



**Green Diversification, Just Transition and
Development Financing in Nigeria: “How public
development banks can finance a just transition
beyond fossil fuels”**



1. Introduction

1.1 Background: Climate Risks and Economic Structure of Nigeria

Nigeria, Africa's most populous nation and largest economy, operates on an economic structure that is paradoxically wealthy in natural resources yet burdened by widespread poverty and infrastructural deficits. The country's macroeconomic stability is heavily tethered to the fossil fuel industry. Historically, crude oil and natural gas have accounted for approximately 90% of Nigeria's export earnings and over half of its government revenue (Izunwa et al., 2025; Gençsü et al., 2022). Despite this outsized contribution to national revenue, the fossil fuel sector is highly capital-intensive and contributes minimally to direct domestic employment, while fostering a "resource curse" that has stifled the growth of other productive sectors like manufacturing and agriculture (Izunwa et al., 2025). In line with this, Ms Glory Ogbuegbu, Director, Renewable Energy Technology Training Institute, Lagos, noted that:

“Oil and gas account for roughly 90% of export earnings and over 50% of government revenue. We produce 1.4 to 1.8 million barrels per day but still import most of our refined petrol. That is not an energy economy. That is a rent economy.”

The human cost of this fossil fuel dependency is starkly felt at the community level. Chief Ambassador Mark Nsidu, Primary Ruler of the Ewa village in Khana LGA of Rivers State, described the compounding effect of oil extraction on local livelihoods:

“Oil spillage is not things of story... It brought hardship, it brought poverty, it denied us access to our core farming, it denied us access to our fishing business, which brought darkness to our communities... Fishing has been trampled upon, the water has been polluted.”

Concurrently, Nigeria is ranked among the most vulnerable countries globally to the impacts of climate change (Georgelkoli and Chinery, 2024). The nation faces severe, multidimensional climate risks across its distinct ecological zones: advancing desertification and prolonged droughts in the northern Sahel and Savanna regions, and escalating sea-level rise, coastal erosion, and devastating floods in the southern rainforest and coastal zones (BNRCC, 2011). These climate hazards pose direct threats to the agricultural sector, which, despite being largely undercapitalised and rainfed, remains the backbone of the domestic economy, contributing roughly 25% to the Gross Domestic Product (GDP) and employing up to 70% of the labour force (Igwe and Okwurume, 2025). The convergence of fossil fuel dependency and acute climate vulnerability places Nigeria in a precarious position, demanding an urgent structural and economic transformation.

1.2 Rationale for Green Diversification and Just Transition

The global imperative to decarbonise and limit global warming to 1.5°C above preindustrial levels necessitates a rapid phaseout of fossil fuels, fundamentally threatening Nigeria's traditional economic model. As major global economies transition toward renewable energy, Nigeria faces the imminent risk of declining oil demand and the stranding of its fossil fuel assets, which could trigger a catastrophic shortfall in government revenues (Gençsü et al., 2022). Consequently, green diversification is no longer merely an environmental objective but a critical economic survival strategy.

Transitioning toward climate-compatible sectors offers immense potential for sustainable economic growth. Nigeria boasts vast, largely untapped renewable energy resources, particularly solar, wind, and hydropower, which can close the nation's severe energy access gap that currently leaves over 85 million citizens without reliable electricity (Okojokwudu et al., 2025; Stout et al., 2024). Furthermore, there is significant potential in non-extractivist sectors, including solar and wind energy, which, while requiring some material inputs, are non-extractivist in the direct sense, as well as the domestic manufacturing of renewable energy technologies, the development of green agricultural

products through climate-smart agriculture, and the promotion of green industrial and circular economy products.

However, this structural shift must be anchored in the principles of a "just transition." A just transition requires that the shift away from high-carbon industries does not exacerbate existing inequalities or marginalise vulnerable populations (Power Shift Africa, 2024). It demands deliberate social policies to retrain workers in sunseting fossil fuel sectors, the repurposing of regressive fossil fuel subsidies toward public infrastructure and social safety nets, and ensuring that green industrialisation yields equitable social benefits, increased energy access, and enhanced social justice for local communities historically burdened by fossil fuel extraction (Okojokwudu et al., 2025; Gençsü et al., 2022).

1.3 Importance of Development Finance and Public Development Banks (PDBs)

Achieving green diversification and a just energy transition in Nigeria requires an unprecedented mobilisation of capital. The Nigerian government's Energy Transition Plan (ETP) estimates a funding requirement of \$1.9 trillion by 2060, while the country's Nationally Determined Contribution (NDC) requires approximately \$17.7 billion annually to meet 2030 mitigation and adaptation targets (Stout et al., 2024). Currently, tracked climate finance in Nigeria falls critically short, meeting less than 10% of these estimated needs (Stout et al., 2024).

