



Regulatory Barriers and Business Environment Assessment



This report is developed as part of the Africa Policy Dialogue (APD) on *Catalyzing Green Jobs through Low Carbon Transition in Nigeria*, being implemented by the Advocacy for Policy and Innovation (API) in partnership with INCLUDE Knowledge Platform.

The APD seeks to institutionalize inclusive green job policies and create a structured workforce pipeline to support Nigeria's low-carbon transition and sustainable development goals in relation to energy diversification. A core focus of the project is enabling access to opportunities in the renewable and sustainable energy sector. This requires an understanding of the landscape, necessitating research development to inform legislative deliberations and guide stakeholder decision-making.



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1. Executive summary

Nigeria's transition toward a low carbon economy presents a significant opportunity for private sector participation, green entrepreneurship and employment creation across renewable energy value chains. Over the past decade the Government of Nigeria has assembled a broad suite of policy and regulatory instruments aimed at promoting renewable energy deployment, expanding energy access and strengthening investment in sustainable energy systems. These include the National Renewable Energy and Energy Efficiency Policy ([NREEEP, 2015](#)), the Climate Change Act 2021, the Electricity Act 2023, the Nigerian Electricity Regulatory Commission mini grid regulations, the Nigeria Electrification Project, the Economic Sustainability Plan's Solar Power Naija initiative, and more recently the National Energy Compact and the Third Nationally Determined Contribution (NDC 3.0). Independent legal and policy assessments confirm that this architecture is comparatively advanced in the West African region ([Okhirebhu et al., 2025](#); [Olujobi et al., 2026](#)).

The central finding of this assessment is consistent with the wider evidence base: the binding constraints on renewable energy enterprise in Nigeria arise less from any absence of policy ambition than from implementation gaps, regulatory fragmentation, overlapping institutional mandates and procedural inefficiency that raise transaction costs and investment uncertainty ([Okhirebhu et al., 2025](#); [Olujobi et al., 2026](#); [CPI, 2025](#)). Several structural features compound these governance problems. Tracked climate finance reached only USD 2.5 billion in 2021/22, against an estimated annual need of USD 29.7 billion to 2030, leaving an annual financing gap of USD 27.2 billion, and roughly 79% of international climate finance arrived as debt in a country that already spends more than 80% of public revenue on debt service ([CPI, 2025](#)). The national grid collapsed twelve times in 2024 ([Olujobi et al., 2026](#)), and approximately 40% of the electricity consumed in Nigeria is generated by diesel and petrol back up systems ([CPI, 2025](#)). Borrowing costs are further inflated by external risk pricing: under prevailing credit rating practice, and the sovereign ceiling rule in particular, renewable energy projects in Africa face financing costs two to four times higher than comparable projects in Europe or North America even where project fundamentals are sound ([Olingo, 2026](#)).

Market entry procedures remain complex, institutional coordination is uneven, grid and market performance risks are significant, and state level variation in administrative capacity produces highly differentiated business environments across Nigeria's geo political zones. Using policy and legal analysis, institutional mapping, stakeholder consultation, business lifecycle assessment and state level spatial analysis, this assessment examines how national frameworks translate into real world business conditions and proposes reforms to strengthen regulatory

coherence, reduce investment risk and support a more predictable, efficient and investment friendly green economy, with a focus on catalysing green jobs and inclusive entrepreneurship.

Key conclusions are that:

- Nigeria's renewable energy policy architecture is comparatively advanced in the region, especially following the Electricity Act 2023 and the National Integrated Electricity Policy and Strategic Implementation Plan, but its impact is undermined by coordination and implementation weaknesses ([Okhirebhu et al., 2025](#); [Olujobi et al., 2026](#)).
- Regulatory fragmentation and overlapping federal and state mandates significantly raise transaction costs, particularly for the micro, small and medium enterprises that make up about 97% of Nigerian businesses and 45% of gross domestic product ([CPI, 2025](#)).
- Grid unreliability, payment risk and off taker creditworthiness are central to investment risk perception and directly condition the bankability of both on grid and hybrid projects ([CPI, 2025](#); [Olujobi et al., 2026](#)).
- State level governance and administrative practice strongly influence business conditions, requiring tailored, spatially informed reform strategies rather than one size fits all interventions.
- Employment outcomes have so far lagged ambition. The Energy Transition Plan projects around 340,000 green jobs by 2030 and 840,000 by 2060, yet only about 50,000 direct jobs had been recorded in decentralised renewable energy by the most recent sector census, of which roughly 27% went to women and 40% to youth ([Federal Republic of Nigeria, 2025](#); [Manya, 2023](#)).
- Reform priorities lie in streamlining licensing and market entry, improving institutional coordination, clarifying and operationalising investment incentives, strengthening grid and market governance, and deliberately designing for SME participation, local content and inclusive green job creation.

2. Introduction and background

Nigeria's energy transition agenda reflects the country's commitment to expanding energy access, reducing carbon intensity and fostering economic diversification through sustainable industrial growth. The scale of the access deficit frames the opportunity. Only about 60% of the population has access to electricity, urban access stands near 85% against roughly 40% in rural areas, and national electricity consumption is estimated at around 80% below the level expected for the country's population and income ([CPI, 2025](#); [Manya, 2023](#)). Across the African continent nearly

600 million people still lack access to electricity ([Olingo, 2026](#)). Renewable energy technologies, including solar power, decentralised mini grids, clean cooking solutions and waste to energy systems, are therefore central both to closing this persistent gap, particularly in rural and peri urban areas where grid extension is costly or unreliable, and to generating employment in installation, maintenance, services and domestic manufacturing.

