



**CASE STUDY
NIGERIA**

Decent Jobs for Youth and Women in Nigeria's Low-Carbon Transition

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Executive summary

Climate change parameters have gained global consensus, highlighting the imperative to move away from environmentally harmful practices (Oyebode, 2022). Simultaneously, the concept of a just transition—a pathway ensuring that the shift to a low-carbon economy is inclusive and fair—is still evolving (Ojo & Mustapha, 2022). At regional and national levels, particularly in Nigeria, this discourse intertwines with developmental priorities (Obeng, 2021). These priorities are rooted in tangible challenges such as energy poverty and the necessity for economic diversification, moulding the distinct goals and objectives of the LCT in different geographical contexts. One of these developmental priorities is the growing unemployment rate of 34.9% for young people between ages 15-34, amidst the impending “population time bomb” (National Development Plan 2021-2025). As a result, Nigeria has designed a national development plan that encompasses a grand strategy aimed at addressing its developmental priorities with the recognition that the Renewable Energy sector can generate over 100 million jobs in 10 years (Ogbonna et al, 2023). Despite these efforts, current policies and strategies have primarily focused on energy conservation and decarbonisation efforts, lacking a specific emphasis on labour-based incentives and job creation. This imbalance places a disproportionate burden on the younger generation, subjecting them to adverse consequences of the prevailing conflict between environmental preservation and employment generation.

The Nigerian government demonstrates its dedication to sustainable energy development through a range of initiatives, including policy, regulatory frameworks, and targeted action plans promoting renewable energy sources (Ogbonna, Nwachi, Okeoma & Fagbemi, 2023). Moreover, the updated Nationally Determined Contribution (NDC) showcases heightened ambition, aiming for a 31% increase in emissions by 2030 while elevating economy-wide mitigation targets to 47%, with 20% as unconditional reductions. This aligns closely with the 1.5°C pathway of the Paris Agreement, aiming for emission peaks by the decade's end. Additionally, the introduction of the "decade of gas" in 2020 signals Nigeria's commitment to boosting domestic natural gas consumption, which offers relatively lower CO₂ emissions compared to fuel oil and coal.

Furthermore, the government is spearheading initiatives to transition both rural and urban areas from biomass to natural gas for cooking purposes. This move acknowledges natural gas's crucial role in achieving decarbonization goals. Gas consumption is expected to rise by 25% above 2019 levels by 2030, before declining to half by 2060 to achieve carbon neutrality. Currently, gas is extensively used in sectors like cooking, power, industry, and exports. Post-2030, consumption is projected to decrease due to global demand shifts and ongoing transition efforts. Simultaneously, the government has implemented a comprehensive framework, including policies like the National Renewable Energy and Energy Efficiency Policy (NREEEP) and National Energy Efficiency Action Plan (NEEAP), to harness renewable energy, promote energy efficiency, and expand electricity access, especially in rural areas. Measures such as the NEC Mini-Grid Regulations aim to accelerate electricity provision in underserved areas, while the NERC Eligible Customer Regulations streamline electricity sales. These efforts align with the Sustainable Energy for All Action Agenda (SE4All-AA) and promote local resource utilization within the Nigerian Electricity Supply Industry (NESI).

Traditionally, trade unions in Nigeria have championed the just transition concept, stressing the significance of maintaining decent work conditions throughout the transition (Ojo & Mustapha, 2022). Their focus includes safeguarding workers' rights, ensuring workplace safety, upholding collective bargaining agreements, and providing social protection for those impacted by the shift, central to their vision of a just transition (Ojo & Mustapha, 2022).

Conversely, the broader environmental well-being prioritized by the government, emphasizes decarbonization and environmental efforts as primary while viewing decent jobs as a natural consequence. Despite sharing the overarching goal of transitioning towards a more sustainable future, the differing priorities highlight the multifaceted interpretation of the priorities in a just transition, underscoring the need to balance these perspectives for a universally accepted framework in Nigeria (Ojo & Mustapha, 2022).

As a result of the above imbalance, we argue that the low-carbon transition has become a handmaiden to fossil fuels, as it replicates the injustice enshrined in the traditional energy generation sector, leaving many disadvantaged groups, especially youth and women, on the fringes of the clean energy revolution. For instance, the energy transition plan in Nigeria represents a significant initiative aimed at combating energy poverty by fostering sustainable growth in clean energy generation. As of now, this plan doesn't explicitly mention the inclusion of youth and women (Policy Center, 2023). Additionally, The National Energy Efficiency Action Plan (NEEAP), spanning from 2015 to 2030 and intended to implement the National Renewable Energy and Energy Efficiency Policy (NREEEP) in Nigeria emphasizes educating the youth about the responsible disposal of energy-efficient lamps and batteries while lacking a specific framework for creating jobs or facilitating youth employment in the energy sector, solidifying youth as consumers rather than partners in the transition. Though the plan gives precedence to women's empowerment within the energy landscape, this is only particularly regarding their involvement with traditional energy sources. This lack of prioritization underscores the secondary role assigned to youth and the limited job prospects available for women and youth in the Low Carbon Transition (LCT) and within the broader context of the "Decade of Gas."

To address critical questions about the balance between LCT objectives and job creation for youth and women, the case study draws on evidence from a series of case study interviews with key stakeholders within the Nigerian Low Carbon Transition sector as well as grey and academic literature. This aims to identify the perspectives of youths and women on the hindrances to a just transition, the impact of national policies on inclusive job creation, and the necessary policy adjustments for enhanced inclusive participation in the transition process. We acknowledge that the transition in Nigeria mandates significant alterations in current production and consumption practices to reduce greenhouse gas emissions while ensuring equitable distribution of both the costs and benefits across society (Carley & Konisky, 2020; Jennings, 2020). We propose that the transition formula doesn't necessitate an "either-or" scenario but, rather, a harmonious blend of priorities that are equally crucial and mutually reinforcing.

Key Messages

There is a need for an equitable transition in Nigeria's low-carbon journey. The research highlights that historically, marginalized groups like youth and women have faced exclusion from decision-making processes and job opportunities within the energy sector. This exclusion perpetuates socio-economic disparities, hindering efforts towards inclusive growth and sustainable development. Without targeted interventions to address these inequalities, there is a risk of replicating the same patterns observed during the fossil fuel era, where job opportunities were often concentrated among privileged groups. Moreover, the study emphasizes that equitable job creation is not only a moral imperative but also essential for the success and sustainability of Nigeria's transition to a low-carbon economy. By providing decent job opportunities for marginalized communities, such as youth and women, Nigeria can harness the full potential of its human capital, driving innovation, productivity, and economic growth. This inclusive approach aligns with international best practices and commitments, including those outlined in the Paris Agreement, which emphasize the importance of addressing climate change while promoting social equity.

Furthermore, the study underscores the potential consequences of failing to prioritize equitable job creation, including social unrest and conflict. Inequitable distribution of employment opportunities can exacerbate existing tensions and grievances, undermining social cohesion and stability. Conversely, prioritizing job creation for marginalized groups can foster a sense of ownership and inclusion, contributing to greater social harmony and resilience.

Bridging Environmental Goals with Inclusive Opportunities. Nigeria faces a significant hurdle in harmonizing its policies and strategies for the low-carbon transition with the imperative to create labour-based incentives, especially for marginalized groups like youth and women. One key aspect to consider is the disconnect between the commendable goals set forth in the Nationally Determined Contribution (NDC) and the lack of explicit emphasis on inclusive job creation (Nweke-Eze, 2022). While the NDC outlines ambitious targets for emission reductions and renewable energy adoption, there remains a gap in translating these goals into tangible opportunities for marginalized communities. This lack of alignment undermines the effectiveness of Nigeria's efforts to achieve sustainable development and social equity. Besides, the absence of specific provisions for labour-based incentives within existing policies and strategies exacerbates the challenge of inclusive job creation (Policy Center, 2023). Without targeted interventions to promote employment opportunities for youth and women, Nigeria risks perpetuating existing inequalities and stifling socio-economic progress. It's imperative to recognize that a just transition requires proactive measures to ensure that the benefits of environmental initiatives are equitably distributed across society.

Navigating the Interplay of Priorities in Nigeria's Transition towards a Low-Carbon Future. The transition to a low-carbon economy in Nigeria is marked by a complex interplay of divergent priorities among stakeholders. While trade unions advocate for maintaining decent work conditions and labor rights throughout the transition, civil society organizations and the government prioritize broader environmental well-being. This divergence poses challenges in aligning strategies to ensure inclusive job creation, particularly for marginalized groups like youth and women. Balancing these priorities is crucial for achieving a just transition that addresses both environmental sustainability and socio-economic equity effectively. Fostering dialogue and collaboration among stakeholders is essential to navigate these complexities and advance towards a sustainable and equitable future for Nigeria.

Acknowledging Colonial Legacies in Nigeria's Low-Carbon Transition for Inclusive Development. Historical factors, including colonial legacies, exert a significant influence on the socio-economic landscape and awareness of low-carbon transition initiatives in Nigeria. These legacies shape perceptions, power dynamics, and access to resources, impacting the effectiveness and inclusivity of transition strategies. Recognizing and addressing these historical influences is essential for designing transition strategies that are equitable, culturally sensitive, and responsive to the needs of all stakeholders. By acknowledging and mitigating the impact of colonial legacies, Nigeria can foster a more inclusive and sustainable transition towards a low-carbon future.

Youth as Catalysts for Change. The research highlights the pivotal role of youth as agents of change in driving the low-carbon transition. It underscores their potential to innovate, advocate for sustainability, and lead renewable energy initiatives, thus contributing significantly to the transition process.

Skills Development and Capacity Building. Emphasizing the importance of skills development, the study underscores the need for targeted capacity-building programs to equip youth with the technical know-how and entrepreneurial skills required in the renewable energy sector. These initiatives aim to empower youth to actively participate in and benefit from the transition.

Recommendations

In order to capitalise on the opportunities a just transition brings for youth in Nigeria, this case study also presents a number of key policy and programming recommendations for different stakeholders in the low-carbon transition ecosystem.