Given domestic fiscal constraints, Public Development Banks (PDBs), including Multilateral Development Banks (MDBs), such as the African Development Bank (AfDB) and the Development Bank of Nigeria (DBN), are indispensable to bridging this financing gap. PDBs hold a unique mandate to provide concessional finance, technical assistance, and risk mitigation instruments (such as guarantees and blended finance) that are crucial for derisking green projects and crowding in private institutional investors (Afreximbank, 2024). Nevertheless, the role of PDBs in Nigeria's transition remains complex. While they have catalysed vital investments in off-grid solar and climate-resilient agriculture, institutions like the AfDB have also faced criticism for continuing to fund fossil gas

infrastructure under the guise of "transition fuels," highlighting a need for stronger Paris-aligned exclusion policies and procedural justice mechanisms (Power Shift Africa, 2024; Dauda et al., 2025).. Therefore, critically assessing how PDBs anchor green diversification is essential for accelerating Nigeria's sustainable development trajectory.



A Summary Chart highlighting key issues and a Just Transition Imperative

1.4 Scope, Objectives, and Research Questions

This report provides a comprehensive, countrywide analysis of green diversification, just transition frameworks, and the pivotal role of development financing in Nigeria. The primary objectives guiding this research are:

1. To determine how exposed Nigeria's economy is to climate-compatible versus climate-incompatible (sub)sectors (in terms of production, employment, export, finance, and overall GDP rate).
2. To evaluate Nigeria's (future) potential for economic growth in climate-compatible sectors and activities (production potential, employment potential, export/local sales potential, potential for social benefits / increase in social justice). This includes critical

minerals sourcing, but very importantly also other, non-extractivist sectors such as renewable energy production, manufacturing of renewable energy technology, green agricultural products, and green industrial products, as well as SME potential in different domestic green activities (e.g., solar panel installation).

3. To analyse how green diversification is politically anchored nationally and regionally. This involves assessing the extent to which the use of this country-specific potential for green diversification is reflected in or contradicted by relevant state strategies and economic policy, and to what extent this potential is reflected in the regional strategies of relevant regional alliances Nigeria is part of.

4. To assess how green diversification is anchored in PDB activity in Nigeria. This explores the extent to which Nigeria's potential for green diversification is reflected in relevant national strategies and regional programmes of PDBs active in Nigeria. It will investigate the extent to which different PDBs already actively support Nigeria in leveraging its potential for green diversification (investment projects, policy-based finance, technical assistance), or do the opposite (e.g., support fossil fuel development), and identify the main hurdles for PDBs to support green diversification in the country.

1.5 Methodological Overview

To achieve these objectives, this report relies on a robust secondary data analysis and a mixed-methods qualitative design.

Data Sources: The study utilises macroeconomic datasets from the Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS) to assess sectoral exposure and lending trends. Climate finance flows are evaluated using databases from the Climate Policy Initiative (CPI) and tracked international development finance records. Policy alignment is assessed through documentary analysis of Nigeria's national frameworks, including the Energy Transition Plan (ETP), the Climate Change Act (2021), and the Nationally Determined Contributions (NDCs).

Analytical Tools: The study employs Key informant Interviews (KII), thematic and content analysis to interrogate policy coherence across national strategies and PDB investment portfolios. To evaluate the institutional and governance factors influencing the

effectiveness of PDB interventions, the report integrates fuzzyset Qualitative Comparative Analysis (fsQCA) alongside insights gathered from multistakeholder engagements and historical evaluations of donor-led initiatives (Dauda et al., 2025). This approach ensures a nuanced understanding of both the structural bottlenecks and the causal configurations that drive successful green diversification and sustainable development financing in Nigeria.

2. Conceptual and Analytical Framework

This section outlines the theoretical, conceptual, and analytical frameworks that undergird this report. Navigating Nigeria's transition from an oil-dependent economy to a sustainable, low-carbon future requires a robust multidimensional approach. The study defines core concepts, establishes the analytical lenses used to interpret the data, and details the specific macroeconomic and environmental indicators employed to evaluate the progress and potential of green diversification.

2.1 Definitions

Green Diversification

Green diversification refers to the strategic restructuring of an economy away from an overreliance on natural resource extraction, specifically fossil fuels, toward sustainable, low-carbon, and environmentally resilient productive sectors (Omoju, 2024). In the Nigerian context, this entails shifting the economic base from crude oil and natural gas exports towards non-extractivist industries, such as renewable energy production, climate-smart agriculture, green manufacturing, and circular economy practices (Igwe and Okwurume, 2025). It goes beyond mere energy substitution; it is an economic transformation that seeks to foster high-value, sustainable economic activities that generate local employment and reduce vulnerability to global fossil fuel market volatility.