The Energy Transition Plan, launched in 2021, sets the long term direction. Under a net zero aligned pathway it targets utility scale solar capacity of 8 gigawatts by 2030 and 197 gigawatts by 2050, decentralised renewable capacity of close to 16 gigawatts by 2050, and an electric vehicle share of 60% of the passenger fleet by 2050 ([SEforALL, 2024](#)). Crucially, the plan identifies local manufacturing and assembly of solar panels, inverters, batteries and balance of system components as a national priority for capturing value and deepening the employment impact of the transition ([SEforALL, 2024](#)). Original equipment manufacturers are positioned as central actors in the renewable energy value chain, with implications for jobs, supply stability and industrial upgrading.

At the core of the national framework is NREEEP, which sets strategic directions for scaling renewable energy and improving energy efficiency across sectors. The Electricity Act 2023 marks a structural shift by devolving aspects of power sector regulation, permitting states to license and regulate their own electricity markets, which expands the space for sub national renewable energy projects and for state driven regulatory experimentation ([Olujobi et al., 2026](#); [CPI, 2025](#)). The National Integrated Electricity Policy and Strategic Implementation Plan seeks to revitalise the power sector by integrating renewable energy, enhancing grid reliability and improving sector liquidity. Targeted programmes operationalise this intent: the Nigeria Electrification Project, implemented by the Rural Electrification Agency, provides performance based grants to developers of solar mini grids and stand alone systems; Solar Power Naija aims to connect five million households to solar power; and the National Energy Compact, aligned with the continental Mission 300 initiative, targets universal electricity access and a 50% renewable share in the generation mix by 2030 ([Federal Republic of Nigeria, 2025](#)). The Climate Change Act 2021 provides the overarching governance umbrella, establishing the National Council on Climate Change, a Climate Change Fund and a carbon budgeting mechanism, and anchoring energy transition policy within a long term climate regime ([Olujobi et al., 2026](#)).

Within this architecture, several focus areas are especially relevant for renewable energy business environments: solar expansion, prioritising mini grids and solar home systems for off grid and weak grid communities; financing mobilisation through international partnerships and performance based grants; local content and industrial development to increase domestic value addition; and the

integration of energy transition objectives into the Climate Change Act 2021 to support long term planning and access to climate finance. The effectiveness of these policies depends on how they are implemented within complex regulatory structures and diverse regional contexts. The devolution introduced by the Electricity Act 2023 brings both opportunity and risk, as states with stronger capacity and clearer strategies may become investment hubs while others struggle to develop coherent frameworks. Early movement is already visible, with Katsina State developing wind power following implementation of the Act ([CPI, 2025](#)). This report starts from the existing frameworks and evaluates their implementation, coherence and interaction from a business environment perspective, identifying gaps and reform opportunities that can support a more predictable, efficient and investment friendly environment for catalysing green jobs.

3. Methodology and analytical approach

The assessment adopts a multi layered, mixed methods methodology designed to evaluate how existing policies and regulatory frameworks influence renewable energy business development across Nigeria. The approach reflects established good practice in investment climate and regulatory diagnostics, which emphasise combining analysis of formal rules with evidence on institutional behaviour and firm experience ([World Bank, 2004](#); [World Bank, 2014](#)). Recognising that regulatory implementation varies significantly across states and regions, the methodology combines six complementary components.

3.1 Policy and regulatory review

A systematic review of national legislation, policies and regulatory instruments relevant to renewable energy business development, covering market entry and licensing frameworks, investment incentives and tax instruments, financing mechanisms and dedicated credit lines, grid access rules and electricity market regulations, environmental and social compliance standards, and SME and entrepreneurship support policies. The objective is to assess not only the existence of instruments but their coherence, internal consistency and effectiveness in enabling private participation across the business lifecycle, with attention to where instruments overlap, contradict one another or fail to provide clear signals to investors ([Olujobi et al., 2026](#); [Okhirebhu et al., 2025](#); [Daudu and Idehen, 2024](#)).

3.2 Institutional mapping

Mapping of the roles and mandates of key regulatory agencies and investment support institutions at federal and state levels, including sector regulators, financing institutions, investment promotion agencies and business support entities. Particular attention is given to areas of overlapping jurisdiction,

coordination gaps and administrative bottlenecks. This analysis distinguishes between barriers arising from the substantive content of rules and those arising from institutional design, incentive structures and capacity constraints, which recent governance assessments identify as decisive in the Nigerian context ([Okhirebhu et al., 2025](#); [Onuh et al., 2024](#)).

3.3 Stakeholder consultations

Qualitative insights from across the renewable energy ecosystem, including developers and private operators, investors and financial institutions, regulatory agencies and ministries, industry associations, technical experts and civil society. Consultations test and refine the desk findings, reveal where formal frameworks function differently in practice and where informal norms or discretionary practice shape outcomes, and document divergent views between public authorities and private actors. This is consistent with guidance to integrate qualitative methods into investment climate diagnostics ([World Bank, 2014](#)).

3.4 Business lifecycle analysis

A lifecycle framework assesses regulatory impacts at distinct stages of enterprise development, namely market entry and licensing, investment and financing, operational compliance and grid access, and business expansion and scaling. Examining regulation through this lens distinguishes entry barriers from growth constraints and long term sustainability risks, allowing reform options to be targeted where they are most likely to unlock investment, reduce attrition and support viable business models.

3.5 State level cartography and spatial analysis

Spatial analysis captures geographic variation in regulatory implementation and business conditions, recognising that institutional capacity, infrastructure availability, investment concentration and administrative procedure differ markedly across regions ([Edomah, 2021](#)). Mapping supports identification of investment hotspots and emerging markets, comparison of regulatory environments across geo political zones, mapping of off grid opportunity in underserved and fragile areas, and understanding of how sub national governance dynamics influence investor confidence. The detailed application of this method is presented in the Annex.

