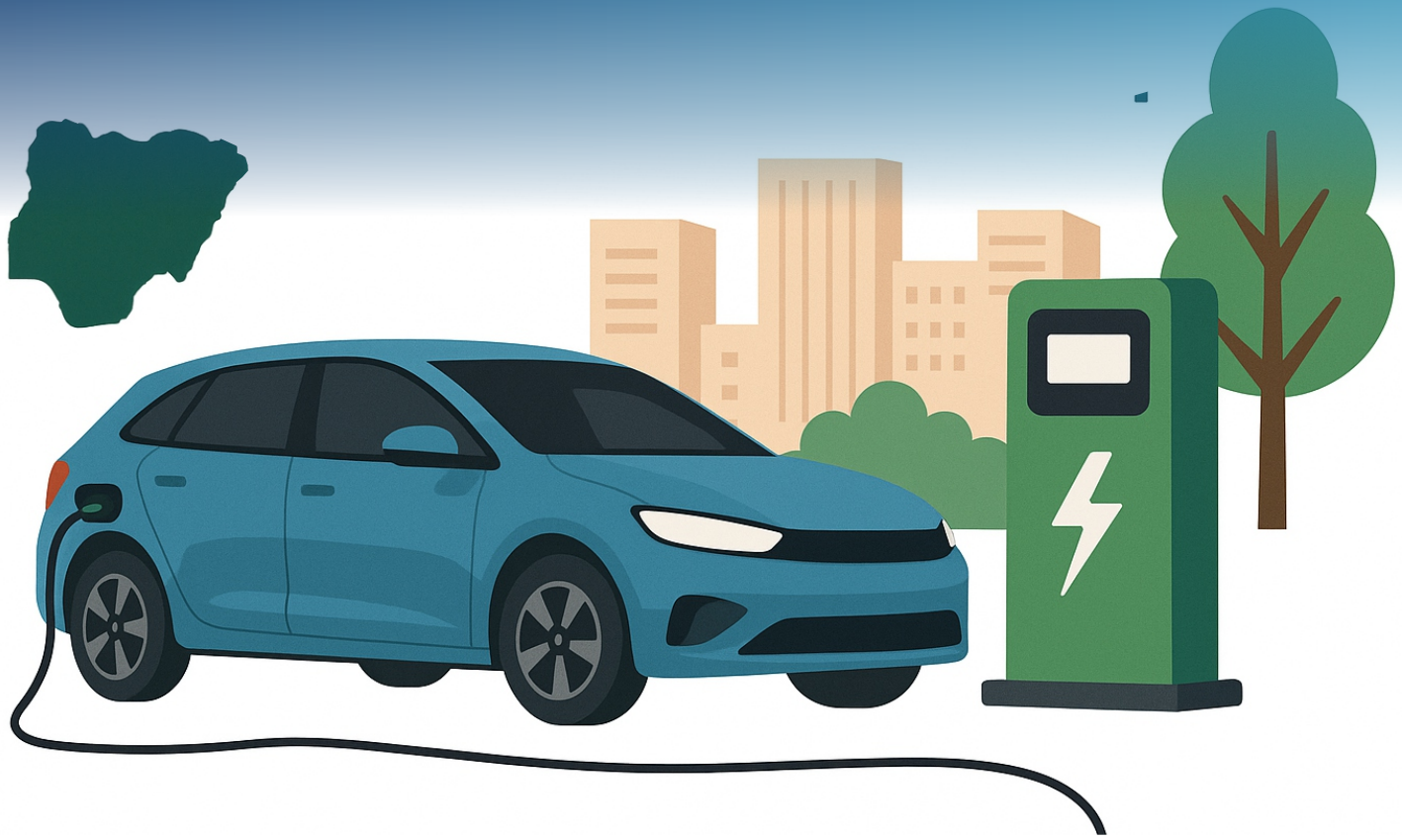

Clean Technology Hub
Energy Innovation Centre

Understanding and Strengthening Nigeria's Electric Vehicle Charging Ecosystem

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Pre-Event Policy Brief – Abuja EV Stakeholders Roundtable Dialogue

Executive Summary

Nigeria is entering a decisive phase in its transportation and energy transition agenda. As global momentum for decarbonization accelerates, the adoption of electric vehicles (EVs) presents a significant opportunity for the country to reduce dependence on fossil fuels, cut emissions, and stimulate growth in both industrial and service sectors. However, large-scale EV adoption depends heavily on the availability, reliability, and accessibility of charging infrastructure.

Nigeria's EV charging ecosystem remains in its early stages, shaped by pilot installations in major cities, unclear regulatory frameworks, fragmented investment models, a grid and a challenging electricity supply environment. Recent studies further highlight persistent systemic barriers, including high capital cost, weak technical capacity, and policy/regulatory gaps[1].

This policy brief provides a concise evidence-based assessment of the current state of EV charging infrastructure in Nigeria. It also serves as the official pre-read for the EV Stakeholders Roundtable Dialogue, framing key discussion points and facilitating alignment among stakeholders. In summary:

- The EV charging infrastructure ecosystem must expand from isolated pilots to a cohesive national network.
- The regulatory and investment environment must evolve to unlock private-sector participation and PPP models.
- There is a significant opportunity for integrating renewable energy and local manufacturing and developing green technical skills to build an inclusive and resilient EV charging ecosystem.

