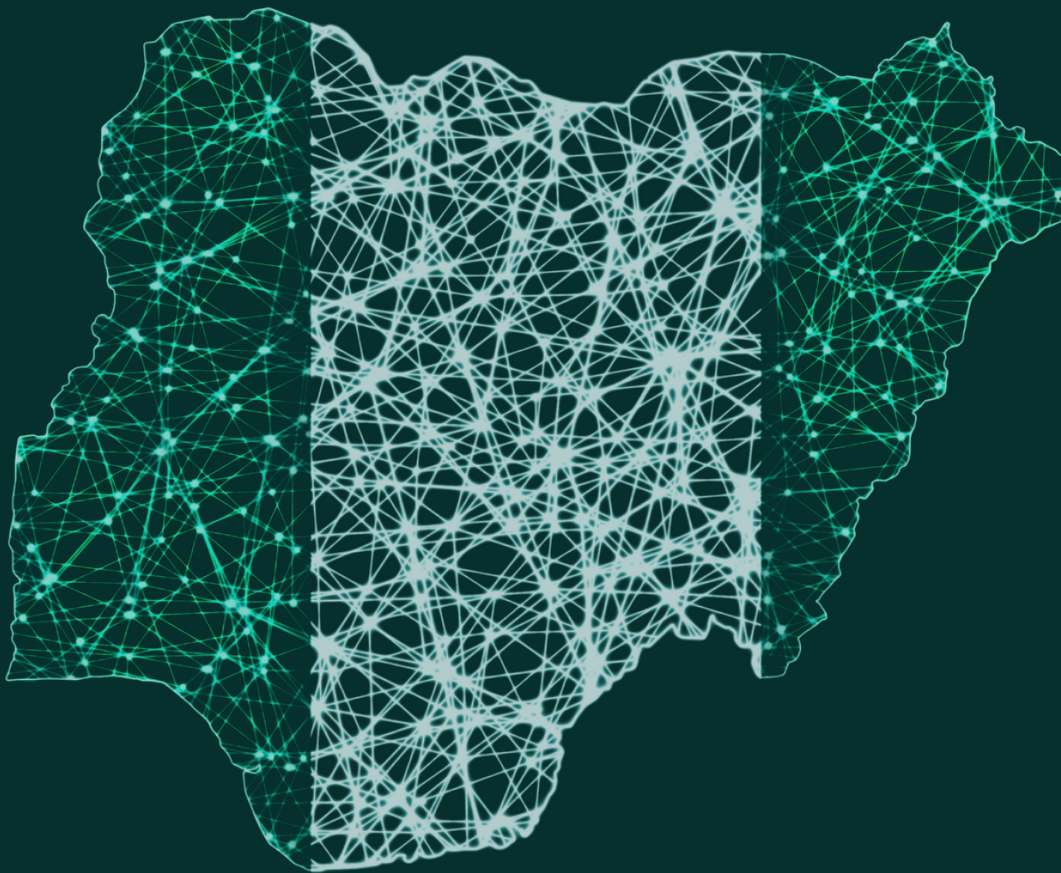


JULY 2023

# Empowering State Governments:

## A New Era of State Participation in the Nigerian Electricity Sector



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# Acronyms

**AEMO** Australian Energy Market Operator

**AER** Australian Energy Regulator

**BOOT** Build-Own-Operate-Transfer

**CERC** Central Electricity Regulatory Commission

**DisCo/  
Discom** Distribution Company

**EA** Electricity Act 2023

**ECN** Electricity Corporation of Nigeria

**EPSRA** Electric Power Sector Reform Act 2005

**ESCO** Energy Service Company

**FERC** Federal Energy Regulatory Commission

**IEDN** Independent Electricity Distribution Network

**MVA** Megavolt Amperes

**NBS** National Bureau of Statistics

**NDA** Niger Dams Authority

**NEM** National Electricity Market

**NEPA** National Electric Power Authority

**NERC** Nigerian Electricity Regulatory Commission

**NESI** Nigerian Electricity Supply Industry

**PHCN** Power Holding Company of Nigeria

**PPP** Public Private Partnership

**PSC** Public Service Commission

**PUC** Public Utility Commission

**SEB** State Electricity Board

**TCN** Transmission Company of Nigeria

**WAPP** West African Power Pool

# FOREWARD

DEAR ESTEEMED READERS,

Energy, particularly electricity, forms the backbone of any modern economy, facilitating economic growth, improving living standards, and enabling progress across all sectors. Recognising this fundamental truth, the Nigerian government has long been committed to addressing the challenges that have plagued the power sector, striving to provide its citizens with reliable and affordable electricity.

In this report, we venture beyond conventional wisdom and delve into the intricacies of state participation in the Nigerian power sector. We examine the potential benefits of strategic state intervention and participation in driving positive change.

Throughout our analysis, we assess the various forms of state participation, ranging from direct ownership and operation of power assets to the establishment of regulatory frameworks that foster private sector engagement, carefully considering the advantages and drawbacks of different models to paint a comprehensive picture. We also examine international case studies. By doing so, we seek to offer a pathway forward—a roadmap that encourages collaboration and embraces innovation.

We must emphasize that this report is not intended to promote a one-size-fits-all solution or advocate for a particular course of action. Rather, it is a thought-provoking exploration of the potential synergies that can be harnessed through effective state participation in the Nigerian power sector.

It is our sincere hope that this report catalyzes change and supports the goal of providing energy access to all Nigerians.

# Introduction

The Nigerian electricity sector has long been a critical component of the nation's infrastructure, powering industries, homes, and essential services. However, the structure of the sector has predominantly operated at the national level, with limited participation from individual states. In a ground-breaking move aimed at enhancing the Nigerian electricity sector, a new constitutional amendment signed in March 2023 paved the way for state governments to actively participate alongside the federal government. This progressive development acknowledges the importance of regional involvement and local empowerment in driving sustainable power supply. In this report, we will explore the implications of this constitutional amendment, highlighting the potential benefits and challenges of state participation in the Nigerian electricity sector.

Under the centralised structure, the Nigerian electricity market operates with several stakeholders, including the Federal Government, regulatory bodies, generation, transmission, and distribution companies. This centralised approach, while initially intended to streamline operations and ensure efficiency, has faced several challenges in meeting the growing electricity demand.

This report will delve into the recent constitutional amendment allowing states to participate in Nigeria's electricity sector. It will analyse the existing structure of the Nigerian electricity market at the national level, highlighting its strengths and limitations. Furthermore, it will examine case studies of developed countries that have embraced state participation, drawing lessons from their experiences. It will also look at the possibility of states operating alongside existing infrastructure, potential bottlenecks, and solutions. Finally, this report will explore the functions of the Federal regulator and the potential role of new State regulators to ensure effective governance and regulation of the sector.

# 1 THE NIGERIAN ELECTRICITY MARKET

EMPOWERING STATE GOVERNMENTS: A NEW ERA OF STATE PARTICIPATION IN THE NIGERIAN ELECTRICITY SECTOR





# 1 The Nigerian Electricity Market

Electricity in Nigeria dates back to 1886, when the sector was under the control of the British colonial government and was a department under the Public Works Department. In 1951, the Nigerian government established the Electricity Corporation of Nigeria (ECN), which was a government-owned monopoly responsible for electricity generation, transmission, and distribution. ECN practised a centralised business model, with the government being the primary provider of electricity services.

**Electricity generation in Nigeria began in 1896 with the establishment of the first power plant in Lagos, which was then the capital of Nigeria. It was known as the Lagos Thermal Station, a small-scale facility designed to meet the limited electricity needs of colonial administrators and a few local businesses.**

In 1962, a statutory organisation called the Niger Dams Authority (NDA) was established to build and maintain dams along the Niger and Kaduna Rivers. NDA commissioned a 320 MW hydropower plant, with all the power generated being sold to ECN. However, in 1972, the federal government merged the ECN with the NDA to form the National Electric Power Authority (NEPA).

NEPA was a government-owned entity still responsible for the generation, transmission, and distribution of electricity. NEPA's business model focused on centralised planning, government funding, and the direct operation of power plants. However, NEPA was unable to expand its initial electricity capacity due to poor maintenance, inefficiencies, and corruption; as a result, supply remained poor.

In 2005, the Electric Power Sector Reform Act (EPSRA) was enacted to promote competition and private sector participation. The act expressly mentions that states cannot participate in electricity markets or areas that already have a federal presence. Following this enactment, NEPA was eventually unbundled into successor companies called the Power Holding Company of Nigeria (PHCN), which was made up of generation and distribution companies and one transmission company. PHCN companies, excluding TCN, were eventually privatised in 2013, and the privatised companies make up the current structure we have today.

# 1 The Nigerian Electricity Market

The history of the Nigerian electricity market shows that the market has always been operated at a national level with no state involvement. As such, the growth of the power sector has always been implemented at a national level, with one transmission network and grid in place to serve the entire country.

The current structure has faced significant challenges despite the unbundling of NEPA to form PHCN and the privatization of PHCN successor companies. There are still inadequate investments in the electricity sector, poor electrification and energy access rates, and high liquidity challenges resulting from poor revenue collection.

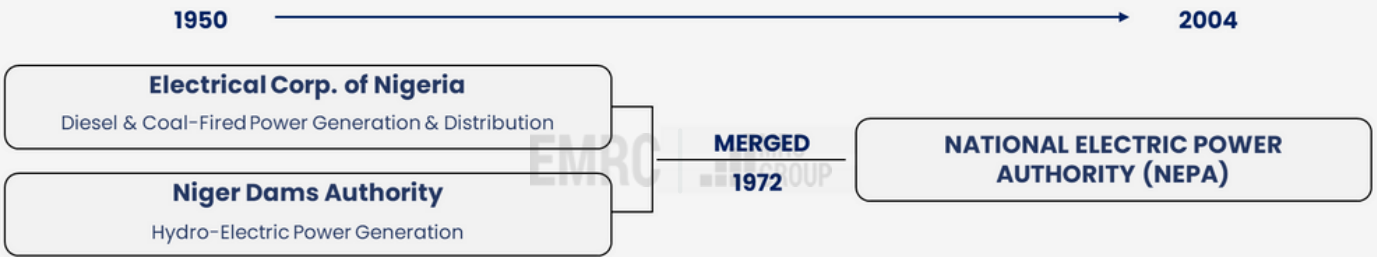


# 1 The Nigerian Electricity Market

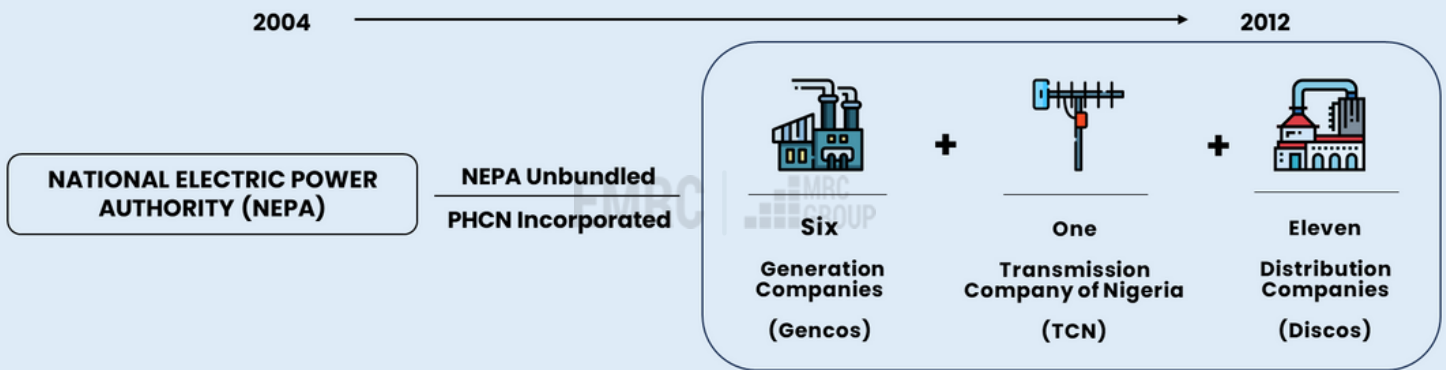
Figure 1: Structure of the Nigerian Electricity Market

