CHARTING THE FUTURE OF NIGERIA'S ELECTRICITY SECTOR: EVALUATING THE IMPLICATIONS OF NERC'S ORDER ON THE ESTABLISMENT OF AN ISO FOR THE NESI

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1.0. INTRODUCTION

In recent months, the Nigerian Electricity Supply Industry ("NESI") has witnessed significant developments driven by the Constitutional amendment[1] signed into law by former President Muhammadu Buhari and the subsequent enactment of the Electricity Act 2023 (the "EA 2023"). These legislative changes have instigated a shift towards a decentralized system within the NESI, prompting substantial interest and activity across the sector.

Under the Electric Power Sector Reform Act, 2005 ("EPSRA"), Nigeria privatized the generation and distribution sectors, leaving the transmission sector under the management of the Transmission Company of Nigeria Plc (the "TCN").[2] The TCN includes the Transmission Service Provider (TSP), Market Operator (MO), and System Operator (SO). Despite this organizational framework, the TCN has struggled with performance issues.

The perennial breakdown of the national grid and other critical TCN infrastructure have sparked widespread discontent among Nigerians, prompting a nationwide outcry for the Federal Government (FG) to intervene and overhaul the sector.[3]

In response to these challenges, the EA 2023 has outlined provisions for the unbundling of the TCN.

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[1] The amendment removed the phrase "areas not covered by the national grid" that was in item 14(b) of the second schedule to the Constitution. The effect of this amendment is that willing States of the Federation can now make laws with respect to the generation, transmission and distribution of electricity even in areas covered by the national grid.

[2] The TCN was briefly managed by Manitoba Hydro International (MHI) Ltd under a Management Contract

[3] A publication released by the Punch Newspaper as of January 2024 revealed that the National Grid has collapsed 46 times in 6 years. https://punchng.com/nigerias-power-grid-collapsed-46-times-in-six-years-iea/

2.0. UNBUNDLING THE TCN[4]

The TCN as a successor company was issued 2 (two) separate licences under the EPSRA to operate as the transmission service provider and system operator for the national grid system by the Nigerian Electricity Regulatory Commission ("NERC" or the "Commission"). However, the performance of the TCN under the licenses issued has been suboptimal. In view of this, the EA 2023 mandated the TCN to incorporate an entity which would be an Independent System Operator (the "ISO")[5] to take over the functions of the TCN regarding System Operations which functions, amongst others, will be power generation, scheduling, commitment & dispatch, transmission scheduling and generation outage, coordination, transmission congestion management and international transmission coordination.[6]

Considering the poor performance of the transmission network, market, and system operations under TCN's exclusive management, the unbundling of the TCN has the potential of attracting private participation and investment in the transmission arm of the NESI which may eventually lead to optimization of the NESI.

3.0. NERC'S ORDER ON THE ESTABLISHMENT OF THE ISO

Pursuant to the provisions of Section 15 of the EA 2023, NERC, on 30th April 2024 issued an Order on the establishment of the ISO for the NESI ("Order").[7] The Order seeks to provide clear directives on the timelines for the incorporation of the ISO and to outline the procedure for the transfer of the assets and liabilities of the market and system operations portion of the business that currently vests in TCN to the ISO.

The Commission ordered the Bureau of Public Enterprises to incorporate the ISO as a private company limited by shares no later than 31 May 2024. Consequently, the ISO was incorporated as the Nigerian Independent System Operator ("NISO") on

[4] See link to our previous article https://ao2law.com/nigerian-electricity-reforms-what-does-the-future-hold/
[5] Section 15 of the EA 2023
[6] Section 67 (1) of the EA 2023
[7] https://nerc.gov.ng/wp-content/uploads/2024/05/Order-on-the-Establishment-of-the-Independent-System-Operator-for-NESI-1.pdf

the 29th of May 2024.[8] The object clause of the NISO is as stated in Section 16(12) of the EA 2023.

By the Order, the initial subscribers shall be the Bureau of Public Enterprises and the Ministry of Finance Incorporated while the final shareholding structure of the NISO shall be determined after consultation with government, market participants and industry stakeholders.