Incentivising low-carbon initiatives for Entrepreneurship

- One way to address the financial hurdles faced by clean energy entrepreneurs, particularly women-led ventures, is the establishment of a dedicated, low-interest loan facility or fund. This fund could be set up by governmental or private entities, offering accessible and affordable financing tailored to the clean energy sector. Additionally, this facility could specifically address the needs of women entrepreneurs, providing mentorship, financial literacy programs, and support services, aiming to increase their likelihood of securing funding and fostering sustainable business growth.
- **Establish import-substitution initiatives:** Encourage local production by introducing an import-substitution policy for energy components. Incentivize local manufacturers through tax breaks and support schemes.
- **Implement specific renewable energy Export Processing Zones:** Establish special economic zones from existing free trade zones in Nigeria, that would focus on renewable energy production, offering tax relief, infrastructure, and access to foreign markets to stimulate manufacturing growth. The establishment of e-commerce-specific platforms facilitating access to markets has also been emphasized.
- **Introduction of currency hedging mechanisms:** Create a structured currency hedging mechanism to shield entrepreneurs from drastic fluctuations in foreign exchange rates, ensuring more stable costs in energy equipment purchases.
- **Tax harmonization policies:** Introduce harmonized taxation policies specifically tailored for renewable energy businesses. This should include the simplification of tax codes, reduction in tax rates, and incentives for green enterprises. Afterwards, develop programs that educate entrepreneurs about tax deductions and exemptions available for clean energy initiatives, focusing particularly on youth and women-led businesses.

Bridging the skills gap: the role of TVET and other training programmes

- Integrating Technical and Vocational Education and Training (TVET) into policy frameworks stands as a vital step toward addressing the knowledge gap and limited technical training opportunities in Nigeria's renewable energy sector. By designing comprehensive TVET programs focused on renewable energy systems and establishing specialized training centres, individuals, particularly youth and women, gain access to practical, hands-on learning experiences in clean energy technologies.
- Non-Governmental Organizations (NGOs) and civil society organizations are uniquely positioned to implement a multi-level training approach aimed at upskilling trainers within Technical and Vocational Education and Training (TVET) programs. This approach involves empowering a core group of trainers by providing them with advanced knowledge and hands-on expertise in renewable energy systems, such as solar power and energy-efficient technologies. These trained individuals, equipped with the latest industry insights and best practices, then become agents of knowledge

transfer. They, in turn, train a wider network of educators, expanding the reach and impact of TVET programs across various regions in Nigeria.

- To prepare informal sector workers in Nigeria for the Low Carbon Transition (LCT), targeted upskilling initiatives are essential. By providing technical training in renewable energy technologies, fostering entrepreneurship through business development courses, diversifying skills, offering certifications in clean energy fields, and guiding resourceful adaptation strategies, these programs aim to equip young workers with the necessary skill set to navigate and contribute effectively to the evolving energy landscape.

Promoting a gender-sensitive approach

- **Gender Sensitization Campaigns:** Implement national awareness campaigns focusing on contextually specific gender equality messages in the energy sector. This initiative should encompass educational modules in schools and broader media campaigns aimed at altering societal perceptions of women's roles in the industry.
- **Alternative Financing Schemes:** Alternative financing schemes such as 'energy as a service' and instalment-based payment plans, inspired by successful models in countries like Kenya and Bangladesh, offer an innovative approach to enhance access to clean energy in Nigeria. By partnering with microfinance institutions or establishing specialized energy service companies, these models allow users to pay for clean energy gradually, making it more affordable and accessible, particularly in rural communities. Embracing such financial strategies could significantly boost energy access in Nigeria, stimulating job creation and fostering sustainable economic development. While the measures employed by entrepreneurs help alleviate some of the financial challenges, access to government grants remains essential to support sustainable renewable energy projects by young entrepreneurs in impoverished areas.

More specifically for the following stakeholders:

- **Government Agencies:**
 - Implement youth-focused employment programs within the renewable energy sector, offering vocational training, apprenticeships, and internships.
 - Enact policies that incentivize private sector involvement in youth employment initiatives, such as tax breaks or subsidies for hiring young workers in clean energy fields.
 - Allocate funding for educational institutions to develop curriculum tailored to the skills needed for jobs in the low-carbon transition.
- **Private Sector Companies:**
 - Establish mentorship programs and internship opportunities to provide hands-on experience for young professionals interested in renewable energy careers.
 - Create diversity and inclusion initiatives to ensure equitable hiring practices and opportunities for women in leadership roles within the organization.
 - Collaborate with educational institutions to develop specialized training programs that align with industry needs and provide job placement assistance for graduates.
- **Non-Governmental Organizations (NGOs) and Civil Society**
 - Advocate for policies that prioritize youth and women's employment in the low-carbon transition sector and hold the government and private sector accountable for their commitments.

- o Provide capacity-building workshops, entrepreneurship training, and networking opportunities for young people and women interested in pursuing careers in renewable energy.
- o Conduct research and awareness campaigns to highlight the importance of youth and women's inclusion in the low-carbon transition and its potential socio-economic benefits.
- **Educational Institutions**
 - o Develop and offer courses and programs in renewable energy technologies, sustainable development, and green entrepreneurship to equip students with the necessary skills for employment in the sector.
 - o Establish partnerships with industry stakeholders to provide students with practical training opportunities, access to cutting-edge research facilities, and mentorship from industry professionals.
 - o Promote gender equality in STEM fields by encouraging female students to pursue studies and careers in renewable energy through targeted outreach programs and scholarships.
- **International Development Agencies and Donors:**
 - o Allocate funding for youth employment projects that focus on skills development, job placement, and entrepreneurship in the renewable energy sector.
 - o Support initiatives that promote gender diversity and inclusivity in the workforce, such as mentorship programs, leadership training, and advocacy campaigns.
 - o Invest in infrastructure and capacity-building programs that facilitate access to renewable energy technologies and create employment opportunities for youth and women in low-income communities.

Future research

The case study also brings to fore several knowledge gaps for future research and an opportunity to build an inclusive LCT research agenda.

- **Impact of Gas Transition on Renewable Energy Practices:** Given the substantial clamor for gas as a transitioning fuel, research is needed to understand how Nigeria's 'Decade of Gas' initiative influences or impedes the practical execution of renewable energy practices in the country. Examining the interaction between gas and renewable energy policies can provide insights into achieving a balanced energy transition.
- **Formalization of Informal Sector Jobs:** Research could explore the feasibility of formalizing and legitimizing jobs in sectors such as recycling and waste management, primarily occupied by women, within Nigeria's low-carbon transition strategy. This research could assess the potential impact of increasing wage margins, ensuring access to benefits, and formalized support structures on job quality and inclusivity.
- While acknowledging the disparities in scholarship on the just transition, research must delve into the ways Nigeria can integrate its energy, employment, and environmental policies to develop a more unified and comprehensive strategy. This strategy should balance sustainable energy needs and create job prospects in renewable sectors.
- There is sparse research into the extent to which Nigeria can address and mitigate the historical influence of pre-colonial structures on its transition to a just society in the context of environmental change.
- The informal sector, particularly in recycling and waste management, plays a significant role in Nigeria's economy, with a predominant workforce composed of women. However, these jobs often lack formal recognition, leaving workers

vulnerable and marginalized. Research aimed at investigating the feasibility and potential implications of formalizing these informal sector jobs within Nigeria's low-carbon transition strategy is relevant.

- There is a need for research to examine how differentiated responsibilities are conceptualized and operationalized within Nigeria's low-carbon transition policies and strategies.

1. Introduction

Nigeria possesses abundant energy resources, encompassing coal, biomass, crude oil, and natural gas (Nweke-Eze, 2022). The nation's substantial reservoir of natural assets positions it favourably for a prominent role in renewable energy production. In broad terms, Nigeria's energy consumption, primarily relies on traditional biomass and waste, representing a significant share of 73.5% of the nation's primary energy consumption in 2018, with fossil fuels contributing to 26.4% of the energy consumed, while hydropower accounted for the remaining 1% (Bamgbopa, Musbaudeen, Dindi, Alabi, Sodiq, Yusuf & Sanusi, 2019). In 2022 however, renewable energy became a part of the mix, reducing the other sources by contributing 16.4% of the total electricity capacity (Statista, 2023). Like many countries in the global south, the attainment of universal energy access remains a daunting challenge, significantly impacting socio-economic development (World Bank, 2021). This is because, despite Nigeria's central role in Africa's energy transition (Ogbonna et al., 2023), the country faces the dual challenge of diversifying its energy mix and economy (Umbach, 2010).

It is settled discourse that the transition in Nigeria mandates significant alterations in current production and consumption practices, requiring cleaner technologies and reduced greenhouse gas emissions (Ojo & Mustapha, 2022), all while ensuring equal distribution of both the costs and benefits across society (Carley & Konisky, 2020). Supporting this mandate, the National Climate Change Policy and Response Strategy aims to foster low-carbon, high-growth economic development, pivoting from an oil-dependent economy to a more sustainable and diverse structure (Jennings, 2020). Notably, the initiative aims to replace traditional fuels with Liquefied Petroleum Gas (LPG) in alignment with Sustainable Development Goal 7 (SDG7). However, these shifts reveal substantial income and wealth disparities, where 4 out of 10 Nigerians live in poverty and nearly 39.1% fall below the global poverty threshold (World Bank, 2021; Dataphyte, 2023). Nigeria's Energy Transition plan targets a move towards electricity and biogas-based cooking post-2030, reflecting a correlation between household income levels and preferred fuel types (Nweke-Eze, 2022; Heinrich Boll Foundation, 2021).

This socioeconomic disparity traces its roots to a wider structural and institutional challenges coming from Nigeria's colonial history. Marked by British rule which led to enduring disparities in infrastructure, economic development, and educational opportunities (World Inequality Report, 2022), the colonial investments, mainly concentrated in urban centers, perpetuated regional disparities that persist post-colonialism. The uneven distribution of resources and infrastructure remains a pivotal factor influencing awareness and prospects in the context of LCT initiatives in Nigeria.

