, A guide to Multi-level Governance for Local and regional Public Authorities (2015) available at: https://www.local2030.org/library/210/A-Guide-to-Multi-level-Governance-For-Local-and-Regional-Public-Authorities.pdf last accessed 13/02/2024.

developers, local government areas, and electricity department bodies. A dialogue space focused on addressing goals, issues, and development gaps can lead to the understanding of the different injustices that exist in the transition process and the role the state has played in balancing differentiated objectives. Furthermore, a formalized policy space within the RE transition policy process can lead to co-production of knowledge, improved public awareness, and the development of necessary linkages and competencies. This can help to facilitate a just transition process and address the nation's unfair cognitive culture of development in the following ways:

(a) Balancing Conflicting Policy Objectives

The challenges of several policies and the lack of coordination among them is one challenge that obscures the path of progress within the transition which is brought about by differentiated interests. A multi-level governance seeks to balance these conflicting positions while also meeting global transitional pressures. It is argued that in the resolution of these conflicting positions, "the trend towards persuasive coordination in institutional layering driven by endogenous conditions is expected,"[300] however, it is argued here that binaries or oneness may not be sufficient for 'just' transitions in Nigeria. The institutional framework envisaged to bring about procedural, distributive and recognition justice themed transition in the country therefore does not speak of the 'uniformity' of approach but rather of differentiation in policymaking and implementation based on evidence and through a formalised policy-making process.

For instance, the United Nations has held that prior to realising good institutional coordination, "deep assessment of the country's governmental, institutional, and political contexts is important."[301] It is in regard of this that Sesan et al., argue for evidence-based policy making

[300] A., Corcaci, The dynamics of multilevel administration. Coordination processes between national, supra- and international administrations in energy policy. (2023) *Z Politikwiss* 33, 157–180.

[301] UNDP, Institutional and Coordination Mechanisms: Guidance Note on Facilitating Integration and Coherence for SDG Implementation (2017) available at: https://sustainabledevelopment.un.org/content/documents/2478Institutional_Coordination_Mechanisms_GuidanceNote.pdf last accessed 13/02/2024.

with regards the current transition to better reference differentiated peculiarities and interest,[302] for effective post-implementation evaluation of policies and programs. This evidence-based policymaking platform is hitherto referred to as a formalised policy process that provides a meeting platform for the constant monitoring of progress and the recognition of gaps for developments. Within this platform and process, decision making can become more participatory, progress can be monitored for accountability, and the targeting of intersectional or existing vulnerabilities for correction and rebalancing of past marginalisation can be promoted via training and empowerment for the actualization of a just transition. The formalised policy platform and process are crucial because case study examples show how they are absent from the nation's mini grid project implementation and contract cycle, which prevents adequate project coordination.

(b) Re-purposing the Principle of State Sovereignty for Development.

The implications of the principle of state ownership over its natural resources cannot be overlooked in the current global energy transition, especially from the context of developing countries. The recent drama of developing countries regarding the commitments that await them under the United Nations Framework Convention on Climate Change (UNFCCC) and the attendant development impacts of the global renewable energy (RE) trends and investment turn away from oil and gas to RE, has engendered the revisiting of the role and relevance of state governance of its resources. The normative value of "this principle is rooted in economic development and self-determination."[303] It establishes the importance of "natural resources as economically valuable distributive goods."[304]

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[302] T., Sesan, & W., Siyanbola, "These are the realities": insights from facilitating researcher-policymaker engagement in Nigeria's household energy sector. (2021) *Humanit Soc Sci Commun* 8, 73

[303] N., Schrijver, 'Self Determination of Peoples Sovereignty over Natural Wealth and Resource' CH 5 in *Realising the Right to Development* (United Nations Pub 2013) HR/PUB/12/4 95-102

[304] S., Caney, Global Interdependence and Distributive Justice 31 (2005) *Review of International Studies* 389 - 399

The International Court of Justice (ICJ), in "*The Case concerning armed activities on the Territory of the Congo,"*[305] acknowledged the distributive importance of natural resources in the Congo case, highlighting their role in national development and satisfying basic human needs. Gumplova,[306] has equally emphasized the importance of natural resources in national development and human needs satisfaction. Thus, state sovereignty aims to redistribute resources to restore balance against colonialism, elitism, poverty, and generational equity. This principle includes centralized control, coordination, and adjudication for people's benefit. Within this understanding of collective ownership, Nine stipulates the state's adjudication of resources to include: "rights to determining the rules of access, withdrawal, exploitation, preservation, disposal and profit from these resources."[307]

A question could then arise about who "the people" are, as framed within the resolution 1308 or national policies stipulations of management of resources for the people's benefit."[308] Even better, the question regarding the identification of "energy citizens" in connection to the current ET would be: whether everyone within a context has been rightfully recognised as energy

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[305] Armed Activities on the Territory of the Congo (*Democratic Republic of the Congo v. Uganda*), Judgement, I.C.J Reports 2005, 168 Paras 243-246

[306] P., Gumplova, 'Normative View of Natural Resources – Global Redistribution or Human Rights – Based Approach?' (2021) *Human Rights Rev* 22,

[307] Ibid

[308] "The right of peoples and nations to permanent sovereignty over their wealth and resources must be exercised in the interest of their national development and the well-being of the people of the State concerned" G.A. Res. 1803 (XVII), at 15, U. N. Doc. A/5344 (Dec. 14, 1962):

"Arguments exist regarding the interpretations to be adopted regarding this right - whether it is vested in the state or jointly to the state and its peoples. This thesis aligns with the latter as it reflects the language and literal expressions of the UNGA 1803, which states 'the peoples and nations' - purposively pointing to developing countries' economic and political emancipation and ensuring that resource policies are just and are people-interest-centered. The position of resource policies contrary to people's interest are cloaked in human rights and the need for development. This has found expression in many energy transitions in the country, leading to injustices, flagrant human rights, and environmental violations, and interpretative and locus standi issues before international courts. Interestingly, we see a growing trend even within the just energy subject, the moving away of international courts from recognizing states as the only subjects of international law and a people being collectively able to exercise their rights to development."

[308]Y., Chekera & V., Nmehielle, 'The International Law Principle of Permanent Sovereignty over Natural Resources as an Instrument for Development: The Case of Zimbabwean Diamonds' (2013) 6 (1) *African Journal of Legal Studies* 69-101.

citizens as (producers, owners, and participants in energy decision-making) or have they been rightfully empowered, and targeted with mini grid options? Or does energy citizenship only pertain to certain individuals? It is the thesis submission that a re-purposive application of this principle within an integrated energy transition framework can help achieve a just transition.

For while the Nigerian local content legislation,[309] aimed at dismantling enclaves and enhancing national ownership in the oil and gas industry,[310] it had a 'definition gap' in policy, ignoring the non-definition of oil and gas host communities and their access rights, highlighting the relaxed attitude towards social exclusion and human rights abuses in the bottom-tiered communities.[311] The mini grid regulation, 2016 targeting of mini-grids is equally criticized for only focusing on 'unserved' and 'underserved' areas,[312] which may not include other marginalization's or intersecting inequalities. The regulation also fails to address unique energy needs of certain groups, such as women, people with disabilities, and those with prior marginalization's. Thus, a more comprehensive approach is needed.

It is argued that state ownership principle, when effectively implemented, can facilitate multi-level governance by coordinating local, private, and international interdependence and governance systems for the transition. It allows states to maintain autonomy while participating in national, private partnerships and global transition initiatives, fostering effective multi-level governance and global cooperation, that can ultimately drive an integrated, differentiated energy transition agenda.

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[309] Nigerian Oil and Gas Industry Content Development Act 2010 Act No 2 CAP P10 LFN 2004

[310] Ibid.

[311] PIA's failure to define 'host communities' or stipulate the standards for selecting these communities and the subsequent leaving of the determination of this question to the oil company exemplifies this transfer of burden as well as the risk associated with this, such that could widen socioeconomic gaps, making certain groups of people more vulnerable to climate change.

[312] Mini Grid Regulation, 2016 section 3.