4.0. RESPONSIBILITIES OF THE NISO

4.1. Generation scheduling, commitment and dispatch:

The NISO would play a crucial role in the efficient operation of electric power systems, particularly in generation scheduling, commitment, and dispatch. As an impartial entity responsible for managing the grid, the NISO will oversee the scheduling of generation resources to meet forecasted demand across various time horizons. This involves coordinating with power generating entities to ensure optimal utilization of available resources while considering economic and reliability factors.

[8] Based on the information contained on the Corporate Affairs Commission's portal.

In terms of commitment, the NISO will make decisions on which generating units will be brought online or taken offline based on real-time data and operational needs. This includes managing startup and shutdown schedules to minimize costs and maintain grid stability. During dispatch, the NISO will continuously monitor grid conditions and adjust generation outputs to match actual electricity demand, ensuring a balance between supply and consumption in real-time.

4.2. Transmission Scheduling and generation outage coordination:

Regarding transmission scheduling, the NISO shall plan and coordinate the movement of electricity across the transmission network to ensure efficient and reliable delivery from generators to consumers. This includes managing congestion on transmission lines and scheduling maintenance activities to minimize disruptions. Additionally, the NISO shall coordinate generation outage schedules, ensuring that maintenance and repairs on generating units are carried out in a way that maintains grid reliability and meets regulatory requirements.

4.3. Transmission congestion management

The NISO shall identify and mitigate congestion points on the transmission network to ensure efficient and reliable electricity delivery. It would employ various tools and mechanisms such as market-based approaches, transmission upgrades, re-dispatching of generation, and curtailment of transactions to alleviate congestion and maintain grid reliability.

4.4. International transmission coordination.

The NISO shall coordinate international transmission activities to facilitate efficient and reliable electricity exchange across borders. It would collaborate with neighboring grid operators and regulatory authorities to manage interconnections, transmission capacities, and operational protocols between different countries or regions.

4.5. Procurement and scheduling of ancillary services and system planning for long term capacity:

The NISO would play a significant role in international transmission coordination by facilitating procurement and scheduling of ancillary services and conducting system planning for long-term capacity. Additionally, the NISO shall engage in long-term

system planning to forecast future electricity demand, assess transmission network adequacy, and plan for the expansion or reinforcement of infrastructure to meet projected needs.

4.6. Administration of the wholesale electricity market, including the activity of administration of settlement payments, in accordance with the market rules:

The NISO shall administer the wholesale electricity market, ensuring fair and efficient operation in accordance with market rules. It would oversee the day-to-day activities of the market, including the scheduling and dispatch of electricity generation, and facilitate the matching of supply and demand through market mechanisms such as auctions and bilateral contracts. Additionally, the NISO would manage settlement payments between market participants, ensuring accurate and timely financial transactions based on actual electricity deliveries.

5.0. PROSPECTS OF THE NISO

5.1. Grid Reliability: The average Nigerian is tired of the incessant collapse of the national grid. With the birth of an independent entity, the NISO can make impartial decisions aimed solely at enhancing grid stability and reliability, thereby significantly reducing the frequency and duration of power outages. This independence is expected to enable NISO to prioritize maintenance and upgrades to the transmission network, ensuring a robust and reliable infrastructure. That said, power generation, infrastructure investment and efficient transmission lines are also critical success factors for grid reliability.

5.2. Market Efficiency: The establishment of the NISO will enhance competition in the electricity market by guaranteeing transparent and non-discriminatory access to the transmission network for all market participants. This will promote fair competition and facilitate a more competitive market environment

5.3. Renewable Energy Integration: As the world gradually transitions towards the usage of renewable energy, the NISO has the opportunity to integrate renewable sources such as solar and hydropower into the grid using advanced technologies. This effort will enable Nigeria to harness its extensive renewable energy potential. NISO can lead the deployment of smart grid technologies, enhancing the efficiency, reliability, and security of the electricity supply. Implementing advanced metering systems will provide real-time data on electricity consumption, aiding in demand management and loss reduction. Ultimately, these initiatives will encourage the adoption of environmentally sustainable practices in the electricity sector

5.4. Grid Operation and Control: The NISO will manage the real-time operation of the electricity grid to ensure reliable electricity supply to consumers. This includes monitoring grid conditions, balancing electricity supply and demand, and dispatching generation resources.