3.6 Regulatory risk and investment environment analysis

Finally, the methodology assesses structural risks affecting renewable energy businesses, including grid reliability, energy theft, distribution inefficiency, tariff and payment uncertainty and broader regulatory instability, and traces how these risks are transmitted through the electricity and investment systems into the cost of

capital and the willingness of private actors to engage. This is consistent with World Bank and African Development Bank guidance, which holds that credible regulatory frameworks, stable market rules and improved power sector performance are preconditions for mobilising private finance at scale ([World Bank, 2020](#); [AfDB, 2021](#)), and with evidence that risk is frequently overstated relative to project fundamentals in African markets ([Olingo, 2026](#)).

4. Existing business enabling policy and regulatory landscape

4.1 Market entry and licensing frameworks

Nigeria's regulatory environment provides several pathways for renewable energy business entry through frameworks developed by the Nigerian Electricity Regulatory Commission and related institutions. Licensing regulations, embedded generation guidelines and the Regulation for Mini Grids 2016, with subsequent updates expanding capacity thresholds and investor protections, set out conditions for isolated and interconnected projects. These instruments aim to facilitate decentralised solutions, provide legal certainty for developers, and encourage private participation in unserved and underserved areas. The mini grid framework in particular allows developers to obtain permits, secure site exclusivity and agree compensation in the event of future grid arrival, which in principle reduces regulatory risk and supports long term planning. Companies are incorporated under the Companies and Allied Matters Act 2020, which provides a range of entity structures for private and foreign owned firms ([SEforALL, 2024](#)). Nonetheless, stakeholder feedback and independent reviews indicate that procedural delays, inconsistent interpretation of requirements and administrative complexity remain common, especially for smaller firms, increasing transaction costs and extending development timelines ([Okhirebhu et al., 2025](#)).

4.2 Investment promotion and incentive policies

Investment promotion shapes renewable energy business development by influencing expected returns and risk perception. Frameworks administered by the Nigerian Investment Promotion Commission provide incentives including tax relief under the Pioneer Status Incentive scheme, duty free importation of key equipment and accelerated capital allowances for qualifying renewable energy assets ([SEforALL, 2024](#)). Sector specific import measures are relatively favourable: solar panels with diodes attract a reduced 5% import duty, solar panels without diodes are duty free, and solar cells and components used in module assembly are exempt, while the Nigerian Automotive Industrial Development Plan 2023 provides a ten year tax holiday for assemblers of electric vehicles and their components ([SEforALL, 2024](#)). Pioneer Status and free trade zone arrangements can materially

improve project economics in capital intensive segments such as manufacturing and large scale generation.

In practice, however, the impact of these incentives is constrained by accessibility barriers, limited awareness among SMEs and weak coordination between investment promotion agencies and sector regulators ([CPI, 2025](#); [Okhirebhu et al., 2025](#)). Application processes can be lengthy and complex, with limited tailored guidance for smaller firms and start ups, and many developers are either unaware of available incentives or perceive them as too administratively demanding relative to the scale of their operations. The challenge therefore lies less in the absence of incentives than in how they are communicated, administered and aligned with sector specific requirements. A specific and consequential gap illustrates the point: while renewable energy equipment has been exempt from value added tax since 2021, batteries for solar systems, the single most expensive component of a solar installation, remain outside the exemption, which directly raises the cost of off grid and storage projects ([CPI, 2025](#); [Olujobi et al., 2026](#)).

4.3 Financing and market support mechanisms

Access to finance remains a critical determinant of renewable energy business growth. The Bank of Industry, commercial banks and development finance partners have introduced dedicated programmes targeting off grid solutions, solar home systems and mini grids, including the Bank of Industry's Solar Energy Fund, while performance based grants under the Nigeria Electrification Project reduce upfront capital requirements and improve viability in rural and low income markets. Risk mitigation structures have also emerged: InfraCredit, established by the Nigeria Sovereign Investment Authority and GuarantCo, has provided local currency guarantees that had unlocked an aggregate of around USD 201 million in infrastructure finance as of 2022, and the Development Bank of Nigeria has become the only national entity with direct access to the Green Climate Fund, accredited for funding in the range of USD 50 million to USD 250 million for on lending, blending and project management ([CPI, 2025](#)).

Despite these initiatives, financing gaps persist due to perceived regulatory and market risk, currency volatility, uncertain tariff structures and concerns around power purchase arrangements and off taker creditworthiness ([CPI, 2025](#)). International public climate finance to Nigeria has been delivered overwhelmingly as debt, around 79% of the international total, a heavy reliance that is difficult to sustain given that the country already devotes more than 80% of revenue to settling or servicing debt ([CPI, 2025](#)). Institutional investors, including the domestic pension industry, contributed less than 1% of tracked private climate finance, in part because few instruments are structured to match their risk and return requirements and because currency depreciation has sharply reduced the dollar

value of available domestic capital ([CPI, 2025](#)). As a result, many promising projects depend on concessional finance and grants, limiting the pace and scale of private investment. Green bonds offer one scalable channel: Nigeria issued Africa's first sovereign green bond in 2017, the domestic market reached about USD 136 million by 2021, and a third sovereign green bond of 50 billion naira, approximately USD 33 million, was launched in June 2025 ([CPI, 2025](#); [Federal Republic of Nigeria, 2025](#)).

4.4 Grid access and market structure policies

Electricity market regulations shape the commercial viability of renewable energy businesses, especially where projects interface with the national grid and distribution networks. Rules governing grid connection, tariff determination, net metering or wheeling, and distribution frameworks influence the ability of producers to sell electricity, recover investments and manage integration risk. For mini grids and embedded generators, the terms of interaction with distribution companies, including interconnection rules and compensation in case of network expansion, are particularly important. However, grid instability, high technical and commercial losses, non technical losses and energy theft remain major challenges. The scale of the reliability problem is illustrated by the twelve separate collapses of the national grid recorded during 2024 ([Olujobi et al., 2026](#)), and by the fact that approximately 40% of all electricity consumed is produced by diesel and petrol back up generators rather than the grid ([CPI, 2025](#)). For developers, these structural issues translate into heightened uncertainty around dispatch, revenue flows and the enforceability of power purchase agreements, reinforcing a bias toward fully off grid or pay as you go models where developers can better control end user relationships, while raising questions about long term integration and scaling within the national electricity supply industry.