(d) Cognitive Cultural Shift Within the Development Goal

The decision to develop a nation's resources is not bad however the manner and interests sought in the discharge of that development objective may contradict Article 1 of the UN Declaration on Permanent Sovereignty, which acknowledges the right of peoples and nations to permanent sovereignty over their natural resources. The same can be said of investment contracts in energy resources where they are designed to advance national development interests, benefiting investors and governments, while being detrimental to host communities. This decision also highlights the importance of participatory rights in managing and benefiting from natural resources.

Thus, while some countries have successfully transformed their energy sector through natural resource reforms, this is not the case in many developing countries. The problem is complex, involving infrastructure, inequalities,[313] and the 'enclave' nature of energy resources.[314] It is in regard of this that a multi-level governance approach is needed to balance competing interests and address complex labour hierarchies driven by past unfair structures, such as colonial era investment regimes. Thus, there is a need for policymakers and their strategies to be shaped by an energy justice culture to help them prevent and correct injustices for marginalised communities, particularly those who host these natural resources exploited for development or those dependent on natural resources for their livelihoods. It is equally important that the nation's energy policies are economically beneficial, as well as socially and environmentally just.

One of the ways this can be actualised is through unlearning and re-skilling or training for knowledge production necessary to the transition as well as training for our law and policymakers in the conduct of evidence-based policymaking. For example, in some regions of the country, indigenous communities are disproportionately affected by energy development projects such as hydroelectric dams and oil extraction. These communities often have limited

[313] A., Nordholm & S., Sareen, 'Scalar Containment of Energy Justice and its Democratic Discontents Solar Power and Energy Poverty Alleviation Front (2021) 3 *Sustain Cities*, https://doi.org/10.3389/frsc.2021.626683.

[314]A., Bastida, The Law and Government of Mining and Minerals: A Global Perspective (Hart Publishing, 2020) 45.

access to information and decision-making processes, leading to their rights being ignored and their traditional lands being destroyed without proper compensation or consultation. This highlights the need for energy justice to be integrated into all energy policy and decision-making processes to ensure all communities are treated fairly and equitably.[315] The attempt to salvage these concerns of marginalised local contexts, especially energy (oil and gas) host communities, is reflected in the establishment of 'host communities' development trust' in the Petroleum Industry Act 2021.[316] However, this reform of the petroleum industry related to the energy transition fails once more to establish standards of procedural justice and to identify mechanisms for effectively structured and useful cooperation and collaboration between operators and host communities for this purpose.

Nigeria v. Process & Industrial Developments Limited (P&ID) case[317] highlights the unequal exploitation of energy resources from developing countries. Heffron and Bausch have argued against the magnitude of the arbitration award based on public policy[318] due to its failure to consider taxation structures and payment, project cost evaluation, environmental issues, a social license to operate, and climate change issues.[319] This principle is the substratum of the government's control or involvement in the energy resources and sector, from the constitution to the legislation and policy regulations – the Petroleum Act, EPSRA, and investment contracts. For regulations in the field of electricity, it is evident that despite the liberalisation of the sector according to EPSRA, through the licensing regime and NBET, the government still manages to maintain control over the country's electricity industry- by determining standards, quality, and safety. With the PIA, the permitting and licensing regime by the minister of petroleum - via recommendations from the commission and authority, provides the entry point for the

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[315] E., Kachikwu, *Legal Issues in the Nigerian Petroleum Industry* (2016) Law Pub & Conf. Services Ltd.

[316] Petroleum Industry Act, 2021 section 235, 318

[317] [2019] EWHC 2241

[318] R., Heffron, & R., Bausch, 'Process & Industrial Developments Limited v The Federal Republic of Nigeria (2020) (1) 1 *Global Energy Law and Sustainability* 1

[319] Ibid

government (through the minister) to participate, regulate and grant approval, licenses, and permits across the entire oil and gas value chain.[320]

It is argued that the state sovereignty principle may fail to achieve the resource management goal for 'people's interest' when the energy justice value does not guide it. This is because "global redistribution (management) of resources - turns on the unevenness distribution of natural resources in the earth and their proceeds, and sometimes political borders which determine these collective entitlements are unjust and arbitrary."[321] When it comes to the role of redistributive policies in promoting and rebalancing equity, economic empowerment and sustainable development, Kohler opines that:

> "The redistributive and other policy reforms required for reducing inequality and bringing down the use of natural resources for nurturing the economy cannot be achieved under the prevailing paradigm that uses private investment-led economic growth...the reforms needed require *a different paradigm and political economy that acknowledges the embeddedness of the economy in society and the environment*, and which aims at maximising human well-being within planetary boundaries."[322]

This is what the MLP, through the multi-levelled governance approach is advocating for within this study in order to help drive a just transition. Thus, the transition to renewable energy (RE) requires re-imagining state sovereignty over natural resources to acknowledge conflicting but fundamental objectives: (i), the problem of equity and "fairness in the distribution of affordable and secure energy benefits and burdens,"[323] resulting from energy resources/extraction and (ii), the problem of achieving national development, energy security and at the same time,

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[320] Petroleum Industry Act 2021 section 111 (1)

[321] Ibid

[322] K., Pierre, Redistributive Policies for Sustainable Development: Looking at the Role of Assets and Equity DESA Working Paper No. 139 ST/ESA/2015/DWP/139 1-51 1,2, 36, 37.

[323] B., Jennings (ed.) Social Justice – The Subject Matter of Social Justice Defining the Basic Structure a Global Basic Structure? Nature, Choice, and The Scope of Social Responsibility (4th ed, Gale 2014) 2966-2973.

environmental protection and (iii) centralisation versus decentralisation: which requires strong coordination and re-balancing of the following:

(a) subsidising affordable energy among relevant actors within the state, particularly to groups who have been unfairly excluded or marginalised from past transitions.
(b) market regulation of the sector, and
(c) managing complex sectoral interests that make up the sustainable energy transition process and the multiple approaches to achieving secure and sustainable energy, given the available energy resources in the country and their various geographical locations.

The perception of this problem, whether locally or internationally, reveals that energy issues are complex and cannot be considered or appropriately addressed without considering issues of context and responsibility - which is where governance comes in. Whether appraised from the local, private, or international dimension, the interdependence of these issues poses legal challenges: developing and applying a comprehensive and practical set of legal requirements aimed at decarbonisation, without instituting measures that will stifle development or justice elsewhere. This is where the role of states' management of resources engenders the balancing of multiple objectives and interests to prevent tensions and social exclusions. It is submitted here that such balancing of competing aims and interests can only be effectively achieved in a formalised policy process and platform.

(e) Rebalancing Competing Interests

Introducing subsidies to upstart renewable energy use in the country, for instance, would entail recognising the role and contexts of multiple stakeholders in the energy transition process and, indeed, the impact of fuel subsidy removal on the public and the vulnerable. What this would mean for vulnerable consumers is the high cost of assessing gas-generated electricity in the country – especially where fossils are still the primary economic resource of the country. A critical enquiry from socio-legal and political economy perspectives argues that there are inherent convolutions and contradictions in introducing negotiated agreements and

performance standards or tariffs to stimulate the transition to RE use at local levels,[324] within Nigeria's present energy infrastructures and context.

This is because the goal of these standards though leading to decarbonisation, exacerbates advantages and disadvantages but notably disregards the impact caused on the vulnerable in developing economies. For example, feed-in tariffs (FiTs) have led to the popularity of domestic photovoltaic (PV) installations in the country, which have yet to be able to support the necessary transitioning.[325] The reason is that the objectives of FiTs are to encourage a *diversification* of the electricity generation mix, engage communities and nudge new local technologies toward grid parity.[326] Acceptably, this could foster empowerment and behavioural change, which captures to a large extent the country's energy policy direction,[327] and incentivisation of the products (performance-based grants and minimum subsidy tender); however, the transition would be slow by first ensuring efficiency.