6.0. POTENTIAL CHALLENGES OF THE NISO

6.1. Financial Viability: Securing adequate funding and revenue streams to sustain the operations of the NISO is essential. In view of the existential illiquidity challenges in the NESI, it is essential for the NISO to develop pragmatic revenue generation models, cost recovery mechanisms, and ensure financial stability amidst fluctuating energy markets.

6.2. Infrastructural Deficit: The NESI faces critical infrastructural deficits in its transmission subsector. Key challenges include inadequate transmission capacity to meet growing demand, resulting in frequent grid congestion and an unreliable electricity supply. Much of the transmission infrastructure is outdated and in need of significant upgrades and maintenance, contributing to technical losses and inefficiencies. Moreover, the geographical coverage of the transmission network is limited, particularly in rural areas, hindering efforts to extend electricity access and integrate renewable energy sources effectively.

6.3. Operational Challenges: Successful implementation of the objectives of the NISO hinges on seamless coordination and integration with key stakeholders such as distribution companies, generation entities, and regulatory bodies. Lack of coordination among these parties can result in operational inefficiencies. Therefore, assembling a team of highly skilled professionals proficient in modern grid management, regulatory compliance, and advanced technologies is imperative. However, the shortage of such specialized skills within the local workforce presents a significant challenge that must be addressed through targeted training and capacity-building initiatives. By fostering expertise in these areas, Nigeria can enhance the effectiveness and sustainability of its electricity market reforms under the NISO framework.

6.4. Technological Challenges: Achieving operational efficiency in the transmission sector necessitates upgrading the existing infrastructure to modern standards, facilitated by smart grid technologies and advanced metering infrastructure. However, the adoption of these modern standards and technologies introduces inherent cybersecurity risks. Therefore, it is crucial for the NISO to implement robust

cybersecurity measures to protect against potential threats and ensure the secure operation of the grid during the deployment of these advancements. This includes establishing comprehensive security protocols, conducting regular risk assessments, and enhancing cybersecurity awareness and training among personnel involved in grid operations. By addressing cybersecurity concerns proactively, the NISO can effectively mitigate risks and bolster the resilience of the grid while leveraging technological innovations to improve overall efficiency and reliability.

7.0. CONCLUSION

Undoubtedly, the incorporation of the NISO represents a pivotal step towards enhancing the efficiency, reliability, and transparency of Nigeria's electricity sector. By establishing the NISO, Nigeria aims to streamline grid management, ensure fair market access for all participants, and foster a competitive environment conducive to sustainable energy development. This initiative is crucial as Nigeria seeks to address longstanding challenges such as inadequate transmission infrastructure, technical losses, and inefficiencies in electricity delivery.

Moreover, the NISO's prospects in integrating renewable energy sources, such as solar and hydropower, into the grid underscores its potential to drive forward the country's clean energy ambitions. Through the adoption of advanced technologies and smart grid solutions, the NISO can optimize energy distribution, mitigate operational risks, and improve overall grid resilience. However, the success of the NISO hinges on effective coordination with existing stakeholders, robust regulatory frameworks, and investment in building local expertise in modern grid management and cybersecurity.

In essence, the establishment of the NISO represents a transformative opportunity for Nigeria's electricity sector, paving the way for a more sustainable, efficient, and resilient energy infrastructure that meets the evolving needs of consumers and supports economic growth. By addressing infrastructure deficits, enhancing operational capabilities, and promoting renewable energy integration, Nigeria can position itself as a regional leader in energy sector reform and sustainable development.

Disclaimer: The foregoing should not be treated as legal advice. Kindly contact any of the key contacts if you need further clarification on this briefing note.