4.5 SME and entrepreneurship support policies

Small and medium sized enterprises are increasingly active in solar installation, energy services, clean cooking and emerging assembly and maintenance businesses, and they dominate several of these segments. This matters for the wider economy because micro, small and medium enterprises constitute roughly 97% of Nigerian businesses and 45% of gross domestic product ([CPI, 2025](#)). General SME support frameworks implemented by the Small and Medium Enterprises Development Agency of Nigeria, the Bank of Industry and various entrepreneurship funds provide credit schemes, capacity building and business development services relevant to green enterprises. However, alignment between these broader entrepreneurship policies and sector specific renewable energy regulation remains limited. Many licensing, standards compliance and environmental procedures were designed with larger infrastructure projects or established utilities in mind, leading to high relative compliance costs for SMEs, and most SME support instruments are

not tailored to the distributed assets, service based revenue models and innovative financing arrangements typical of small renewable energy enterprises. International evidence confirms that even where green credit lines exist, they are frequently difficult for young, informal or women led firms to access, and that limited awareness, regulatory complexity and gaps in finance and skills are the recurring barriers to SME greening ([Krajcovicova, 2025](#)). As a result, many green SMEs operate in an environment that does not fully reflect their needs, constraining their ability to scale and to contribute to inclusive green job creation at the pace envisaged in national strategy.

5. Regulatory barriers and business environment diagnostic analysis

While Nigeria has developed a wide range of enabling policies, significant barriers continue to limit their effectiveness ([Okhirebhu et al., 2025](#); [Olujobi et al., 2026](#)). This section presents a structured diagnostic of systemic issues that emerge across policy implementation, institutional coordination and market realities, adopting a business lifecycle perspective and integrating insight from policy review, institutional mapping, stakeholder consultation and state level spatial analysis.

5.1 Policy implementation gap

A central finding is the gap between progressive policy frameworks and their practical implementation. Nigeria's renewable energy policies demonstrate strong strategic intent, including commitments to decentralised solutions, universal electrification and private sector engagement, yet businesses frequently struggle to translate these ambitions into operational reality. Key issues include inconsistent interpretation of regulatory guidelines across agencies and states, limited clarity on the administrative procedures required to obtain approvals, and delays in decision making that particularly affect smaller developers and new entrants. These patterns are consistent with analyses identifying weak enforcement mechanisms, fragmented regulation and the absence of a coherent implementation regime as core obstacles to policy effectiveness ([Olujobi et al., 2026](#); [Okhirebhu et al., 2025](#); [Onuh et al., 2024](#)). For firms, the result is uncertainty about how long approvals will take, what documentation is required in practice and whether similar projects will be treated consistently over time and across jurisdictions, all of which raise transaction costs and slow market development in risk sensitive segments such as mini grids and embedded generation.

5.2 Regulatory fragmentation and institutional overlap

Renewable energy governance in Nigeria involves multiple institutions with overlapping mandates. The Electricity Act 2023, the Climate Change Act 2021, sector

specific regulations and investment promotion frameworks all assign roles to federal and state entities in ways that reflect the multisectoral nature of the transition but also create coordination challenges. Diagnostic observations include multiple agencies involved in licensing, environmental approvals, compliance and investment facilitation; the absence of integrated, single window approval processes, resulting in sequential engagement with several institutions; and limited alignment between federal policy objectives and sub national implementation. This is not a uniquely Nigerian failing. Comparative work on SME greening finds that fragmented implementation and weak coordination across ministries, agencies and financial actors is among the most consistently observed constraints internationally, and that very few countries have moved toward integrated approaches combining finance, regulation and skills ([Krajcovicova, 2025](#)). In the Nigerian renewable energy and climate literature, overlapping mandates and weak horizontal coordination are repeatedly identified as undermining reform and muddying accountability ([Okhirebhu et al., 2025](#); [Olujobi et al., 2026](#)). From a business perspective, fragmented processes extend timelines and increase the importance of informal relationships and navigation skills, which disadvantages new and smaller firms and raises concerns about predictability and fairness.

5.3 Market entry and licensing barriers

Licensing and approval processes represent a critical choke point. While frameworks such as the Regulation for Mini Grids provide enabling pathways on paper, stakeholders report lengthy and unpredictable processes for mini grids, embedded generation and related permits; a perceived lack of transparency and standardisation, including varying documentation requests and unclear approval criteria; and limited capacity among smaller enterprises to navigate complex requirements and follow up repeatedly with multiple agencies. These challenges disproportionately affect SMEs and local developers, who face higher relative compliance costs and are less able to absorb delay, which limits the inclusiveness of sector growth and constrains local value creation even where national policy explicitly seeks to promote SME participation and local content ([Okhirebhu et al., 2025](#)).

5.4 Financing constraints and investment risk perception

Access to finance remains one of the most significant constraints on renewable energy business development, and the difficulty has both a domestic and an external dimension. Domestically, lenders perceive the sector as high risk because of regulatory uncertainty and structural power market problems: uncertainty around tariff structures, cost recovery and the stability of power purchase or service agreements; concerns about grid stability, distribution losses and the financial health of off takers, especially distribution companies; and currency and

macroeconomic volatility. These factors collectively raise the cost of capital and determine whether projects reach financial close ([CPI, 2025](#)). The available finance is also poorly matched to need. The wider context is set out in Table 1: tracked climate finance of USD 2.5 billion in 2021/22 stood against an annual requirement of USD 29.7 billion to 2030, and was almost equalled by the cost of foreign debt servicing and dwarfed by fossil fuel subsidies ([CPI, 2025](#)). A separate assessment of the 2015 to 2021 period found that Nigeria received around USD 4.93 billion in climate finance across 828 projects, of which roughly 75% arrived as concessional loans, with the national budget covering only about 14% of climate action costs ([Federal Republic of Nigeria, 2025](#)).