Just Transition

A just transition ensures that the shift toward a low-carbon economy is equitable and inclusive, safeguarding the rights and livelihoods of workers and vulnerable communities. Grounded in energy justice theory, it encompasses three core tenets: distributive justice (fair allocation of the transition's costs and benefits), procedural justice (inclusive and transparent decision-making processes), and recognition justice (acknowledging and addressing historical sociocultural marginalisation) (Sovacool et al., 2016; Loehr et al., 2022). For Nigeria, a just transition means that moving away from fossil fuels must involve retraining fossil fuel dependent workforces (distributive justice), ensuring that affected communities; particularly in the Niger Delta, have a meaningful voice in transition planning and are not sidelined by technocratic decisions (procedural justice), and acknowledging the decades of environmental harm and economic marginalisation suffered by communities in oil producing regions (recognition justice). Concretely, this requires redirecting regressive fossil fuel subsidies into social safety nets and ensuring that the deployment of renewable technologies alleviates, rather than exacerbates, widespread energy poverty (Okojokwudu et al., 2025; Shyu, 2021).

Climate Compatible vs. Climate Incompatible Sectors

Climate-incompatible sectors are those fundamentally misaligned with global decarbonization targets due to their high greenhouse gas (GHG) emissions and environmental degradation. In Nigeria, this primarily constitutes the upstream, midstream, and downstream oil and gas sectors, as well as fossil-fuelled captive power generation (e.g., diesel and petrol backup generators), which carry severe stranded asset risks as global climate action accelerates (Izunwa et al., 2025; Gençsü et al., 2022). Conversely, climate-compatible sectors operate synergistically with climate mitigation and adaptation goals. These include decentralised renewable energy (solar, wind, small hydro), sustainable agroforestry, green transportation (e-mobility), and waste-to-wealth circular economy models, but the distinction extends across sectors: industry, agriculture, fisheries, buildings, transport, and tourism can each contain both climate-compatible and climate-incompatible activities depending on their practices and energy orientation.

These sectors not only minimise emissions but also inherently build socioeconomic resilience against climate shocks (Igwe and Okwurume, 2025; African Development Bank, 2021).

2.2 Analytical Lenses

Structural Transformation

This study utilises structural transformation as a primary analytical lens to evaluate how capital, labour, and technology can be reallocated from low-productivity, highly volatile extractive industries to resilient, high-productivity green sectors. Historically, Nigeria has suffered from the "resource curse", a paradox where fossil fuel wealth has stifled the growth of other productive sectors, leading to macroeconomic instability and high poverty rates (Izunwa et al., 2025). The structural transformation lens assesses how leveraging green industrialisation and renewable energy localisation (e.g., domestic solar panel assembly and transition mineral processing) can decouple economic growth from carbon emissions, acting as a catalyst for sustainable, economy-wide modernisation (Omoju, 2024; Stout et al., 2024).

Political Economy Analysis

Energy transitions are not purely technological or economic phenomena; they are deeply contested political processes. The political economy lens explores how power, inequality, and historical institutional structures dictate the pace and direction of Nigeria's transition (Baker, Newell, and Phillips, 2014). This approach interrogates the entrenched interests of political elites, state-owned enterprises, and multinational corporations that benefit from the fossil fuel status quo, often resisting reforms or capturing green transition agendas for continued rent-seeking, a phenomenon described as *trasformismo* (Newell, 2019).

Furthermore, this lens is critical for understanding the persistent policy gaps and lack of enforcement in Nigeria, demonstrating how donor-led interventions and conditionalities from international finance interact with domestic governance constraints and spatial inequalities (Okojokwudu et al., 2025; Pavanelli et al., 2023).

Climate Finance Frameworks

The transition requires unprecedented capital mobilisation, making climate finance a crucial analytical lens. This framework evaluates the architecture of financial flows, specifically tracking the sources, instruments, and destinations of capital, to identify financing gaps and mismatches between national needs and actual investments (Stout et al., 2024). A central focus is placed on the role of Public Development Banks (PDBs) and Multilateral Development Banks (MDBs). Drawing on mission-oriented finance approaches, this lens assesses how PDBs utilise concessional capital, blended finance, risk mitigation instruments, technical assistance, and policy-based financing to derisk climate-compatible projects, support countries in identifying green diversification pathways, and, where appropriate, crowd in private institutional investment (Soumonni and Ojah, 2022; African Development Bank, 2021). It critically examines whether PDB activities actively anchor green diversification or inadvertently perpetuate carbon lock-in through continued fossil fuel financing, business-as-usual lending, or insufficiently transformative project design.

