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Powering the Future: Nigeria's Feasible Path to Net Zero

Ethan Abraham[1], Arjun Ravikant Mishra[2], Felipe Chafic Anselmo Mucare[3] and Paula Pardo Sanchez[4]

[1]Dougherty Valley High School

[2]Innovation Academy

[3]Escola Americana do Rio de Janeiro

[4]Los Sauces Pontevedra

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Introduction

When Nigeria signed onto the Paris Agreement of 2015 (PA), they agreed to attempt to reduce worldwide temperatures to 1.5°C above pre-industrial levels. This essay aims to demonstrate that Nigeria's alignment with the PA is inevitable by showing Nigeria's framework, catalysts, and economic resilience.

Nigeria has set up numerous key goals to follow in order to reduce emissions. First, Nigeria has pledged to reduce its emissions by about 168.2 million metric tons of carbon dioxide equivalent ($MtCO_2e$) by 2030, and 184.9 $MtCO_2e$ by 2035. Second, Nigeria has committed to reducing emissions from oil and gas sectors by 60% in emissions from their oil and gas sector by 2035 and by 95% by 2050 as their oil and gas sectors continue to grow (IEA). Third, Nigeria has vowed to achieve zero routine gas flaring by 2030. By doing all of this, Nigeria plans to reach net zero by 2060.

Nigeria has submitted a total of four different scenarios in their Long-Term Low-Emissions Development Strategies (LT-LEDS). However, of the four scenarios, only one scenario is likely to achieve Nigeria's ambitious net zero target.

The Energy Transition Plan (ETP) serves as a framework for Nigeria to follow, serving as a transition from fossil fuels to clean renewable energy for all in the country by 2060 (Climate Action Tracker). This plan aims to transition key sectors in Nigeria's economy such as their power, residential buildings, industry, transport and oil & gas sectors to the use of renewable energy. The ETP also gave way to the Integrated Energy Planning (IEP) tool.

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The IEP tool provides full transparency across sectors and investment-grade data needed to transition the country to renewable energy. Additionally, the IEP tool helps the Nigerian government decide the best way to provide energy for specific communities (especially communities with limited electricity access), plan access to safer cooking methods with less air pollution such as using electric stoves instead of wood and charcoal, and to ensure that new renewable energy will actually keep businesses and the economy running. To achieve this, the IEP tool utilizes local community data such as how much energy each household actually needs, affordability and feasibility amongst consumers, and how close these new projects are to existing infrastructure such as power lines and existing energy systems (Federal Government of Nigeria).

To help solidify the transition to renewable energy sources, Nigeria has also passed the Electricity Act of 2023. This Act modernized Nigeria's earlier energy source framework under the Electricity and Power Sector Reform Act of 2005 (EPSRA), and absorbed it. The Electricity Act aims to liberalize Nigeria's electricity generation and distribution, ensuring that communities across the country can access the energy they need. Under this Act, states within Nigeria can grant licenses to private investors who can operate their own mini-grid systems and power plants within the state, aiming for everyone to have access to clean energy. These electricity generation licensees are required to meet standards provided by the Nigerian Electricity Regulatory Commission, ensuring that these generators operate properly and fairly. This Act also allows for the integration of renewable energy technologies into the existing grid system, while also incentivizing investment into these renewable energy projects through feed-in tariffs (a policy that guarantees a fixed price for renewable electricity fed into the

grid-and tax incentives). The Act creates clear guidelines for the licensing, monitoring, and supervision of participants in the renewable energy market, ensuring market competition and fairness to preserve innovation. Finally, the Electricity Act guarantees licensees the right to asset protection, requiring the Nigerian government to compensate licensees in the case of governmental shutdown (United Nations). While Nigeria's policies establish a comprehensive framework for Nigeria to work with, their success ultimately depends on effective implementation.

Nigeria's framework isn't just a dream, its circumstances make net zero by 2060 a feasible possibility.