## TIMELINE: STRUCTURE OF THE NIGERIAN ELECTRICITY MARKET

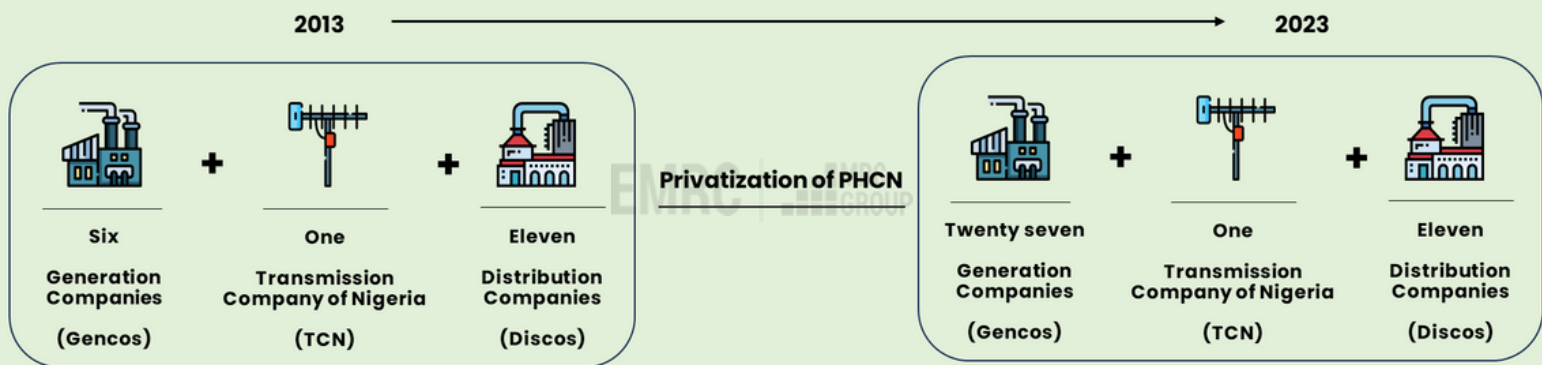
TWO NATIONAL POWER COMPANIES



The Niger Dams Authority built the first hydropower plant in Nigeria, Kainji Dam, which had an initial installed capacity of 320MW.



Upon handover in 2013, the total installed generation capacity of the 6 Gencos and the Independent Power Producers (IPPs) was 7,291MW.



Today, the total installed generation capacity of all on-grid power plants in the NESI is 13,500MW.

# 1 The Nigerian Electricity Market

The Nigerian electricity market operates under a centralized structure, where the Federal Government plays a significant role in the governance and regulation of the sector. This structure was established to streamline operations, coordinate investments, and ensure a reliable and efficient supply of electricity across the nation. The PHCN, as a vertically integrated state-owned power utility holding company in Nigeria, was historically responsible for the generation, transmission, and distribution of electricity.

Currently, the Federal Government, through its agencies such as the Nigerian Electricity Regulatory Commission (NERC) and the Transmission Company of Nigeria (TCN), has been responsible for overseeing and regulating the electricity market. NERC, as the regulatory authority, sets tariffs, issues licenses, and ensures compliance with industry standards.

TCN, on the other hand, manages the transmission infrastructure, ensuring the smooth flow of electricity from power generation facilities to distribution networks.

**ACCORDING TO RECENT DATA FROM THE NATIONAL BUREAU OF STATISTICS (NBS), LESS THAN 60% OF HOUSEHOLDS IN NIGERIA HAVE ACCESS TO ELECTRICITY, HIGHLIGHTING THE URGENT NEED FOR INTERVENTIONS AND STATE PARTICIPATION TO IMPROVE ENERGY ACCESS AND MEET THE GROWING DEMAND.**

While the EPSRA expressly barred states from participating in areas covered by the national grid, the new provision that allows them to participate in this area is a constitutional amendment, and by law, the constitution is the supreme law in the country. Furthermore, the recently passed Electricity Act (EA) recognises the authority of states to participate in areas covered by the national grid. .

# 2 POTENTIAL BENEFITS OF STATE PARTICIPATION IN THE ELECTRICITY MARKET

EMPOWERING STATE GOVERNMENTS: A NEW ERA OF STATE PARTICIPATION IN THE NIGERIAN ELECTRICITY SECTOR



# 2 Benefits of State Participation in NESI

A key similarity amongst the case studies considered in this report is the existence of state participation in the electricity sector of the country at the start, before the development of national coordinated electricity networks. This is very different from the structure and development of the Nigerian electricity market, which started at the national level first.

The following potential outcomes highlight what the states can achieve by exercising the powers now given to them to participate in power development across the electricity value chain on and off grid:

## 1 Strengthening Policy Implementation:

With the constitutional amendment, state governments now have the legal framework to align their policies and regulations with the federal government's energy agenda. This collaboration fosters a more efficient and coordinated approach to policy implementation, as state governments can tailor their strategies to address regional energy needs and challenges. By leveraging local expertise and resources, states can play a vital role in ensuring the effective execution of national energy policies, leading to improved outcomes in power generation, transmission, and distribution.

## 2 Accelerating Power Generation:

The ability of state governments to participate in power generation is a game-changer for the Nigerian electricity sector. While the federal government will continue to oversee national power generation projects, state governments now have the opportunity to develop and implement their own generation initiatives. This empowers states to tap into local resources, such as renewable energy potential or natural gas reserves, fostering diverse and decentralized energy systems. By embracing renewable energy sources and encouraging private sector investments, states can contribute significantly to expanding Nigeria's power generation capacity.

## 3 Enhancing Transmission and Distribution Infrastructure:

States can actively engage in improving transmission and distribution infrastructure within their regions. By collaborating with the federal government and relevant agencies, state governments can participate in the planning, development, and maintenance of transmission lines, substations, and distribution networks. This joint effort will address regional disparities, reduce transmission losses, and improve overall power reliability, ensuring that electricity reaches every corner of the country.

# 2 Benefits of State Participation in NESI

## 4 Fostering Innovation and Collaboration:

It will open up avenues for innovation and collaboration. With increased autonomy, states can explore innovative technologies and business models that best suit their specific energy requirements. This fosters healthy competition among states, driving efficiency and encouraging best practices. Furthermore, collaboration between state governments, the federal government, private sector entities, and research institutions can promote knowledge exchange, research partnerships, and the development of cutting-edge solutions to address the challenges faced by the sector.

## 5 Enhanced investment opportunities:

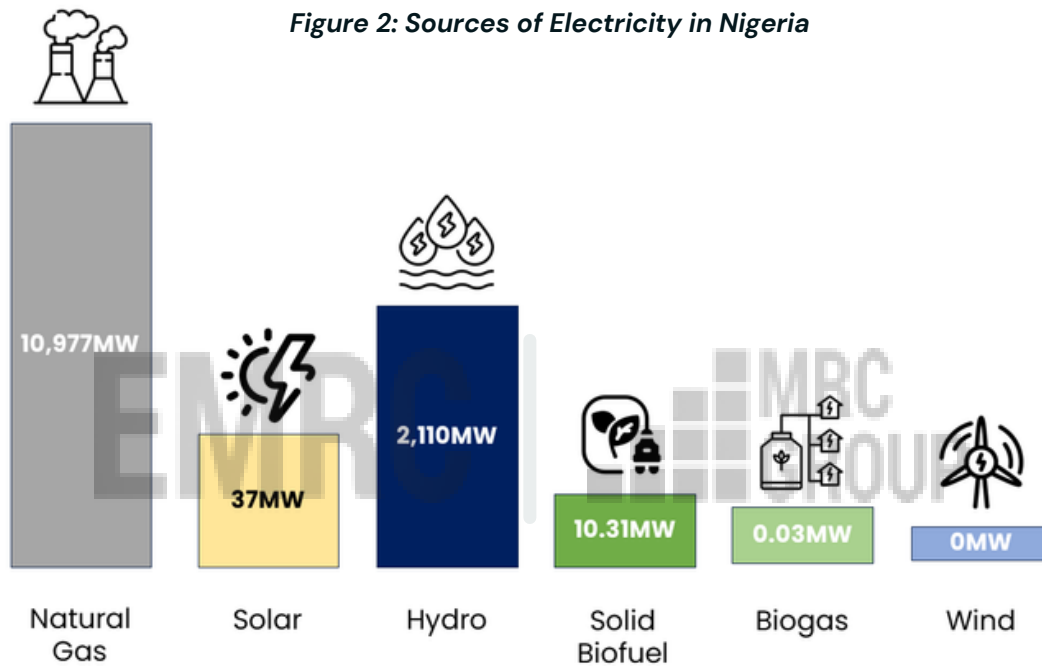
State governments can create an enabling environment for private sector participation by offering incentives, tax exemptions, streamlining regulations, and providing necessary infrastructure support. This can unlock capital for the development of generation, transmission, and distribution infrastructure.

## 6 Encouraging Renewable Energy Adoption:

Sub-Nationals are uniquely positioned to capitalize on their local renewable energy resources. With the constitutional amendment, state governments can proactively drive the adoption of renewable energy solutions in their regions. By implementing favourable policies, providing incentives, and streamlining regulatory processes, states can attract private sector investments in renewable energy projects such as solar, wind, and hydroelectric installations. This decentralized approach will not only contribute to Nigeria's renewable energy targets but also foster regional economic development and job creation.



## 2 Benefits of State Participation in NESI



Source: International Renewable Energy Agency (IRENA)

**Natural gas** boasts the largest installed capacity. However, gas constraints and ageing infrastructure limit its availability for power generation, with less than half of the total capacity accessible.

**Solar power** plays a vital role in energizing off-grid areas, reflecting Nigeria's increasing interest in renewable energy integration. However, the grid-connected solar capacity remains low at 9.7MW.

**Hydropower** is another significant electricity source with three on-grid power plants contributing to the installed capacity. Q4 2022 saw an output of 1,316MW, influenced by seasonal changes and operational factors.

**Solid biofuel** and **biogas** exclusively serve off-grid applications, providing energy to rural communities sustainably.

**Wind power** is absent in Nigeria due to a focus on other energy sources, limited investment, and a lack of supportive policies. Despite obstacles, favourable wind conditions in certain regions present an opportunity for future wind power development to diversify the energy mix and enhance sustainability.

State participation in the power sector can significantly boost electricity generation figures by promoting renewable and non-renewable technologies. Diversifying energy sources, including expanding renewables, is crucial in addressing Nigeria's energy challenges and ensuring a sustainable and reliable electricity supply for the future.



# 2 Benefits of State Participation in NESI

## 7 Improved service delivery:

State participation can lead to improved service delivery, including reliable electricity supply through embedded generation, reduced distribution losses, and better customer service. States can work with state electricity distribution companies, independent electricity distributors, and franchisees to implement consumer-focused initiatives, such as metering improvements, billing transparency, and better customer complaint handling procedures, to enhance customer satisfaction.

## 8 Enhanced Energy Security:

State participation can contribute to improved energy security by diversifying the sources of electricity generation. States can explore renewable energy resources, such as solar, wind, and hydropower, to reduce dependence on fossil fuel-based generation.

## 9 Efficient Governance and Regulatory Frameworks:

State participation can lead to the development of effective governance structures and regulatory frameworks at the state level. States can establish regulatory bodies to oversee the electricity sector within their jurisdictions, ensuring fair competition, consumer protection, and adherence to environmental standards.