Consequently, the government's fixation on gas as a transitional fuel in Nigeria is influenced by various factors interlinked with the nation's economic and energy landscape. Nigeria, faced with a significant budget deficit of 37% in 2022, relied on domestic and foreign loans, ultimately elevating its debt profile to N45 trillion by the year's end. Consequently, these financial constraints have hindered the country from meeting its revised NDC pledges, projected to cost USD 117 billion by 2030 (Olorunfemi & Anieze, 2022). The insufficient government support for the private sector in the energy transition has led to immense pressure solely on the government to drive rapid economic development. This pressure has

directed the country's focus towards gas as a transitional fuel (Adzawla, Sawaneh, Yusuf, 2019), especially as it strategically invests in fossil fuel exploration to propel progress in various energy sectors, contradicting its carbon neutrality goals.

With Sustainable Development Goal 7 advocating for widespread access to affordable and dependable energy, the current high costs associated with renewable energy prevent more than half of the Nigerian population from accessing these sustainable solutions. Consequently, individuals, especially those facing economic hardships and living in impoverished conditions, resort to unsustainable methods like tree cutting for charcoal production when their livelihoods are severely strained (Ogbonna, Nwachi, Okeoma, & Fagbami, 2023). This limitation in renewable energy accessibility further emphasizes the government's inclination towards gas, which is seen as a more viable and readily available energy source to address the country's energy needs and economic demands. The study seeks to demonstrate how job creation within LCT offers a viable solution for addressing job and economic pressures without demanding an exclusive choice between options.

Nigeria clings to the promise that the transition holds potential for job opportunities due to the link between inequality, poverty, and unemployment (Ogbonna, Nwachi, Okeoma & Fagbemi, 2023). Its dependence on this promise is complicated by challenges such as stakeholder exclusion, lack of cohesion (Edomah, Ndulue, & Lemaire, 2021), economic poverty (Dioha, MO, Emodi, NV, Dioha, EC, 2019), and a heavy reliance on a biomass-based economy (Adewuyi, OB, Kiptoo, MK, Afolayan, AF, Amara, T, Alawode, OI, Senjyu, T, 2020). This complexity is further compounded by the fact that although oil exports make up only 13% of the country's Gross Domestic Product (GDP), they constitute a significant majority of Nigeria's foreign exchange earnings, contributing up to 95%. This sector notably generates over 80% of the nation's total income (Osunmuyiwa, O, Biermann, F, Kalfagianni, A, 2018).

Given the conflict of stakeholder perspectives on what should be prioritized in the transition, the study delves into the plight faced by youth and women amid the complexities of the "just transition," where conflicting interests prioritize revenue generation, environmental concerns, community welfare, and decent jobs in silos. Chiefly, current policies and strategies have primarily focused on energy conservation and decarbonization efforts, lacking a specific emphasis on labor-based incentives and job creation. We argue that influential stakeholders, including governments and private sector giants such as multinational oil and gas companies involved in the transition, prioritizing environmental preservation over job creation with the expectation that jobs will naturally flow as in the case of fossil fuel. Consequently, we witness the perpetuation of a key injustice, where renewable energy efforts tend to over-rely on or is significantly influenced by the existing production and energy consumption systems fuelled by fossil fuels. This choice satisfies the growing energy and job demands of the more affluent members of society, often at the expense of those geographically and economically disadvantaged due to their proximity to clean energy infrastructure, gender, political affiliations and age demography.

The paper's structure unfolds with an Introduction detailing the conflict between environmental concerns and job creation, introducing the theme of "jobs versus environment." It progresses with Chapter 1, "Distributive Justice," discussing clean energy access disparities and their impact on youth and women; "Procedural Justice," examining policy deficits and exclusivity, and "Recognition Justice," delving into cultural barriers and women's exclusion in climate politics. The subsequent chapter examines job creation in the Low Carbon Transition (LCT), dissecting sectors, challenges, and opportunities for youth and women. Lastly, a "Recommendations" chapter outlines strategies and policies to address identified challenges, concluding with a summary and advocacy for a more equitable approach in the transition.

1.1 Methodology

The research employs the theoretical foundation of a 'Just Low-Carbon Transition,' guided by concepts articulated in INCLUDE's evidence synthesis paper on Youth in Low Carbon Transitions in Africa (2023) and Bloomer and Morrissey's work (2023). These highlight the core elements of justice and encompass distributive, procedural, and recognition justice, framing the examination of youth and women's experiences within Nigeria's Low Carbon Transition. Drawing on the principles of decent work by the International Labor Organization, this study delves into the intricacies of job decency and the potential consequences of job losses during the transition (Ogbuanya and Chukwu, 2020).

We conducted a single-case study focusing on Nigeria, selected for its demographic, economic, and environmental significance. Interviews, snowball sampling, and key informant approaches guided the case study, involving 24 participants from various sectors including government, civil society, NGOs, youth and women groups, labour unions, and entrepreneurs. The research employed qualitative methods through semi-structured interviews and two focus group discussions in the North East and North Western regions. Data was collected using digital platforms like WhatsApp, Google Meets, and Zoom.

Semi-structured open-ended questions facilitated data collection, exploring factors influencing or hindering youth and female employment in the Low Carbon Transition (LCT) and entrepreneurship within this context. We discuss the opportunities, challenges, and potential job losses in LCT and non-LCT sectors affecting youth and women.

The study encountered limitations, notably the potential bias associated with snowball sampling that could reduce internal validity. To mitigate this, we sought a diverse group of participants through internet searches, databases, and interviews with key stakeholders. It's important to note that findings from a single-case study, in this instance, Nigeria, cannot be generalized to Sub-Saharan Africa. Instead, they offer insights into context-specific similarities.

1.2 Stakeholders And Conflicting Priorities

The global shift toward low-carbon energy sources has deeply impacted Nigeria's economy, primarily due to the fluctuating and often escalating prices of crude oil, as well as the substantial costs of fuel imports. This economic conundrum has significantly affected multiple industries, leading to the disheartening consequence of job losses in the country. Consequently, Nigeria finds itself at a critical juncture, where it must reconcile the imperatives of low-carbon transition with the preservation of domestic industries and the labour force, all while navigating the intricate global energy landscape. This synthesis necessitates a comprehensive reevaluation of Nigeria's energy strategy, encompassing not only supply diversification but also job creation and the establishment of safeguards to buffer against economic shocks triggered by the global energy transition.

Nigeria's commitment to Paris agreement is showcased through a suite of initiatives, comprising policy, regulatory frameworks, and targeted action plans aimed at reducing emissions and advocating renewable energy sources. The updated Nationally Determined Contribution (NDC) embodies Nigeria's heightened ambition and enhanced quality in addressing climate action beyond 2020. Realigning baseline projections with precise economic growth estimates, the revised NDC anticipates a 31% increase in emissions by 2030, while simultaneously elevating economy-wide mitigation targets to 47%, with 20% as

unconditional reductions. This updated NDC aligns more closely with the 1.5°C pathway of the Paris Agreement and strives to achieve emission peaks by the decade's end, showcasing a marked reduction in absolute emissions.

Specifically addressing the oil and gas sector, Nigeria's revised NDC signals significant progress, committing to end flaring by 2030 and pledging a 60% reduction in fugitive methane emissions from oil and gas operations by 2031, strategically curbing a substantial portion of energy sector greenhouse gas emissions, embarked on a notable drive to implement innovative solutions in solar off-grid systems. As a commitment to this drive, the year 2020 witnessed the introduction of the "decade of gas" by the federal government, signifying gas a firm commitment to bolstering domestic natural gas consumption (Nweke-Eze,2022). Notably, natural gas, with its 12.3% equivalent CO₂ emissions in generating one kWh of energy, emerges as a comparatively environmentally favorable alternative when contrasted with fuel oil and coal (Nweke-Eze,2022).

This initiative is designed to facilitate the transition of both rural and urban dwellers from the conventional use of biomass to natural gas for culinary purposes. Consequently, In the pursuit of energy transition in Nigeria, the government has recognized the pivotal role of natural gas as a major facilitator in bringing the nation closer to its decarbonization objectives. It is anticipated that natural gas will play a key role in narrowing the clean cooking gap by promoting the use of Liquefied Petroleum Gas (LPG) in the country (ETP,2022). As per the Energy Transition Plan (ETP), it is projected that gas consumption in Nigeria will increase by around 25% above the 2019 baseline by the year 2030, before subsequently decreasing to approximately 50% of the 2019 figure as the nation moves closer to its 2060 target of achieving carbon neutrality. In 2019, gas consumption in Nigeria stood at approximately 2.9 trillion cubic feet (tcf), with a significant portion, roughly 1.7 tcf (equivalent to 60%), allocated to sectors such as Buildings (Cooking), Power, Industry, and Exports. Post-2030, it is anticipated that gas consumption will decrease, primarily due to the influence of declining global demand and the ongoing transition efforts (Nweke-Eze,2022).

In parallel, the Nigerian government has established a framework inclusive of the National Renewable Energy and Energy Efficiency Policy (NREEEP), National Energy Efficiency Action Plan (NEEAP), and National Renewable Energy Action Plans (NREAP). These strategies focus on harnessing renewable energy resources, emphasizing energy efficiency, and extending electricity access to remote areas through the Rural Electrification Strategy and Implementation Plan (RESIP). Complementary measures, such as the NEC Mini-Grid Regulations, specifically target underserved areas for accelerated electricity provision, aligned with the Sustainable Energy for All Action Agenda (SE4All-AA). Additionally, regulations like the NERC Eligible Customer Regulations streamline the process for direct electricity sales, while the Regulation on National Content Development promotes local resource utilization within the Nigerian Electricity Supply Industry (NESI).

Figure 1: Assessment of Just Transition Policy Integration in National Strategies

JT policy areas/ GJP area of work	Policy strategy	ERGP	Vision 20:2020	NIRP	NEP	INDC
Employment Considerations	Sustainable Enterprises					
	Resilient Enterprises					
	Green Employment Programme					
	Skills development					
	Social protection					
	OSH					
	Social dialogue					
Environment Considerations	Mitigation strategies					
	Adaptation and resilience strategies					
	Specific mention of 'green jobs' or employment- environment linkages					

Source: ILO, 2020

The table presents an overview of various national policy strategies, indicating the recognition of different just transition policy areas through colour-coded boxes. Blue boxes denote the acknowledgement of specific just transition policy areas within each policy strategy. Varied colour intensities reveal the degree of consideration given to each policy area, aiding in the identification of well-integrated just transition policies within national frameworks and emphasizing potential areas lacking emphasis. Observations from the image indicate that elements such as green employment, resilient entrepreneurship, social dialogue, occupational safety and health (OSH), and explicit references to green jobs are less commonly featured across the board.