The upcoming roundtable offers an opportunity for government agencies, industry actors, financial institutions, and development partners to collectively define the enabling conditions for the nationwide deployment of EV charging infrastructure. Recent legislative developments, such as the Senate's passage of the Electric Vehicle Transition and Green Mobility Bill 2025 (second reading October 2025), signal growing political will and policy support with mandates for charging at fuel stations and new grants/tax incentives.[2]

[1] https://journals.nipes.org/index.php/jete/article/view/1532/1104

[2] https://www.channelstv.com/2025/11/05/electric-vehicle-transition-bill-passes-second-reading-in-senate/

Introduction

The transport sector plays a defining role in Nigeria's energy, environmental, and economic trajectory. According to the International Energy Agency (IEA), the sector accounts for 57% of Nigeria's energy-related CO_2 emissions[3], making it the country's single largest contributor. Electrifying road transport, therefore, aligns directly with Nigeria's Long-Term Low Emissions Development Strategy (LT-LEDS)[4], which targets a 60% renewable energy mix by 2060 and identifies e-mobility as a catalyst for reducing emissions, promoting local assembly, and strengthening value-chain development. While several policy frameworks already exist, the primary challenge lies in shifting from policy intent to large-scale deployment of charging infrastructure.

Global evidence shows that the availability, visibility, and reliability of charging infrastructure are decisive factors for consumer acceptance of electric vehicles. The IEA's Global EV Outlook highlights that dependable public charging significantly reduces range anxiety and accelerates mass adoption. Since 2022, the number of public chargers worldwide has more than doubled, reinforcing the strong correlation between infrastructure development and EV uptake. For Nigeria to move beyond small pilots toward meaningful adoption, similar enabling conditions must be established domestically. In Nigeria, research shows that supporting charging infrastructure will determine whether EV adoption remains niche or evolves into mainstream mobility across urban and peri-urban markets[5].

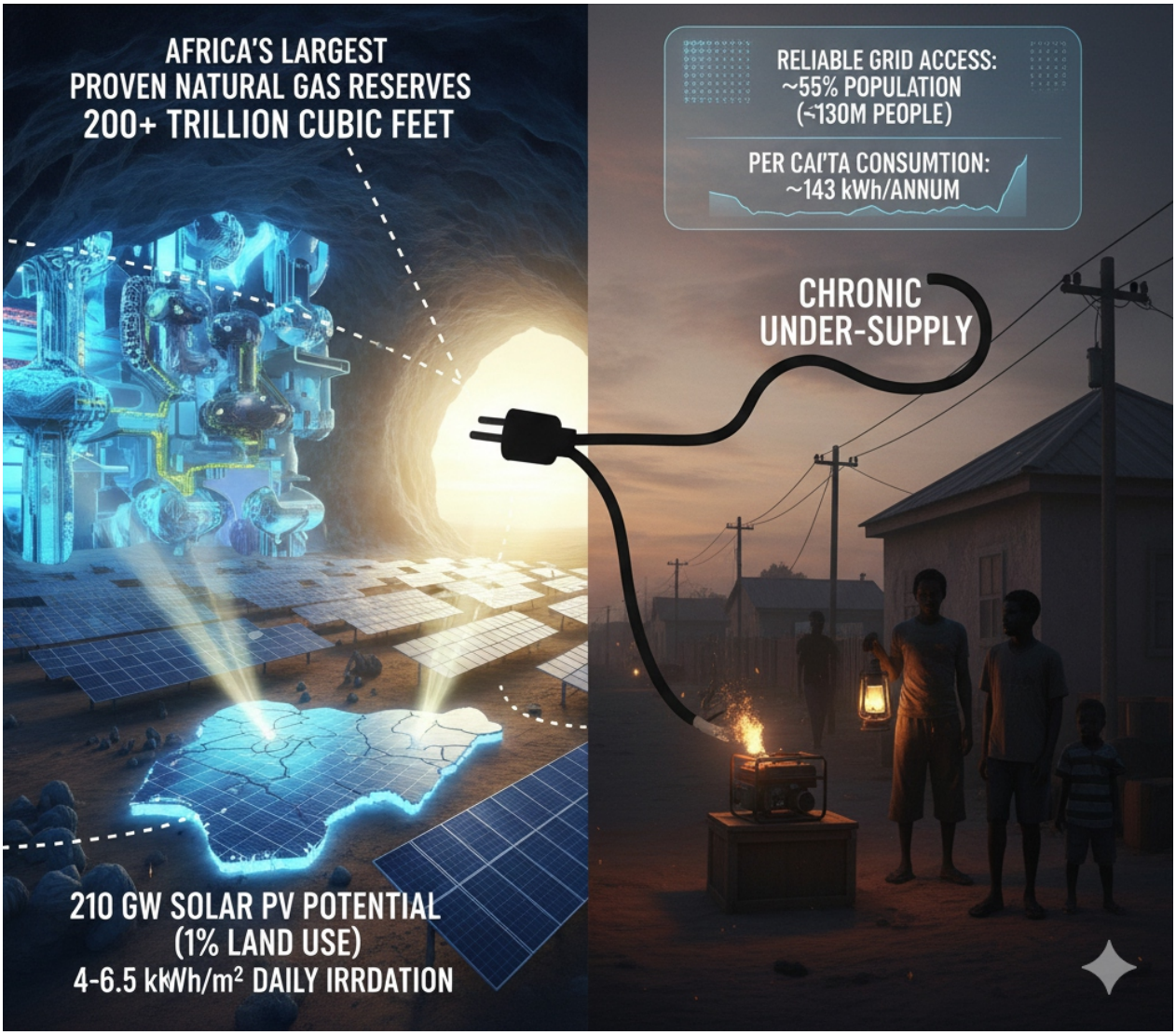
Nigeria's abundant solar radiation and expanding distributed energy landscape, supported by more than 100 operational mini grids, present a strategic opportunity to integrate EV charging with decentralized renewable systems[6]. Co-locating EV chargers with mini-grid hubs and building charging stations powered by solar rooftop systems can reduce deployment costs, ease pressure on the national grid, and enhance energy resilience. Ensuring equitable access (urban versus rural areas; commercial fleets versus private vehicles), while expanding local manufacturing and job creation. These benefits add further strategic relevance to building a robust EV charging ecosystem. Consequently, the development of a robust EV charging ecosystem is not merely a technical undertaking; it is a multidimensional challenge involving policy coordination, regulatory clarity, urban and energy planning, and substantial investment.