## 10 Customized Tariff Structures and Subsidy Programs:

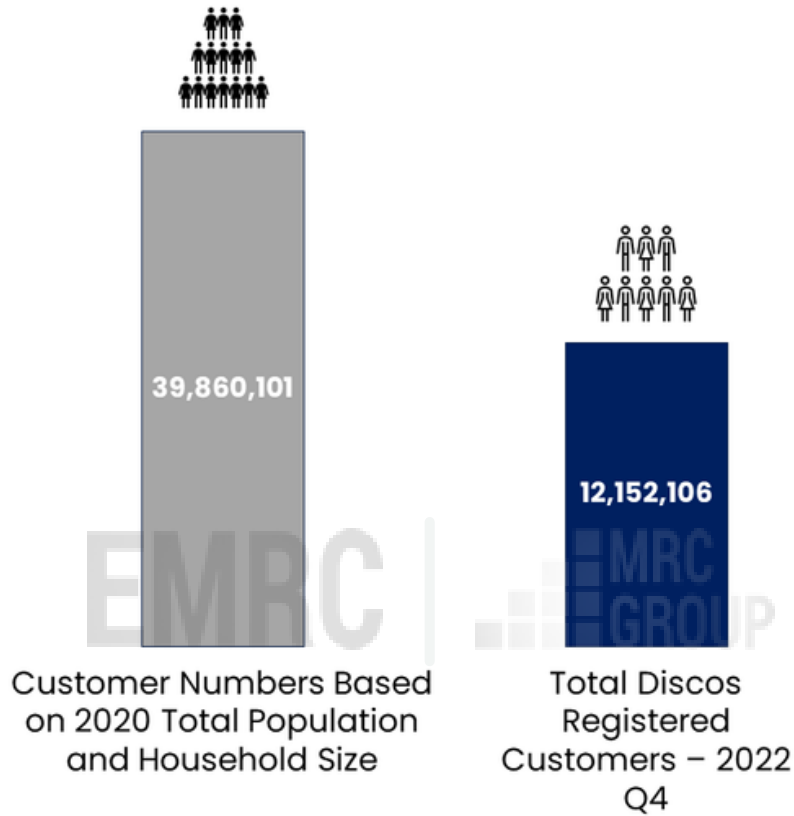
It will allow for the design of tariff structures and subsidy programs tailored to local needs and socioeconomic conditions. This flexibility can ensure affordability, especially for low-income consumers while maintaining financial viability for electricity providers.

## 11 Improvement in Energy Access:

State participation in the Nigerian electricity sector has the potential to improve electricity access by tailoring solutions to regional needs, attracting investments for infrastructure development, involving local communities, and promoting energy efficiency. With states actively engaged, targeted efforts can expand electricity coverage and enhance energy access for more Nigerians.

# 2 Benefits of State Participation in NESI

Figure 3: Potential vs Actual Customer Population in the Nigerian Electricity Market



Source:

Nigerian Bureau of Statistics (NBS) 2021 Demographic Bulletin  
Nigerian Electricity Regulatory Commission (NERC) 2022 Quarter Four Report

The graph above is based on the latest NBS population data for 2020. Using the average household size and population per state in Nigeria, the total number of electricity customers should be closer to forty million, compared to the current twelve million plus registered electricity customers in quarter four of 2022. This shows that the current number of registered customers is only 31% of the potential number based on household size.

Thus, states have the opportunity to close the electricity access gap in their various states. By prioritizing electrification efforts in underserved areas and investing in local infrastructure, states can expand the reach of electricity to remote communities.

The population of each state and their household size can be found in the annexes.

# 3 LIMITATIONS TO STATE PARTICIPATION IN NESI

EMPOWERING STATE GOVERNMENTS: A NEW ERA OF STATE  
PARTICIPATION IN THE NIGERIAN ELECTRICITY SECTOR



# 3 Limitations to State Participation in NESI

While the Electricity Act and constitutional amendment open doors for sub-national power over electricity, there are concerns and limitations to fully exercising these powers:

## 1 Limited Financial Capacity:

Many states in Nigeria face financial constraints and may struggle to mobilize sufficient funds for infrastructure development, operation, and maintenance in the electricity sector. Insufficient budget allocations, limited access to financing, and competing demands for resources in other sectors can hinder the ability of states to actively participate in the electricity sector. Lack of adequate funding can hinder the implementation of projects and lead to suboptimal service delivery.

## 2 Regulatory Coordination and Harmonization:

Ensuring effective coordination between the federal regulator (NERC) and the new state regulators will be crucial to maintaining consistency in regulatory frameworks, standards, and pricing mechanisms. Misalignment in policies and regulatory frameworks can create uncertainties for investors and impede progress. Collaboration and information sharing will be essential to avoid fragmentation and ensure a cohesive national electricity market.

## 3 Capacity Building:

States will need to develop institutional capacity and expertise in electricity sector governance, regulation, tariff design, and market operations. Building a skilled workforce and providing training opportunities for state regulators and personnel will be vital to ensuring effective implementation and compliance.

## 4 Political Interference:

Political interference in the operations and decision-making processes of state-owned entities can undermine their efficiency and financial viability. It is crucial to establish appropriate governance mechanisms that will insulate the electricity sector from undue political influence and ensure transparent and merit-based decision-making.

# 3 Limitations to State Participation in NESI

## 5 Incomplete/Unavailable Infrastructure:

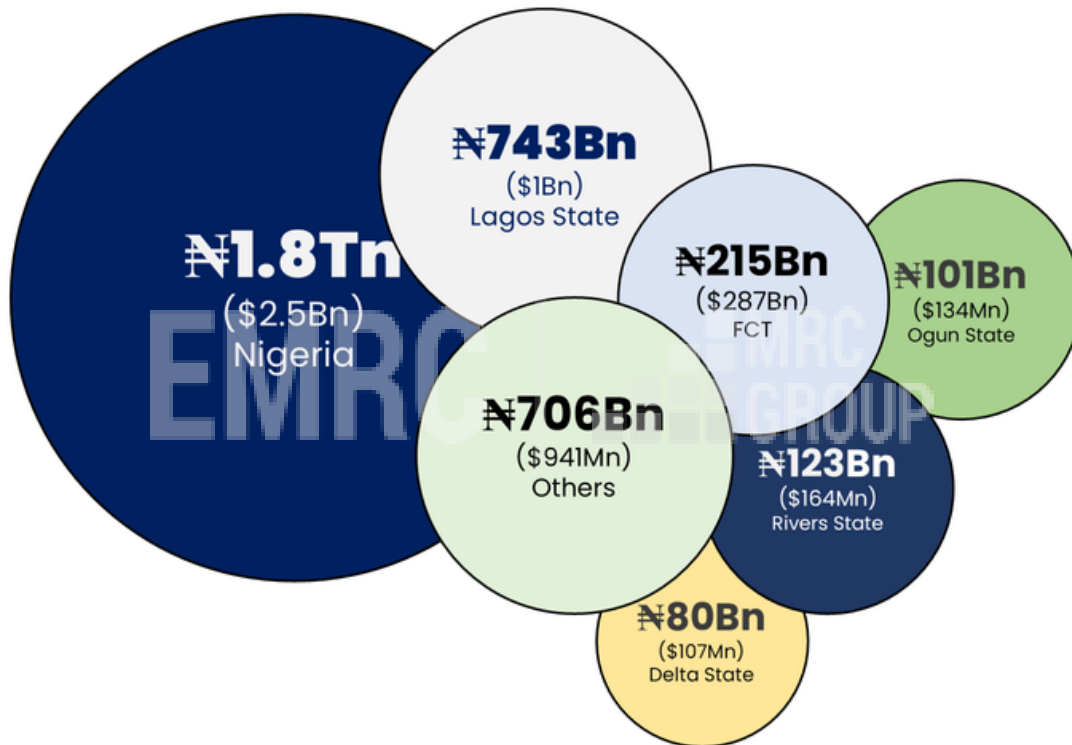
Many states in Nigeria still lack adequate electricity infrastructure, including generation plants, transmission lines, and distribution networks. For example, not all states in Nigeria have power plants situated within the states themselves.

**MANY STATES FACE FINANCIAL CONSTRAINTS AND MAY STRUGGLE TO MOBILIZE SUFFICIENT FUNDS FOR INFRASTRUCTURE DEVELOPMENT AND OPERATION IN THE ELECTRICITY SECTOR. AS A RESULT, THESE STATES MAY ENCOUNTER DIFFICULTIES MEETING THE GROWING DEMAND FOR ELECTRICITY AND MAINTAINING A RELIABLE POWER SUPPLY. IT IS CRUCIAL FOR THESE STATES TO FIND INNOVATIVE SOLUTIONS AND SEEK ASSISTANCE TO OVERCOME THEIR FINANCIAL CONSTRAINTS AND ENSURE SUSTAINABLE DEVELOPMENT IN THE ELECTRICITY SECTOR.**



# 3 Limitations to State Participation in NESI

Figure 4: Internally Generated Revenue by States (2021)



Source: National Bureau of Statistics

The diagram above illustrates the distribution of internally generated revenue (IGR) among the states in Nigeria, focusing on Lagos, Rivers, Delta, Ogun, and the Federal Capital Territory (FCT).

In 2021, Nigerian states generated a total of \$2.5Bn in IGR. However, five states—Lagos, Rivers, Delta, Ogun, and the Federal Capital Territory—stand out as significant contributors to this figure, with 63% of the total sum generated by them alone. They boast relatively robust economies and possess various thriving industries, leading to substantial IGR. As a result, these states have more financial capacity to invest in infrastructure and services for the development of their state electricity markets. The IGRs of the remaining 32 states may not be sufficient to support large development initiatives, which could affect their ability to construct sustainable power markets.

As the majority of states may find it difficult to invest in key energy infrastructure, there may be discrepancies in access to dependable power and economic development.

# 3 Limitations to State Participation in NESI

Figure 6: Poverty Index in Nigerian Geo-Political Zones and States

NORTH-CENTRAL		SOUTH-SOUTH		NORTH-WEST		SOUTH-EAST		NORTH-EAST		SOUTH-WEST	
Benue	75%	Akwa-Ibom	71%	Kaduna	74%	Abia	30%	Adamawa	69%	Ekiti	36%
FCT	48%	Bayelsa	89%	Katsina	73%	Anambra	32%	Bauchi	74%	Lagos	30%
Kogi	61%	Cross-River	75%	Kano	66%	Ebonyi	78%	Borno	73%	Osun	41%
Kwara	48%	Delta	48%	Kebbi	82%	Enugu	63%	Gombe	86%	Ondo	27%
Nassarawa	61%	Edo	36%	Sokoto	91%	Imo	41%	Taraba	79%	Ogun	68%
Niger	70%	Rivers	62%	Jigawa	84%	<b>Average</b>	<b>48.74%</b>	Yobe	83%	Oyo	49%
Plateau	84%	<b>Average</b>	<b>63%</b>	Zamfara	78%			<b>Average</b>	<b>77%</b>	<b>Average</b>	<b>42%</b>
<b>Average</b>	<b>64%</b>			<b>Average</b>	<b>78%</b>						

Source: National Bureau of Statistics

The diagram above depicts the percentage of poor people across Nigeria.

The high proportion of poor people across the 6 geo-political zones indicates that a significant number of Nigerians may be unable to meet their basic needs.

The presence of a substantially poor population in a state poses a considerable risk to ventures in a state's electricity market as it suggests that the potential customer base capable of paying for electricity services is limited. Consequently, electricity providers in these states may encounter high losses due to unpaid bills and poor revenue generation from electricity sales.

It is critical for policymakers and stakeholders in the NESI to consider each state's socioeconomic characteristics when developing strategies and regulations for market involvement. Understanding the incidence of poverty in each location would aid in the development of tailored solutions to solve cost concerns, enhance energy access for the disadvantaged, and develop long-term models for power distribution and consumption.

# 4 CASE STUDIES: COUNTRIES WITH STATE PARTICIPATION IN THE ELECTRICITY SECTOR

EMPOWERING STATE GOVERNMENTS: A NEW ERA OF STATE PARTICIPATION IN THE NIGERIAN ELECTRICITY SECTOR





# 4 Case Studies: Countries with State Participation in the Electricity Sector

To understand the potential benefits and challenges of state participation in the electricity sector, we will draw insights from developed countries that have embraced and practiced this approach. Notable case studies include the United States, Australia, and India, where state participation has contributed to the robustness and efficiency of their electricity markets.

## 4.1. Case Study 1 – United States

The history of state participation in the electricity sector in the United States is characterized by a mix of private and public involvement. Initially, private companies were the predominant providers of electricity generation and distribution services. However, over time, state governments began to play a more active role in the sector, especially in the early to mid-20th century.