Thus, the design of performance-based standards within the transition agenda of a country matters, as these standards have to be structured from the vantage point of local contexts. Numerous governments face this challenge of competing values and interests in energy development. Cenevska's case commentary of *Inter-Environnement Wallonie ASBL and Bond Beter Leefmilieu Vlaandersen ASBL v. Conseil des Ministres* resonates with this rebalancing

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[324] A., Oni, The Nigerian Electricity Market: Understanding the Transactional, Legal & Policy Issues (Ciplus, 2019)

[325]"The Nigerian Electricity Regulatory Commission (NERC) also introduced the renewable energy Feed-in-Tariff (Re-FiT) in 2012 to lower the costs of negotiating and signing PPAs for small renewable generators (30 MW or less). The government purchased 50% renewable electricity, which aided in lowering costs, promoting market stability, and increasing competition in the energy sector." – O., Coker, Nigeria's Renewables Market: Opportunities and Development for Solar PV. GreenMatch (2017) available at: https://www.greenmatch.ch/en/blog/nigerias-renewables-market-opportunities-and-development-for-solar-pv last accessed 25/02/23

[326] C., Nolden, 'Performance and Impact of the Feed-in Tariff Scheme: Review Evidence' (2015) *Science Policy Research Report* for the Department of Energy and Climate Change, Sussex Uni. 39

[327] Energy Commission Act, 1979, as amended by Act No.32 of 1988, Act No. 19 of 1989 and Energy Commission of Nigeria (ECN) 'National Energy Policy' (2022). Available at: https://www.energy.gov.ng/Energy_Policies_Plan/Approved_Revised_NEP_2022.pdf last accessed 25 February 2023.

objective of government concerning competing interests.[328] In this case, "the relationship between achieving core EU environmental objectives and ensuring the security of Belgium's electricity supply was raised."[329] Etty et al. continues to note that:

> "the court's reasoning in the case demonstrates the unveiling tensions between environmental, security and economic objectives and how these tensions implicate precise questions of law and broader questions of power, sovereignty over resources and territory, and the disparate visions for the rule of law in achieving decarbonisation."[330]

Cenevska's analysis discusses how CJEU acknowledged a breach of environmental obligations while sustaining Belgium's ability to maintain its current energy security policy in the said case.[331]

In other words, even where it has to do with renewable energy development and use, equity and justice still lie in contexts and perspectives. For instance, REA's mini-grid promotion objective reads: "*to electrify unserved and underserved areas that have high economic growth potential* ..."[332] The point here is that development is at the core of this targeting. The phrase: 'areas with high economic growth' immediately turns on a marginalised and social exclusion disposition even with a decentralised option. The thesis demonstrates how this disposition has dominated the nation's energy transition history and political culture in chapter four, with energy-related policies and laws as examples and in chapter five, with the mini-grid case study. This highlights the government's need to rebalance and the chance the transition journey provides the country to address historical injustices in the sector. This is the relevance of a

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[328] Case C-411/17

[329] T., Etty, & V., Heyvaert, *et a*l, 'Energy Transition in a Transnational World' (2021) 10 (2) *Transnational Environmental Law* 197 – 204

[330] Ibid

[331] Ibid

[332] Rural Electrification Agency, 'Project Implementation Manual for the Nigeria Electrification Project (Nigeria July 2021) 11 available at: https://rea.gov.ng/wp-content/uploads/2021/12/NEP-PROJECT-IMPLEMENTATION-MANUAL.pdf last accessed 23 March 2023

multi-levelled approach, showing how the state and other actors are important as they all can positively or negatively influence the successful diffusion of mini grids in Nigeria.[333] Because the structure of every society is anchored upon laws, institutions, and policies, "ill-designed laws and structures will not properly define the different distribution of benefits and burdens of mini grids across society."[334]

A rebalancing of competing interests will also mean targeting the resource gap and energy access issues, because these are the fertilised zones for other inequalities and development issues that impact stakeholders and the nation towards a just transition. For instance:

> "Crude oil revenue is the country's fiscal lifeline as it provides almost 65 per cent of government revenues which is shared among all three tiers of government (federal, state, and local). The monthly federal allocation is used by the tiers of government to pay salaries, among other administrative expenses. This implies that a dwindling income as a result of the energy transition becomes a threat to the survival of the country's thirty-six states and 774 Local Government Areas (LGA). On the other hand, oil revenue accounts for about 90 per cent of foreign exchange earnings which helps stabilise fluctuations in the exchange rate through central bank interventions. As a result, dwindling FOREX earnings coupled with the country's high dependence on imports may further weaken the local currency, thus increasing the local price of imported goods."[335]

Energy poverty is a major challenge to the transition towards a low-carbon economy. The country faces multiple challenges of climate change, energy poverty, environmental pollution, and economic development, all seeking a rebalancing, especially given the connectedness of energy to socio-economic development. Therefore, addressing energy poverty is crucial in

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[333] (n 1)

[334] J., Lamont, & C., Favor, '"Distributive Justice", *The Standard Encyclopaedia of Philosophy, (2017)*, Edward N., Zalta (ed.), available at: https://plato.stanford.edu/archives/win2017/entries/justice-distributive/ 1 last accessed 18/11/2021

[335] P., Omoregbe, 'Is Nigeria Ready for Global Energy Transition By 2025' (January 3, 2022; Nigerian Tribune) available at: https://tribuneonlineng.com/is-nigeria-ready-for-global-energy-transition-by-2025/ last accessed 13 March 2023.

achieving a sustainable and equitable transition towards a low-carbon economy. It requires a holistic approach that considers the interplay between energy, environment, and socio-economic factors, and it is argued here that achieving this balance is justice. The country can achieve a more resilient and sustainable future for all by addressing these challenges. For example, in rural communities in sub-Saharan Africa, energy poverty has hindered economic development and access to necessities such as healthcare and education. A holistic approach to addressing energy poverty would involve the fair distribution of cost-accessible renewable energy solutions while also considering the environmental impact and socio-economic factors such as job loss, the need for reskilling, and job creation, as well as access to financing. This would improve residents' quality of life and contribute to a more sustainable future for these communities. For instance, the Brundtland report notes that:

> "the 2030 agenda for sustainable development emphasizes the importance of energy services for development. Nigeria's energy legislation struggles to implement this principle due to development challenges and policy non-enforcement. Access to energy services ensures affordable, reliable, and sustainable energy for most people. With 1.1 billion households without access and a significant portion of health facilities in sub-Saharan Africa lacking reliable electricity."[336]

The discussion on energy access encompasses consumption, security, affordability, and sustainable energy transition, highlighting the need for reliable, affordable electricity for essential purposes.

Energy access also resonates sectoral linkages between energy security, good education, a sound health system, agriculture and business/manufacturing, labour, and social welfare. It is therefore reasoned that socio-economic development is the primary objective of expanding energy access. Apart from the poor transmission and distribution infrastructure contributing to the country's electricity deficit, it should be noted that the key reason for energy poverty in the country is low generation. To improve production, the nation has sought to pursue its natural

[336] D., Ogunbiyi, 'Power in Pandemic – Why Energy Access Matters during Coronavirus '(2020) Available at: https://www.seforall.org>goal-7-targets. access last accessed 16/11/2021.

gas resources while improving renewables to meet efficiency.[337] EPSRA, on this note, has established the Rural Electrification Agency to execute the government's electrification strategy and implementation plan of increasing rural electricity to about 60% in 2022.[338] The project also seeks to extend the grid to unserved areas, ensure cost-reflective tariffs and introduce mini-grid solutions. Presently, the NERC Mini-Grid Regulation of 2016 specifically attends to this goal. Asides from the role of policy, the EPSRA has also introduced market competition and investments, robust monitoring, standards, and evaluation systems into the sector.[339] Thus, showing that a holistic and multi-perspective approach is critical to improving the country's energy supply access.

More importantly, the energy access challenge objectively requires a right to access energy services as a human rights concern. By this, the country faces trade-offs because it cannot simultaneously prioritise energy access, economic development, and environmental protection. Heffron,[340] argues that the magnitude of this problem goes beyond the confines of national boundaries and therefore requires the interface between national, local, private, actors and international law strategies and the role of institutions – in ensuring the attainment of this goal. Consequently, it should be noted here that the policy direction of Nigeria's energy framework and strategy is development and energy efficiency and not energy transition.

As gleaned from some national laws, the international notions of environmental protection, human health and climate change have equally impacted the nation's energy transition laws and governance framework, albeit reactionarily. Most regulations emphasising ecological protection were enacted in response to the country's international participation in the UNFCCC

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[337] Energy Commission of Nigeria, National Energy Policy, 2022 available at: FEDERAL REPUBLIC OF NIGERIA (energy.gov.ng) last accessed 24 December 2022. 7 -8

[338] Electric Power Sector Reform Act, 2005 Section 88.