Table 1. Nigerian climate finance in context, 2021/22 (USD billion)

Indicator	USD billion
Tracked climate finance (2021/22)	2.5
Estimated annual climate finance need to 2030	29.7
Annual climate finance gap	27.2
Foreign debt servicing cost (2021/22)	2.3
Fossil fuel subsidies (2022)	9.3
2022 flood loss and damage (median estimate)	6.7

Source: [CPI \(2025\)](#).

Externally, the cost of capital is inflated by international credit rating practice that frequently overstates risk relative to project fundamentals. Under the sovereign ceiling rule, projects and companies cannot generally be rated significantly above the sovereign rating of the country in which they operate, so commercially sound renewable energy projects inherit the perception of sovereign risk even when backed by long term power purchase agreements and international guarantees. Of Africa's 54 countries, only Botswana and Mauritius currently hold investment grade ratings, renewable energy projects on the continent face financing costs two to four times higher than comparable projects in Europe or North America, and subjective rating assessments are estimated to cost African countries up to USD 74.5 billion a year in higher borrowing costs and lost investment; Nigeria's solar independent power producer pipeline is cited among the casualties ([Olingo, 2026](#)). Policy frameworks designed to attract investment will therefore have limited impact unless regulatory predictability improves and risk mitigation instruments such as guarantees, blended finance and clear off taker arrangements are systematically deployed, and unless multilateral institutions provide credit enhancements that partially separate projects from sovereign risk ([CPI, 2025](#); [Olingo, 2026](#)).

5.5 Grid reliability, energy theft and operational risk

Operational risks associated with Nigeria's electricity market significantly influence business viability. Grid unreliability, distribution inefficiency, vandalism, non technical losses and widespread electricity theft create uncertainty regarding revenue and system integration. Grid instability reduces confidence in grid connected projects, complicates hybrid models and raises concerns about curtailment and equipment damage; energy theft and distribution losses undermine financial sustainability along the value chain and contribute to the liquidity problems that affect distribution companies and their ability to honour obligations; and infrastructure degradation increases operational risk and makes long term planning harder for developers and financiers. The twelve grid collapses recorded in 2024, despite continued reliance on diesel and petrol generation, are a stark illustration of the underlying instability ([Olujobi et al., 2026](#); [CPI, 2025](#)). Developers respond by shifting toward fully off grid models, pay as you go systems or captive generation, but regulatory frameworks for grid and off grid interaction, including interconnection, compensation and eventual integration, are still evolving. This creates a paradox in which decentralised solutions offer resilience and flexibility, yet the absence of mature integration rules can limit their long term scalability within the national power system.

5.6 Geographic variation in regulatory and business environments

State level analysis reveals substantial regional variation in regulatory implementation, infrastructure readiness and investment attractiveness. While national policies provide overarching frameworks, local administrative practice, political priorities and institutional capacity determine how businesses actually experience regulation. Certain states function as de facto investment hubs because of stronger institutional presence, clearer procedures, more active state level energy or investment agencies and greater market demand. Off grid opportunity is concentrated in regions with low grid reliability and high energy deficits, but these areas often face governance, infrastructure and security constraints that raise risk. Differences in regulatory process, documentation requirements and administrative efficiency across states affect project timelines, costs and firm strategy, encouraging developers to prioritise more predictable jurisdictions and potentially reinforcing spatial inequities in energy access. The devolution introduced by the Electricity Act 2023 is likely to widen these differences, as states with capacity build coherent markets while others lag ([CPI, 2025](#); [Olujobi et al., 2026](#)). These dynamics underscore the need for targeted, state sensitive reform complemented by capacity building and policy alignment at state level, rather than uniform national measures. The spatial analysis is developed in the Annex.

5.7 SME participation, inclusion and the just transition

SMEs are pivotal for expanding access, creating local jobs and driving innovation, and they dominate segments such as solar home system distribution, small scale installation, energy services and clean cooking. Yet existing regulatory frameworks and financing instruments often favour larger developers and established firms. SMEs face higher relative compliance costs because regulatory burdens do not scale down with project size, limited access to finance tailored to their scale and asset structures, and weak alignment between general SME support and sector specific requirements such as standards compliance, licensing thresholds and tax treatment. Demand and willingness to pay for reliable clean energy are high, but financial constraints, regulatory complexity and the absence of targeted support remain decisive barriers ([Krajcovicova, 2025](#)).

Inclusion is a further concern. Field evidence finds that women and youth remain on the margins of the clean energy economy: of the roughly 50,000 direct jobs recorded in the sector, about 27% went to women and 40% to youth, and women in particular are concentrated in informal roles with lower pay and fewer hours ([Manya, 2023](#)). High costs of solar systems, currency driven price escalation, an outdated skills base and a persistent preference for foreign expertise, sometimes described as an expatriate syndrome inherited from the fossil fuel era, all constrain the participation of local, women led and youth led enterprises ([Manya, 2023](#)). These barriers matter because around 70% of formal renewable energy jobs require skilled qualifications, and sector commentary indicates that Nigeria currently has only about half of the skilled workforce its power sector requires, with renewable energy talent pipelines expanding but not yet at scale.