The Federal Government of Nigeria collaborates with a spectrum of stakeholders, aligning objectives to achieve comprehensive energy goals and socio-economic development. Notably, Nigerian National Petroleum Company Limited, Ministry of Power, Ministry of Environment, REA (Nigerian Rural Electrification Agency), Ministry for Women Affairs, and Ministry of Youth Development collectively pursue various objectives:

- **Energy Sovereignty and Security:** Emphasis is on securing the country's energy independence and ensuring a stable energy supply for socio-economic development.
- **Optimizing Energy Mix:** The collaborative modelling aims to enhance the country's energy portfolio for greater efficiency and sustainability.
- **Universal Access and Gender Equity:** Collective efforts strive to provide modern energy services to all, ensuring territorial and gender equity to mitigate energy inequalities and injustices.
- **Financial Flows and Investments:** A key focus remains on increased financial investment in oil, gas, and clean cooking initiatives to bolster energy initiatives.

State Governments aim to attain territorial equity in energy access, promoting localized energy solutions to enhance the local economy and support decentralized energy initiatives. The transfer of energy competence to local authorities, as per the Electricity Bill of 2022, further emphasizes the decentralization process.

Despite these concerted efforts, these policies and strategies have primarily focused on energy conservation and decarbonization efforts, lacking a specific emphasis on creating

labor-based incentives. For instance, the energy transition plan in Nigeria represents a significant initiative aimed at combating energy poverty by fostering sustainable growth in clean energy generation. As of now, this plan doesn't explicitly mention the inclusion of youth and women (Policy Center, 2023). Additionally, the (NREEEP) addressed the youth more as consumers than participating stakeholders as it emphasises educating the youth about the responsible disposal of energy-efficient lamps and batteries. The plan lacks a specific framework for creating jobs or facilitating youth employment in the energy sector, impacting their engagement and contribution. In contrast, the policy gives precedence to women's empowerment within the energy landscape, particularly concerning their involvement with traditional energy sources with no mention of their prospective contribution to new renewable energy technologies. The nature of prioritization underscores the secondary role assigned to youth and the limited job prospects available for women and youth in the Low Carbon Transition (LCT) within the broader context of the "Decade of Gas."

Civil Society Organizations (CSOs) on the other hand concentrate on universal energy access for households, schools, and healthcare facilities, advocating for local content development, technology transfer, demand-side energy modelling, and fostering dialogue among stakeholders to fortify the energy transition. Additionally, the private sector collaborates with the government through public-private partnerships, advocating for favourable policies and incentives to safeguard investments. The pursuit of win-win partnerships with foreign private companies remains a priority.

Traditionally, trade unions in Nigeria have championed this concept, stressing the significance of maintaining decent work conditions throughout the transition. Their focus includes safeguarding workers' rights, ensuring workplace safety, upholding collective bargaining agreements, and providing social protection for those impacted by the shift, central to their vision of a just transition (Ojo & Mustapha, 2022). Conversely, the broader environmental well-being prioritized by the government, emphasizes decarbonization and environmental efforts as primary while viewing decent jobs as a natural consequence. Despite sharing the overarching goal of transitioning towards a more sustainable future, the differing priorities highlight the multifaceted definition of a just transition, underscoring the need to balance these perspectives for a universally accepted framework in Nigeria (Ojo & Mustapha, 2022).

This lack of consensus disproportionately burdens the younger generation, sidelining their needs and exposing them to adverse consequences. This oversight, coupled with inadequate institutional support and incentives, marginalizes the concept of a "just transition." Although the low-carbon transition implies inclusivity, in Nigeria, the LCT fails to deliver on this promise as the energy poverty that once plagued traditional systems has found a new home in the distribution of renewable energy. Just as marginalized communities bear the brunt of inadequate access to traditional energy sources, the shift to renewable energy has replicated this injustice, leaving many disadvantaged groups, especially youth and women, on the fringes of the clean energy revolution. Factors fuelling these disparities encompass a mix of affordability and infrastructural challenges.

2. Consequences of conflicting priorities in the just transition

This section touches on the intricate balance between job creation and environmental conservation, revealing consequences that exhibit distributive, procedural, and recognition injustices. These injustices lay the groundwork for broader implications concerning

opportunities for direct, indirect, and induced jobs for youth and women within the transitioning sector and opportunities for entrepreneurship in LCT.

2.1. Distributive Justice

At 59.9%, only over half of Nigeria's populace has access to electricity, with stark urban-rural disparities (Okoh and Okpanachi,2023). urban areas benefiting from infrastructural privileges exhibit an electrification rate hovering around 85%, in sharp contrast to the rural areas lagging at nearly 40% (World Health Organization,2021). Beyond these statistics, even areas with electrification face the issue of reliability. The Nigerian Electrification Project sheds light on this, noting that many electrified zones grapple with under 6 hours of daily power supply, compelling over 60% of businesses and households to generate power independently, often resorting to fossil-fuelled generators (IFC, 2019; Ayodele,2021). This situation, though rampant in the fossil-dependent on-grid energy generation, has spilled over into clean energy sources, through institutionally deficient structures.

Consequently, interviews reveal that in navigating the quest for an equitable Low Carbon Transition (LCT) in Nigeria, the exploration of distributive justice unravels diverse dimensions — spanning spatial, temporal, and social realms. A critical aspect pertains to evaluating the discrepancies in electricity availability and accessibility across the nation's diverse geographical regions. This analysis delves further into the intricate interplay between techno-economic and sociocultural factors shaping the landscape of clean energy access in Nigeria. Emphasizing the importance of fair distribution in the benefits and challenges associated with the LCT, it becomes evident that these outcomes directly influence job opportunities for both the youth and women. This underscores the pivotal role of justice in shaping their prospects within the evolving LCT sector.

One specific phenomenon **is the paradox of replicated energy poverty in renewable energy distribution in Nigeria**. Though a just transition implies an inclusive transition process (McNally,2018), in Nigeria, this expectation is at stark variance with the distribution of clean energy solutions to marginalized groups. Beneath the shining promise of clean energy lies a disconcerting reality: the energy poverty that once plagued traditional systems has found a new home in the distribution of renewable energy. Just as marginalized communities bore the brunt of inadequate resources limiting their access to traditional energy sources, the shift to renewable energy has replicated this injustice, leaving many disadvantaged groups, especially youth and women, on the fringes of the clean energy revolution. For instance, with the clustering of poverty in rural areas, 86.8% of people below the \$2.15 poverty line are rural dwellers (World Bank, 2023) who have long lacked the financial capacity to pay for renewable energy products (Nduka, 2020). Factors fuelling these disparities encompass a mix of affordability, infrastructural challenges, and proximity to key power installations (Iwayemi & Fawowe, 2011; Sesan, 2011).

Though the “just transition” was proposed in part to establish a connection between the promotion of environmentally friendly technology and the creation of sustainable employment opportunities (McCauley &Heffron, 2018), with marginalized groups like youth and women being disproportionately excluded from access due to unemployment and poverty, access to jobs opportunities is also limited (Powerforall, 2019). This point is buttressed by study participants attesting to how expensive clean energy solutions are to purchase and install for women and youth in petty trading businesses. Entrepreneurs operating small businesses, particularly in local manufacturing, retail, food processing, and grooming sectors like welding, provision and petty grocery kiosks, grinding & food drying machines, hairdressing, and barbing saloons, heavily rely on energy to sustain their operations. These businesses have grappled with the affordability and accessibility of

traditional energy sources and now face the concerning realities of energy poverty in the new era of clean energy sources. For instance, on the demand side, female and youth-owned businesses encounter challenges associated with the high costs of solar power, which subsequently lead to loss of profits and in extreme cases, loss of business. As both traditional and renewable energy sources prove to be unaffordable and inaccessible for many of these entrepreneurs, the unfortunate consequence is that many are compelled to close their businesses. This, in turn, contributes to the escalation of unemployment.

On the supply side, the availability and cost of renewable energy sources often interact in a way that hinders their deployment in rural communities (Nduka, 2020), particularly those grappling with poverty, whether in terms of time or material resources. As a result, study participants disclosed that some communities restrict their energy usage to save money, underutilizing the installed mini-grid infrastructure. The energy losses during transmission and distribution (Komolafe and Udofia,2020) reduce the overall efficiency of the power system and cause financial strain on the entrepreneurs and the jobs they potentially create. To tackle this problem, renewable energy entrepreneurs for clean cooking often rely on support programs to initiate and sustain their ventures with subsidies to poor consumers. However, many of these support programs lack long-term sustainability. Though International bilateral or multi-lateral funding could enhance the adoption of renewable energies (Cle-Anne,2016), this can be problematic as renewable energy entrepreneurs in this study find their businesses viable only as long as the support continues, making it challenging to build self-sustaining enterprises. This is because the support programs fail to address the root cause of energy poverty, which drives the use of charcoal and biomass. Entrepreneurs lose their customer base who revert to the use of charcoal on the clean stove initially subsidised by clean energy programs. This reversion to traditional energy sources impacts the entrepreneurs' business potential and, in turn, affects their ability to sustain and expand their enterprises. it not only affects individual businesses but also has an indirect impact on job opportunities in the energy supply expansion. Entrepreneurs are forced to downsize or close their businesses, leading to reduced employment opportunities in the sector, ultimately affecting economic growth and development.

The paradox of renewable energy poverty and distribution is further highlighted by insufficient generation capacity to meet the energy demand (SEforALL ,2023), which has direct implications for job creation. The allocation of resources and funding for renewable energy projects is often insufficient (Okoh, 2024) limiting job prospects for youth and women. According to study participants, without financial support for initiatives that could potentially benefit marginalized groups, their ability to actively participate in low carbon transition (LCT) efforts, such as renewable energy projects, afforestation endeavours, and climate adaptation programs, is severely hampered. For instance, the Rural Electrification Agency (REA) in Nigeria has demonstrated a commitment to promoting off-grid development as a cost-effective solution for remote areas, underpinned by multiple projects and initiatives. These endeavours have harnessed mechanisms such as Performance-Based Grants (PBG) to complete some mini-grid projects, extending clean and reliable electricity access to thousands of households, businesses, and public facilities. The positive impact of these mini-grids has been evident in the lives of over 230,000 people, improving their daily routines, economic activities, and overall quality of life (REA, 2023). Furthermore, the REA's focus on harnessing renewable energy sources, with the installation of 5.8MW of photovoltaic capacity, aligns with environmental sustainability goals.