[3] https://www.iea.org/countries/nigeria/emissions
[4] https://unfccc.int/sites/default/files/resource/Nigeria_LT-LEDS_01122023the _240425_094617.pdf
[5] https://www.sciencedirect.com/science/article/pii/S1361920924001391
[6] https://punchng.com/nigeria-connects-6m-people-through-mini-grids-wbank/
[7] https://www.policycenter.ma/publications/nigeria-africas-gas-powerhouse-making#:~:text=If%20fully%20harnessed%2C%20it%20should,d%20used%20domestically%5B10%5D.

Nigeria's Energy Landscape: The Foundation for EV Charging Scale-Up

Nigeria's energy sector is a paradox of abundance and scarcity, holding Africa's largest proven natural gas reserves at over 200 trillion cubic feet[7] while possessing the potential of approximately 210 GW of solar photovoltaic (PV) power by utilizing just 1%[8] of suitable land, with average daily irradiation ranging from 4 to 6.5 kWh/m² (peaking at ~6 kWh/m² in northern regions like Kano). However, chronic under-supply stifles electrification and industrial growth, leaving households and businesses in a cycle of frustration and improvisation. As of mid-2025, reliable grid access covers only about 55% of the population (roughly 130 million people), with per capita electricity consumption at approximately 143 kWh per annum, which is quite low. In comparison, the average per capita electricity consumption for Sub-Saharan Africa is estimated at around 180 kWh per annum.

Critically, this is not just a power problem; it is a missed opportunity for leapfrogging. Nigeria's grid fragility amplifies EV barriers; however, distributed renewables could rewire the narrative by combining solar mini-grids with chargers to build resilient energy solutions along trade corridors, potentially reducing deployment cost.



[8] https://www.nigeria-energy.com/content/dam/markets/emea/nigeria-energy/en/2023/docs/NE23-NigeriaEnergyRoadmap-Report.pdf

Key Features of the Current Energy Mix

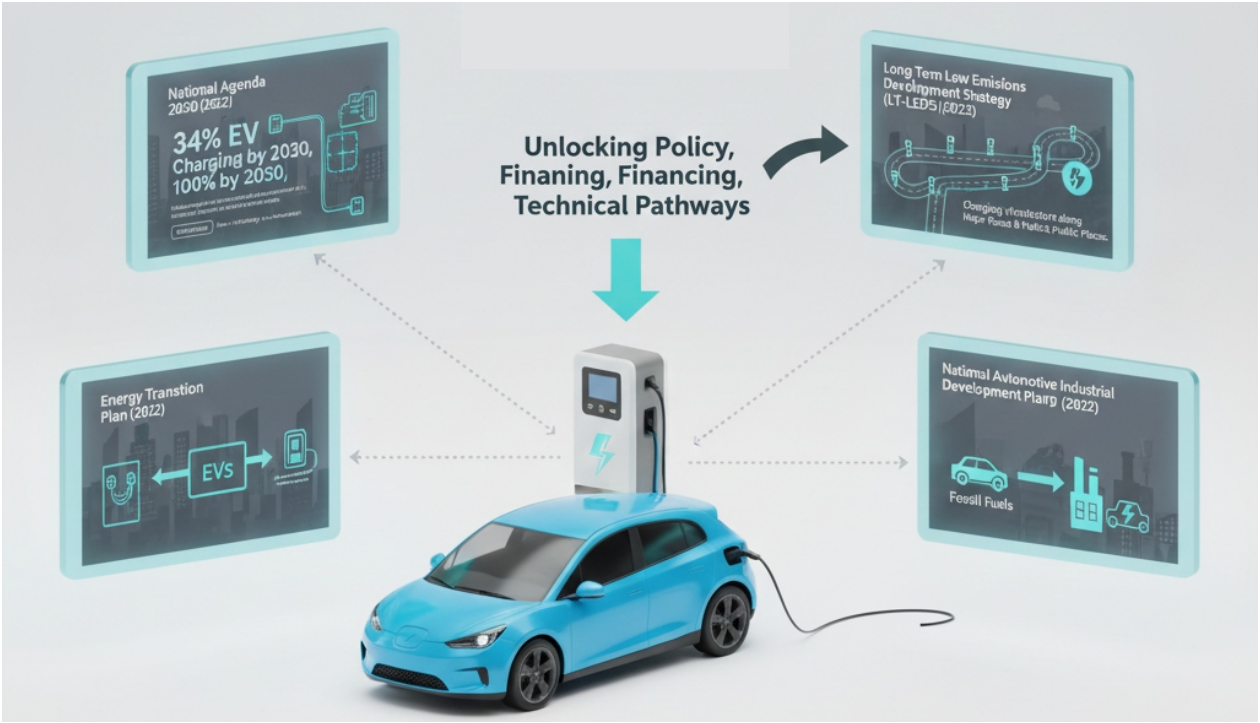
Feature	Current Status	Implications
Dominant Generation Source	Natural gas/thermal (fossil) makes up ~ 75–77% of electricity generation.	High dependence on gas exposes the power sector to gas supply risks, price volatility, and infrastructure stress.
Hydropower Share	Hydro contributes ~22–27% of electricity generation.	Hydropower is significant, but generation is subject to seasonal variability (water flow), which poses a risk to reliability.
Other Renewables	Other renewables (like solar and biomass) represent ~0.3% of generation	Renewable (non-hydro) capacity is still nascent, with huge potential for growth, especially in solar.
Capacity vs Available Generation	Installed capacity is ~13,600 MW, but only ~5,200 MW (≈ 38%) is reliably available on average.	A Large capacity-availability gap constrains the ability to serve high-load demand (like EV fast charging) purely from the grid.
Seasonal / Risk Factors	The reliance on gas supply and water flow poses risks from pipeline difficulties and seasonal hydropower changes.	These risks require diversification and backup solutions (e.g., hybrid energy systems, storage).
Long-Term Transition Goals	According to Nigeria's Energy Transition Plan, renewables are projected to scale up significantly (e.g., large growth in solar PV).	Indicates alignment between energy policy and EV/powering infrastructure: opportunity for renewable-based charging infrastructure.