The inclusion question connects to a deeper just transition tension that any green jobs strategy must confront. The single largest source of national emissions reductions in the NDC 3.0 comes from reducing deforestation and the associated cut in fuelwood and charcoal use, yet the informal solid biomass economy supports an estimated 41 million people, translating to roughly 530,000 full time equivalent direct jobs and a further 200,000 indirect jobs in transport and trade, while around 65,000 jobs are simultaneously at risk in the oil and gas industry ([Federal Republic of Nigeria, 2025](#)). A credible green jobs agenda therefore cannot treat employment as an automatic by product of decarbonisation. It must pair the phase down of carbon intensive and biomass based livelihoods with deliberate skills development, social protection and enterprise support, so that emerging opportunities in clean energy, reforestation, sustainable agriculture and the circular economy are genuinely accessible to displaced and excluded workers. Strengthening SME integration into renewable energy markets is thus both an economic opportunity for domestic value addition and a precondition for an equitable transition.

6. Reform pathways and policy recommendations

Building on the diagnostic, this section proposes reforms to strengthen the business environment for renewable energy development. The focus is on optimising existing frameworks, improving institutional coordination and reducing regulatory friction, rather than creating entirely new architectures ([Olujobi et al., 2026](#); [Okhirebhu et al., 2025](#)). Measures are organised across three horizons: short term administrative improvements, medium term regulatory adjustments and long term structural transformation.

6.1 Streamlining market entry and licensing processes

Problem. Complex and fragmented licensing procedures increase transaction costs and uncertainty, particularly for SMEs and emerging developers, where procedural delay and inconsistent requirements are a key barrier to scaling decentralised solutions ([Okhirebhu et al., 2025](#)).

Recommended actions:

- Short term: establish a coordinated single window information and application interface for renewable energy licensing across relevant institutions, building on international experience with one stop shops ([World Bank, 2004](#)); and publish standardised guidance documents and process maps setting out licensing pathways, required documentation and indicative timelines.
- Medium term: introduce formal inter agency coordination protocols to reduce duplicative approvals and clarify sequencing, with a clear lead agency; and expand digitalisation of licensing, including online submission, tracking and feedback, to reduce discretionary delay.
- Long term: harmonise regulatory procedures across federal and sub national levels, including common minimum standards for documentation and timelines, to ensure consistency nationwide.

Lead institutions: NERC, Federal Ministry of Power, NIPC and relevant state energy and investment agencies.

6.2 Enhancing investment incentives and access

Problem. Existing incentives signal policy support but are under utilised due to administrative complexity, limited awareness and weak coordination, with SMEs least able to navigate them ([CPI, 2025](#); [Okhirebhu et al., 2025](#)).

Recommended actions:

- Short term: run targeted outreach with industry associations and the Rural Electrification Agency to raise awareness of Pioneer Status and duty waivers among SMEs and local developers; and simplify application procedures with

clear eligibility criteria, standard checklists and committed processing timelines.

- Medium term: align investment promotion with renewable energy strategy so that priority technologies and business models in the National Energy Compact and the National Integrated Electricity Policy are explicitly accommodated; introduce fast track approval for strategic investments that meet defined criteria such as scale, local content or coverage of underserved regions; and close the value added tax anomaly by extending the existing exemption on renewable energy equipment to solar batteries, the most expensive component of storage systems ([CPI, 2025](#); [Olujobi et al., 2026](#)).
- Long term: establish a coordinated green investment facilitation platform integrating investment promotion, regulatory guidance and access to finance, reducing fragmentation between NIPC, sector regulators and financial institutions.

Lead institutions: NIPC, Federal Ministry of Industry, Trade and Investment, Federal Ministry of Power, with the Bank of Industry and state investment agencies.

6.3 Strengthening financing ecosystems for renewable energy businesses

Problem. Affordable finance is constrained by regulatory risk perception, electricity market uncertainty and externally inflated borrowing costs, while regulatory stability, clear off taker arrangements and predictable tariffs are central to lowering the cost of capital ([CPI, 2025](#); [Olingo, 2026](#)).

Recommended actions:

- Short term: clarify policy and regulatory positions on tariffs, cost recovery and standard forms of power purchase or service agreement for mini grids, captive plants and embedded generation; and develop and disseminate standardised contract templates for common business models to reduce negotiation complexity, legal cost and perceived contractual risk.
- Medium term: expand risk mitigation instruments, including guarantees, partial risk sharing facilities and blended finance, building on the InfraCredit local currency guarantee model and the Development Bank of Nigeria's Green Climate Fund accreditation, and working with multilateral institutions to provide credit enhancements that partially separate projects from sovereign risk ([CPI, 2025](#); [Olingo, 2026](#)).
- Long term: develop a domestic green finance framework and taxonomy that incentivises private lenders and institutional investors, including pension funds, to allocate capital to renewable energy enterprises, and scale the domestic green bond market beyond its current modest base ([CPI, 2025](#); [Federal Republic of Nigeria, 2025](#)).

Lead institutions: Central Bank of Nigeria, Bank of Industry, Federal Ministry of Finance and development finance partners.

6.4 Improving grid integration and market stability

Problem. Grid instability, distribution inefficiency and energy theft reduce the commercial viability of grid connected projects and complicate hybrid models, with high losses and off taker illiquidity deterring investors ([CPI, 2025](#); [Olujobi et al., 2026](#)).

Recommended actions:

- Short term: strengthen coordination between the Transmission Company of Nigeria, distribution companies and developers to improve integration planning and grid impact assessment; and enhance monitoring, reporting and enforcement on technical and non technical losses, including targeted anti theft campaigns and metering programmes.
- Medium term: clarify the regulatory framework governing hybrid grid and off grid systems, including interconnection rules, compensation for stranded assets and procedures for transitioning mini grids when the main grid arrives; and introduce incentives for distributed generation and demand side solutions that reduce grid pressure and improve reliability.
- Long term: support grid modernisation and smart grid investment aligned with renewable energy expansion and climate resilience objectives.

Lead institutions: NERC, the Transmission Company of Nigeria, distribution companies and the Federal Ministry of Power.

