Enlight Series

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Nigeria's Energy Transition Plan and the Power Sector

Introduction

In 2022, the Nigeria Energy Transition Plan was launched to chart the pathway for Nigeria's ambitious plan of achieving net zero by 2060. This plan focused on reducing emissions across five prominent areas: Power, Cooking, Oil and Gas, Transport and Industry. These areas are responsible for about 65% of the country's 275 metric tons (mt) of carbon dioxide equivalent (total greenhouse gas emissions), and the power sector has the highest proportion of these emissions. The energy transition plan is commendable with its strategy to move away from fossil fuel sources such as oil, coal and gas (which is the primary feedstock of power plants in Nigeria) towards renewables has been gathering momentum, and the industrial and economic effects of this shift to emerging technologies such as biomass, hydro, geothermal, wind, solar, and other energy sources will only increase over the next few years. The evolving paradigm of how energy is generated and transmitted will require the power industry, stakeholders and policymakers at all levels of government to make complex decisions about adapting, which will consequently impact the economy. Investments are already dramatically shifting to emerging areas of renewable energy production, and energy labour markets are changing. The global workforce in conventional thermal power could soon decline as some workers may transition to emerging related areas, including CO2 recovery and efficiency enhancement for specific plants. Therefore, it is imperative to ensure that the replacement of energy sources is as reliable as conventional fossil fuels. The energy transition would also impact the manufacturing, construction, agriculture and power industries. How these industries, especially the power sector, adapt and respond to the energy transition evolution would be an exciting upheaval that will have a toll on the economy.

Highlights on the Nigerian Power Sector

Power is at the heart of any significant industrialisation any country wants. No country can make progress beyond the amount of electricity it generates. The power sector in Nigeria has been a subject of ongoing reforms and challenges as the country strives to provide reliable and sustainable electricity to its population. Nigeria has struggled with inadequate power generation capacity, leading to frequent power outages and limited access to electricity for over 200 million people. The power generation mix heavily relies on fossil fuels, primarily natural gas, but also includes hydroelectric and a smaller portion of coal-fired power plants. Nigeria is endowed with large oil, gas, hydro and solar resources, and it has an installed generation capacity of about 13GW of electric power from existing plants. However, it can only dispatch around 4GW, which is insufficient to meet the electricity consumption demand of the country. Efforts to diversify the generation mix with more renewable energy sources, such as solar and wind, have been ongoing but relatively slower. The transmission network has its share of constraints, leading to challenges in effectively delivering generated power to distribution networks. Insufficient transmission capacity has often resulted in power bottlenecks and a mismatch between generated power and the ability to distribute it to consumers. The Distribution Companies (DisCos) responsible for distributing electricity to end-users face challenges related to revenue collection, billing accuracy, and technical losses, impacting their operational efficiency and ability to invest in network improvement.

Efforts to promote renewable energy and increase the share of renewables in the energy mix have gained momentum, with policies like the National Renewable Energy and Energy Efficiency Policy (NREEEP) driving the initiative. Initiatives to improve energy access in rural and underserved areas include the promotion of mini-grids and off-grid solutions. Despite progress, most of Nigeria's population still lacks access to reliable and affordable electricity, particularly in rural areas.

The Interplay of the Nigerian Energy Transition Plan and the Power Sector

The Nigerian Energy Transition Plan and the power sector are closely interconnected, as the energy transition plan outlines the strategies and actions for shifting the country's energy system towards cleaner and more sustainable sources. In contrast, the power sector is central in implementing these changes. The power sector represents about 27% of in-scope emissions, attributable to using off-grid diesel/petrol generators and on-grid combustion in power plants. The connection between the power sector and the Nigerian energy transition is crucial. Nigeria seeks to address energy challenges, reduce greenhouse gas emissions, and transition to a more sustainable and diversified energy system. Transitioning to renewable sources would help reduce the sector's carbon footprint, improve energy security, and enhance environmental sustainability. The success of the Nigerian Energy Transition Plan is highly dependent on the activities and progress being achieved in the power sector. Some of the recent developments in the power sector that could drive the success of achieving the energy transition plan targets include the recently signed constitutional amendment by the Former President of Nigeria, Muhammadu Buhari, and the new Electricity Act 2023 signed by President Bola Ahmed Tinubu, which consolidates all legislations dealing with the electricity supply industry.

The recent constitutional amendment signed into law allows states nationwide to license, generate, transmit, and distribute electricity, which means that all states will be allowed to develop their electricity market frameworks specific to their capacity and realities. This is the right direction to achieve the nationwide universal electricity access target. If adequately implemented, the Electricity Act 2023 could be the key to unlocking and steering the Nigerian Energy Transition Plan in the right direction. A central high point of the Act is the dedication of specific provisions to utilising renewable energy in the power sector. The Act provides for establishing the National Integrated Electricity Policy and Strategic Implementation Plan, which shall encompass the optimal utilisation of renewable energy in the power sector and create waivers and subsidies to stimulate renewable energy development, amongst others. The Act also mandates the Nigerian Electricity Regulatory Commission (NERC) to support the incorporation of renewable energy into the energy mix by taking measures to provide a simplified licensing and favourable fee regime for renewable energy generation and distribution, issue commercial and technical regulations for connectivity of renewable energy generators to the grid and distribution networks, impose an obligation on the bulk purchaser to purchase a specified percentage of its electricity from renewable energy sources and guarantee the feed-in-tariff rates for electricity generated from renewable energy sources. These are highly commendable provisions, especially as the Electricity Act 2023 is Nigeria's first central legislation on renewable energy. The Act has the potential to solve Nigeria's power sector challenges by creating energy access, stimulating investments in the power sector and advancing the adoption and transition to clean energy to achieve the nation's net zero emission target by 2060. The Nigerian government has envisioned net-zero pathway projects to successfully meet the energy transition plan targets. Some of these projects within the plan's pipeline include an expanded super-grid with more extensive coverage and renewables integration for the power sector. This grid envisions to comprise 197GW of grid-connected solar, 11GW of hydropower, 10GW of gas, 34GW of hydrogen, 6GW of biomass and about 90GW of energy storage capacity by the year 2050. The government projects financing the net-zero target in the energy transition plan will require about $ 1.9 trillion, and much of this financing is needed to build power supply infrastructure in the sector. The government adopted a market-driven approach as its financing model via public-private partnership (PPP) to finance the plan. As of November 2022, the government was working to kickstart the plan's implementation by securing $10 billion.

Conclusion

Energy transition involves changing energy sources and improving energy efficiency across all sectors. Energy efficiency measures can help reduce energy wastage, increase system reliability, and lower overall energy consumption. The Nigerian energy transition plan requires substantial investment in new technologies, infrastructure, and research and development to drive innovation in the power sector. Also, effective policy and regulatory frameworks are essential to drive the energy transition in the power sector. These frameworks can provide incentives for renewable energy deployment, set emissions reduction targets, and encourage energy efficiency initiatives. The enactment of the Electricity Act 2023 was the way forward to drive this plan whilst exploring the opportunities that the transition plan avails. As Nigeria aims to improve energy access for all citizens while achieving its net-zero target by 2060, the energy transition in the power sector is crucial, and it can foster the provision of clean and affordable electricity to underserved communities, contributing to social and economic development. The power sector's role in the Nigerian energy transition is pivotal for achieving the country's sustainable development goals, reducing its carbon footprint, enhancing energy security, and ensuring a cleaner and more resilient energy future.

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