EV Charging Infrastructure Policies in Nigeria

There are four existing policy frameworks (the National Agenda 2050 of 2021, the Long Term Low Emissions Development Strategy of 2023, the Energy Transition Plan of 2022, and the National Automotive Industrial Development Plan of 2023) that make mention of EV charging infrastructure in Nigeria, and one under development (the Electric Vehicle Transition and Green Mobility Bill of 2025). The existing frameworks typically focus on the EV segment of the market and say very little on EV charging infrastructure.

The National Agenda 2050, launched in 2021 under the Federal Ministry of Finance, Budget and National Planning, envisions 34% and 100% of Nigerian cities having EV charging outlets by 2030 and 2050, respectively. The NA 2050, however, does not mention how this will be achieved beyond "appropriate incentives and sanctions frameworks" and "investments in energy storage devices and systems". Similarly, Nigeria's Long Term Low-Emissions Development Strategy (LT-LEDS), launched in 2023 by the National Council on Climate Change (NCCC), contains proposed mitigation measures for the Transport Sector to promote "wide adoption of electric vehicles", which includes "Provide charging infrastructure along major roads and designated public places".

The Energy Transition Plan, launched in 2022 by the Energy Transition Office, envisioned that the number of EV charging stations would be 60 by 2030 (servicing EVs that make up 1% or 191,700 of the passenger vehicle mix by 2030 and then grow by 6,000 annually after 2030—implying that 120,000 EV charging stations would cater to 13 million EVs (i.e. 60% of the total vehicle fleet) by 2050. This implies a ratio of 108 EVs to 1 charging station by 2050, an improvement from 3,195 EVs to 1 charging station by 2030. While the ETP 2022 was criticized for setting ambitious goals without stipulating implementation pathways and measures, the 2025 revision of targets no longer includes targets for charging stations.



Instead, EV targets are disaggregated by vehicle type (2/3 wheelers, 4-wheelers, trucks, and buses), and mention of charging infrastructure is limited to the statement that one of the barriers to EV adoption is inadequate charging infrastructure, and assumptions for the modeled targets include "incentives, regulations, and charging infrastructure investments will drive the transition" and "improvements in battery range and charging infrastructure make electric 2/3 wheelers more viable for consumers".

The National Automotive Industrial Development Plan (NAIDP) of 2023, developed by the National Automotive Design and Development Council (NADDC), is supposed to be more comprehensive and detailed in the specific incentives to be provided for the promotion of e-mobility in Nigeria. Yet, while "vehicles" are mentioned 264 times, "charging" is mentioned only four times, despite one of the two stated objectives of the plan for e-mobility being "To facilitate investments in electric vehicle charging stations and other infrastructure". The NAIDP targets cumulative local production of vehicles in Nigeria of 200,000 units by 2033 (covering about 40% of domestic vehicle demand), and 30% (60,000 units) will be EVs, thereby exceeding the ETP 2025 revised projection of 1,210 total EVs by 2030. No commensurate target is set for local development of charging stations. Fiscal incentives are stated for "auto assemblers", "auto manufacturers", and knocked-down imported EVs, and not for charging infrastructure producers.

In contrast, the draft National Action Plan for the Development of Electric Vehicles in Nigeria, developed by the NADDC in 2022, and for which a public validation workshop was held in July 2023, contained a dedicated section on charging infrastructure. It proposed specific measures, such as:

- Tax reduction for renewable energy producers supplying public charging stations (5% VAT, 10% CIT).
- Reduced electricity tariff or subsidies for public charging stations.
- Specified ToU (Time-of-Use) tariffs for individual owners of level 1 (slow charging), and level 2 (fast charging), and level 3 (rapid charging) EVSE (Electric vehicle supply equipment) to promote ownership of EV.
- Foster Land access for EV charging infrastructure development
- Create standards for EV stations
- Domesticating the production of charging station components (unifying the production of charging plugs and superchargers).
- Increase the investment in EV charging stations, including through cheap loans (1-5% interest rate) issued for companies willing to set up commercial charging stations with renewable energy sources, and create funding facilities dedicated to EVs charging infrastructure.

The draft Action Plan was, unfortunately, not pushed forward for approval from the Federal Executive Council.

It is in light of these gaps that the Nigerian Senate has introduced the Electric Vehicle Transition and Green Mobility Bill, 2025. The Electric Vehicle Transition and Green Mobility Bill, 2025[9] (sponsored by Senator Orji Uzor Kalu and currently under second reading in the Senate), represents Nigeria's first comprehensive legislative effort to accelerate the adoption, localization, and regulation of electric mobility. The Federal Ministry responsible for Industry, Trade, and Investment has been slated as the primary coordinating body for the implementation of the bill.

