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United Kingdom Nigeria Infrastructure Advisory Facility

# Transforming Nigeria's Electricity Sector:

## The Role of NISO in Driving Systemic Change



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# Transforming Nigeria's Electricity Sector: The Role of NISO in Driving Systemic Change

With the enactment of the Electricity Act 2023, Nigeria has taken a bold step towards decentralising its electricity sector and creating a more efficient and sustainable energy future. Central to this shift is the emergence of the **Nigerian Independent System Operator (NISO)** a critical institution tasked with stabilising, coordinating, and modernising the national grid, while supporting the emergence of functional subnational markets.

While this stage of market development feels familiar, as this is a second attempt at an ISO, it is not without risk. What could make the difference this time is the intentional strengthening of NISO through clear regulatory backing, strategic stakeholder engagement, and sustained collaboration. As the institutional linchpin of NESI, NISO must be empowered to manage a growing web of complexity with competence and neutrality.

## Opportunities for Impact in NESI

NISO is positioned to play a **transformative role** in addressing the structural deficiencies faced by the Nigerian Electricity Supply Industry (NESI). Its statutory mandates are directly aligned with key sectoral issues, providing a framework through which NISO can support the stabilisation, modernisation, and integration of Nigeria's evolving electricity market. Four priority areas define the immediate opportunities for NISO.

- 1. Operational Reliability & System Visibility:**  
Frequent grid collapses and low system visibility demand real-time oversight. NISO must modernize protocols and deploy digital tools such as SCADA/EMS, IoT, and analytics, to stabilize operations and enable faster, data-driven responses.

- 2. Efficient Dispatch & Load Balancing:** To reduce stranded generation and integrate renewables, NISO should coordinate balanced dispatch and develop protocols for variable and distributed energy sources, ensuring more efficient use of available capacity.
- 3. Market Transparency & Investor Confidence:** Addressing market inequities and liquidity constraints requires NISO to enforce fair rules, publish operational data, and support investor confidence through improved monitoring, reduced defaults, and new market mechanisms.
- 4. Institutional Alignment & Capacity Building:** Regulatory overlaps and internal skill gaps threaten coherence. NISO must drive institutional coordination and build internal capacity through a clear operational framework and structured skills development.

## Political Economy Realities

Despite its promise, NISO faces serious structural and political economy challenges that must be addressed for it to succeed. These challenges range from lack of structural independence, unclear payment enforcement frameworks, lack of an ancillary services framework, contested operational roles to issues centred around SCADA ownership and access. Addressing these challenges will require more than technical interventions. It will require political will, regulatory clarity, and sustained intentional stakeholder collaboration all of which must be intentional



## Learnings from Global Experience: The Impact of ISOs

Around the world, countries have realised that a reliable electricity market needs an independent system operator at its core. From India's **POSOCO** to **CAISO** in California and **PJM** in the U.S., ISOs have shown that with autonomy, data visibility, and the right regulatory framework, operators can deliver both stability and innovation.

Presented below are snapshots of four global examples that offer valuable lessons for NESI as it works to strengthen its institutional and operational framework:

**Figure 1: Global examples of the transformative impact of ISOs**

### Power System Operation Corporation (India)

*Transformative role* - Manages both national and regional grid. Able to forecast and manage variable renewable energy



### California ISO (USA)

*Transformative role* - Successfully integrated renewables to up to 30% of supply while maintaining grid stability



### Pennsylvania-Jersey-Maryland Interconnection (USA)

*Transformative role* - Reduced electricity costs through transparent pricing mechanism and optimised grid management



### National Grid ESO (UK)

*Transformative role* - Key in low-carbon transition by enabling renewables and demand-side participation



Nigeria can and should learn from these examples. However, the lessons learnt must be adapted to fit our own political, economic, and institutional realities. We therefore should focus on the “Best Fit” interventions that can enable Nigeria’s power sector evolution into a credible, transparent, and investible market and not a NESI trapped in cycles of reform without results.

## Stakeholders that will shape NISO’s Success

**CALL to ACTION**

NISO’s ability to transform Nigeria’s electricity sector will depend on its internal reforms as well as the strength of its **stakeholder ecosystem**. For NISO to fulfil its quasi-regulatory and market coordination roles, multiple actors must play synergistic roles in ensuring alignment, and innovation:



### Policy & Regulatory Authorities

- Federal Ministry of Power
- Nigerian Electricity Regulatory Commission
- State Electricity Regulatory Commissions

Provide consistent policy direction, safeguard NISO’s autonomy, and ensure coherence across regulatory frameworks. Prioritise federal and state alignment, resolve institutional overlaps, and create operational clarity for NISO to manage the grid and market effectively.



### Investors & Market Participants

- Transmission Service Provider
- GENCOs
- DISCOs
- Private investors
- Energy traders
- Storage providers

Help foster a transparent, rules-based electricity market by complying with grid and market codes, upholding financial obligations, supporting transparent dispatch, innovating, and promoting liquidity. Build confidence and attract sustained investment through constructive engagement with NISO, consistent infrastructure investment and commitment to fair market practices.



### Civil Society & Development Partners

- Consumer groups
- Academia
- Donor agencies

These stakeholders play a key role in strengthening NISO’s institutional development and public legitimacy. Their focus should include technical assistance, capacity building, and performance monitoring, alongside advocacy for fairness, transparency, and alignment with broader energy transition goals.

**NISO represents more than just a new institution. It is Nigeria’s second chance to resolve grid inefficiencies, restore confidence and optimise market coordination in the NESI. It not only carries the burden of past reforms that did not achieve set objectives but also of a more efficient and sustainable energy future. If the Nigerian Electricity Supply Industry is to realise the vision of the Electricity Act 2023, then NISO must be enabled to operate independently and transparently.**

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12 Usuma Street, Maitama, Abuja, Nigeria