However, financial challenges persist in achieving the ambitious target of delivering 20,000 megawatts to over 200 million people by 2030. Notably, the projects' failure to disaggregate their gender and demographic impact during the design phase has raised concerns. Despite facilitating international and private sector partnerships—with a noteworthy engagement with local companies—a closer examination of the project implementation process reveals limited success and extended criticism from participants in this study.

Moreover, the urban-rural disparity in energy access exacerbates energy poverty and reduces job potential, leaving women and youth in remote areas isolated and deprived of essential resources. These linked issues have broad-reaching implications, including limited educational opportunities, compromised healthcare access, and economic disparities, disproportionately affecting women and youth. This aligns with Okafor and Ugwuoke's (2020) concerns about the uneven distribution of electricity access, favouring urban areas and resulting in disparities in economic activities and living standards.

In Africa, historical and political factors, as noted by Okoye et al. (2019), may play a role in infrastructure placement. Consequently, areas receiving such investments likely exhibit distinct characteristics shaping employment. Due to their expense, the colonial administration's construction of electrification infrastructure is suspected to have been influenced by factors such as mineral resources, local labor markets, and trade demand (Abbasi et al, 2022). This has been the case with the **urban-rural divide in Nigeria** impacting the distribution of clean energy technologies, hindering the capacity of youth and women in rural areas to secure employment in the sector. This is because renewable energy services operating within the fossil framework of socio-political inequalities rooted in Nigeria's colonial history, inadvertently perpetuate the exclusion of specific population segments, as revealed by study participants. This exclusion is evident in access to education where rural youth and women face challenges in acquiring the skills and knowledge needed for renewable energy careers. This challenge has built on the widespread illiteracy to erode the possibility of accessing and comprehending highly skilled technical training to participate in formal jobs. For instance, the knowledge disseminated in the northern regions tends to be basic and primarily focused on consumption, and adapting to the high illiteracy level, lacking the comprehensive training needed for active participation in the formal LCT sector through direct jobs.

The intersection of poverty, culture, and religion (Okwanya et al, 2021), also highlighted by participants in this study creates significant barriers for women as traditional custodians of the environment (Raimi et al, 2019) in their search for efficient and gainful participation in low Carbon practices in rural and within the agricultural sector. The issue of land ownership plays a crucial role and disproportionately affects women residing in rural areas. Land ownership in sustainable agriculture has implications for job creation. Women with land ownership have the agency to engage effectively in practices like integrated farming and agroecology, which is crucial for sustainable agriculture (Uduji et al, 2019). Their control over land decisions allows them to readily adopt eco-friendly and clean energy technologies, creating economic empowerment and encouraging investments in Low Carbon Transition (LCT) initiatives. This, in turn, generates employment opportunities in the agricultural sector. Conversely, women relying on borrowed land face challenges in adopting eco-friendly farming practices and clean energy technologies, limiting their contributions to LCT goals. Their reduced empowerment and resource access result in fewer employment opportunities within the agricultural sector.

Essentially, energy poverty in low-carbon transitions is a multifaceted challenge that disproportionately impacts youth and women based on the interaction between unemployment, poverty, and geographical locations. While the world marvels at the development of cutting-edge technologies, the paradoxical truth is that the benefits of renewable energy remain unevenly distributed, perpetuating a cycle of energy poverty that echoes the past. This is because, distributive justice faces multifaceted challenges, spanning spatial, temporal, and social dimensions in Nigeria. Disparities in electricity access between urban and rural areas, compounded by unemployment, and poverty, disproportionately affect the creation of LCT jobs for women and youth.

2.2. Procedural Justice

The Nigerian Low Carbon Transition (LCT) and its renewable energy sector present the substantial potential for job creation for Nigerians (Tambari et al, 2020). However, the realized job creation within this sector has been sluggish, with only 50,000 direct jobs formed, involving 27% women and 40% youth, notably lower than the country's overall unemployment rate of 53.4% (Powerforall, 2019). This disparity between potential and actual job creation highlights a significant gap. Procedural justice, focusing on fair decision-making processes, underlines the necessity for equitable employment strategies within the renewable energy sector, aligning with the aspirations and jobs demands of the Nigerian populace. Despite the optimistic prospects outlined in Nigeria's Renewable Energy Master Plan (Elavarasan et al., 2021) and the ILO's endorsement of the LCT journey to address unemployment (ILO, 2023), the current situation reflects the urgency of more effective strategies to bridge the gap between environment scholarship while fulfilling the sector's potential for substantial job creation.

Our examination in Nigeria explores decision-making experiences for job opportunities within LCT initiatives, with a focus on women and youth. We uncover key challenges including:

- Inclusivity deficits in policy design,
- Elite capture of clean energy resources (corruption),
- The influence of profit-driven activities like charcoal production,
- Cultural barriers in energy usage,
- Women's exclusion in climate politics, and
- Interventions overlooking local contexts' contribution. Some of these factors align with the findings of Nduka (2020), citing (Aliyu et al., 2013; Ajayi and Ajayi, 2013; Business Day, 2019)). These challenges illuminate the intricate political economy of LCT in Nigeria and its implications for job creation.

Recent progress in the enactment of a Nigerian Electricity Act that recognizes the significance of renewable energy sources is a promising step in transitioning towards a more sustainable energy landscape. This legislative effort aims to grant states increased autonomy in regulating their respective energy sectors, potentially facilitating the implementation of environmentally sustainable energy solutions. However, at the heart of policy-making in Nigeria lie challenges in the design phase (Nduka, 2020). This inclusivity deficit leads to a state whereby instead of formulating policies based on empirical evidence of people's realities, respondents share that LCT policies are often imported from other regions to align with the global narrative around the environment. These policies, while well-intentioned, are crafted without express consideration for the unique needs and concerns of marginalized groups, including women and youth. This oversight has a cascading effect, including a failure to address unemployment and job-related upskilling needs that directly impact these demographic groups, ultimately leading to a loss of job opportunities for them. A fundamental reason behind these shortcomings is the lack of consultation with women and youth during the policy design process. This lack of inclusion perpetuates a cycle where the policies designed without their input fail to create the necessary job opportunities and support for these communities

The Nigeria Climate Change Act (Aluko and Oyebodey, 2022) also highlights the involvement of youth and women in climate advocacy and education but lacks a comprehensive plan for job creation in the context of climate change. The Act places significant emphasis on climate awareness and education, yet the absence of specific provisions for employment opportunities is a striking gap. This highlights a common challenge in climate policies, where the economic implications of climate change mitigation and adaptation are often overlooked.

On the list of challenges is elite capture or corruption as highlighted by Nduka (2020) citing Business Day (2019). This is a key issue, distorts resource allocation, directing funds away from initiatives that could generate jobs for the broader community. Instead, it favours the interests of the elite, leading to a reduction in job opportunities for the intended marginalized groups. In certain regions of Nigeria, poverty and the influence over decision-making often interact to exacerbate procedural injustice. This occurs in the context of LCT projects, though not peculiar to it. The skewed distribution of resources and hiring practices perpetuates inequality and, in turn, hampers economic growth and job creation. The root of the problem lies in the manipulation of decision-making processes by corrupt politically influential individuals or groups within LCT projects. They use their power and connections to gain preferential access to resources, diverting benefits intended for low-income earners (Iwundu, 2017; Roy, et al, 2013).

Consequently, this study reveals a tripartite-fold exploitation. Firstly, influential individuals compel less fortunate people to endure long queues to access subsidized low-carbon products, which are then resold at higher rates for profit. In return, privileged individuals offer nominal stipends to those who waited in line, further entrenching their procedural advantage. Secondly, elites exert substantial influence over the decision-making processes within certain LCT initiatives. By shaping resource and job allocation decisions to disproportionately favour their interests, elites further exacerbate procedural injustice. These opportunities, including those for young Nigerians without political influence and those for low-income individuals involved in trading these subsidized products, or for petty traders relying on these products to support their businesses, are adversely affected. This, in turn, results in the elimination or significant hindrance of both direct and indirect job opportunities.

External influences and illicit foreign activities also contribute to carbon footprints and undermine direct jobs aimed at carbon reduction due to the unfair competition they create between clean cooking products and profit-intensive charcoal production. The influence of external factors and profit-driven activities exerts a profound impact on the decision-making abilities of informed local communities who do not appreciate the presence of foreign companies engaged in charcoal production, due to the environmental and social impact it has on their areas. However, the decision to allow or continue such activities is influenced by local authorities who benefit from this production. The local authorities prioritize their immediate financial gains through kickbacks or other benefits from charcoal production and so the decisions made do not necessarily reflect the best interests or desires of the local communities, especially young social entrepreneurs engaged in the manufacture of clean cooking stoves and briquettes to serve these communities.

The direct job opportunities for young and female manufacturers of clean cooking stoves and the indirect jobs created through the multi-level trade in briquettes are significantly hindered due to intense and unhealthy competition. Visual evidence of charcoal production bearing foreign company logos for export underscores the complex interplay between global supply chains and local communities.

On a similar trail, neglecting the local context in environmental and development initiatives has far-reaching implications for job opportunities. The adoption of a one-size-fits-all approach often hinders the stimulation of local economies, especially in sectors like renewable energy and sustainable development. This failure to align with local requirements and cultural nuances can impede the growth of local industries, thereby affecting job prospects. Furthermore, transparency and accountability issues in project management result in mismanagement and the loss of potential job opportunities (Premium Times, 2022). Moreover, projects that overlook the engagement of their intended beneficiaries miss the chance to create local jobs, exacerbating the challenge of job creation. These issues not only hinder employment prospects but also undermine Nigeria's ability to achieve its climate and environmental goals. Addressing these challenges requires urgent improvements in

governance, planning, and execution of environmental projects, ensuring their success and the realization of their intended impact.