One of the six objectives of the Bill is to "develop nationwide electric vehicle charging infrastructures". The bill, therefore, has a dedicated section on charging infrastructure. Key provisions include:

- The Standards Organisation of Nigeria (SON) is to ensure that all electric vehicles, components, and charging equipment meet international safety and quality standards, and it should develop and publish specific standards for electric vehicle batteries, motors, and charging stations.
- The Ministry of Transportation is to oversee the licensing and regulation of electric vehicle charging networks.
- The Ministry of Power is to promote the integration of renewable energy into electric vehicle charging infrastructure; develop policies to ensure adequate power supply for electric vehicle charging stations; and collaborate with the Nigerian Electricity Regulatory Commission to establish tariffs for electric vehicle charging services.
- From the commencement of the bill, all fuel stations in Nigeria shall be required to install electric vehicle charging points.
- Private investors establishing electric vehicle charging stations shall be eligible for grants and tax credits.

However, while the bill offers vital political momentum, there remain significant technical, institutional, and operational gaps that must be addressed to guarantee effective implementation, industry development, and long-term sustainability. In its current form, it risks establishing a dominant, capital-intensive market that excludes startups, two/three-wheelers, and the vast majority of Nigerians. If significantly strengthened, it could become the cornerstone of Nigeria's energy transition.

Strengths and Positive Provisions within the Bill

1. The bill pushes for nationwide availability of charging points by mandating installation at all fuel stations.
2. It introduces grants and tax credits to support private developers of charging infrastructure.

9 https://ir.nilds.gov.ng/bitstream/handle/123456789/1832/ELECTRIC%20VEHICLE%20TRANSITION%20AND%20GREEN%20MOBILITY%20ACT%202025%20%28New%20Bill%29%29.pdf?sequence=1&isAllowed=y#:~:text=This%20Bill%20seeks%20to%20establish%20a%20comprehensive%20legal%20framework%20for,to%20drive%20compliance%20and%20adoption.&text=1.,Objectives.

3. One of the objectives is to integrate renewable energy into charging infrastructure development, which helps in addressing energy access constraints.
4. The bill mandates SON to ensure that all charging equipment meets international safety and quality standards.

Key Shortcomings, Risks and Gaps

1. Mandating every fuel station to install EV chargers "immediately upon commencement" is technically, financially, and infrastructurally unrealistic. Many fuel stations lack adequate transformer capacity, physical space for compliant installations, and a stable power supply. The bill fails to account for the diversity of fuel station sizes, locations, and infrastructure conditions across the country. This creates a high risk of non-compliance and potential safety issues.
2. There is a lack of phased or prioritized deployment strategy. It assumes that all fuel stations are built with equal capacity, ignoring the fact that some locations, such as highways, inter-city corridors, and major urban hubs, should be prioritized due to higher demand. Without structured phasing, the policy becomes difficult to implement and financially burdensome for operators.
3. It does not address the energy and grid implications of large-scale charging deployment, especially fast chargers, which place significant demand on local distribution networks. The bill does not require grid impact assessments, tariff frameworks, or coordinated planning with NERC, TCN, or the DisCos. Without clear energy planning provisions, the accelerated rollout could overload transformers or result in high tariffs for EV users.

Recommendations for Strengthening the Bill

1. To make the charging infrastructure provisions more realistic and implementable, the bill should introduce a phased and strategic deployment framework. Instead of requiring that all fuel stations install chargers immediately, the policy should prioritize high-demand locations such as major roads, transportation corridors, and urban centers, then gradually expand to medium-traffic stations, and finally require EV-readiness (such as wiring and conduit installations) for smaller or low-volume stations.
2. Integrate grid planning into the charging mandate. The bill should require coordinated action among the Ministry of Power, NERC, TCN, and the DisCos to conduct load assessments, plan grid upgrades, and design EV-friendly tariff structures.
3. The bill should outline operator licensing, technical compliance procedures, minimum uptime obligations, pricing transparency, and consumer protection standards.
4. Incentives should also be clarified to specify eligibility criteria, tax credit levels, duration of support, application processes, and roles of relevant agencies.
5. To support infrastructure deployment, the bill should establish a dedicated Nigeria EV Transition Fund. It should be financed through a modest carbon levy on petrol/diesel, green bonds, and concessional loans from AfDB, the World Bank, and climate funds.

Current Landscape of EV Charging Infrastructure in Nigeria

Nigeria's EV charging ecosystem remains in its formative stages, emerging in three distinct but complementary streams, each serving specific purposes, offering unique advantages, and facing inherent limitations. These streams include government- and research-led pilots, fleet- and assembler-driven deployments, and battery-swapping innovations targeted primarily at two- and three-wheelers.

1. **Government and research pilots:** Government-led and research-oriented EV charging stations primarily as proof-of-concept installations designed to demonstrate feasibility, build technical capacity, and support early policy experimentation. The National Automotive Design and Development Council (NADDC) leads these initiatives and has commissioned several solar-powered EV charging stations since 2021 across key universities, including the University of Lagos (UNILAG), University of Nigeria Nsukka (UNN), and Usman Danfodio University, Sokoto (UDUS), as well as one at its headquarters in Abuja. Recent expansions include NADDC's collaboration with Federal University Lafia (FULafia) for a new EV starting station[10]. The Federal Ministry of Industry, Trade and Investment has overseen these projects as part of Nigeria's broader National Automotive Industry Development Plan (NAIDP) and Long-Term Low Emissions Development Strategy (LT-LEDS). The Energy Commission of Nigeria (ECN) also operates a pilot hybrid EV charging station at its Abuja office.