6.5 Addressing geographic disparities through state level policy alignment

Problem. Variation in regulatory implementation and institutional capacity across states creates uneven business environments and spatially concentrated investment, a divergence the Electricity Act 2023 may widen ([CPI, 2025](#); [Olujobi et al., 2026](#)).

Recommended actions:

- Short term: develop state level guidance that aligns national renewable energy policy with local administrative practice and clarifies the roles of state energy, planning and investment agencies; and use spatial mapping to identify priority states for targeted technical assistance and pilot regulatory innovation, drawing on the cartography in the Annex.
- Medium term: implement capacity building for sub national institutions involved in renewable energy regulation and investment facilitation, including

training on licensing, public private partnerships and climate compatible planning.

- Long term: encourage convergence of state level procedures with national regulatory standards while preserving space for context specific innovation and learning through state level pilots.

Lead institutions: Federal ministries of Power, Environment, and Industry, Trade and Investment, with state governments, NERC and state level agencies.

6.6 Supporting SME participation and inclusive green entrepreneurship

Problem. Current frameworks and financing instruments favour larger developers, limiting SME participation and local entrepreneurship even though SMEs dominate many market segments, and women, youth and informal workers remain under represented ([Krajcovicova, 2025](#); [Many, 2023](#)).

Recommended actions:

- Short term: create proportionate compliance pathways for small scale projects, for example thresholds for light touch licensing and simplified reporting; and strengthen alignment between SME support programmes such as training, grants and guarantees and renewable energy policy, through joint schemes targeting green SMEs and women led enterprises.
- Medium term: develop financing instruments tailored to small and medium renewable energy enterprises, including working capital and asset finance with appropriate ticket sizes and collateral expectations; and integrate the just transition imperative by linking enterprise support, reskilling and social protection for workers exiting the firewood, charcoal and oil and gas value chains ([Federal Republic of Nigeria, 2025](#)).
- Long term: establish structured innovation ecosystems, such as green incubators and accelerators, that link start ups, research institutions and market opportunities, with deliberate gender and youth focus and a view to capturing the circular economy and clean energy jobs that national strategy projects ([Federal Republic of Nigeria, 2025](#)).

Lead institutions: SMEDAN, Bank of Industry, NIPC and the Federal Ministry of Industry, Trade and Investment, with the Rural Electrification Agency and industry associations.

7. Conclusion

Nigeria's renewable energy transition is supported by an increasingly comprehensive policy and regulatory architecture that reflects strong strategic intent to expand energy access, attract private investment and generate green jobs.

Frameworks such as the Electricity Act 2023, NREEEP and the Nigeria Electrification Project have created important entry points for decentralised development and private participation. The evidence assembled here, however, points to a consistent conclusion: the effectiveness of these frameworks is constrained less by policy design than by how they are implemented within a complex and fragmented governance environment. Regulatory barriers are rooted in coordination failures, procedural inefficiency and institutional capacity gaps rather than in the absence of enabling policies, a diagnosis that recurs across the legal, economic and sectoral literature ([Okhirebhu et al., 2025](#); [Olujobi et al., 2026](#); [CPI, 2025](#)).

Structural challenges in the electricity market, including grid instability, payment risk and weak off taker creditworthiness, continue to shape investor perception and limit scalability, while the cost of capital is inflated by both domestic risk and external rating practice ([CPI, 2025](#); [Olingo, 2026](#)). Spatial variation in state capacity and administrative practice produces highly differentiated investment conditions, reinforcing the need for targeted, state sensitive approaches alongside national reform. Above all, renewable energy is not only an energy sector issue but a broader economic transformation opportunity in which SMEs and local enterprises are decisive for innovation, access and jobs. Realising the employment promise of the transition, projected at around 340,000 green jobs by 2030 and 840,000 by 2060 but so far only modestly realised, will require deliberate attention to SME participation, local content, skills and social protection, so that the move to a low carbon economy is not only environmentally necessary but also equitable and inclusive ([Federal Republic of Nigeria, 2025](#); [Manya, 2023](#)). The priority for reform is therefore to improve the functionality of existing systems: streamlining licensing, strengthening coordination, making incentives accessible and coherent, addressing power sector governance, and embedding spatially informed, inclusion focused strategies into national implementation. If effectively delivered, these reforms can transform Nigeria's renewable energy sector into a more predictable, efficient and investment friendly market, accelerate progress toward universal energy access, and catalyse green jobs across installation, operations, services and manufacturing value chains.

References

This assessment draws on a defined set of verifiable source documents and the primary policy, legal and institutional instruments named within them. References to those instruments (NREEEP 2015, the Climate Change Act 2021, the Electricity Act 2023, the Energy Transition Plan, the Companies and Allied Matters Act 2020, the Nigerian Automotive Industrial Development Plan 2023, the Nigeria Electrification Project, the National Energy Compact and the NERC Regulation for Mini Grids 2016) are cited in the text by their formal titles.

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Annex 1

Cartography of green skills, decentralised renewable energy activity and green jobs (2025 to 2027)

A.1 Purpose and framing

This cartography assesses where and how decentralised renewable energy can generate green jobs across Nigeria between 2025 and 2027, and what skills and institutional partnerships are needed in each state. It combines a simple multi criteria spatial classification, covering decentralised renewable energy activity, training supply and skills gaps, with forward looking job opportunity clusters and tailored priority actions per state. The approach follows standard spatial planning and technical and vocational education and training mapping practice: map demand side signals from technology and investment, overlay supply side capacity from training institutions, and use the intersection to prioritise targeted interventions ([World Bank, 2021](#)). It is consistent with calls for spatially explicit skills planning for the energy transition, given that the sector is projected to require hundreds of thousands of additional green jobs by 2030 ([Federal Republic of Nigeria, 2025](#)).