More than half of Nigeria's entire population is under the age of 30, and 3.5 million young Nigerians enter the labor market every year. Nigeria's youth unemployment remains the highest globally, with about 23% of young Nigerians actively looking for work. Within 25 years, Nigeria's working age population is projected to reach 100 million. This large influx of young laborers provides Nigeria with the necessary amount of workers to bolster renewable energy and

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green technology industries, strengthening its ability to meet its goal of net zero by 2060. The Nigerian government plans to equip millions of new Nigerian workers with digital literacy and entrepreneurial skills by 2030 in these sectors, allowing for employment sectors to grow and economic competition to grow. This allows for Nigeria's green tech industry and renewable energy sector to align with the net zero goal of the Nigerian government. (Oduwole and Ibrahim).

The green technology and renewable energy sectors give Nigeria a unique opportunity of higher employment rates and a higher GDP. By 2030, ~800,000 new jobs will be made in the solar energy sector, ~300,000 in wind energy, ~400,000 in energy efficiency, ~250,000 in grid modernization, ~150,000 in hydropower and other renewables, and ~100,000 in miscellaneous supporting industries. This also helps implement the Electricity Act of 2023, as these jobs will be decentralized, giving job opportunities to people across Nigeria.

900,000 of these jobs will be in Northern Nigeria, 600,000 in Central Nigeria, and 500,000 in Southern Nigeria. From these new jobs, Nigeria will see an extra $2-3 billion annually from tax revenue, and these jobs will contribute 3-4% of Nigeria’s GDP. These jobs will also create an additional 1,000,000 jobs in supporting industries such as supply chain sectors. Local procurement will also make about $5-8 billion because renewable projects will purchase materials from Nigerian companies and businesses, bolstering the economy and small businesses.

Additionally, these jobs will help propel Nigeria to a renewable energy giant in Africa, with a potential extra $2-3 billion annually made from renewable energy equipment exports to other countries (EPT).

These economic incentives and job creation opportunities will motivate Nigeria to reinvest more money back into their green technology and renewable energy sectors, both of which are important for decarbonizing their economy. These sectors will rapidly grow under Nigeria’s current pace, showing that net zero by 2060 and alignment with the PA are feasible. The Solar Energy sector in particular is especially integral to Nigeria’s journey, as the country receives 5.5-7 hours of sunlight everyday. Rural communities need viable clean energy that’s not a part of a centralized national grid system, and the Solar Energy sector does just that (Idyllic Technologies). As fuel prices rise, solar panel costs decrease. Now solar energy is a reliable and cheap source of energy for Nigerians, offering an alternative to fossil fuels. Nigeria has already deployed 1.4 GW of off-grid solar, which is equivalent to ~30% of its operational grid capacity. The main motivation for solar power is no longer luxury; it’s a matter for survivability for many Nigerians, keeping small businesses running and providing clean energy to rural communities. Nigeria can generate a projected 427 gigawatts of solar power if Nigeria continues their

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momentum. At the rate Nigeria is going, Nigeria will become the “solar capital of Africa” (Amokeoja). With these strengths and incentives, Nigeria is sure to align with the PA.

Critics often argue that Nigeria lacks the funds to support their renewable energy transition. It is estimated that an additional $410 billion in funding will be required, with a total cost of $1.9 trillion and an average cost of ~$10 billion per year for the ETP to achieve its goals (Federal Government of Nigeria). This scale of costs is frequently cited as a major barrier to achieving Nigeria’s net zero target. However, it must be noted that these costs are spread over the span of more than 30 years. Nigeria receives funding from various organizations such as the Green Climate Fund, African Development Bank Group, and the World Bank (ADBG; GCF; WBG), providing funding for large-scale energy transition projects in Nigeria. Additionally, it is crucial to remember that 2 million jobs will be made in Nigeria’s green tech and renewable sectors, contributing to 3-4% of Nigeria’s GDP and billions of extra dollars earned from these two growing sectors. As a result, the scale of costs doesn’t prevent alignment, but instead represents a long-term investment cycle supported by both international and domestic economic growth.

Overall, Nigeria’s pathway to net zero by 2060 isn’t just a mere aspiration, but is structurally supported by their comprehensive framework, catalysts, and economic resilience. Through strong framework such as the Electricity Act of 2023 and the Energy Transition Plan, and incentives such as job creation, GDP growth, and decentralizing energy with solar power, Nigeria will continue its momentum and ultimately align with the Paris Agreement’s goal of keeping temperatures at 1.5°C above pre-industrial levels.

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