   These projects provide foundational learning platforms for EV technology, solar integration, and charging system design. They enable hands-on training opportunities for engineers, technicians, and students, thereby contributing to the development of Nigeria's technical workforce for broader deployment. However, the limitations of this stream are equally apparent. Most installations are typically small-scale and primarily used for research rather than public access. Their financial sustainability remains uncertain, as operations depend on grants rather than revenue. Furthermore, the absence of a structured replication mechanism or dedicated financing window means that these pilots risk remaining isolated projects rather than stepping stones toward national rollout. Finally, there is minimal publicly available operational data, which reduces the feedback loop between demonstration and policy learning.

2. **Fleet and assembler-led deployments:** Possibly the most commercially significant stream, driven by private operators and vehicle assemblers. Private fleet operators and vehicle assemblers deploy charging stations to support logistics fleets, ride-hailing services, corporate mobility, and proprietary EV models. Leading companies in this charge include Foltï Technologies Limited, Qoray, SAGLEV, First Electric, Phoenix

[10] https://thenigeriaeducationnews.com/2025/09/05/naddc-and-fulafia-partner-to-establish-ev-charging-station-and-cng-conversion-hub/

Renewables, Africa Motor Works (AMW), Jet Motors Company (JMC), and EV World Africa.

The strength of this model lies in its strong alignment with commercial logic. Companies that integrate charging infrastructure directly into their fleet operations achieve higher asset utilization, more predictable energy demand, and immediate economic benefits. The model also supports local industry growth, as firms expand assembly capacity and use their proprietary charging hubs as R&D platforms for locally assembled EVs. However, because these stations are designed for closed-loop fleets, they rarely serve the general public, limiting network interoperability. Regulatory uncertainty further constrains growth: there are still no formal licensing requirements, tariff structures for private charging operators, or standardized technical or safety guidelines from NEMSA or SON. Additionally, most of these projects remain concentrated in commercial centers like Lagos and Abuja, leaving large parts of the country with minimal or no infrastructure presence.

3. **Battery Swapping Innovations:** Unlike the conventional plug-in charging stations common in developed markets, this model relies on battery swapping, solar microgrids, and modular infrastructure to deliver more accessible electric mobility energy. Tailored primarily for 2- and 3-wheelers, the system eliminates driver downtime by allowing operators to exchange depleted batteries for fully charged ones within minutes. Companies such as MAX, Spiro, Aarago, Siltech, Zoome, and Nayo are leading this shift

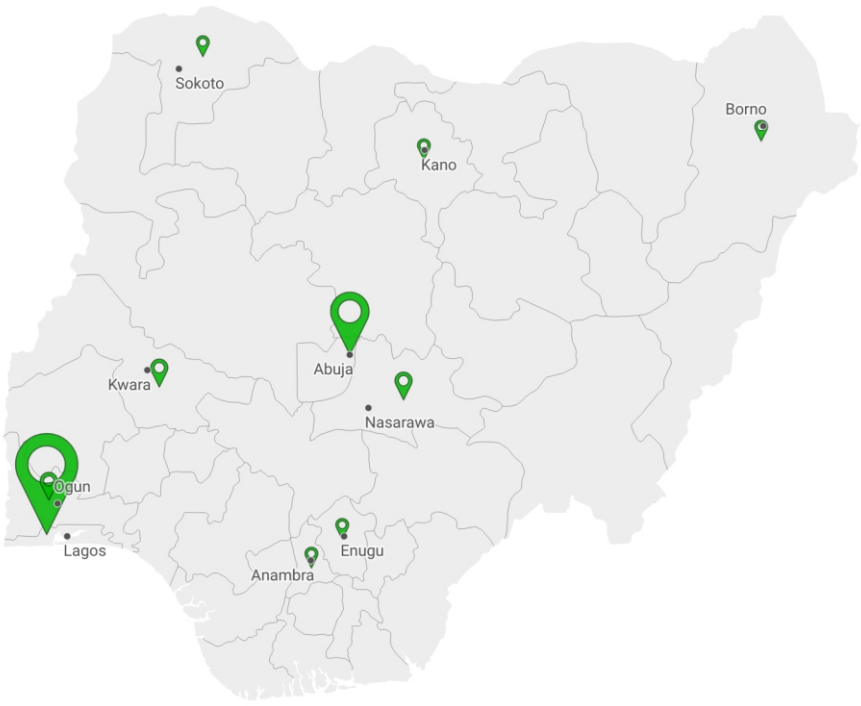
   This stream offers several notable advantages. Its flexibility supports rapid deployment across urban and peri-urban areas, and its reliance on solar-powered charging helps to overcome persistent grid reliability challenges. It also delivers significant social co-benefits, including support for small and medium-sized enterprises (SMEs), the creation of local manufacturing opportunities, and fostering gender-inclusive employment in operations and servicing. The expansion of this model is constrained by both technological and financial barriers. Battery swapping requires significant upfront capital to procure multiple battery units, creating a working capital burden. The lack of standardized battery formats across OEMs complicates scaling. Additionally, national bodies such as the Standards Organisation of Nigeria (SON) or NEMSA have yet to establish formal safety, performance, and environmental guidelines for battery management and disposal. Access to concessional financing is also limited, as many commercial lenders remain hesitant to support e-mobility ventures without established credit histories or proven repayment performance.

With the emergence of digital mapping tools such as the ConnectVolt app (developed by EVC Point Nigeria), combined with continuous stakeholder engagement and systematic desktop research, the process of identifying and verifying electric vehicle (EV) plug-in charging stations and battery-swapping infrastructures across Nigeria has become far more structured and evidence-driven. These digital platforms now function as critical enablers of data-driven ecosystem monitoring, helping to close longstanding information gaps between infrastructure developers, policymakers, and end-users.