[339] Ibid

[340] R., Heffron, A., Ronne, J., Tomian, A., Bradbrook and T., Kim, 'A Treatise for Energy Law (2018) 11 (1) *Journal of World Energy Law & Business* 4

since 1972.[341] For instance, in response to PA, 2015,[342] and NDCs,[343] RE has been incorporated into the nation's energy mix as part of a strategy to cut carbon to 25% by 2030 and attain energy efficiency, and policies like NREEP,[344] and REMP, have been enacted towards the attainment of that purpose. Although regulations have been implemented to limit the effects of climate change in Nigeria, the nation is still in a vulnerable and developing position, making it equally unprepared to adapt to and manage these effects. Thus, we see how most of these laws or policies are generally unenforceable.[345] Ijaiya and Joseph, further argue that the country's energy transition and access policies/laws were generally employed as reactionary responses to environmental and developmental emergencies rather than being deliberately implemented to promote the interests of marginalised communities.[346]

However, existing marginalisations and vulnerabilities and development position make these laws unenforceable. The Niger Delta ecocide state is an example of this environmental and energy access injustice.[347] Kotze and Du Plessis, have argued that "the continued use of fossil fuels to drive unsustainable socio-economic development is likely to cause climate-related conflict in the future and aggravate already-existing issues such as environmental destruction

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[341] Sustainable development – Paris Agreement 2015, Gabcikovo-Nagymaros case (Spain v France) 12 RIAA 285

[342] Conference of the Parties, Adoption of the Paris Agreement, 12 December 2015, U.N. Doc. FCCC/CP/2015/L.9/Rev/1 (12 December 2015).

[343] FGN, Nigeria Intended Nationally Determined Contribution (2015) a available at: http://www4.unfccc.int/ndcregistry/PublishedDocuments/Nigeria First/ApprovedNigeria%27s INDC_271115.pdf, last accessed 10/02/2024.

[344] Approved National Renewable Energy and Energy Efficiency Policy (NREEEP) for the power sector] (2015) available at: , http://www.power.gov.ng/download/NREEE POLICY 2015- FEC APPROVED COPY.pdf, last accessed 10/02/2024.

[345] H., Ijaiya, & T., Joseph, 'Rethinking Environmental Law Enforcement in Nigeria' (2014) 5 *Beijing Law Review* 306 - 321

[346] Ibid

[347] Suit No. FHC/CS/B/153/2005 [Federal High Court of Nigeria] Nov. 14, 2005 - The case of *Gbemre v Shell Petroleum Development Co. Nigeria Ltd* also lays credence to this as it reveals that the Nigerian government and energy corporations have always been determined to exploit their carbon-intensive resources for energy production and economic development at the expense of respect to life, health, and the environment.

and the negative impacts on the health and well-being of vulnerable people."[348]In *SERAC Communication*, it was alleged that the Nigerian Government-Shell Petroleum Consortium exploited oil reserves in Ogoni land with no regard for the health or environment of the local communities, disposing of waste into the environment and waterways in violation of environmental standards.[349] They further attacked, burned, and displaced vulnerable citizens who sought to protect their homes, lands, and means of livelihood to keep developmental projects ongoing.[350]

Indeed, when analysing the governance role in rebalancing of interests, the complexity of climate change becomes revealed in the tensions of survival and social justice and the claims to recognition, participation, and preservation of livelihoods and indigenous values.[351] These concepts interface and further reveal that the fight for human rights, energy/climate justice and the environment are inseparable because "the environmentalism of the poor to a large extent relates to actions and justice concerns of contexts, even in situations where the environment is also a source of livelihood."[352] This will be the same for renewables as indigenous communities risk becoming dispossessed of their land for expanding renewable energy projects. The court's decision In *Nunavut Land Claim Agreement* [353]lays credence to this concern. Here, the court recognised indigenous people's right to own their land and resources, vesting in them 350,000 square meters of land and mineral rights to 36,000 square meters.[354] Based on the above case,

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[348] L., Kotze, & A., Du Plessis, 'Putting Africa on the Stand: A Bird's Eye View of Climate Change Litigation on the Continent' (2020)50 (3) *Africa Climate Change Litigation* 629

[349] *SERAC v. Nigeria*, Decision, Comm. 155/96 (ACmHPR, Oct. 27, 2001)

[350] Ibid.

[351] (n 348) Kotze 633.

[352] Ibid

[353] *Nunavut Tunngavik Inc v. Canada (Attorney General) et al., (2014) 580 A. R. 75* 1996-1997 Annual Report on the Implementation of the Nunavut Lands Claims Agreement

[354] Ibid

the courts are becoming more purposive in interpreting the international energy principle of land and natural resources, especially regarding health and environmental protection.

Thus, since the colonial regime, governance of energy (re)sources and reforms in the country have been development driven and externally influenced and have become the basis for the vicious cycle of debts and numerous legislations and policies around energy and electricity reform in the country. Agreements, legislations, their interpretation, and enforcement mechanisms have failed to incorporate precise justice standards for the energy transition in the country because of the nature of energy itself, development goals and the different starting positions of contexts within the Nigerian society. The thesis submits that a single development objective that ignores all other arguments is risky because it continuously upholds injustice against marginalised communities. It contends that in order to effectively transition away from this cognitive development culture and create a comprehensive and well-rounded strategy for achieving a just transition and sustainable development, there needs to be a change in public awareness and education, as well as a focus on evidence-based policymaking and governance among legislators and institutions.

(f) A Formalised Policy Process as an Integrated Energy Transition Framework

The role of law in driving transitions is inevitably relevant, especially in the stipulation of guidelines and administrative roles for functional lines and the implementation of policies and projects. Layered within these project implementations are tethered power asymmetries and differentiated actor interests that are fertilised zones for marginalisation, especially in Nigeria's corrupt society. Thus, formalised law and policy design are vital to establishing these layers of communication and control between participants, sectors, and internationals down to the local bottom layers because the transition is multi-layered. This is an important descriptor of multi-layered governance for a just energy transition.

Legitimised by community members and interest groups, the law establishes substantive rules, institutions, decision-making processes, and mechanisms for dispute resolution and

accountability.[355] Laws are, therefore, social engineering tools; their changing nature affects distributive impacts regarding the costs, benefits, and burdens of transitioning to RE. Consequently, it is the role of laws and policies to drive the change that automatically defines a people's opportunity to access electricity or their capability in transitioning to RE options.[356] Clean energy development (SDG 7), while simultaneously basing attention on integrating and recognising local contexts and responsibility, is a more effective way of ensuring just strategies.

Thus, sustainable development and the differentiated principle, due to different starting positions of local contexts, set dialogue, collaboration and consideration of public policy, environment, and governance at the centre of energy transition and a just transition for all. This should be the case nationally, but first, the underlying energy culture should be reappraised, using EJ tools to create a formalised RET policy process—one that provides a space within these different contexts and sectoral interests for institutional energy departments and non-state actors to speak to each other, collaborate, and solve the energy problem nationally.

The section argues that these national regimes, structures, and activities have been marked by development and globalisation convolutions and contestations, increasing the interconnectedness and interface between international law and regional and domestic legal order.[357] It is these interactions that this thesis captures as the landscape and regime influences on current transitions. The complex and diverse legal, disciplinary, sectoral, and normative landscape operating in energy creates different legal realities across multiple standards, and it is argued that these complexities can be well captured by the MLP framework, using multi

[355] P., Martin, B., Boer, & L., Slobodian (eds.) Framework for Accessing and Improving Law for Sustainability: A Legal Component of a Natural Resource Governance Framework (2016) IUCN Environmental Policy and Law Paper No. 87, 1, 84

[356] Ibid

[357] N., Edomah, C., Foulds & A., Jones, 'Energy Transitions in Nigeria: The Evolution of Energy Infrastructure Provision (1800 – 2015)' (2016) 484 (9) *Energies* 9.

governance. The situation is even more convoluted given the climate change scenario that ripples into political, economic, social, and ecological tensions.[358]

6.7 Conclusion

This chapter has examined the challenges surrounding energy transition in Nigeria, while also engaging in energy justice analysis of some of the issues. Many commentators have argued that the power sector reforms have still not ensured the connection of many unserved communities to the grid.[359] Others suggest that "the power sector reform is nothing but a mere replacement of public monopoly by private monopoly with no regard and recognition for the already marginalised."[360]These contestations suggest that much more is required to be done in the NESI for a better outcome. Although chapter four reveals that the Nigerian energy sector has established laws, policies, and institutions to help further the energy efficiency goal in the country, reforms have not been matched with balanced outcomes. With regards to the interplay of the laws on the NESI structure, it is observed that external private stakeholders exert more influence on the NESI through financial interventions.