This lack of context also extends to government-led initiatives, exemplified by projects like the Green Bonds afforestation project (Heinrich Böll Foundation, 2022) and the noteworthy initiative focused on Clean Cook Stoves (NAN,2021). These cases underscore a recurring pattern of challenges that plague such initiatives. The common issues include a glaring lack of transparency and accountability, which casts doubts on the proper utilization of funds and the adherence to contract specifications. As a consequence, these projects suffer from mismanagement, leading to their diminished impact on the environment and jobs for marginalized groups.

Box 1: Best practice: clean cookstoves and wonder bags for rural women

The initiative aimed at transitioning rural women in Nigeria from traditional, polluting cooking methods to cleaner and more efficient alternatives, funded by N9.2 billion. However, the project faced several challenges. Mismanagement of funds raised transparency concerns as only N5 billion was reportedly released, impacting revenue potential and job creation. Contractors' non-compliance with specifications led to the importation of non-eco-friendly products, and lack of beneficiary inclusion raised distribution doubts. Despite the significant funds, only a fraction of the planned cookstoves were distributed, casting doubt on the project's actual impact. Furthermore, the project's focus on importing stoves instead of supporting local production was criticized for its potentially negative impact on the local clean cooking industry, possibly leading to job losses.

2.3. Recognition Justice

In the context of Nigeria's energy landscape, the exploration of recognition justice delves into cultural norms and gender dynamics, focusing on their impact on the Low Carbon Transition (LCT). It explores deeply ingrained beliefs influencing traditional energy practices, particularly the role of women in energy generation. Additionally, it highlights how cultural barriers hinder the adoption of sustainable energy sources, limiting new employment opportunities. We also examine the exclusion of women from crucial roles in climate politics, emphasizing the influence of cultural biases on their involvement in policy discussions and employment related to climate change. Recognition justice stands at the core, unveiling the complexities of cultural and gender dynamics in Nigeria's energy sector and their effects on achieving a more just transition.

The persistence of deeply ingrained cultural beliefs in numerous rural areas significantly influences traditional energy generation. This is exemplified by the central role played by women in procuring firewood for household cooking, a practice passed down through generations (Danlami, 2019). As a result, women in these communities have become primary custodians of this tradition, safeguarding it as an integral part of their daily lives (Raimi et al, 2019). While this cultural practice preserves their traditional roles and cultural heritage, it contributes to limiting opportunities for women to explore new job effects within the LCT.

Moreover, transitioning to more sustainable energy sources, such as renewable energy production and distribution, has the potential to create fresh job opportunities in the energy sector. However, deeply entrenched cultural beliefs has contributed to slowing down and resisting this transition, hindering the emergence of new employment prospects in sustainable energy fields.

Recognition injustice sometimes gives rise to procedural injustice. In the case study at hand, the exclusion of women from critical roles in climate politics is deeply rooted in cultural biases and gender discrimination. Women in Nigeria face numerous challenges when participating in climate change initiatives, with strikingly low representation in crucial roles across many states. Their exclusion from political roles intersects with cultural and gender dynamics, perpetuating traditional norms and prejudices that hinder their active involvement in policy discussions. This exclusion is particularly evident in oil communities, where women bear a disproportionate burden of climate-related consequences, including responsibilities like gathering polluted water and caring for sick children due to contaminated resources. Adding to these challenges, many women primarily engage in the informal sector, further complicating efforts to achieve a just transition in climate initiatives that predominantly focus on formal settings with greater male representation.

This exclusion of women from vital roles in climate politics in Nigeria profoundly impacts job opportunities. It often results in their underrepresentation in formal job sectors, limiting access to positions in climate-related fields. Many women are confined to the informal sector due to cultural biases, complicating their participation in climate initiatives. Their exclusion from policy discussions and the gendered burdens they face hinder their active involvement in employment opportunities related to climate change and environmental conservation.

3. Opportunities and challenges for youth and women

This section navigates through the dynamic landscape of the Low-Carbon Transition, delving into the various opportunities and challenges faced by youth and women in the interviews. It examines the nuanced cross-sectorial prospects and barriers within the renewable energy sector, highlighting the disparity in participation and employment quality. Furthermore, it investigates the pivotal role played by Micro, Small, and Medium Enterprises (MSMEs) in propelling green growth, job creation, and the formidable obstacles encountered in this endeavour. The exploration not only highlights the entrepreneurial resilience and initiatives undertaken by youth and women but also uncovers the existing impediments in the business sphere. Amidst this journey, it underscores the intricate web of challenges impacting job quality and prospects within the energy sector, providing a comprehensive view of the multifaceted landscape these demographics navigate in their quest for meaningful engagement within the Low-Carbon Transition.

3.1. Cross-sectoral opportunities and barriers

The renewable energy sector in Nigeria, compared to direct, formal employment, employs a notable number of workers through informal jobs and productive use jobs. In 2017, this sector accounted for approximately 9,000 direct, informal jobs, almost double the sector's direct, formal workforce; 4,000 direct jobs, while the conventional electricity sector provided 10,000 jobs. 70% of formal jobs in the Nigerian renewable energy sector require skilled qualifications, providing an opportunity for a skilled workforce to engage in the DRE sector (Powerforall, 2019). In terms of induced jobs, estimates in Nigeria indicate that 15,000 jobs were created through improved electricity access in 2017, significantly surpassing the sector's direct, formal workforce. In Nigeria, examples demonstrate the spillover effects of employment from the Distributed Renewable Energy (DRE) sector. For instance, a 50-member construction team for a short-term solar street light installation project might necessitate the services of around two food vendors. Additionally, a 2.4 kW solar milling project in the country required six water fetchers during its four-month construction phase.

However, those in informal employment often work fewer hours and receive lower wages (Powerforall, 2019) and specific estimates regarding potential job loss due to fuel switching or associated losses remain inadequately assessed in Nigeria.

A major source of job loss is Charcoal. The pivotal role of biomass, especially in forms like charcoal, wood chips, and agricultural residues, in supplying over 80% of energy needs in Nigerian rural communities cannot be understated. It emphasizes the economic significance of this biomass as a job provider and income sustainer. The shift toward renewable energy sources presents a potential threat to these livelihoods within the charcoal supply chain, affecting various roles like harvesters, producers, and distributors. It also points out the potential for creating new job opportunities in emerging renewable energy sectors such as solar, wind, and biomass-to-energy. While certain roles within the informal sector, like generator maintenance services, may decline due to the transition to renewable energy sources, there is evidence that many informal sector workers exhibit a striking capacity for adaptation and resourcefulness. Young workers, often possessing skills in traditional energy sources such as electricity installations, charcoal production, and waste recycling are repurposing their expertise to support emerging clean energy technologies. Their ability to creatively adapt existing skills and practices, known as 'bricolage', allows them to play a role in the ongoing transformation towards a low-carbon future. This resourcefulness underlines the adaptability of informal sector workers, enabling them to contribute to the changing energy landscape despite potential shifts in job demands.

Women's involvement in the formal renewable energy sector workforce is limited, whereas youth engagement is significant. However, women show increased participation in the informal renewable workforce. The renewable energy sector in Nigeria highlights wage equality between men and women. Despite this, there's a disparity in participation, with only 27% of women and 40% of youth involved in this sector (Powerforall, 2019). Companies acknowledge the potential for increased inclusion of women and youth, but challenges in corporate culture, recruitment, and skill development need addressing for this to occur. Nigeria faces relatively low Distributed Renewable Energy (DRE) market penetration, reflecting issues of jobless growth (Powerforall, 2019). Cultural stereotypes and historical conditioning have hindered women's representation in STEM fields, particularly in engineering. These factors impede the participation of women, especially in the highly skilled or technical aspects of the Low Carbon Transition (LCT).

Moreover, the reliance on foreign expertise in the renewable energy sector has created a challenge for young Nigerians and women seeking employment opportunities. There's a stark contrast between the diversity of potential careers available within the low-carbon transition (LCT) and the prevalent belief that foreign-educated individuals and expatriates are more qualified for these roles. This trend has perpetuated a skills gap, hindering local talent from securing employment in this burgeoning sector. To combat this expatriate employment syndrome which is a vestige of fossil fuel sector, there is a crucial need for substantial investment in skill development and education to enhance the domestic workforce's expertise in the renewable energy industry.

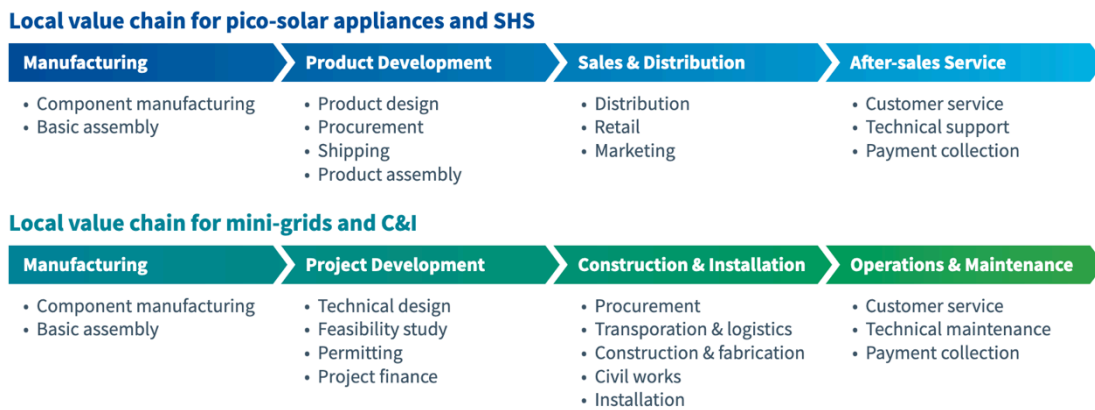
3.2. MSME's as the engine of green growth and jobs in Nigeria

Despite the injustices persisting across recognition, procedural, and distributive justice within the LCT, youth and women have exhibited remarkable resilience. They have explored the opportunities within LCT and emerged as champions of a balanced approach by fostering labour incentives for decarbonization through entrepreneurial endeavours. This trend underscores the remarkable resilience and often underappreciated contributions of these specific demographics within the energy landscape. Some examples highlighting their

resilience include participation in the solar energy supply, waste-to-energy and e-mobility projects.