As of late 2025, available and verifiable data indicate a small but steadily growing network of EV charging stations and battery-swapping points, concentrated largely in Lagos and Abuja, with emerging presence in Kano, Borno, Nasarawa, and selected institutional or pilot sites. While the growth remains modest, it signals the early formation of a formal charging ecosystem in Nigeria. The spatial distribution, however, is still uneven, clustering mainly in urban and peri-urban areas with stronger grid access, higher commercial activity, and supportive institutional environments.

Even so, the rise of digital tools such as real-time location tracking apps and ecosystem mapping platforms is gradually strengthening transparency and visibility. These improvements are essential for effective policy formulation, targeted investment planning, and building user confidence in Nigeria's nascent e-mobility landscape.

Distribution of Charging/Battery Swapping Stations in Nigeria.



Source: Connect Volt app, stakeholder engagement, and systematic desktop research

Key Policy and Regulatory Gaps in Unlocking EV Charging Infrastructures

To unlock the full potential of electric mobility, Nigeria must address a set of systemic gaps that limit the development, scale, and sustainability of its EV charging infrastructure. These gaps are not only technical but also institutional, financial, and informational, and together, they collectively form the backbone of the policy challenge we face.

1. **Absence of a Finalized National Charging Standard and Charge Point Operator (CPO) Regulatory Framework:** Nigeria currently lacks an officially gazetted national framework for EV charging standards, procedures, and operator licensing. Without harmonized

standards, safety requirements, metering, and communication protocols, the market risks becoming fragmented.

Why it matters:

a. A lack of standards can lead to incompatible chargers, unsafe installations, and unreliable user experiences.
b. Investors want predictable regulations before committing capital. Ambiguity over who can build, own, and operate chargers raises legal and commercial risk.
c. Available standards alignment (e.g., with IEC 61851) allows Nigeria to integrate into regional supply chains and attract OEM partnerships.

Global benchmark: India's Bureau of Energy Efficiency (BEE) established a clear CPO registration and standardization regime[11]; similar frameworks exist in Kenya (EPRA Guidelines 2023)[12] and South Africa (SABS EVSE Standards 2022)[13].

2. **Fragmented Institutional Responsibilities and Weak Coordination:** Several agencies currently share overlapping roles in EV policy and infrastructure oversight: NADDC (automotive industrial policy and EV promotion), NERC (electricity regulation and tariffs), SON (product standards), NEMSA (electrical safety enforcement), REA (rural energy access, including solar-powered stations), and State DisCos (grid connection and billing). However, these institutions often operate in silos, with no dedicated inter-agency coordination platform for EV infrastructure.

Why it matters:

a. A CPO may need several permits from different agencies with unclear sequencing or cost, prolonging project timelines.
b. The lack of a unified vision (industrial, energy, and transport policy) leads to mixed messages to investors
c. Without a lead coordinator, policy follow-through and implementation monitoring are ineffective.

3. **Grid Reliability and Tariff Uncertainty:** Charging stations are high-load facilities that depend on reliable and cost-effective electricity. Yet, Nigeria's grid is plagued by instability, outages, and poor voltage quality. Most DisCos cannot guarantee a consistent supply for commercial high-load connections. Moreover, there is no defined tariff class for EV charging, leading to pricing uncertainty.

Why it matters:

a. Frequent power outages raise operating costs, forcing CPOs to resort to diesel generators, undermining the environmental benefits of EVs.

[11] https://beeindia.gov.in/sites/default/files/2024-06/Cover%20letter%20and%20MoP%20Guidelines_28%20June%202024.pdf
[12] https://energy.go.ke/sites/default/files/KAWI/Other%20Downloads/EPRA-E-Mobility-Guidelines.pdf
[13] https://www.gov.za/sites/default/files/gcis_document/202209/46884gen1276.pdf

b. Without a dedicated tariff class, CPOs face unpredictable electricity costs, undermining profitability and pricing consistency for users.
c. The expansion of fast-charging hubs may overload weak distribution networks.

4. **Lack of Fiscal Incentives and Dedicated Financing Instruments:** Nigeria still lacks targeted fiscal or financial incentives to encourage and promote CPO investment or local charger manufacture, in contrast to advanced markets. On the other hand, nations like Morocco and Kenya provide concessional financing windows, capital subsidies, import duty waivers, and tax exemptions.

Why this matters:

a. The cost of a 50 kW DC fast charger ranges from $25,000 to $50,000[14] (not including civil works). This will be further inflated by import tax or clearing and FX volatility.
b. Commercial banks remain risk-averse due to a lack of precedent and uncertain returns.
c. Without incentives, Nigeria risks remaining a passive market rather than a manufacturing hub for chargers and components.

5. **Skills, Technical Capacity, and Local Manufacturing Gaps:** The EV charging value chain requires a multidisciplinary workforce: electrical engineers, technicians, software developers, and safety inspectors. Nigeria's technical education system has not yet adapted to this emerging industry.

Why it matters:

a. Poor technical know-how increases the risk of malfunction, fires, and downtime.
b. Without local assembly and production, dependence on imports persists, raising costs and limiting supply chain resilience.
c. A fully developed charging industry could create thousands of technical and support jobs, but only if local capacity exists.

6. **Data Gap and Absence of Spatial Planning:** There is currently no central database or digital registry for charging infrastructure in Nigeria. There are few public charging stations, and those that do exist are privately documented by operators, with minimal utilization data sharing.

Why it matters:

a. Without spatial data, the government cannot identify priority corridors or underserved regions.
b. Potential investors lack evidence of market demand, traffic flow, and grid readiness.
c. Policymakers cannot measure impact or progress toward national EV targets.

[14] https://www.cleancurrent.com/bioenergy-and-alternative-fuels/ev-charging-infrastructure-costs/

If these gaps are not quickly addressed, then the few national EV targets set by the Federal Government have not been achieved.