A.2 Methodological approach

The cartography uses a five column framework for each state: decentralised renewable energy activity, classified as low, medium or high based on current and pipeline projects and market presence; training supply, classified as in state centre, nearby centre, or limited to none, based on the National Power Training Institute of Nigeria, accredited technical and vocational institutions and donor backed hubs; primary skills gaps, mapped to a simplified taxonomy from A to E; green job opportunities for 2025 to 2027; and priority actions with anchor partners. The skills taxonomy is as follows: A, basic solar installation and site practice; B, design and engineering for commercial, industrial and mini grid systems; C, operations, maintenance and asset management; D, last mile sales, solar home system agency and community engagement; and E, project development, commercial and contract skills.

Rather than presenting only a table, the cartography conceptualises Nigeria as four broad opportunity bands, summarised in Table A1. This typology allows planners to see at a glance where to prioritise advanced labs and structured on the job training with engineering, procurement and construction firms, where to roll out short cycle bootcamps, and where to couple skills investment with security and inclusion strategies.

Table A1. Opportunity bands for decentralised renewable energy and green skills

Band	Indicative states	Primary skills gaps and focus
Mature hubs	Lagos, FCT, Kano, Kaduna, Rivers, Oyo, Delta, Edo, Ogun, Plateau, Anambra	High activity, in state or nearby training. Gaps in B, C and E. Advanced design and asset management labs.
Emerging corridors	Abia, Enugu, Imo, Nasarawa, Niger, Kwara, Ondo, Osun, Gombe, Katsina, Bauchi, Benue	Medium activity, nearby training. Gaps in A, C and D. Short cycle bootcamps linked to live sites.
Latent markets	Adamawa, Bayelsa, Borno, Cross River, Ebonyi, Ekiti, Jigawa, Kebbi, Kogi, Sokoto, Taraba, Yobe, Zamfara	Low activity, limited training, large access gaps. Gaps in A, C and D. Bootcamps plus recognition of prior learning.
Special zones	Niger Delta states (Bayelsa, Rivers, Delta, Cross River); conflict affected areas (Borno, Yobe, parts of Plateau)	Couple skills with livelihoods, environmental and security strategies. Hub and spoke plus mobile training.

Note: the underlying state by state classification table is maintained as a separate working dataset.

A.3 State level patterns and implications

Mature hubs combine high decentralised renewable energy activity with in state or nearby training centres, and their gaps lie in design, operations and maintenance, and commercial and project development skills. Green job opportunities concentrate in commercial and industrial system design, mini grid operations and customer management, long term operations and maintenance contracts, and technical sales for corporate and public clients. The appropriate response is advanced design and asset management labs plus structured on the job training with local engineering, procurement and construction firms, moving the workforce from basic installation toward portfolio management and project finance skills. These states are where national green jobs targets will be most visible in formal employment between 2025 and 2027.

Emerging corridor states show medium activity, often linked to Nigeria Electrification Project sites or commercial and industrial pilots, with training available through nearby rather than in state hubs and gaps centred on basic installers, operations and maintenance technicians and last mile sales. Short cycle bootcamps, recognition of prior learning and cohorts linked to live project sites are well suited here, alongside expansion of trainer pools and assessment capacity. Latent states combine low current activity and limited training with some of the largest electrification gaps and highest diesel dependence, which implies substantial latent demand if barriers are addressed. Their near term opportunities lie in basic installation, solar home system agency, public facility retrofits in health and education, and early agricultural energy use for irrigation, milling and storage where security permits. In conflict affected states such as Borno and Yobe, a hub and spoke model anchored in safer localities and supported by mobile training teams is more realistic than reliance on fixed centres.

A.4 Green job potential 2025 to 2027

Employment projections for the transition suggest that meeting national targets could generate around 340,000 green jobs by 2030 and up to 840,000 by 2060, with an early wave in solar and decentralised renewable energy, and the power sector alone projected to account for around 170,000 jobs by 2030 and 420,000 by 2060 ([Federal Republic of Nigeria, 2025](#)). These figures should be read as conditional potentials rather than baseline expectations. Realised employment has been far more modest, with only about 50,000 direct decentralised renewable energy jobs recorded to date, and the gap between projection and outcome reflects jobless growth, an under developed skills base in which roughly 70% of formal roles require skilled qualifications, and a talent pipeline still below requirement ([Manyà, 2023](#); [Federal Republic of Nigeria, 2025](#)). Against this backdrop, the state level mapping suggests that mature hubs could each absorb hundreds of advanced technicians and mid level professionals over the period, emerging corridor states could sustain dozens to low hundreds of installers, agents and technicians each, and latent states, once bootcamps and recognition of prior learning are in place, could generate steady cohorts of basic installers and sales agents.

A.5 Priority cartographic recommendations

Three overarching recommendations follow from the mapping:

- Design a hub and corridor skills strategy. Formally recognise the Lagos, Ogun and Oyo cluster, the FCT, Nasarawa and Niger cluster, the Kano, Kaduna and Katsina cluster and the Rivers, Delta and Edo cluster as green skills hubs with feeder corridors in medium activity states, and align the investments of the Rural Electrification Agency, the National Power Training Institute of Nigeria and accredited technical and vocational institutions accordingly.

- Institutionalise short cycle, project linked bootcamps in low activity states. Use Nigeria Electrification Project and donor pipelines to guarantee live project exposure in states such as Adamawa, Bayelsa, Borno, Jigawa, Sokoto, Taraba, Yobe and Zamfara, linked to national qualifications frameworks.
- Embed state level green jobs targets and monitoring. Integrate simple indicators, such as the number of trained installers and operations and maintenance technicians and the number of decentralised renewable energy jobs per state, into national skills and energy transition monitoring, so that future cartography can track progress and recalibrate interventions ([World Bank, 2021](#); [Federal Republic of Nigeria, 2025](#)).