Thus, though enablers of development in themselves, law and policy reforms are never a stand-alone exercise. They require participation, social and behavioural patterns change, and strong markets to succeed. These factors are contextual and environmentally designed and, as such, cannot be made to ignore time, place (context) and process – and this is justice. Externally influenced contracts and laws are imperfect in destroying niches and investment-inclined regimes. Law and policy reforms ought to be transformed but reintegrated into existing regimes to reflect collaborative stakeholder engagement to improve energy access, sustainability, and transition.

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[358] Ibid, 8-9

[359] Y., Omoregbe, 'Resource Control and Benefit Sharing in Nigeria' (2016) *Oxford Uni. Press* 262

[360] E., Okafor, 'Reforms in the Power Sector and Implications for Ind. Development in Nigeria: *(*2014) 12 The case of Difference Between Six and Half Dozen' *Ibadan Journal of Social Science*) 5

Lessons from oil and gas and their legislation have proven that expanding investments in the RET should consider public policy, interdependence, human rights, and due diligence.[361] In *Cortec (Pty) Limited and Stirling Capital Limited v. Republic of Kenya*,[362] the defendant successfully pursued legal strategies that combined domestic legal obligations, Environmental Impact Assessment (EIA), Social license to operate, energy finance reserve obligation and overall environmental justice issues to hold corporations liable for noncompliance. In policy terms, the case raised questions about the appropriate roles of domestic law and bilateral investment treaties (BiTs) in determining the nature and scope of investor obligations. Other concerns highlight the importance of conducting EIA and recognising environmental standards in investment obligations. All these emphasises the role of law and policy in attaining human rights, energy access, transition, and energy justice considerations where properly structured.

Additionally, the inclusion of new players in the energy supply chain or transitional agenda (such as private and non-state actors) and their corresponding corporate responsibility highlights the significance of law and policy as a veritable tool for instigating social engineering or reducing or increasing the risk profile of energy activity – efficiency or transition. It is impossible to emphasise the significance of law and policy in deciding how various actors interact during the transition, particularly in light of the growing number of cases that are continually bringing to light the interrelated problems of energy and climate justice. Just transitions may still be a long way off for the nation unless legal interventions that seek to hold corporations directly responsible for their violations of public policy, the environment, and the energy transition are made, along with a widening of the energy transition space and approaches towards soft law approaches and the multisectoral interconnections. Thus, the goal of energy development, security and the transition is no longer independent, 'given its entrenchment in many other interconnected, local, regional and global issues and the larger relationships and interactions among nations.'

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[361] 'The United Nations (UN) Principles for Responsible Investment (PRI) report mentioned that they are about 300 policy instruments which recognise disclosure and transparency requirements on the environment, sustainability and governance.' - PRI, Global Guide to Responsible Investment Regulation (United Nations, 2016)

[362] ICSID Case No. ARB/15/29

The mini grid case study and its impact in the Niger Delta communities' reveal that the current energy system, including that of the mini grid sector is largely inequitable. For instance, pollution from fossil fuels is experienced in the ND and so is the uneven accounting of energy access, income, and wealth, as the poor within the ND who live in these polluted communities lack electricity access and capacity to self-generate electricity. Ikot Ada Udo village meets this frame entirely as a community whose land, soil, water, and crops have been polluted. The remaining occupants in this community are living within the ruins of a polluted environment, below the poverty line and lacking electricity. These people have the same or less than the average income like the rest of the nation but not compensated or recognized in any way by the REA.[363]

Again, the mini grid criterion strategy of targeting only areas furthest from the national grid is equally regressive as these vulnerable or marginalized spend a considerable part of their income on electricity, due to the archipelago nature of their environment and their creek-like housing. In a recent survey, some of these ND skip energy needs by opting for just lighting and phone charging load because of cost.[364] The Akipelai case study here has revealed the average Nigerian's emotional attachment to cheap/subsidized fuel rather than mini grids and this is owing to cost not matching income, inefficient load, time, and unfamiliarity with the maintenance of the technology. Understanding how Nigerians feel about the removal of fuel and gas electricity subsidies highlights how energy tariffs contribute to a collective interconnection between poverty, hunger, clean water, energy access, affordability and quality, decent work, education, and economic growth.

The challenge faced by the policymakers is therefore how to reimagine the energy targeting system given the flexibility of mini grid (low carbon), and to procedurally frame and distribute the same evenly without harming investments. But it seems that no solution is perfect. The Nigerian mini grids and subsidies do not go to everyone equally, they go first to everyone who-can make the up-front cost. This policy increases the energy burden of the low-income earners

[363] Ibid.

[364] (n 167) Bolon.

and the benefits of the middle class.[365] It appears regressive. The technology, policy and regulation, financing mechanism, investment and past pollution are all the controversial issues that policy makers will need to constantly rebalance using regulatory, economic, and social justice approaches. The question here is how we can address sustainable energy transition and help ND communities simultaneously.[366] It is submitted that this poses a case of balance. Because when it comes to equity, decision-makers and other interested parties must have a comprehensive energy system plan in which they continually consider who is asking for access and justice, who is responding, and whose questions are given attention.[367] It has thus recommended the need for contextual but integrated strategies to target these issues.[368]

The preceding suggests that constitutionalising and democratising Nigeria's RE law is essential to adequately embed energy justice standards and provide additional measures for ensuring responsibility. Since the colonial regime, Nigeria's energy governance and reforms have been development-driven and externally influenced, leading to debts and numerous legislations. However, these policies have failed to incorporate precise justice standards for the energy transition due to the nature of energy, development goals, and different interests within Nigerian society. The complex legal landscape in energy creates different legal realities across multiple standards, particularly in light of climate change. Thus, because of this complex energy landscape and because the nation's pursuit of natural gas as a transition fuel might impede the global decarbonisation agenda, raising an EJ and sustainable development issue for the present and future generations, the nation requires a just transition to renewable energy to underpin mitigation and decarbonisation within the transition. Doing this requires a multi-

[365](n 12) Baker.

[366] Ibid, Given the volatile and past polluted nature of this environment, issues abound regarding the fairness or otherwise of siting a diesel and solar hybrid mini grid in an already polluted ND community.

[367] Usually, it is the entitled and the empowered elites or politicians who make the laws (regime makers), (the experts) those who deal with the mini grid technology at the niche level, and the global/ international trends and intervention (landscape level) who get to ask the questions and whose answers get listened to that are engaged in the transition process.

[368] (n 12) Baker.

levelled governance institution that implements organisations and the frameworks through which diverse actors interact and build 'just' consensus for action.[369]

[369] N., Dubash et al, 'National and Sub- national Policies and Institutions' In IPCC: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change 1358 https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WFIII_Chapter13.pdf last accessed 10/03/2023

Chapter 7: Conclusion and Recommendations

This chapter addresses some of the challenges that might impede against a 'just' transition in Nigeria. It also provides a summary of the main thesis's argument and offers recommendations for how to approach these issues that aim to affect the nation's 'just' transition.

7.1 Summary and Conclusion

This thesis has focused on Nigeria's renewable energy (RE) transition process. It has examined how and why a multilevel perspective of the current transitions can better ensure a just energy transition in the country. Using mini grids as a case study, the thesis reveals how private, local, and international government power and interests, as well as existing regimes and competing objectives of actors, impact the implementation of clean energy legislative and policy packages for Nigeria's transition towards renewable energy. Through the case study, the thesis has emphasised the significance of a multi-governance approach (MLG) for robust coordination and the balancing of conflicting goals and power dynamics that exist in the transition towards a just transition, particularly for the rural Niger Delta communities that have been marginalised in previous transitions. Previous scholarship has explored transitions from multi-level perspectives, considering competing objectives, tensions, barriers, emerging trends, and technological advances, and their human rights and social implications. This thesis contributes to developing scholarship on transition theory by emphasising the impact of the MLP in promoting a just transition from fossils-based energy use to RE. This contribution is based on an analysis of policy framework regulations and mini grid case study projects in the Nigerian context, as well as their effects on vulnerable groups within the context, such as the rural Niger Delta communities. [1] It emphasises the value of MLP framing in reinforcing justice norms in the transition process through the recognition and targeting of these groups for the distribution of mini grids, capacity building, and ensuring their adequate involvement to facilitate a more equitable and inclusive transition that leaves no one behind.