The electricity sector in the United States currently operates within a framework that combines federal and state regulatory authority. The Federal Energy Regulatory Commission (FERC) is responsible for regulating interstate electricity transmission, wholesale markets, and hydroelectric projects. At the state level, Public Utility Commissions (PUCs) or Public Service Commissions (PSCs) regulate retail electricity markets, set rates, and oversee utilities within their jurisdictions.

State regulators in America are responsible for balancing the interests of consumers, utilities, and the broader public in the electricity sector. They aim to ensure reliable, affordable, and sustainable electricity services while promoting competition, protecting consumers, and advancing energy policy goals at the state level. Some of their key functions are:



# 4 Case Studies: Countries with State Participation in the Electricity Sector

- Rate regulation
- Utility Oversight
- Utility licensing
- Consumer Protection
- Energy Policy and Planning
- Market Monitoring and Competition
- Renewable Energy & Environmental Regulations

States in the United States of America have regulatory oversight and involvement in national electricity transmission through various mechanisms. The bulk transmission system is typically regulated at the federal level, but state regulatory bodies play a role in ensuring the reliability, planning, and operation of transmission infrastructure within their states. For electricity transmission, states provide the following:

- Regulatory oversight on siting and permitting of transmission infrastructure;
- Integrated resource planning to evaluate the need for transmission infrastructure to support long-term electricity needs;
- Interconnection standards and procedures for connecting generation plants to transmission infrastructure.
- Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs)
- Rate design on the cost of transmission.

# 4 Case Studies: Countries with State Participation in the Electricity Sector

## 4.2. Case Study 2 – Australia

Similar to America, the electricity sector in Australia has a history of state participation. Here, state-owned utilities provided electricity services in most of the states in the country. The utilities operated as vertically integrated monopolies, which meant they controlled the entire electricity value chain (Generation, Transmission, and Distribution) within their state.

However, in the early 1980s, Australia underwent significant market reforms aimed at introducing competition and deregulation in the electricity sector. The National Electricity Market (NEM) of Australia was established to facilitate a wholesale electricity market across states, and just like NEPA, this saw utilities restructured into separate entities separating the generation, transmission, and distribution functions, respectively.



Multiple state governments eventually privatized their electricity assets like the privatization of the Nigerian government-owned electricity companies in 2013. However, in Australia, some states still own and operate significant electricity infrastructure.

The electricity sector operates under a dual regulatory framework involving both federal and state regulators. At the federal level, the government oversees national energy policy and sets broad guidelines through the Australian Energy Market Commission (AEMC), the Australian Energy Regulator (AER), and the Australian Energy Market Operator (AEMO). At the state level, each state has its own regulatory bodies responsible for implementing policies and regulating the electricity sector within their jurisdictions. Some of the state regulatory functions are:

# 4 Case Studies: Countries with State Participation in the Electricity Sector

- Setting Electricity Pricing
- Issuing Licensing
- Market monitoring and compliance
- Network regulation – Transmission and Distribution.
- Consumer protection
- Renewable energy support
- Stakeholder engagement
- Market design
- Electricity industry codes

In Australia, electricity transmission is primarily regulated by two key national bodies, AEMO and AER, and there is a federally operated transmission line. Some states still have transmission networks located within their states and for intrastate transmissions.

An important point to note is the existence of state participation in the electricity sector since its inception.

## 4.3. Case Study 3 – India

The Indian electricity market has experienced significant state participation. With a federal and state structure, India has successfully implemented decentralized decision-making and regional autonomy to address the diverse energy needs across its states.

India's electricity sector operates under a federal and state structure, with the central government and state governments sharing responsibilities. The key regulatory authority at the central level is the Ministry of Power, which is responsible for formulating policies and overseeing national-level matters. Each state has its own State Electricity Regulatory Commission (SERC), which regulates the electricity sector within its jurisdiction. The central government also established the Central Electricity Regulatory Commission (CERC) to regulate interstate matters and oversee the functioning of regional grids.



# 4 Case Studies: Countries with State Participation in the Electricity Sector

In India, the primary entities responsible for electricity generation, transmission, distribution, and regulation within the states are State Electricity Boards (SEBs), also known as State Power Utilities. Alongside private operators, the states themselves own and operate more than eight transmission and distribution utilities in the country, ensuring regulatory oversight and an efficient power supply.

While transmission in India has not undergone complete privatization, it is predominantly managed by the central government-owned Power Grid Corporation of India. This corporation is responsible for the development, operation, and maintenance of the interstate transmission system across the nation. At the intrastate level, state-owned transmission companies handle electricity transmission within their respective regions.

However, the electricity distribution sector in India has significant private-sector involvement. Numerous Distribution Companies (Discoms) in the country are privately owned and operated, contributing to the efficient distribution of electricity to end consumers.

The collaboration between state-owned utilities and private operators in both the transmission and distribution sectors is a testament to India's commitment to creating a robust and sustainable electricity ecosystem.

The development of the electricity sector in India started at the state level, very much like in America and Australia. Each state was responsible for developing its electricity infrastructure and providing electricity to residents. Over time, the growing demand for electricity gave birth to the need for interstate transmission of electricity. The central government then took steps to create a national transmission system and promote coordination among states.

# 5 BUSINESS MODELS TO BE CONSIDERED BY STATES

EMPOWERING STATE GOVERNMENTS: A NEW ERA OF STATE PARTICIPATION IN THE NIGERIAN ELECTRICITY SECTOR



# 5 Business Models to be Considered by States

States must consider multiple business models and determine which is best for entry into the electricity market. Below is a synopsis of some business models to be considered by the states:

## **1. STATE-OWNED GENERATION AND DISTRIBUTION:**

States can establish their own generation plants and distribution networks, becoming vertically integrated entities responsible for the entire electricity value chain within their jurisdictions. This model gives states direct control over generation, transmission, and distribution within their borders. However, it is important to note that there are currently privately owned and operated distribution utilities within the state carrying out this function.

## **2. PUBLIC-PRIVATE PARTNERSHIP (PPP):**

Under this model, state governments can collaborate with private sector entities to develop, operate, and maintain power infrastructure. State governments provide the necessary land, permits, and regulatory support, while private companies bring in the required investment, technical expertise, and management capabilities while allowing states to retain partial ownership and oversight. This is the current arrangement between the federal government and distribution utilities in Nigeria.

## **3. FRANCHISE MODEL:**

States can adopt a franchise model where they grant licenses to private entities to operate distribution networks within specific geographic areas. The state retains regulatory oversight, while the private company is responsible for investment, operation, and maintenance. Due to the current existence of distribution networks in most states, states can adopt this model for areas without distribution networks. This is like the arrangement where the Ibom Utility of Akwa Ibom State recently got an Independent Electricity Distribution Network (IEDN) license from NERC.

## **4. ENERGY SERVICE COMPANY (ESCO):**

States can establish ESCOs to provide energy services, including energy efficiency solutions, demand-side management, and renewable energy installations.

# 5 Business Models to be Considered by States

**BY ADOPTING A FRANCHISE MODEL, STATES CAN GRANT LICENSES TO PRIVATE ENTITIES TO OPERATE DISTRIBUTION NETWORKS WITHIN SPECIFIC GEOGRAPHIC AREAS.**

## **5. BUILD-OWN-OPERATE-TRANSFER (BOOT):**

Under this model, private investors are granted a concession to develop, own, and operate power infrastructure for a specific period of time. After the agreed-upon period, ownership and control of the infrastructure are transferred back to the state government. BOOT arrangements provide private investors with revenue streams during the concession period, and the state government benefits from infrastructure development without upfront capital investment. This mostly benefits states that may be grappling with a fiscal challenge.

## **6. ENERGY COOPERATIVES:**

State governments can support the formation of energy cooperatives, where communities or groups of consumers collectively own and manage their electricity generation and distribution systems. By pooling resources, community members can invest in renewable energy projects, operate microgrids, and share the benefits of clean and affordable electricity. Energy cooperatives encourage local ownership and foster community engagement in the energy transition.



# 6 IMPLICATION ON ELECTRICITY DISTRIBUTION UTILITIES

EMPOWERING STATE GOVERNMENTS: A NEW ERA OF STATE PARTICIPATION IN THE NIGERIAN ELECTRICITY SECTOR




# 6 Implication on Electricity Distribution Utilities

Currently, there are existing distribution networks in every state in Nigeria, which are owned and operated by the 11 Discos acquired by investors in the 2013 privatisation transaction. The Act and constitutional amendment are unclear as to what powers states have over the existing distribution network.

According to the distribution licenses signed by the existing DisCos, it can be inferred that NERC has granted distribution licensees sole control over their regions. While this has been a subject of debate over the years, the implementation of the new constitutional amendment can bring this issue to the forefront and may even end the debate once and for all.

Thus, in the case of handling existing distribution infrastructure, the states should explore multiple options, which will depend on a few factors such as the condition of the existing infrastructure, ownership arrangements, financial feasibility, and the overall goals and strategies of the state government. Some possible options that may be considered are:



**State participation leads to customer-centric initiatives. Through improved metering, billing transparency, and enhanced complaint handling procedures, states can enhance service delivery and ensure customer satisfaction.**

## 1. RENTING OR LEASING EXISTING INFRASTRUCTURE:

State governments can explore the option of renting or leasing the already existing distribution infrastructure from the incumbent distribution companies or private entities. This approach allows the state government to utilize the existing infrastructure without the need for significant capital investment or the duplication of infrastructure.

## 2. BUILDING PARALLEL LINES:

Alternatively, state governments may choose to build parallel distribution lines to supplement the existing infrastructure. This approach provides the state with greater control over the distribution system, allowing for customized planning and development. It can be particularly beneficial in cases where the existing infrastructure is outdated, overloaded, or unable to meet the growing energy

# 6 Implication on Electricity Distribution Utilities

**State participation opens up new investment opportunities.** By creating an enabling environment for private sector engagement and offering incentives, states can attract capital for infrastructure development, ensuring long-term financial viability.

demands of the state. This option would require significant capital investment from the states and may be counterproductive due to the existence of lines unless these are built as an extension of the existing network or simply in areas where they are non-existent.

Based on the amendments, states may not legally have any claim over the current distribution network and may have to consider the options above to participate in electricity distribution.

## 6.1. Impact of state participation on the current owners of Distribution Utilities

The fate of current owners of distribution utilities who bought and paid for franchise areas in states during the 2013 privatization would depend on the specific provisions and regulations established during the transition to state participation in the electricity sector. A few possible scenarios are listed below on how the states may go about it:

### 1. RETAIN OWNERSHIP WITH ADAPTED AGREEMENTS:

The current owners of distribution utilities will retain ownership of their assets and continue operating within their franchise areas. However, new agreements or contracts may need to be negotiated to accommodate the changes brought about by state participation. These agreements could address aspects such as revised performance targets, regulatory oversight, and adherence to state-specific policies or standards.

# 6 Implication on Electricity Distribution Utilities

## **2. ASSET TRANSFER OR LEASE ARRANGEMENTS:**

The state government may opt to seek a legal transfer or lease the existing distribution infrastructure from the current owners to the newly established state entities or state-owned companies responsible for electricity distribution. This could involve a negotiated transfer of assets, where the state compensates the current owners for the infrastructure and assumes operational control. Lease arrangements can also be considered, where the state leases the infrastructure for a specified period, allowing the current owners to retain ownership while the state oversees operations and regulation.

Lease arrangements are most likely to happen for states, as this lets them avoid making financial commitments toward building new lines.