The solar power market in Nigeria has witnessed significant participation from the country's youth (Okwanya et al,2021) and female demographic, who have been actively engaged in providing solar installation and maintenance services. This involves a huge participation in Pico-solar appliances and Solar Home System¹.

Figure 2: Local Value chain Scope for renewable energy jobs



Source: (Powerforall, 2019)

These ventures not only generate informal jobs through installation and maintenance but also initiate roles in various sectors, such as human resources, accounting, auditing, and sales and marketing specialists. Young entrepreneurs and women in Nigeria have established solar power-related businesses, significantly contributing to providing energy access to diverse populations, including marginalized groups (Muritala, 2023).

This study highlights solar as a service, empowering young and female entrepreneurs in the informal sector to manage energy resources, promote economic self-sufficiency among women, and ensure reliable energy access for rural communities. These innovative approaches not only expand gender inclusivity in Nigeria's renewable energy sector but also redefine sustainable energy solutions, emphasizing the social and economic benefits for communities and women.

¹ Pico-solar appliances and Solar Home System are the most popular avenues for youth participation in the are small-scale solar energy devices designed to power individual appliances or small electronics. These devices are typically portable and have a low energy output, often used for charging small electronics, lighting, or running basic appliances' (Solar Home System) companies are enterprises that provide solar power solutions designed for individual households. These systems are intended to power a home's basic energy needs, such as lighting, mobile phone charging, or operating small appliances.

Box 2: Best practice: innovative solar energy solutions

In recent years, initiatives like the 'Jaza Woman' program have gained attention for their impactful contributions to renewable energy access and jobs. Jaza Energy facilitates access to clean electricity in rural communities located in Nigeria by establishing solar energy hubs. These hubs are managed by local women and provide a range of services, including the distribution of home electrification kits and rental battery packs to customers. These efforts were underscored in single interviews and focus group discussions during the study.

Study participants also identified another example within the formal sector; a startup called Arnergy Solar Limited, an enterprise established by a young Nigerian entrepreneur, which has been delivering solar energy solutions to both commercial and residential clientele throughout Nigeria. In 2020, with over 100 jobs created, Arnergy secured a capital amount of \$9 million with the aim of expanding its operations. This financial achievement serves as an indication of the promising growth prospects within the solar power business, as well as the active participation of young individuals in this sector.

Waste-to-energy projects stand as pivotal solutions addressing environmental sustainability challenges while catering to the increasing energy demands. These innovative projects, spearheaded by MSMEs and startups, play a dual role in creating jobs and advancing sustainable energy initiatives. Entrepreneurs focused on waste-to-energy solutions utilize technology not only to address waste management but also as a driving force behind job creation. By employing sophisticated technology and implementing creative waste management methods, these businesses create employment opportunities. Moreover, the integration of advanced technology not only nurtures job growth but also contributes to the progress of the renewable energy and waste management sectors, highlighting the indispensable role of innovation and technology in job creation within the renewable energy market.

As a general notion among study participants, in Nigeria, reducing emissions from waste collection is a critical challenge to sustainable waste management. Traditional waste collection methods often involve multiple trips with inefficient routing, leading to increased fuel consumption and associated carbon emissions. To address this challenge, some youths have begun optimizing waste collection routes and implementing efficient methods like group collection as essential strategies to minimize the carbon footprint of waste management activities.

Box 3: Best practice: Waste-to-energy and clean cooking initiatives

The waste-to-energy initiative led by Eco Bata demonstrates a twofold impact on the environment and job creation. Collaborating with internally displaced women from rural areas, the project creates a waste collection and briquette production chain. These women benefit not only from selling the briquettes for clean cooking but also from engaging in the waste collection process. Additionally, the initiative employs innovative waste collection strategies like route optimization and group collection, leading to a significant reduction in carbon emissions associated with waste collection. By gathering organic waste that would otherwise head to landfills, Eco Bata actively diminishes CO2 emissions and reduces the carbon footprint. This portrays an effective approach to smart waste management that significantly decreases carbon emissions in urban settings while concurrently fostering job opportunities for women engaged in waste collection and briquette production.

Established in 2013, Roshan Renewables, a women-led renewable energy company, has achieved remarkable success, selling over 20,000 clean cookstoves and employing more than 60 female sales agents. Notably, many of these women had faced unemployment due to the COVID-19 pandemic, making Roshan's impact even more significant. Furthermore, Roshan has provided training to over 350 women, including refugees, enabling them to engage in local charcoal briquette manufacturing and fostering a network of female entrepreneurs. This success story vividly illustrates the intricate relationship between environmental sustainability and job creation.

Moreover, Roshan's endeavours have showcased how beneficiaries are harnessing the potential of digital platforms for marketing and sales, underscoring the adaptability and resourcefulness of women in leveraging modern technology to enhance their outreach and economic prospects.

The burgeoning interest of Nigerian youth in the electric vehicle (EV) sector is a promising sign of the shifting attitudes towards environmentally friendly modes of transportation. Despite being in its early stages, the rise of electric mobility is fostering various employment opportunities.

In the realm of direct jobs, the development and manufacturing of electric vehicles present a range of employment prospects. These positions span vehicle assembly, engineering, design, and technical roles, contributing to job creation within the manufacturing segment. Furthermore, the establishment of the infrastructure essential for electric vehicles, particularly the installation, maintenance, and operation of EV charging stations, brings about a need for skilled workers to manage these stations, constituting another segment of direct job creation in the sector.

On the other hand, a few indirect jobs arise from various aspects of the electric vehicle industry. The supply chain management for components necessary for electric vehicles, such as parts assemblage, logistics, and distribution, offers employment opportunities in a parallel segment. Additionally, roles associated with automotive servicing and maintenance, including servicing electric vehicles and converting gas-powered cars, present opportunities for mechanics and technicians, thereby adding to the broader automotive industry. Finally, the research and development sector also contribute to job prospects, exploring and innovating sustainable energy technologies that are pivotal for the advancement of the electric vehicle sector.

These multifaceted opportunities, encompassing both direct and indirect jobs, signify the vast potential and growth of the electric vehicle market in Nigeria.

Box 4: Best practice: Electric mobility solutions fostering employment

Nord Automobiles, a burgeoning EV startup driven by approximately 20 young employees, has announced plans to initiate the production of electric cars in Nigeria, along with the establishment of an extensive EV charging network. Furthermore, the initiative involving the conversion of petrol-powered cars to use gas showcases another budding interest among young Nigerians.

Another electric bus model named “Kaande” is already operational in Maiduguri, Borno state, running on batteries that last for about 200 kilometres without needing a charge, catering to the prevailing electricity scarcity. These buses charge a reduced fare of N50 per trip, in contrast to the N100 charged by fossil fuel-powered public transport buses in the state. This venture, coupled with the electric car manufacturing sector, signifies an increase in both direct and indirect job opportunities for the youth in Nigeria.

The projects, though still in their initial phases, exemplify the potential of youth-driven enterprises and the prospects for job creation within this burgeoning sector.

3.3. Business challenges that impact women and youth

The interplay of over-dependence on imports, currency fluctuations, and local infrastructure deficits pose a huge barrier to young and female entrepreneurs. The Nigerian renewable energy sector faces a daunting challenge due to its heavy dependence on imports for energy components (Obada et al, 2024). This import reliance significantly inflates the expenses involved in renewable energy projects, making them less competitive within the local market. This situation adversely affects the adoption of renewable energy solutions among both households and businesses. The financial strain, especially on youth and female entrepreneurs, alongside their potential investors, is further exacerbated by this import dependency, as highlighted by the study participants.

Significantly fluctuating foreign exchange rates in Nigeria (Ani et al, 2024) have contributed to substantial cost escalations in various commodities, restricting access primarily to the affluent segment of the society. This situation has perpetuated economic disparities, where only the financially privileged can afford energy derived from fossil fuels, renewables, and biofuels. The resulting predicament for young and female LCT entrepreneurs is the hindrance posed by affordability constraints, preventing the widespread adoption of sustainable energy solutions and job creation.

A paradox emerges from the cost disparities between local manufacturing and imports in Nigeria. Challenges related to infrastructure often make local production more expensive (Nduka,2020). Entrepreneurs are confronted with the dilemma of either investing significantly in local production, including infrastructure, energy, and technology, thereby driving up costs, or opting for expensive imports. As a consequence, these constraints impede business expansion and hinder the potential for more job creation and ecological sustainability, as outlined by the study respondents.

The economic viability of traditional practices, particularly in charcoal production, presents a hurdle in the shift towards environmentally friendly methods (Obada et al, 2024). This increases zero-sum/unhealthy competition and hinders market expansion and LCT job creation. Consequently, clean energy entrepreneurs in Nigeria face significant hurdles in

securing funding, with limited availability of local financing options and challenges in dealing with foreign currency-denominated loans. The financial strain due to these discrepancies between international loans and local revenue generation mechanisms complicates repayment, posing threats to business sustainability and job retention. Moreover, women entrepreneurs encounter added scepticism from investors, which exacerbates gender disparities in accessing capital and resources, hindering their business initiation or expansion.

Knowledge gap and limited access to technical training opportunities is a notable challenge stemming from an outdated curriculum that engenders skills mismatch (Obada et al, 2024). This leads to a gap in the knowledge required to participate in LCT at scale. Complementing this is the struggle faced by entrepreneurs in acquiring necessary expertise highlighting a much larger issue—many women aspiring to join the sector face hurdles in gaining the essential technical skills. Particularly challenging is the access to technical skills for women living away from urban areas and lacking connections to influential industry figures. This also underscores the significant shortage of qualified professionals with the requisite expertise to meet the growing demand for skilled employees who possess the necessary technical knowledge and competencies to contribute effectively to LCT. This knowledge gap is further deepened by the lack of encouragement and guidance directing women toward STEM education and training, exacerbating gender disparities within the sector.