[1] It analyses the mini-grid policy regulations and initiatives in the social context of rural communities in Nigeria's Niger Delta region.

The case study projects the injustices and marginalisation within the current transition. It demonstrates how the nation's energy governance regime responds to competing policy objectives and global trends of energy security and environment protection. The study makes clear how energy exclusions and injustice is a cognitive and cultural problem that flows through policy transitions and regimes as well as through the lack of functionalities of institutions. This lack of energy justice underpinning within energy transition policies, technology development, and use justifies the enlarging social justice exclusions and human rights violations in marginalised groups. The thesis argues that, in light of the transition's multifaceted nature and the interactive implications across national, disciplinary, international, and sectoral boundaries, it is critical to advance a justice approach for the entire transition process in order to prevent or lessen the exclusionary effects of this intricate process.[2]

7.1.2 The How and the Why

In answering why EJ considerations should accompany RE transitions, the research speaks to the purpose and impact of a multi-level perception of the transition and a multi-level governance in embedding justice norms within the current transition and its implications on stakeholders. For the 'how', the research considers the manner and procedures through which MLG can administer this objective of equality and fairness within the transition and contribute to the current energy transition process – using the procedural, distributive, and recognition justice tenets within policy and legislative making and mini grid project strategies. This thesis argues that through a formalised policy process, multi-level governance can be achieved. This will allow for a policy space and platform, for promoting strong coordination, interests rebalancing, and evidence-based decision-making, as well as energy citizenship empowerment, education, and reskilling necessary to improve capacities towards the transition. This study recognises that to fully understand and apply the multi-level governance for a ‘just’ transition,

[2] For instance, local contexts (communities) now have similar inclusionary, differentiated, and intersectional expectations of federal governments. These demands include formalised functionalities, compensating for or restoring the capacities of previous marginalised local contexts, and recognising bottom-up initiatives within national regimes and sectoral and international structures to make the transitions just, sustainable, and acceptable.

the quest of transition according ‘to whom’ where and when are equally essential. As earlier pointed out in the preceding chapters, 'the who's lens of justice perceived here is that of the rural marginalised communities of the Niger Delta region of Nigeria.

The 'what' inquiry reiterates meaning, objective, and implications. It exposes the normative exclusionary or inclusive inclinations of the transition towards the Niger Delta group when it comes to their non-targeting and non-recognition for the redistribution of mini grids. It also reveals the non-reiteration of their past marginalisation within the calculation of mini grid costs. This could be viewed as one of the transition's numerous unjust shortcomings.

This thesis considers the pluralist nature of EJ and MLP framing to be one of their most vital qualities. By examining the impact of policy regulations and mini grid projects on vulnerable groups like the rural Niger Delta communities, this thesis aims to highlight the importance of considering multiple perspectives towards enhancing the 'just' rebalancing of competing interests within the transition. It also understands the multi-layered/sectoral interests and approaches involved in the energy transition process, the need for functionalities of institutions, and the global nature of energy value chains. By recognising the different needs and challenges that different groups face, policymakers can develop more inclusive and effective solutions that consider the unique circumstances of all stakeholders. Ultimately, the goal is to promote a more equitable and sustainable energy development and transition in the country.

Given that the transition journey is collective as well as 'in context', the MLP framework as used here, considers the nation’s mini grid development implications through the procedural, distribution, and recognition tenet. The need for integrative, evidence-based law making and formalised processes is one of the contributions of this thesis, hence the use of EJ and MLP frameworks to portray these multiple sectoral approaches, relations, and complexities involved in the transition. As expatiated in chapter six, the proposed RE transition formalised policy process can bring together sectors, governmental departments and actors involved in the transition process and have them speak to each other for better governance and implementation of mini grid policy and transition strategies. The thesis and the recommendations show that silo approaches are no longer tenable for a successful transition exercise because of the multiple sectors and dimensions of energy and its complex impacts. Evidence based policymaking, planning and coordination as well as the balancing of the transition's many complexities is the goal of the MLP. It is argued that the MLP through the multi-level governance approach can

achieve this ‘justice’ purpose of sustainable transitions and collaboration without leaving anyone behind.

The MLP is one of the tools used in signposting the layers where RE transition could occur and how these layers, where poorly coordinated, could be fertilised grounds for energy exclusions. The goal is to use EJ’s distributive, procedural and recognition tenet at these MLP's transitioning layers (landscape, regime, and niches) to provide corrective measures to marginalised contexts, prevent and control tensions, or rebalance complex or competing interests. The thesis has explained that because niches exist in technology usage and business model trial stages, they rarely face much competition. Hence, because only very few socio-interactive processes happen at this stage, transitions cannot thrive. As a result, it is demonstrated using the mini-grid case study that the regime stage is the stage wherein the mini grids can attain a takeover and begin to compete with established regimes where they are integrated within the existing dominant structure. Consequently, the MLP's regime stage is where a lot of complicated social and technical interactions for the niche (mini grid) transition and transformation would happen. This is why strong coordination is needed to fit mini grids into the country's dominant oil and gas paradigm.

Thus, the thesis argues for interdependence and integration of the niche within an existing regime to allow for learning and collaboration for a possible destabilisation of the dominant meso-level paradigm and to prevent unjust exclusions that come with the new technology. Without the MLP framing and justice tenets for rebalancing, the marginalised and vulnerable would be continually hindered by cost, skill, and use, as such, cannot access distributive sustainable and secure energy services. These challenges justify the entry of private and other non-state actors to the sector. In addition, they also inform the national government’s intervention in the sector, with incentives for rebalancing as well as the strong governance and coordination necessary to drive the transition.

The thesis also uses the MLP's landscape level to demonstrate how externalities arising from global trends in RE or policy diffusion affect local energy access needs, and influence policymakers' energy and development policies and strategies at the national level. Relatedly, because the governments regulate the sector, they can deploy command and control instruments to encourage emerging markets to meet international targets. Governments can use laws and policies to rebalance markets for inclusionary measures toward secure energy access. Thus, the

thesis makes a case for the significance of MLP, via a multi governance approach in directing these laws and policies and guiding integrative development strategies that balance global pressures with local needs. Examples include markets, the Ukraine-Russian war and its impact on energy prices, subsidies, and RE global trends. This thesis discusses these themes in chapters 2, and 3. Chapter 4 discusses the legal and institutional framework for energy access and transition in the country and the extent to which the existing legal framework adopts a multi-level perspective and governance approach for a 'just' transition. Chapters 5 and 6 analyse the mini-grid legislation of 2016 as well as a few mini grid rural initiatives in the Niger Delta. Using MLP's multi-level governance approach, these chapters demonstrate how the private sector, national and international governance frameworks, and global transition trends interact and affect rural communities' energy access needs in Nigeria's Niger Delta. The distributive, procedural, and recognition justice tenets are used to address these impacts.

The study highlights the importance of laws and institutional structures for the transition's multi-governance. This is in light of its ability to achieve 'just' energy targeting, recognition, and distribution and their capacity to establish stakeholder collaboration. The case study also shows how (a) the initial failure to target the community for mini grid distribution and the failure to acknowledge how current vulnerabilities or historical marginalisation affect vulnerable groups' access to mini grids and associated costs, (b) developers complain of the lack of productive uses of mini-grids in these rural communities and how this affects their profit, (c) users argue about the unaffordability of load for businesses and how the grid electricity fared better for their energy needs, (d) competition between mini grids and fossil fuels is hampered by lax and poorly coordinated mini grid siting processes, contracts, and operations.