## **3. PURCHASE OR COMPENSATION:**

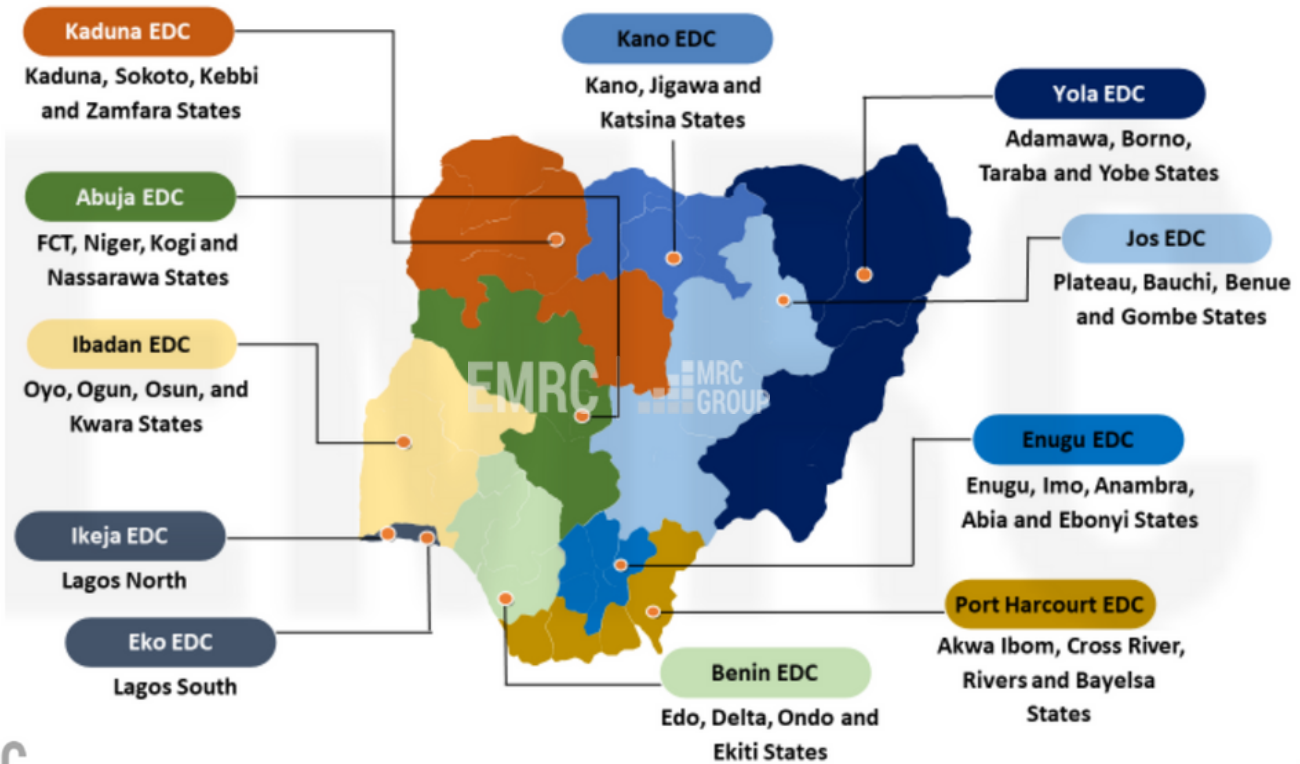
State governments may explore purchasing the distribution infrastructure from the current owners who are willing to sell, particularly if there is a strong desire for complete state control or if there are concerns about the performance or alignment of the existing owners with state objectives. The purchase can be carried out through negotiations or based on predefined valuation methodologies. Alternatively, the state may provide compensation to the current owners for relinquishing control and allowing the state entities to take over operations. Distribution utilities may consider selling parts of their networks to state governments and could decide to sell the entire network in any of the states in which they operate.

## **4. NETWORK FRANCHISING OR PARTNERSHIPS:**

Instead of the option of purchase, the state government may explore the option of franchising or partnerships with the current owners of distribution utilities. This can involve islanding certain parts of the distribution network and determining the most appropriate franchising models to apply, e.g., total management of the area, franchising on cash collection, or franchising by injecting more electricity into the area through embedded generators. This will involve combining resources, expertise, and capital to improve the distribution network and services.

# 6 Implication on Electricity Distribution Utilities

Figure 5: 11 DisCos and their Regions of Operation



EMRC

MRC GROUP

ELEVEN (11) DISTRIBUTION UTILITIES CURRENTLY OPERATE IN THE 36 STATES OF NIGERIA, THE IMAGE ABOVE SHOWS THEIR COVERAGE AREA:

The old legal framework in Nigeria (EPSRA) and the current framework (the new Electricity Act) empower NERC to grant licenses in the Nigerian Electricity Supply Industry (NESI), and this protects Disco's ownership of the current distribution networks in the states. This means the states cannot take ownership without agreeing with the current owners.

The average Disco in Nigeria covers four (4) states, except for Lagos which is covered by both Ikeja and Eko Disco.

# 6 Implication on Electricity Distribution Utilities

IT IS IMPORTANT TO NOTE THAT ANY CHANGES IN OWNERSHIP, STUCTURE OR ALREADY EXISTING AGREEMENTS MUST BE CARRIED OUT UNDER THE APPLICABLE LAWS, CONTRACTS, AND REGULATIONS IN NIGERIA. ANY APPROACH ADOPTED WILL DEPEND ON A RANGE OF FACTORS INCLUDING LEGAL CONSIDERATIONS, FINANCIAL IMPLICATIONS, PERFORMANCE EVALUATIONS, AND THE ALIGNMENT OF THE OBJECTIVES BETWEEN STATES AND THE OWNERS OF DISTRIBUTION UTILITIES.

# 7 THE IMPLICATION ON ELECTRICITY TRANSMISSION

EMPOWERING STATE GOVERNMENTS: A NEW ERA OF STATE PARTICIPATION IN THE NIGERIAN ELECTRICITY SECTOR



# 7 The Implication on Electricity Transmission

Today, the only transmission infrastructure in Nigeria is at the national level connecting all thirty-six states, and it is operated by the Transmission Company of Nigeria (TCN), which is 100% owned by the FGN. This means that despite the constitutional amendment, states cannot take over transmission lines and may only collaborate with TCN. However, there are some approaches state governments may consider.

## **1. REGIONAL TRANSMISSION PLANNING:**

State governments can participate in regional transmission planning processes to ensure that the transmission infrastructure adequately serves their states' needs. This involves collaborating with the relevant federal agencies, such as the TCN, and other stakeholders in the region. By actively engaging in regional planning discussions, state governments can articulate their specific transmission requirements, highlight future load growth projections, and advocate for necessary infrastructure upgrades or expansions to meet the states' electricity demands.

## **2. JOINT FUNDING & INVESTMENT:**

State governments can collaborate with the federal government and other states in various joint investment and funding initiatives for transmission infrastructure. By pooling resources and sharing costs, states can collectively contribute to the development of new transmission lines or the reinforcement of existing ones. This approach allows for a more efficient allocation of financial resources, especially for states that may face budget constraints on individual transmission projects.

## **3. INTRASTATE TRANSMISSION PROJECTS:**

In cases where there are specific transmission needs within a state, state governments can propose and develop state-specific transmission projects. These projects would focus on enhancing transmission connectivity within the states, integrating new power generation sources, or addressing transmission bottlenecks. State governments can initiate feasibility studies, collaborate with TCN, and seek financial support from relevant federal agencies or private investors to implement these projects.



# 7 The Implication on Electricity Transmission

## 4. TRANSMISSION INFRASTRUCTURE PARTNERSHIPS:

State governments can explore partnerships with transmission infrastructure companies or private entities to develop and operate transmission infrastructure within their states. This approach allows states to leverage private sector expertise, investment, and operational capabilities while retaining regulatory oversight and control. Through transparent agreements and well-defined performance benchmarks, state governments can ensure that the transmission infrastructure meet their specific requirements and deliver reliable electricity transmission services.



Overall, state governments should engage in open dialogues and collaborations with TCN, NERC, private transmission operators, and other relevant stakeholders to navigate the challenges of handling transmission at the state level. By actively participating in regional planning, pursuing joint investment opportunities, and developing state-specific projects, states can contribute to the development of a robust and efficient transmission network that meets their electricity needs.

Most of the states' support would be focused on a collaborative effort to communicate their power plans and determine how best TCN can aid their achievement; this could be in underserved areas states intend to provide electricity supply to but require a transmission network. States can only have full control over the transmission networks they build and operate.

# 8

## TRANSMISSION NETWORK COST

EMPOWERING STATE GOVERNMENTS: A NEW ERA OF STATE PARTICIPATION IN THE NIGERIAN ELECTRICITY SECTOR



# 8 Transmission Network Cost

Electricity transmission networks are expensive due to various factors. These include the high costs of building and maintaining infrastructure, such as power lines and substations, the technical challenges of long-distance transmission, the need for grid expansion and upgrades to meet growing demand, regulatory compliance requirements, geographic challenges, investments in grid resilience and reliability, and the costs of integrating and interconnecting different systems.

It is very common for transmission networks to be owned and operated by governments in various countries, cost is often a factor in this ownership. However, there are other reasons, such as energy security, long-term planning, ensuring equitable access to electricity, national energy policies, or the belief that electricity transmission is a strategic infrastructure that requires government control.

The state of the current transmission grid as of September 2019 is shown in the table below:

Table 2: TCN Infrastructure – 2019

	TCN Infrastructure	Units	Number
1	Capacity 330/132kV (MVA)	MVA	14,336
2	Capacity 132/33kV	MVA	17,280
3	Number of 330kV Substations	Count	52
4	Number of 132kV Substations	Count	160
5	Total Number of 330kV circuits	Count	91
6	Total Number of 132kV circuits	Count	212

# 8 Transmission Network Cost

	TCN Infrastructure	Units	Number
7	Length of 330kV lines.	KM	9,183
8	Length of 132kV lines	KM	8,557
9	Work Centers	Count	34
10	National Control Center	Count	1
11	Supplementary National Control Center	Count	1
12	Regional Control Centers	Count	3

According to a document published by GRID NORTH PARTNERS, the cost of building an overhead transmission line is \$1.5m to \$2m per mile, which brings the cost to \$931,677 (Using \$1.5m) per kilometre (Km). This means that using the average price against a total overhead transmission line of 17,740 km, the estimated cost of the Nigerian transmission infrastructure in today's value is \$16.5bn for the network lines alone. This estimated cost of \$16.5bn does not include the cost of substations, circuits, control centers, work centers, or financing costs.

According to the latest data from the National Bureau of Statistics (NBS), in 2021 the 36 states in Nigeria, including the FCT, internally generated N1.8tn (\$2.5bn), using the average current exchange rate of N750/\$. **\$1.58bn (63%)** of the entire revenue was generated by only five states, Lagos, Rivers, Ogun, Delta, and the FCT.

Table 3: Nigerian States Internally Generated Revenue - 2021

S/N	State	Total Revenue Generated by State (₦)	Total Revenue Generated by State (\$)
1	Abia	19,578,331,591	26,104,442
2	Adamawa	13,011,611,228	17,348,815
3	Akwa Ibom	31,396,512,095	41,862,016

# 8 Transmission Network Cost

S/N	State	Total Revenue Generated by State (₦)	Total Revenue Generated by State (\$)
4	Anambra	30,916,674,612	41,222,233
5	Bauchi	17,902,447,968	23,869,931
6	Bayelsa	13,273,992,304	17,698,656
7	Benue	12,601,150,537	16,801,534
8	Borno	18,738,212,887	24,984,284
9	Cross River	22,912,281,172	30,549,708
10	Delta	80,203,623,750	106,938,165
11	Ebonyi	13,752,313,311	18,336,418
12	Edo	42,427,205,323	56,569,607
13	Ekiti	13,620,433,128	18,160,578
14	Enugu	26,717,819,045	35,623,759
15	Gombe	10,563,680,472	14,084,907
16	Imo	12,750,370,901	17,000,495
17	Jigawa	16,492,028,727	21,989,372
18	Kaduna	52,859,708,981	70,479,612
19	Kano	40,401,652,528	53,868,870
20	Katsina	12,039,138,669	16,052,185
21	Kebbi	9,857,039,462	13,142,719
22	Kogi	23,405,613,863	31,207,485
23	Kwara	26,961,014,486	35,948,019
24	Lagos	753,464,683,708	1,004,619,578

# 8 Transmission Network Cost

S/N	State	Total Revenue Generated by State (₦)	Total Revenue Generated by State (\$)
25	Nasarawa	20,674,185,462	27,565,581
26	Niger	16,224,676,971	21,632,903
27	Ogun	100,733,671,789	134,311,562
28	Ondo	30,833,972,735	41,111,964
29	Osun	21,855,392,563	29,140,523
30	Oyo	52,088,670,955	69,451,561
31	Plateau	21,426,017,408	28,568,023
32	Rivers	123,347,774,976	164,463,700
33	Sokoto	23,762,999,758	31,684,000
34	Taraba	9,625,942,714	12,834,590
35	Yobe	8,460,647,980	11,280,864
36	Zamfara	18,980,641,202	25,307,522
37	FCT Abuja	131,924,627,003	175,899,503
	<b>Total</b>	<b>1,895,786,762,264</b>	<b>2,527,715,683</b>

The table above shows that if all the states in Nigeria spend their total revenue generated on building transmission lines alone, they will only be able to build **2,748** Km of transmission lines, which is **15%** of the current length of transmission lines in Nigeria. Also, it is important to note that states cannot spend their total IGR on just one sector as multiple factors contribute to the welfare of states like health care, education, etc. The table above shows that only five (5) states can build over 100km of transmission lines. This means that while there is now a constitutional amendment allowing states to participate in the electricity sector, transmission is a very expensive aspect of the value chain.