At the base of this challenge is the pervasive lack of awareness and limited orientation (Okoh and Okpanachi, 2023; Obada et al, 2024) among Nigerians exacerbated by widespread illiteracy and outdated curriculum. This knowledge gap poses a substantial barrier to the effective implementation of LCT initiatives and by extension the potential jobs to be created through market expansion by women and youth-led enterprises. These challenges pose a detrimental impact on job opportunities, both directly and indirectly, for women and, in many cases, for youth as well.

Another **barrier is the tax-related challenges** (Cle-Anne, 2016) which not only impact financial stability but also lead to indirect job losses as entrepreneurs grapple with high capital costs. Inefficiencies in taxation due to multiple tax regimes at local, state and national levels entrepreneurs to downsize or cut costs by refraining from employing more staff. Moreover, the burden of excessive levies sometimes leads to job insecurity, particularly for entrepreneurs themselves. This further compounds challenges in the employment landscape within the LCT sector. While the challenge of tax burden affects all entrepreneurs, young and female entrepreneurs in LCT face a distinct set of difficulties due to intersecting factors such as lack of awareness, the market size for renewable energy, and the complexities associated with the emerging nature of low carbon transition in Nigeria.

In addition to the aforementioned challenges, security concerns loom large on the landscape for many entrepreneurs. These issues have discouraged numerous potential investors from opting to manufacture locally, leading them to seek alternatives elsewhere. This trend not only results in the loss of job opportunities for Nigeria's youth and women but also deprives the local economy of the employment opportunities that would have been generated through domestic manufacturing.

The challenges pertaining to the security of entrepreneurs' equipment are also significant and multifaceted. Many entrepreneurs report instances of theft involving their products and equipment, resulting in direct financial losses and operational disruptions. Additionally, entrepreneurs face a heightened risk of physical attacks and security threats when they visit their business sites. These security concerns not only jeopardize the safety and well-being of entrepreneurs but also create an atmosphere of insecurity that can hinder their business operations.

The landscape of the energy sector is often marred by **pervasive gender stereotypes** that present significant challenges for women. These stereotypes, deeply rooted in societal perceptions, portray the industry as predominantly male-oriented, deterring women from pursuing careers or entrepreneurial paths in this field. This bias contributes to the misconception that women are ill-suited for the energy sector, further reinforcing the idea of a male-dominated industry. These unfounded beliefs not only hinder women's self-confidence but also restrict their opportunities for professional advancement within the sector. Paradoxically, women play a dominant role in various aspects of the clean energy industry, such as the clean cooking sector, waste-to-energy entrepreneurship, and solar industries.

3.4. Addressing challenges MSMEs face

To address the challenges associated with cost and poverty, youth clean energy entrepreneurs explore the set-up of **productive activities through renewable energy initiatives**. By this, mini-grid projects are set up alongside stimulating local economic endeavours. This approach involves creating opportunities for communities to engage in productive activities and building their own sustainable economies. For example, young developers provide equipment like grinding machines or establish small factories, enabling community members to process agricultural products, such as rice, using alternative energy sources. This, in turn, allows them to generate income by selling processed goods and contributes to local economic development. By facilitating productive activities alongside providing electricity, renewable energy projects create a two-fold impact, offering not only access to power but also a pathway to job creation for communities in need.

Another key point is that entrepreneurs in the renewable energy sector show a proactive approach to business growth **by investing in comprehensive skills training for themselves and their employees**. These endeavours are geared towards fostering a capable workforce, thereby creating more jobs. It is worth noting that despite the commendable efforts in skills training and workforce development, entrepreneurs in the renewable energy sector face a significant challenge in retaining the skilled employees they've invested in. This is due to the departure of these well-trained individuals to larger private firms creates a hurdle in maintaining a stable and experienced workforce. The continuous loss of trained staff hinders the sustained growth and stability of these entrepreneurial ventures. The constant need to reinvest in training new talent diverts resources that could have been allocated to other areas within their businesses, affecting their ability to create and sustain more jobs.

In addition to the above practices, the entrepreneurs in this study **outline two financial models** they have implemented to tackle the cost of renewable and clean energy products. The first model involves partnering with companies focused on financing energy projects, allowing clients to spread payments over time. The second model, "energy as a service," is primarily targeted at corporate organizations, where the entrepreneur installs solar systems, and companies pay for them monthly, including maintenance and upgrades. By so doing, many direct and indirect jobs are created and sustained by the entrepreneurs.

Equally important is **the practice of engendering gender equality through appeal to male authorities**. To tackle gender stereotypes in renewable energy-related activities – particularly pronounced for women residing in rural areas and engaged in the informal last mile delivery of clean cooking technology – entrepreneurs acknowledged the use of strategies that involve the buy-in of authority male figures to support the females in their family. By doing so, they ensure the active participation of women in alternative energy businesses, addressing the challenges posed by traditional gender dynamics and religious expectations.

3.5. Assessing Job Quality and Prospects in the Energy Sector

The study's interviews revealed an intriguing viewpoint - the perceived lack of distinction in decency between 'green jobs' emerging from the Low-Carbon Transition (LCT) and positions in the conventional energy sector. This perception stemmed from several factors: the oversight of decent work principles, the blended nature of the transition involving both traditional and renewable roles, and Nigeria's predominant emphasis on job creation over prioritizing employment standards.

Moreover, the study underscored the significant influence of organizational size and individual negotiating power on the perceived decency of LCT jobs. The ability of employees to negotiate for better conditions and remuneration, particularly those with specialized skills, impacted the quality of these roles. Larger organizations often provide better benefits, stability, and training opportunities, influencing job quality.

Additionally, participants highlighted the pivotal role of trade unions in the oil and gas sector, particularly NUPENG, NLC, and PENGASSAN, in advocating for fair labor practices and industry standards. However, while no specific focus on supporting women and youth was noted, these unions were seen as instrumental in ensuring decent job opportunities within the sector for a wide spectrum of workers. These insights collectively emphasize the multifaceted factors shaping the quality of employment in the context of the Low-Carbon Transition.

4. Conclusion

The intricate balance between job creation and environmental conservation in Nigeria reveals distributive, procedural, and recognition injustices. Disparities in electricity access, replication of energy poverty in renewable energy distribution, and the exclusion of marginalized groups underscore distributive injustices, affecting job opportunities in the Low Carbon Transition (LCT) sector. Procedural injustices, such as inclusivity deficits, elite capture, and one-size-fits-all approaches, have hindered equitable employment strategies within the renewable energy sector. Additionally, cultural norms and gender biases have led to recognition injustices, limiting access to formal job sectors for women and confining them to the informal sector. These injustices not only restrict job opportunities for youth and women but also hinder Nigeria's climate goals, demanding immediate improvements in governance and policy design for a more equitable Low Carbon Transition.

The renewable energy sector, with its promise of sustainable and transformative solutions, has piqued the interest of a new generation of job creators, particularly among the youth and women-led enterprises. This enthusiasm and a palpable sense of hope have led these groups to view, renewables, as not just about mitigating climate change but representing a confluence of environmental sustainability and lucrative business potential (Hart, 2007). According to study participants, instead of waiting for traditional employment opportunities, the youth and women have demonstrated initiative and resourcefulness by becoming self-starters in the realm of sustainable energy. Their entrepreneurial endeavours not only create job opportunities for themselves but also showcase their ability to adapt to the changing energy landscape and contribute meaningfully to the Low Carbon Transition.

In Nigeria's pursuit of a sustainable energy landscape, the revised Nationally Determined Contribution (NDC, 2022) presents commendable goals for emission reductions, both conditional and unconditional. However, the idea of "business as usual" needs a more holistic interpretation. It's imperative to understand that transitioning towards cleaner energy should not just be about cutting emissions; it should also prioritize creating decent jobs for the Nigerian people. A 'just transition' framework emphasizes the need to provide fair and

equitable job opportunities while advancing towards cleaner energy sources. Solely focusing on emission reduction might inadvertently overlook the crucial socio-economic development aspect, which is vital for the overall welfare and prosperity of the Nigerian population.

The clash between environmental conservation and decent job creation in Nigeria has led to a prioritization of environmental preservation over decent job creation, echoing patterns of inequality from the fossil fuel era. This conflict creates a scenario where the concept of a "just transition" becomes entangled in perpetuating fossil fuel structures thereby creating among other consequences, a young generation of unintended victims. Existing policies and strategies towards energy transition in Nigeria lack a specific emphasis on labor-based incentives and job creation, sidelining the role of creating decent jobs within the transition process. This imbalance places a disproportionate burden on the younger generation, subjecting them to unintended adverse consequences due to the prevailing conflict between environmental preservation and employment generation. Labour unions in Nigeria have expressed concern regarding this clash. Some specific points where the transition is reflective of the fossil based economic and social structures are:

- The "expatriate syndrome" reflects practices akin to the fossil fuel era, where job opportunities in Nigeria favour foreigners over local communities. Additionally, locals who secure jobs often need political or class affiliation. This syndrome leads to a disproportionate allocation of job openings to expatriates, hindering the equitable distribution of opportunities and restricting employment prospects for indigenous communities. Although young entrepreneurs appear to be breaking this bias in employment, challenges persist.
- Efforts towards transition tend to rely on established fossil fuel infrastructure, favouring wealthier sections already connected to energy networks. This perpetuates inequality, leaving marginalized regions dependent on fossil fuels, neglecting rural communities lacking clean energy infrastructure.
- Disadvantaged groups, especially women and youth, face exclusion in decision-making processes, limiting their access to opportunities in the low-carbon transition. The perpetuation of these traditional power structures keeps these groups from actively participating in shaping the transition, leading to alleged destructive actions by rural communities, such as destruction and theft of the great green wall trees and vandalism of solar panels and mini-grids that exclude them.
- The current transition inadvertently restricts access to socio-economic opportunities by prioritizing environmental preservation/decarbonization over equitable job creation. This perpetuates inequalities present in the fossil fuel-based economy, potentially leading to further social unrest.
- Additionally, the likelihood of job displacement in the informal sector due to the shift to alternative fuels and the resulting losses is not thoroughly evaluated in Nigeria, posing a considerable challenge.

This underscores a need for a comprehensive approach to transition in the renewable energy sector in Nigeria. It emphasizes the need for a more inclusive and equitable pathway that not only tackles environmental concerns but also places significant emphasis on creating fair job opportunities, especially for marginalized groups like women and youth.

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