The case study highlights the need for policymakers to balance competing interests by ensuring a balance between development and other objectives. Accordingly, governments should follow EJ values to maintain this equilibrium in order not to further marginalise vulnerabilities and existing intersectionality's within the current transition. The thesis posits that MLPs, and its governance approach can help advance just transitions and appropriately rebalance investments for industrialization without further endangering previous sacrifice zones. Therefore, the normative contribution of the EJ and MLP framework is placing fairness at the centre of planning for the energy transition. Recognising where and applying the EJ values allows

policymakers and energy decision-makers to correct/balance previously marginalised interests and include inclusionary measures to prevent further/entrenched injustices. The diversity of interests in the transition highlights the significance of justice and the necessity of a multilevel perspective, considering the differentiated roles and interests that would necessitate strong coordination among the different actors and their interests or strategies for the realisation of a successful transition in the country.

Furthermore, the EJ and MLP calls for rebalancing access and secure and affordable energy issues nationally between the states and federal government regarding the targeting, recognition, and distribution of mini-grid projects. The REA (a national body) specialising in electrifying rural communities seeks to address this secure energy access and human rights violations in energy projects in local contexts using the distance from the national grid as the basis for mini-grid targeting. The thesis uses mini-grid projects in Niger Delta and the regulation to show how EJ notions within laws and policy design are necessary for proper targeting, correcting imbalances and outlining procedures for just transition.

The case study speaks to the issue of lack of access that can be cured by adequate targeting and reform of mini-grid regulations to read beyond served and unserved categorisation. The implication suggests the intervening role of the government in balancing social justice and incentivising RE sector development and acknowledgement of (1) the importance of energy as an essential good necessary for all, (2) the need for markets and functionalist institutions, and (3) influence guiding international implication and investment in the energy sector. Therefore, it evinces how a MLP’s consideration and governance approach can enhance stakeholder collaboration, protect rights, and ensure the effectiveness of people's participation in energy decision-making. Finally, the thesis shows MLP and EJ's limitations in their pluralistic nature and the consequences of the transition's isolator processes, which could equally prevent a successful transition. The solution for making transition work and the successful implementation of policies, laws, and strategies lies in the collaboration of distinctive actors, interests, and governance structures across all layers. This, the thesis argues, must begin with the cognitive reformation of the country's policy and legal structure regarding state governance of energy resources, re-skilling of actors, and training of policymakers in evidence-based policymaking, energy citizenship, and participatory development strategies.

The thesis shows how Nigeria's energy problem is multifaceted. This necessitates the need for multiple approaches, to be reconciled through the recognition of context and cooperation between various sectors and layers. Williamson agrees that embedded institutions and culture can constrain new rules governing transition.[3] This has been the bane of Nigeria's energy reforms – despite international influence. The application, effectiveness and coordination of these policy regulations and their enforcement have been minimal. The evidence of this is partly the lack of robust litigation in the sector and the lethargy of courts to adjudicate these interests.

Hence, a successful RE transition is more than just having legislative and policy reforms – centralised to decentralised mini-grid policy regulations. It is more about correcting the unfair cognitive culture that underpins the state's governance of resources. This can be done through a multi-levelled governance - a formalised policy process, as explained in chapter 6, using the mini-grid example, and this is the significant contribution of this thesis. It shows how energy justice and multi-level perspectives can jointly contribute to helping policymakers to navigate the current complex energy transition terrain. Both theories indicate the growing role of the inter-multi disciplinarity of sustainability research and how fitting these theories can contribute to energy transition scholarship.

It is proposed that the government follow this growing trend of intersectionality and rebalancing guided by justice promotion at the centre of its many policy objectives. This is because the government's policies and laws have heavily influenced the history of energy reforms in the country, and this will continue despite privatisation. And even with markets, it is seen that the government still needs to regulate relations. Therefore, the justice of the transition is in reframing the embedded unjust cognitive culture of government towards contexts and the people's development and how important it is to recognise the diversity of viewpoints and approaches. Notably, the C7 communique underlines the importance of energy efficiency being recognised first as the driving principle towards decarbonisation. Integrating sectors, contexts, and energy-related units deepens the collaboration, planning, and recognition

[3] C., Williamson, 'Informal Institutions Rule: Institutional Arrangements and Economic Performance' (2009) 139 *Public Choice* 371 – 387.

towards problem-solving and development of business models that work – without stifling development or the creation of exclusion elsewhere. Exarheas reports how CR 7 concluded conference communique highlights the emphasis on 'energy efficiency as key to realising decarbonisation' through supporting national-level transitions and empowering capabilities for all.[4]

The 2023 C7 member summit puts its well when it says:

> "...that unless the government addresses the systemic and cultural causes of the interconnected and parallel ongoing crisis, we will keep acting as firefighters running from one crisis to another, which is costly to the government's development budgets, humanity and the planet. Thus, progress towards an equitable world is the only hope."[5]

Therefore, the contribution of this thesis is that 'if multilateralism is the only way forward globally',[6] the best way to implement this nationally is through a formalised energy transition process.

7.2. Barriers to Just Energy Transition in Nigeria

As discussed in chapter six of this thesis, an effective energy transition goes beyond the establishment of legal and institutional framework. Thus, there are several barriers that impede implementation of the somewhat laudable principles espoused in relevant energy access laws and policies in Nigeria. These include a lack of political will, resource gaps, capacity gaps, technological and structural/institutional challenges. No matter how salutary a framework might be, it would not change the narrative unless and until members of the political class muster the political will by putting their feet on the accelerator, with a view to moving transition objectives from theory to practice. Also, the energy transition project is a resource-drawing project which overwhelms some developing countries such as Nigeria. The competitive

[4] Ibid.

[5] S., Martinstone, '7 key Take-aways from the C7 Summit,' Bond 25 May 2022 available at: ttps://www.bond.org.uk/news/2022/05/7-key-takeaways-from-the-c7-summit/ last accessed 27 May 2022.

[6] Ibid.

demands of other concerns might tempt those charged with the qualitative allocation of values and resources to perceive energy transition as a less demanding need, thereby leading to its de-prioritisation in budgetary allocation.

Closely related to this is the lack of or insufficient human skill and technological capacities to drive the energy transition project. Developing countries still experience huge knowledge, finances, and technical know-how gaps in the evolving energy transition sectors. Those with the requisite expertise in oil and gas need re-skilling towards new RE technologies and finances to access these technologies, which ends up as more cost for rural community users. These resource challenges thus fuel or exacerbate existing energy injustice across the globe. For instance, the thesis argues that the lack of strong coordination within the mini grid sector, gaps in resources and capacity, and technological problems have prevented mini grids from successfully destabilising the gas regime. In addressing these socio-technical challenges and advancing the MLP and the multilevel governance approach for a 'just' and successful mini grid transition in the country, the thesis makes the following recommendations:

7.3 Recommendations:

Further to the foregoing, this thesis makes the following recommendations.

(a) Evidence Based Policy Making

Multilevel governance, despite a formalised process, can also be hindered by weak political will when it comes to the implementation and enforcement of existing policies and legislation and the strong coordination of actors and interests for a successful transition. This is because of the significance of political will and capacity to influence successful policy outcomes. Wiener speaks of evidence-based decision making for better regulation and suggested that:

> "…Evidence-based decision making enlarges the scope of impact assessment and benefit-cost analysis, focusing on multiple risks, benefits, and costs. It centralises

> expert oversight to influence decisions and involves ex post evaluation for policy revision and improvement."[7]

It is argued that weak political will ensues when a government 's policies and strategies, from planning to implementation, are set up with the greatest possibility of failing due to insufficient reflection on context's diversity, structures, capabilities, and realities and on the success and impact of past transitions within a context's diverse groups. Post et al., refer to ineffective policies as "quick fixes" that shroud the government's lack of interest and capacity.[8]It is on this note that this thesis recommends moving away from political expediency and towards evidence-based policymaking that allows for targeted solutions based on adequate awareness of a context's heterogenous interests, actors and their unique and existing vulnerabilities, local knowledge, target participation, and risk assessment.

The thesis submits that it is this evidence-based decision making, actualized via a formalised policy making strategy, that increases likelihood of a policy's success and allows for capacity building strategies towards a "just" transition.