It is in the best interest of states to collaborate with TCN on transmission-related matters within their states or consider public-private partnerships for financing transmission within the state.

# 9

## STATE GRIDS

EMPOWERING STATE GOVERNMENTS: A NEW ERA OF STATE PARTICIPATION IN THE NIGERIAN ELECTRICITY SECTOR



# 9 State Grids

Having an electricity grid in a state means that the state has its own vertically integrated system, with the infrastructure to generate, transmit, and distribute electricity within its geographical boundaries. Countries like America, Canada, Australia, India, and Germany have at least one state that owns and operates state electricity grids within their geographical locations.

Under the new constitutional amendment, should states in Nigeria consider developing their state grids? Several factors are typically considered by states to determine if there is a need to set up their grids. Some of these factors are:



## 1. SIZE AND ENERGY DEMAND OF THE STATE:

If a state has an increasing population and high energy demand, developing its grid may be a viable option. This allows the state to have more control over its electricity supply, tailor infrastructure development to its specific needs, and ensure reliable power delivery to consumers within its boundaries.

## 2. EXISTING TRANSMISSION INFRASTRUCTURE:

The condition and capacity of the existing transmission infrastructure will play a crucial role in determining the feasibility and timeline for developing state grids. If the existing infrastructure is inadequate or outdated, developing a state grid may be necessary to overcome transmission constraints and ensure efficient electricity delivery.





# 9 State Grids

## 3. FINANCIAL FEASIBILITY:

Developing a state grid requires substantial financial resources for planning, construction, and maintenance. State governments need to review their financial capacity and explore funding options such as public-private partnerships, international assistance, or concessional loans. Financial feasibility studies should be conducted to determine the viability and affordability of developing a state grid within the state's budgetary constraints.



## 4. POLICY OBJECTIVES:

State governments should align their energy and electricity sector policies with their goals for developing state grids. If the state aims to promote renewable energy adoption, improve energy access, or foster local economic development, developing a state grid may be a strategic approach. State governments can set targets, create enabling policies, and implement supportive regulations to drive the development of state grids aligned with their policy objectives.



However, developing a state grid is a complex and time-consuming process. it involves.

- Proper planning,
- Land acquisition,
- Engineering,
- Environmental assessments,
- Regulatory approvals (Federal/State).

The timeline will vary depending on the specific circumstances and requirements of each state. It may range from several years to a decade or more, considering factors such as the availability of resources, regulatory processes, and the complexity of infrastructure development.



# 9 State Grids

Overall, the decision to develop state grids should be carefully evaluated based on the specific conditions and goals of each state. It requires a comprehensive understanding of the state's energy landscape, available resources, financial capacity, and policy objectives.

States stand the risk of losing out on receiving cheap power if they decide not to trade interstate.

In Nigeria today, the cheapest sources of electricity are from hydropower plants, in electricity market invoices for 2023, hydropower plants charged an energy tariff of 3.67N/kWh, compared to the industry average of 17.69 N/kWh from all generation plants. The development of grids within states may pose the risk that states lose out on receiving cheaper electricity from these plants.



NIGERIA MINISTRY OF WATER RESOURCES

# 10 STATE REGULATORY BODIES

EMPOWERING STATE GOVERNMENTS: A NEW ERA OF STATE PARTICIPATION IN THE NIGERIAN ELECTRICITY SECTOR



# 10 State Regulatory Bodies

## 10.1. Need for state-level electricity regulatory bodies.

Following the constitutional amendment and the new EA allowing for state participation in the power sector, states are allowed to establish their state regulatory bodies that will be responsible for encouraging and enforcing state participation. The establishment of a state regulatory body would help clearly define the scope of the state's participation in the electricity sector and provide for the definition of state-level electricity regulation to ensure the success of all state activities.

Perfectly structured state regulatory bodies can attract investments from private and foreign investors, which will lead to increased competition, innovation, and better service delivery. This is because the state can provide a conducive regulatory environment for investments that may be more attractive than the federal regulations, and the state-level regulations would be easier to adapt to new emerging market conditions.

The new EA sheds light on grey areas for what could be the functions of state regulatory bodies when set up. Some of these questions are:

- Can states regulate existing generation companies located within their coverage areas? Or only newly established generation companies?
- Will the distribution utilities be solely regulated by the states? Or will there still be involvement from the Federal Regulator?
- How will distribution networks/lines be handled? Will there be competing distribution lines if states issue licenses to new distribution companies to compete in the same franchise area?
- How often will prices/costs in the market be reviewed? Will this timeline be the same across all states or be different by the state?
- Do the 11 distribution companies covering the 36 states have to break up into 36 distribution companies with each being regulated by the regulatory bodies in their states?
- Can a state issue licenses to new distribution companies to compete in the franchise areas of already existing distribution companies?
- Who holds the responsibility of setting and approving the tariffs across the value chain including the end-user tariffs? This includes the generation plants and distribution utilities.

# 10 State Regulatory Bodies

A new challenge on how to define the scope of state participation in electricity regulation has emerged considering the amendment and the Electricity Act (EA).

## 10.2. Separation of Powers of the Federal Regulator to Accommodate State Regulators.



The constitutional amendment and EA do not diminish the role of the federal regulator, NERC. NERC will continue to play a critical role in setting national policies, ensuring compliance with national standards, and regulating inter-state matters.

For state regulatory bodies to be set up and succeed in their core functions, there will need to be a separation of powers for NERC. This separation would aid in showing the delineation between the functions of the federal and state regulators, respectively. The separation of powers between the federal regulator and state regulators should be clearly defined, with a focus on harmonizing regulations, facilitating information exchange, and promoting collaboration to achieve a cohesive and efficient national electricity market.

To ensure the successful separation of powers from NERC and the simultaneous operation of state regulators, the following measures should be considered:

### 1. CLEAR MANDATES AND JURISDICTION:

Clearly define the respective mandates and jurisdictions of the federal regulator and state regulatory bodies. This can be achieved through legislation or regulatory frameworks that outline the specific responsibilities, regulatory authority, and decision-making powers of each entity. The mandates should be distinct, with the federal regulator focusing on national-level oversight and coordination, while state regulators concentrate on state-specific issues.

# 10 State Regulatory Bodies

## **2. SHARED GOVERNANCE APPROACH:**

The federal regulator and state regulatory authorities work collaboratively to achieve common goals, while respecting the autonomy and authority of each entity. This approach involves regular consultations, coordination mechanisms, and information sharing between federal and state regulators to ensure a cohesive and harmonized regulatory framework.

## **3. REGULATORY HARMONIZATION:**

Encourage harmonization and consistency in regulatory frameworks to ensure compatibility between federal and state regulations. This can be achieved through collaborative rule-making processes, joint policy development, and the adoption of common standards and guidelines. Regular communication and coordination platforms, such as regulatory forums or working groups, can facilitate the exchange of best practices and the alignment of regulatory approaches.

## **4. DISPUTE RESOLUTION MECHANISMS:**

Establish effective dispute resolution mechanisms to address any conflicts or disagreements that may arise between the federal and state regulatory bodies. These mechanisms should be fair, transparent, and independent, allowing for impartial resolution of disputes while upholding the principles of separation of powers. Mediation, arbitration, or judicial review processes can be considered part of the dispute resolution framework.

## **5. INDEPENDENT EVALUATION AND REVIEW:**

Conduct periodic independent evaluations and reviews of the regulatory framework to assess its effectiveness and identify areas for improvement. These evaluations can be carried out by independent bodies or expert panels to provide an objective assessment of the separation of powers, regulatory performance, and the impact of state participation. The findings and recommendations of these evaluations can inform future reforms and enhancements to the regulatory framework.

Through the implementation of these measures, it becomes possible to preserve and uphold the separation of powers between the federal regulator and state participation in the electricity sector. This ensures that each entity can carry out its respective roles and responsibilities in a manner that is efficient, effective, and aligned with its specific mandates. Moreover, by fostering collaboration, consistency,

# 10 State Regulatory Bodies

and transparency, these measures facilitate a harmonious and coordinated regulatory framework where the federal regulator and state participation can work together towards common goals, enabling the electricity sector to thrive and serve the interests of all stakeholders involved.

## 10.3. Powers to be Separated from the Federal Regulator

To accommodate state participation and regulation in the electricity sector, certain powers can be separated from the federal regulator to empower state regulatory bodies. Examples of some powers that can be considered for separation include:

### 1. LICENSING AND PERMITTING:

State regulatory bodies can be granted the authority to issue licenses and permits to new participants for electricity generation, transmission, and distribution within their respective states. This allows states to have control over the approval process for new projects and ensures that they can tailor licensing requirements to their specific needs and objectives.

**Establishing state-level electricity regulatory bodies is crucial to define the scope of state participation and create a regulatory framework that aligns with state-specific objectives.**

### 2. END-USER TARIFF SETTING:

State regulatory bodies can be given the power to set electricity tariffs within their states. This enables states to consider local factors such as the cost of generation, transmission, and distribution infrastructure, as well as regional socio-economic conditions when determining tariffs. It provides flexibility for states to address the unique energy requirements and affordability concerns of their constituents.

### 3. COMPLIANCE MONITORING AND ENFORCEMENT:

State regulatory bodies can be responsible for monitoring and enforcing compliance with regulations and standards within their states. This includes ensuring adherence to safety regulations, environmental standards, and consumer protection measures. It empowers states to conduct inspections and investigations and take enforcement actions as necessary to maintain regulatory compliance.

# 10 State Regulatory Bodies

## 4. RENEWABLE ENERGY TARGETS AND INCENTIVES:

State regulatory bodies can be responsible for setting renewable energy targets and administering incentives and subsidies to promote renewable energy development within their borders. This allows states to align their renewable energy goals with their unique renewable resource availability, facilitating the transition to a cleaner and more sustainable energy sector.

**This is currently not the sole responsibility of the federal regulator in Nigeria and already has state participation.**

It is important to note that while certain powers can be separated to accommodate state participation, the measures taken to ensure the separation of powers from the federal regulator must continue to be upheld. The exact division of powers will depend on the specific legal and regulatory framework established to govern state participation in the electricity sector.

## 10.4. Retained Duties of the Federal Regulator

To facilitate state participation in the electricity sector, it is essential to establish a framework whereby certain powers can be delegated to state regulatory bodies. However, it is equally important to strike a balance and recognize that certain powers must be retained by the federal regulator to ensure efficient national-level oversight and coordination. These powers include:

### 1. NATIONAL GRID MANAGEMENT:

The federal regulator should retain authority over the management and operation of the national electricity grid. This includes ensuring grid stability, reliability, and efficient transmission of electricity across different states and regions. The federal regulator can oversee grid planning, system security, and coordination of grid expansion projects.





# 10 State Regulatory Bodies

## **2. INTER-STATE TRANSMISSION REGULATION:**

The federal regulator should maintain control over the regulation of inter-state transmission lines and interconnections. This ensures seamless transmission of electricity between states, facilitates coordination among state entities, and prevents potential conflicts or disparities in transmission regulations.

## **3. MARKET MONITORING AND COMPETITION:**

The federal regulator should continue to oversee the functioning of wholesale electricity markets at the national level. This includes monitoring market behaviour, promoting competition, preventing market abuses, and ensuring fair market outcomes. By maintaining oversight of wholesale markets, the federal regulator can safeguard market integrity and prevent anti-competitive practices.