Metric	Targets			Actual
	National Agenda 2050 (2021)	Energy Transition Plan (2022)	Energy Transition Plan (2025 Revised)	
Percentage of cities with electric power charging stations/outlets	17.5% by 2025	-	-	27%
Number of charging stations	-	60 by 2030 and 6,000 annually after 2030	-	48
Number of EVs	1.4 million	191,700 by 2030	1,210 by 2030	NA

Opportunities and Pathways Forward

Evidently, Nigeria is at a crossroads where energy transition ambitions intersect with the realities of infrastructure deficits, industrial policy, and economic inclusion. Despite the current constraint, Nigeria possesses several strategic levers that can fast-track the development of a resilient and inclusive EV charging ecosystem. The pathways outlined below are based on both domestic potential and global best practices, with adaptation for Nigeria's specific context of energy access, mobility demand, and innovation capacity.

1. **Leverage Solar and Hybrid Energy Solutions:** Solar radiation in Nigeria ranges from ~ 4 to 6 kWh/m²/day depending on the location, with cities like Kano averaging around 6.08 kWh/m²/day and Lagos around 4.4 kWh/m²/day[15]. This positions Nigeria among the most resource-rich countries for renewable-powered EV charging. Given the persistent unreliability of grid supply, solar and hybrid (solar + gas + battery) systems represent the most practical and sustainable backbone for charging infrastructure.

   Why it matters:

   a. Reduces dependency on unstable grid connections, ensuring operational reliability.
   b. Aligns with national renewable energy and climate goals, lowering lifecycle emissions of EVs.
   c. Enables off-grid and rural electrification synergies, especially through REA's mini-grid and Energizing Economies programs.

[15] https://www.sciencedirect.com/science/article/abs/pii/S0196890423005393

2. **Develop National Standards and a Licensing Roadmap for Charge Point Operators (CPOs):** Nigeria's EV charging industry still lacks an official national framework governing the licensing, safety, metering, and interoperability of charge point operators (CPOs). Establishing this framework is crucial to building investor confidence and ensuring consumer safety.

Why it matters:

a. Standardized connector types (CCS2, CHAdeMO, Type 2) will prevent equipment incompatibility.
b. Safety protocols will minimize risks of electrical faults and fire hazards.
c. Licensing guidelines define who can build and operate public chargers and under what tariff conditions.

3. **Promote Local Manufacturing and Assembly of Charging Equipment and Components:** Local manufacture of chargers, cables, and connections is critical for lowering deployment costs and increasing industrial diversification. Importing EVSE (Electric Vehicle Supply Equipment) incurs tariffs and foreign exchange fees, rendering large-scale rollout uneconomical.

Why it matters:

a. Builds Nigeria's industrial base and technical expertise in power electronics.
b. Reduces foreign currency exposure and supply chain delays.
c. Creates green manufacturing jobs aligned with the National Automotive Industry Development Plan (NAIDP 2023–2033)[16].

4. **Create Dedicated Financing and Investment Instruments:** Deploying EV charging infrastructure is capital-intensive, and traditional commercial lending instruments are unsuitable for its extended payback period. Nigeria requires innovative green finance mechanisms to de-risk early investment and attract private investment.

Why it matters:

a. Addresses the financing gap for CPOs, local assemblers, and innovators.
b. Stimulates private participation through risk-sharing mechanisms.

5. **Strategic Network Deployment by Priority Corridors and High-Use Segments:** Strategic deployment entails prioritizing high-demand routes and clusters first rather than spreading scarce investment too thinly. Priority corridors such as

[16] https://naddc.gov.ng/wp-content/uploads/2023/06/Nigerian-Automotive-Industry-Development-Plan-2023.pdf

Lagos–Ibadan–Abuja–Kaduna–Kano, Lagos–Port Harcourt, and major metropolitan centers provide early commercial viability due to vehicle density and fleet operations.

Why it matters:

a. Concentrated deployment accelerates visibility and utilization.
b. Builds investor confidence by demonstrating viable business models.
c. Reduces range anxiety and establishes a foundation for national expansion.

6. **Strengthen Human Capacity, Awareness, and Stakeholder Coordination:** Human capital and stakeholder collaboration remain the soft infrastructure that underpins e-mobility development. Building skilled technicians, regulators, and informed consumers is essential for sustainability.

Why it matters:

a. Ensures safety, reliability, and service quality across installations.
b. Reduces dependence on foreign expertise for maintenance.
c. Promotes public confidence and adoption.

Conclusion

Nigeria's transition to electric mobility presents a transformative opportunity, aligning energy transition, industrialization, mobility innovation, and sustainable development goals. However, the charging infrastructure remains a major barrier: without accessible, reliable, and affordable charging, EV adoption will stagnate. The current landscape, characterized by pilot installations, regulatory fragmentation, and financial constraints, needs to evolve into a coherent ecosystem. The forthcoming EV Stakeholders Roundtable is thus timely and strategic: bringing together government, regulators, utilities, the private sector, and development partners to create a unified approach for Nigeria's EV charging infrastructure. It is an invitation to move from individual pilots to system-scale deployment, from regulatory ambiguity to investor certainty, and from import dependence to local industrialization.

Guiding Questions for the Roundtable:

1. What should Nigeria's immediate priorities be (next 12–24 months) to scale charging infrastructure?
2. Which regulatory and institutional levers (at the federal and state levels) should be activated to de-risk investment?
3. How can the private sector be incentivized to roll out charging stations, including in underserved regions?
4. How can local manufacturing and supply chains be embedded in the charging-network strategy?
5. What business models and financing structures are appropriate for Nigeria's context (grid risk, tariff uncertainty, mobile vs. fixed charging, fleet vs. private)?