(b) Renewable Energy Law and Policy Reform

In light of global transition trends and lessons learned from developed and international systems, it is gleaned that policies aimed at promoting transitions are more successful in areas where there is a transparent and targeted legal framework that removes obstacles to "just" transitions and encourages public participation.[9] Olawuyi, puts this well when he stipulates that:

> "just transitions' that enhances energy citizenship will be stifled in countries with unclear or complicated processes for registering or formalising energy start-ups or

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[7] J., Wiener, Better Regulation in Europe: Current Legal Problems (OUP 2006) 59 (1): 447

[8] L., Post, A., Raile, E., Raile Defining political will (2010) *Politics and Policy*, 38 (4) 653-676

[9] UNFCCC's decarbonisation strategies and Germany's case studies samples addressed in Chapter 3 of this study.

> community initiatives…hence, the important starting point is to address pre-existing barriers to entrepreneurship, innovation and registration faced by private actors…"[10]

Thus, the thesis speaks of the need for targeted incentivisation of RE development, RE re-skilling, and knowledge dissemination as well as capacity development and job opportunities towards enhancing RE development in the country. However, the thesis submits that it is through the instrumentality of a RE law that regulatory complexities and coordination challenges in mini grid project, as well as those of unclear and incomprehensive legislation concerns can be resolved in the country.

A clear and comprehensive legal framework on RE development can fully address the procedural, distribution and mini grid targeting strategies such that safeguard against marginalisations, poor coordination and mini grid structural challenges. Etty and colleagues agree with the thesis that federalist structure of nations can hinder the establishment of renewable energy transition laws.[11] This is because of the navigation of procedural and substantive questions at the intersection of energy access and security,' economic development, the environment, and state and intersectoral relations.[12] These integrated objectives, though best addressed holistically at the centre, requires decentralised mechanisms and measures to best ensure practical implementation within a federalist structure, hence the need for the nation's RE policy reforms towards a RE legislation.[13] This thesis, therefore, advocates for a renewable energy law in Nigeria to help institute, organise and streamline all renewable energy activities under a single regime.

It is recommended that the proposed mini-grid policy reform should provide for (a) decentralised vs centralised language, structures and measures, (b) re-skilling and

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[10] D., Olawuyi, 'From Energy Consumers to Energy Citizens: Legal Dimensions of Energy Citizenship' in F. Ruven (ed.) *Sustainable Energy Democracy and the Law* (2021) 26 BRILL 101-123

[11] T., Etty, et al, 'Energy Transition in a Transnational World' (2021) 10 (2) *Transnational Environmental Law* 197 – 204.

[12] Ibid.

[13] Ibid.

empowerment of capabilities, EIA, and participation, and strengthening sectors through collaborative linkages for social innovation, (c) minimal EJ standards within policies for monitoring and impact linking, (d) local content, (e) balancing of competing interests (f) human rights protection and (g) enforcement and justice over irreversible environmental harm from RE project implementation to its decommissioning.

(c) A Multi-levelled Governance through a formalised Energy Transition Policy Process and Strategies.

Following the transition's complexity, and its wide range of actors, the thesis has revealed how the lack of institutional coordination, regulatory overlap and a possible duplication of roles especially following, the constitutional reforms that now enables state's participation in the NESI, can impede 'just' transitions. An analysis of some RE projects in Niger Delta rural communities, further revealed how mini grid projects' impact on these communities had not been linked to policy. This linking of policy to impact as it relates to development, recognition, distribution and procedural standards and capabilities to assess these mini grid services is limited in Nigeria and it is argued that this is not unconnected to structural and institutional or coordination challenges.

The thesis argues that empowering states within the country to disseminate and generate electricity is positive, given that states are the best allocators of marginalised contexts and best co-ordinators of energy-related sectors and government regulatory departments within their states – land, environment, local planning authorities, laws, local representative structures etc. However, it is suggested that apart from carrying out RE reforms, or the incorporation of evidence within RE policymaking strategies in the country, setting up strong institutional structures is crucial to enhancing these collaborative measures and preventing overlaps. Institutional structures can equally ensure adequate risk assessments of projects, performance monitoring, record and result tracking, interest rebalancing outcomes, and better linkage of RE projects to policy impacts.

Importantly, it is suggested that these institutions be set up in accordance with a formalised policy process, with administrative units created that are comprehensive enough to plan,

coordinate, approve, and execute projects, in addition to providing incentives and opportunities for mini grid projects or capacity building initiatives.[14] This implies that laws and structures should no longer be set in isolation and removed from contexts. Thus, the thesis recommends a multi-level governance approach, focusing on evidence gathering through a '*formalized policy process,*' to initiate RE law-making and institutional structures, addressing socio-technical barriers like coordination and capacity building towards a just transition.

Following on from the arguments in the preceding chapters, it is contended that an effective RE policy and legislation making begins with an EJ cognitive and cultural reconditioning at the foundation. An intersectoral integration of strategies and negotiation within this 'formal policy space' can enable monitoring, tracking of outcomes and linking of impacts. Additionally, strong institutions play a crucial role in EJ cultural reconditioning to prevent injustices in state natural (energy) resource management, energy supply generation involving best practices, reskilling, capacity building, and periodic public education. Consequently, this study suggests that this "formalised policy making process" be used to: (a) design RE laws and policies, and regulatory or institutional bodies, (b) embed energy justice principles within the legislation and institutional planning, as well as within coordination and implementation strategies: siting, design, targeting, distribution, procedure, implementation, and decommissioning of renewable energy projects in the country, (c) integrate mini grids within the existing electricity/energy structure and strategies of the country to enhance interdependence necessary for a possible competition and destabilisation of dominant gas regime, (d) intersectoral and context integration and the monitoring of impacts, making explicit the role of cooperation and limitations of non-state actors within the transition process and policy.

The proposal for linking policy impact to legislation and intersectional collaboration for institutional and policy effectiveness is not a novel idea, nor is the contribution of the MLP and EJ framework's use in guiding decision-making. However, there is not currently any unified RE Act in Nigeria. Moreover, due to the multidimensional nature of the country's energy problem, the multi-layers within which transition occurs, the involvement of multisectoral interest, contexts and solution approaches and their attendant tensions, it is recommended that

[14] (n 10) Olawuyi.

a multi-level governance approach be used to shape collaboration and linkages necessary to drive a just transition in the country, through a formalised policy process and platform. A formalised RE policy process (bringing together multiple transition layers, actors and interests and their complexities) is, therefore, necessary for embedding a just transition value within a people's culture and policymaking – leading to the correction of an unjust energy culture.

It is submitted that states – their ministries of land, community representatives, environment, and local planning agencies together; are the best at deciding processes, licensing, and the siting of mini-grid projects. Together, they can spot potential disputes and tense situations and develop fair, negotiated solutions. The formalised policy process structure provides a space for these intersectoral discussions of gaps, tensions and overlaps and recommendations of what strategies would work with little challenges, thereby fostering effective participation and stakeholder collaboration in the RE policy decision-making process. A formalised policy process can improve local mini grid knowledge sharing platforms for retraining, capacity, and community building. Additionally, a formalised policy platform and procedure can be helpful in resolving institutional and sociotechnical issues, supporting integrated transition policies with focused strategies, and guaranteeing a fair and equitable distribution of conflicting needs, rights, and interests.

7.3 Further Research

This thesis has developed an MLP and EJ frame through a social context RE transition experience to show how MLP is a broad tool that can be redefined and tailored to different contexts to drive a just transition. This evidence is represented in UNFCCC frameworks for differentiated responsibilities and circumstances. This should be replicated nationally using decentralised measures. The recent constitution amendment in Nigeria which empowers states to generate and distribute electricity is a step in the right direction. The development complemented this researcher's initial research thoughts and possible recommendations when this study started in 2019. However, this research recognises that empowering state departments and institutions within states and properly integrating energy transition-related sectors and non-state actors will be imperative for limiting local exclusions and empowering capabilities towards RE. Regarding the implementation of this reform – which empowers the creation of mini-grid regulatory bodies within states: (a) Further research (empirical) is required to connect data and specific evidence of socio-technical and institutional challenges

to this desk-based study and the subsequent development of this theory in practice, with evidence of a multi-level governance implication within policy reforms. (b) Further study is perceived on the role of non-state actors within the transition and whether the cooperation by non-state actors (private actors and organisations) in the renewable energy transition strategies in the country ought to be passive or active and whether government policy can provide for this harmonisation of efforts. Notably, the Nigerian state suffers from data problems, and this is one-way REA could enhance research towards linking policy impact output to policy legislation.

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