## **4. POLICY FRAMEWORK AND STANDARDS:**

The federal regulator should retain the responsibility of establishing policy frameworks, regulations, and technical standards that apply nationally. This includes setting overall energy policy goals, developing grid codes, and establishing environmental and safety standards. National-level policies provide consistency, harmonization, and long-term direction for the electricity sector.

## **5. CROSS-BORDER ENERGY EXCHANGES:**

The federal regulator should retain authority over cross-border energy exchanges and international energy trade. This includes facilitating bilateral or multilateral agreements for the import and export of electricity, ensuring compliance with international regulations and standards, and coordinating cross-border transmission infrastructure development. An example of a cross-border energy exchange is the West African Power Pool (WAPP).

## **6. REGULATORY OVERSIGHT AND DISPUTE RESOLUTION:**

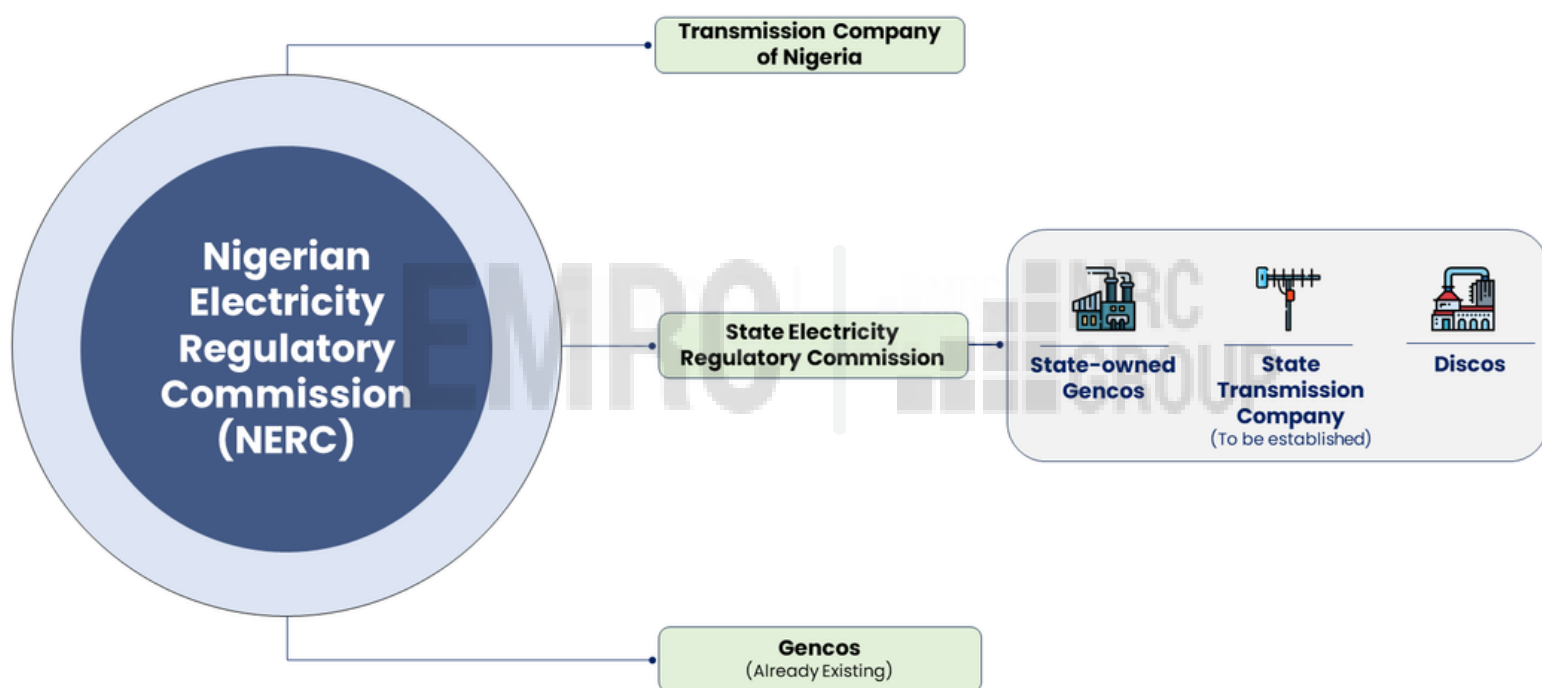
The federal regulator should maintain a supervisory role to ensure effective regulatory oversight of both federal and state regulatory bodies. This includes reviewing regulatory decisions, resolving disputes between state regulatory bodies, and ensuring consistent implementation of regulations across states. The federal regulator can also provide guidance, interpret regulatory provisions, and offer expertise on complex regulatory matters.

# 10 State Regulatory Bodies

Under the EA, states can only control generation, transmission, and distribution that occur entirely within their region. Thus, it is probable that NERC will continue to regulate the existing Gencos and the TCN, which provide services across state borders.

However, distribution will remain under the state regulator's control as the Act provides that where a state takes the requisite steps to establish its own electricity market, the Disco operating in that state will create a subsidiary to continue operations on its behalf, which will be under the authority of the state electricity market regulator.

**Figure 7 – Possible Structure of the NESI following Implementation of State Participation**

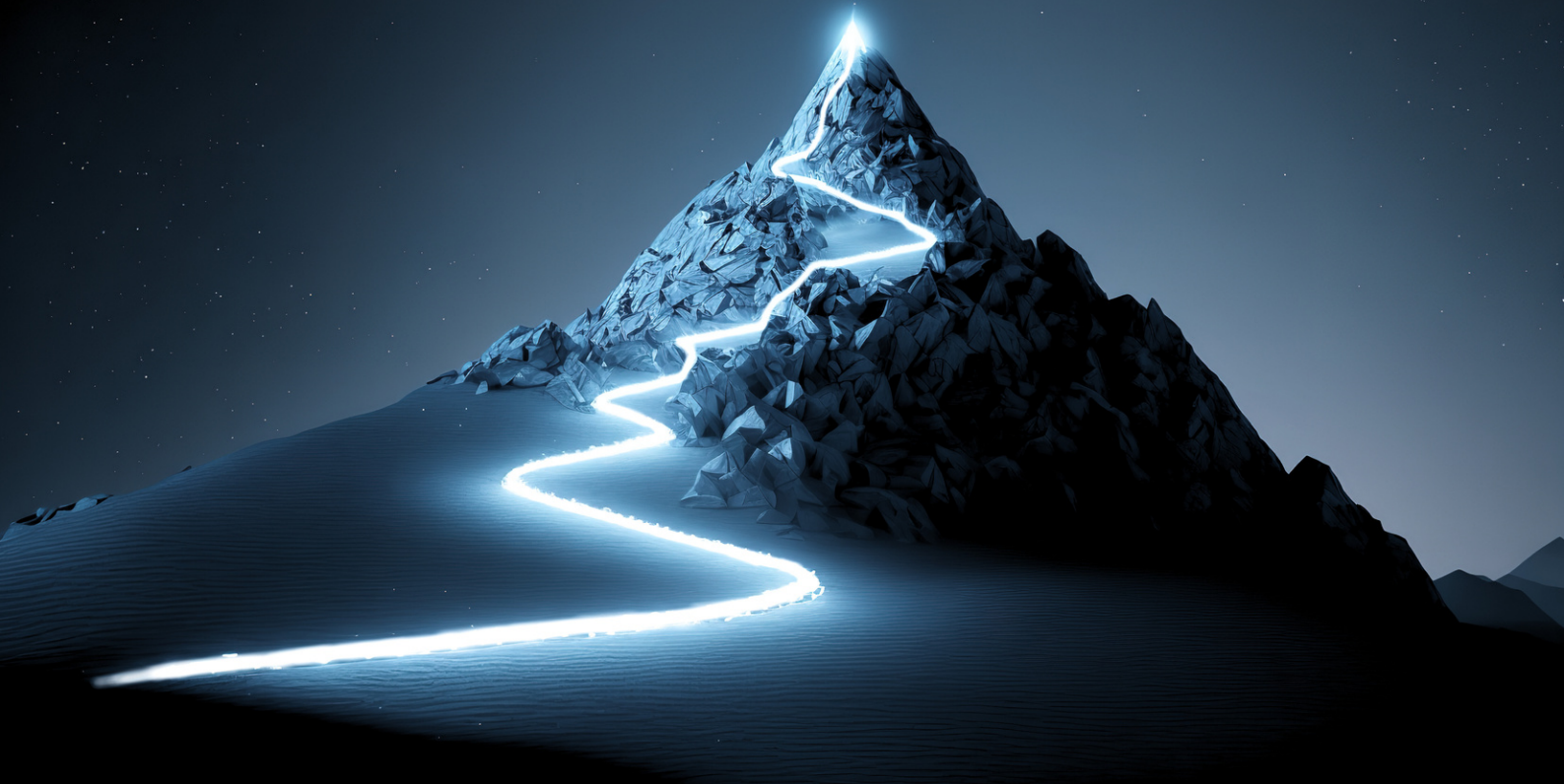


While the EA has provided some clarity, several grey areas remain. In resolving these grey areas, it is important to strike a balance between the powers of the federal regulator and state regulatory bodies to ensure effective coordination, harmonization, and accountability in the electricity sector. The division of powers should be based on considerations of efficiency, expertise, national interest, and the need for a coherent and integrated electricity system.

# 11

## NEXT STEPS FOR SUCCESSFUL PARTICIPATION OF STATES IN THE NESI

EMPOWERING STATE GOVERNMENTS: A NEW ERA OF STATE  
PARTICIPATION IN THE NIGERIAN ELECTRICITY SECTOR



# 11 Next Steps for Successful participation of States in the NESI

To foster a thriving environment for state participation in the electricity sector, it is important to carefully deliberate and implement a series of strategic next steps. These steps aim to maximize the potential benefits and opportunities afforded by the constitutional amendment and EA while also addressing the associated challenges and complexities. By undertaking these steps, states can effectively navigate the path towards establishing their electricity frameworks, promoting local economic development, enhancing energy autonomy, and contributing to Nigeria's overall power sector growth. Furthermore, these steps lay the foundation for a well-coordinated, efficient, and sustainable energy landscape where states can actively participate and collaborate with relevant stakeholders to shape the future of the electricity sector in Nigeria. Some of these next steps are:

## **1. STRATEGIC PLANNING:**

State governments should develop a comprehensive strategic plan outlining their vision, goals, and objectives for participating in the electricity sector. This plan should consider factors such as energy demand, energy targets (renewable and nonrenewable), infrastructure requirements, and policy frameworks. It should provide a roadmap for implementation and guide decision-making throughout the process.

## **2. STAKEHOLDER ENGAGEMENT:**

State governments should engage relevant stakeholders, including industry players, regulatory bodies, local communities, and consumer groups. Collaboration and consultation with these stakeholders will help ensure alignment, address concerns, and create a supportive environment for state participation. Regular communication channels should be established to foster ongoing dialogue and transparency.

## **3. REGULATORY FRAMEWORK:**

Existing regulatory frameworks should be reviewed and amended to accommodate state participation. This includes developing clear guidelines, licensing procedures, and regulatory processes specific to state-owned or state-regulated entities. The regulatory framework should promote fair competition, consumer protection, and operational efficiency while enabling states to achieve their energy objectives.

## **4. INFRASTRUCTURE DEVELOPMENT:**

Assess the existing infrastructure and identify gaps or areas requiring upgrades. Develop plans for the development, maintenance, and expansion of electricity generation, transmission, and distribution infrastructure to meet the state's energy requirements. Collaboration with federal entities, private investors, and international partners can help mobilize the necessary resources for infrastructure development.

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## 5. FINANCIAL PLANNING:

Conduct financial feasibility studies to determine the financial requirements and sustainability of state participation initiatives. Explore funding options such as public-private partnerships, concessional loans, grants, and revenue-sharing mechanisms. Develop robust financial management strategies to ensure the long-term viability of state-owned or state-regulated entities in the electricity sector.



## 6. CAPACITY BUILDING:

Invest in building the technical and managerial capacity of state government officials and employees involved in the electricity sector. This can be achieved through training programs, workshops, and knowledge-sharing initiatives. Enhancing technical expertise, project management skills, and regulatory knowledge will strengthen the state's ability to effectively participate in the sector.

## 7. MONITORING AND EVALUATION:

Establish a monitoring and evaluation framework to track the progress, effectiveness, and impact of state participation initiatives. Regularly assess the performance of state-owned or state-regulated entities, review policy outcomes, and make necessary adjustments to ensure continuous improvement. The monitoring and evaluation process should include key performance indicators, data collection mechanisms, and regular reporting.

## 8. COLLABORATION AND PARTNERSHIPS:

Foster collaboration and partnerships with other states, federal entities, international organizations, and the private sector. Exchange knowledge, best practices, and lessons learned to enhance the effectiveness of state participation initiatives. Explore opportunities for joint projects, resource sharing, and collective bargaining to maximize the benefits of collaboration.

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## 9. PUBLIC AWARENESS AND ENGAGEMENT:

Conduct public awareness campaigns to educate citizens about the benefits of state participation in the electricity sector. Engage the public through transparent communication channels, public consultations, and feedback mechanisms. Encourage consumer participation and create awareness about energy conservation, renewable energy adoption, and sustainable practices.

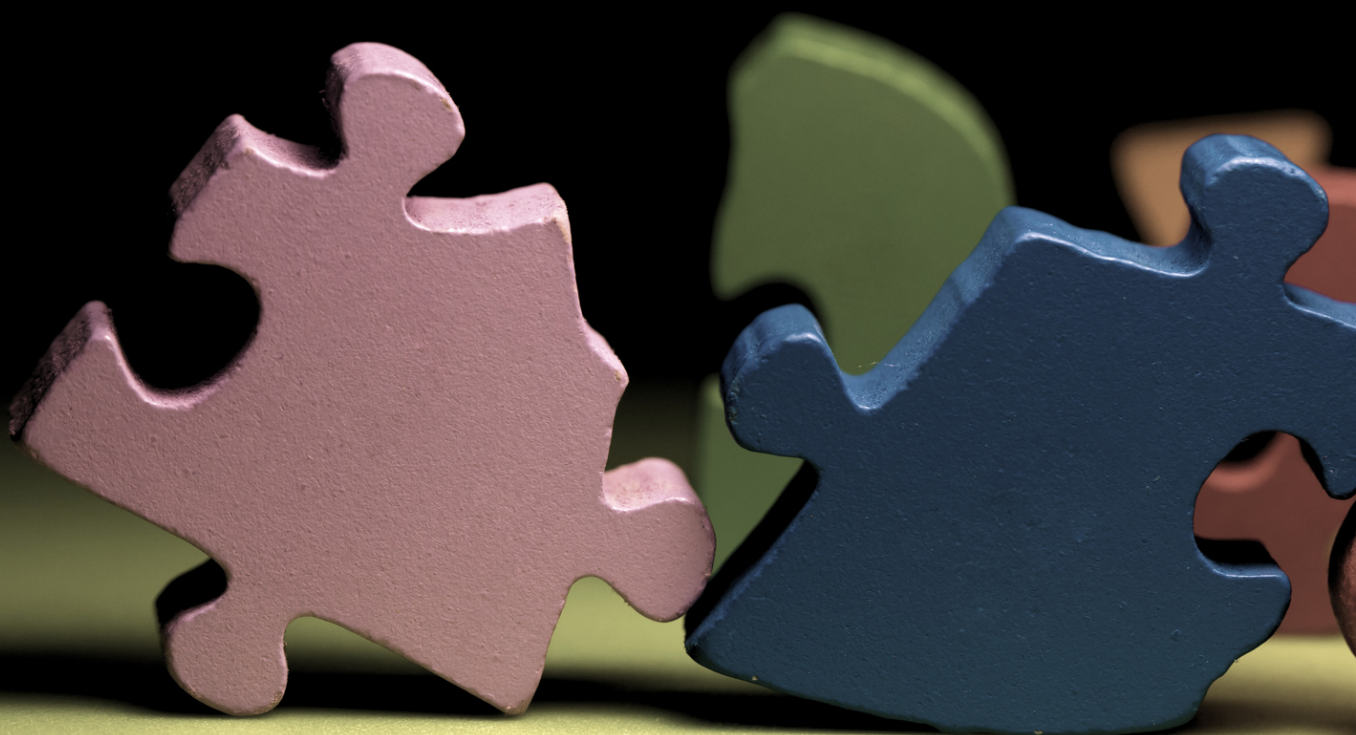
In conclusion, for the successful implementation of state participation in the Nigerian electricity market, state governments need to take strategic next steps.

These steps are crucial to unlocking the potential benefits and opportunities offered by the constitutional amendment while addressing the challenges at hand. By following these steps, states can establish their electricity frameworks, drive local economic development, achieve energy autonomy, and contribute to the overall growth of Nigeria's power sector. These actions lay the groundwork for a well-coordinated, efficient, and sustainable energy landscape where states actively participate and collaborate with stakeholders to shape the future of the electricity sector in Nigeria.

State governments must develop a comprehensive strategic plan that outlines their vision, goals, and objectives for participation in the electricity sector. Stakeholder engagement and collaboration are essential to address concerns, create a supportive environment, and ensure alignment with industry players, regulatory bodies, local communities, and consumer groups. Adapting regulatory frameworks, assessing infrastructure needs, and conducting financial feasibility studies will help states navigate the complexities of participation. Capacity building, monitoring and evaluation, collaboration, and partnerships, as well as public awareness and engagement, are key components for long-term success. By following these steps and maintaining flexibility and adaptability, state governments can effectively harness the potential of state participation in the electricity sector and contribute to a sustainable and thriving energy landscape in Nigeria.

# 12 CONCLUSION

EMPOWERING STATE GOVERNMENTS: A NEW ERA OF STATE PARTICIPATION IN THE NIGERIAN ELECTRICITY SECTOR



# 12 Conclusion



The constitutional amendment and EA, which allow states to participate in Nigeria's electricity sector, mark a significant step towards decentralization, state involvement, and improved service delivery. By leveraging the strengths and resources of individual states, Nigeria aims to address the challenges faced in the electricity market and promote sustainable development.

Through an examination of successful models from developed countries, such as the United States, Australia, and India, valuable insights have been gained regarding the benefits, challenges, and regulatory frameworks associated with state participation in the electricity sector. Lessons learned from these case studies can guide Nigeria in shaping its own inclusive and decentralized electricity market.

As the constitutional amendment unfolds, it is crucial to ensure coordination and harmonization between federal and state regulators, establish clear guidelines for state participation, encourage collaboration among states, promote investments and innovation, and strengthen capacity-building efforts. By embracing these recommendations, Nigeria can unlock the full potential of state participation, paving the way for a more dynamic, sustainable, and efficient electricity sector that meets the energy needs of the country.



# A

## ANNEX

EMPOWERING STATE GOVERNMENTS: A NEW ERA OF STATE PARTICIPATION IN THE NIGERIAN ELECTRICITY SECTOR



# Population and Customer Size

S/N	State	Population (2020)	Average Household Size	Customer Numbers based on Household Size.
1	Abia State	3,941,279	4.15	949,705.78
2	Adamawa State	4,657,314	6.37	731,132.50
3	Akwa Ibom State	4,847,542	4.39	1,104,223.69
4	Anambra State	5,720,035	4.61	1,240,788.50
5	Bauchi State	7,788,504	6.79	1,147,055.08
6	Bayelsa State	2,444,028	3.69	662,338.21
7	Benue State	5,905,747	5.25	1,124,904.19
8	Borno State	5,875,471	9.38	626,382.84
9	Cross River State	4,253,698	3.89	1,093,495.63
10	Delta State	5,416,738	4.28	1,265,592.99
11	Ebonyi State	3,084,214	5.18	595,408.11
12	Edo State	4,567,512	4.52	1,010,511.50
13	Ekiti State	3,431,742	3.5	980,497.71
14	Enugu State	4,505,928	4.11	1,096,332.85
15	Federal Capital Territory	2,820,261	6.05	466,158.84
16	Gombe State	3,733,100	6.69	558,011.96
17	Imo State	5,265,082	4.53	1,162,269.76
18	Jigawa State	7,007,317	8.15	859,793.50
19	Kaduna State	8,549,066	6.24	1,370,042.63
20	Kano State	14,655,311	7.04	2,081,720.31
21	Katsina State	9,639,059	6.8	1,417,508.68

# Population and Customer Size

S/N	State	Population (2020)	Average Household Size	Customer Numbers based on Household Size.
22	Kebbi State	5,178,123	6.39	810,347.89
23	Kogi State	4,253,371	4.94	861,006.28
24	Kwara State	3,351,720	4.73	708,608.88
25	Lagos State	13,012,971	3.51	3,707,399.15
26	Nasarawa State	2,712,349	6.56	413,467.84
27	Niger State	6,407,568	7.50	854,342.40
28	Ogun State	6,090,740	4.04	1,507,608.91
29	Ondo State	5,084,330	3.88	1,310,394.33
30	Osun State	4,303,366	4.02	1,070,489.05
31	Oyo State	7,667,318	4.14	1,852,009.18
32	Plateau State	4,504,272	5.61	802,900.53
33	Rivers State	7,183,473	4.73	1,518,704.65
34	Sokoto State	6,039,289	5.93	1,018,429.85
35	Taraba State	3,421,510	6.39	535,447.57
36	Yobe State	3,481,567	6.87	506,778.31
37	Zamfara State	5,482,423	6.54	838,290.98
	<b>Nigeria</b>	<b>206,283,338</b>	<b>5.44</b>	<b>39,860,101.05</b>

# About Us



EMRC are a group of independent consultants who provide global energy market, regulatory, techno-economic, and financing advice for clients in the electricity, renewables, and gas sectors. We are part of the MRC Group, which includes nine other sister companies operating internationally, with a team of over 80 experts and a presence in 10 cities around the world. The group aims to deliver reliable access to affordable energy through its projects.



**Our Locations**

# What We Do



## Highlighted Services

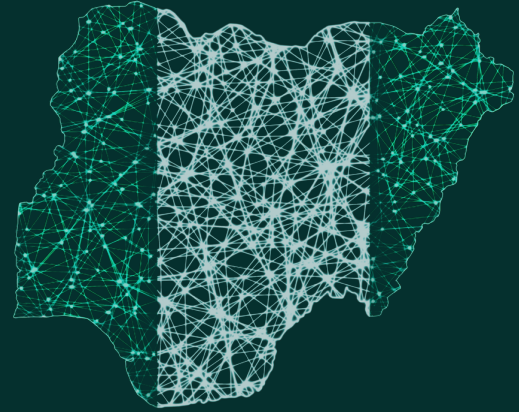
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- **Tariff Analysis:** we deliver personalized solutions that drive cost optimization, regulatory compliance, and consumer-centric energy tariffs for energy companies. Our experience empowers you to make informed tariff decisions that enhance affordability for consumers and businesses alike.
- **Market Research and Analysis:** Equipped with an elite team of experts, we delve deep into the energy market to provide you with invaluable insights. Our comprehensive research and analysis empower you to make data-driven decisions, identify great opportunities, and stay ahead of the competition.
- **Business Strategy Development:** Crafting a winning strategy is at the core of what we do. We collaborate closely with your team, understanding your unique vision and goals. With our strategic expertise, we formulate tailored plans that align with your aspirations, ensuring sustainable growth and profitability.
- **Due Diligence:** Our due diligence expertise forms the bedrock of informed decision-making and risk management in the energy sector. Our comprehensive evaluations unveil opportunities, ensure compliance, and mitigate potential risks.
- **Transactions & Investment Advisory Services:** Making the right investment decisions is crucial in the energy sector. Rely on our seasoned investment advisors to guide you through the intricacies of the market, enabling you to maximize returns and minimize risks.
- **Regulatory Compliance and Risk Mitigation:** Navigating the regulatory landscape can be challenging. Our experts are well-versed in compliance requirements, ensuring your operations run smoothly while mitigating potential risks.
- **Policy Advisory:** Guiding governments, organizations, and businesses in navigating the complex energy policy landscape with clarity and purpose.

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# Empowering State Governments:

A New Era of State Participation in the Nigerian Electricity Sector



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