2.3 Indicators Used

To operationalise the conceptual and analytical frameworks, this report relies on a specific set of measurable indicators to assess the exposure, potential, and financing of Nigeria's green diversification:

GDP Contribution: Used to measure the economic footprint of climate-compatible versus climate-incompatible sectors. It tracks the shift in value-added output from the oil

and gas sector to sustainable agriculture, renewable energy, and green manufacturing, serving as a primary proxy for structural transformation.

Employment: Evaluates the labour intensity and job creation potential of different sectors. This indicator contrasts the minimal direct employment provided by the capital-intensive fossil fuel industry with the massive job-creation potential (both direct and indirect green jobs) of renewable energy deployment and climate-smart agriculture.

Exports: Assesses trade resilience and economic exposure by tracking the ratio of fossil fuel exports to green industrial and agricultural exports. It highlights the urgency of moving away from a mono-export (crude oil) dependency.

Emissions Intensity: Measures the volume of greenhouse gas emissions per unit of economic output. This indicator evaluates the success of decarbonization efforts, assessing whether the economy is successfully decoupling growth from global warming impacts.

Finance Flows: Quantifies the volume and trajectory of capital investments. It tracks the percentage of public and private credit allocated to high-carbon versus green sectors (including green industry and green construction), the proportion of concessional versus market-rate debt, and the balance between adaptation and mitigation financing, ultimately measuring the alignment of financial systems with sustainable development targets (Stout et al., 2024).

3. Nigeria's Economic Exposure to Climate(In)Compatible Activities

3.1 Analytical Approach: Activity Level Classification

To accurately assess Nigeria's economic exposure to climate change and the energy transition, this analysis shifts from a traditional macro sectoral approach to a granular, activity-based classification. Broad sectors often mask conflicting environmental impacts; for instance, the agricultural sector encompasses both highly polluting practices (such as slash-and-burn clearing) and regenerative practices (such as agroforestry). Consequently, an activity-level framework allows for greater analytical precision.

In this context, climate-compatible activities are defined as those that are low-emission, resource-efficient, and inherently climate-resilient, directly supporting global decarbonization and national adaptation goals (Omoju, 2024). Conversely, climate-incompatible activities are characterised by high greenhouse gas (GHG) emissions, environmental degradation, and deep reliance on fossil fuels, carrying a high risk of becoming stranded assets as the global transition accelerates (Gençsü et al., 2022). The methodology for this classification relies on three primary criteria: emissions intensity, land use impact, and the underlying energy source of the activity. It is important to note that the application of this methodology is constrained by two distinct data challenges in Nigeria: first, the lack of robust, localised Measurement, Reporting, and Verification (MRV) systems in the formal economy; and second, the near-absence of reliable emissions tracking in the informal economy, where activity-level data is rarely captured. Together, these gaps often obscure a precise assessment of Nigeria's actual emissions profile (Stout et al., 2024).

3.2 Economy-Wide Overview of Exposure

At an aggregate level, Nigeria's macroeconomic architecture exhibits a dangerous structural dependence on climate-incompatible activities, presenting a stark dichotomy between revenue generation and domestic livelihoods. The national economy is disproportionately anchored to fossil fuel extraction. Crude oil and natural gas consistently account for approximately 90% of export earnings and over 60% of total government revenue (Izunwa et al., 2025). However, this sector operates as an enclave economy; despite its export dominance, it contributes only about 6% to the overall Gross Domestic Product (GDP) and provides less than 0.1% of direct domestic employment (Gençsü et al., 2022). This stark contrast, generating 90% of export revenue while employing barely any of the domestic workforce, reflects a revenue structure that flows predominantly into government budgets, fossil fuel subsidies, and public sector wages rather than into productive employment or industrial development.

Conversely, climate-compatible and highly vulnerable activities, predominantly within agriculture and informal trade, drive the bulk of domestic employment and GDP.

Agriculture alone contributes approximately 24% to 25% of the GDP and employs up to 70% of the labour force (Amaefule et al., 2023). A respondent from Niger Delta University's Federal Ministry of Finance study captured the structural paradox succinctly: "Nigeria earns its revenue from oil, but its real economic growth comes from agriculture and services. The key challenge is to align revenue sources with these productive sectors for long-term stability." This bifurcation introduces a complex transition risk versus opportunity spectrum. The heavy reliance on oil exports exposes Nigeria to severe transition risks, including global oil price volatility and the stranding of hydrocarbon assets. Simultaneously, the undercapitalization of agriculture and green manufacturing presents a vast opportunity spectrum, where targeted capital reallocation could drive green industrialisation, enhance food security, and stimulate widespread job creation.

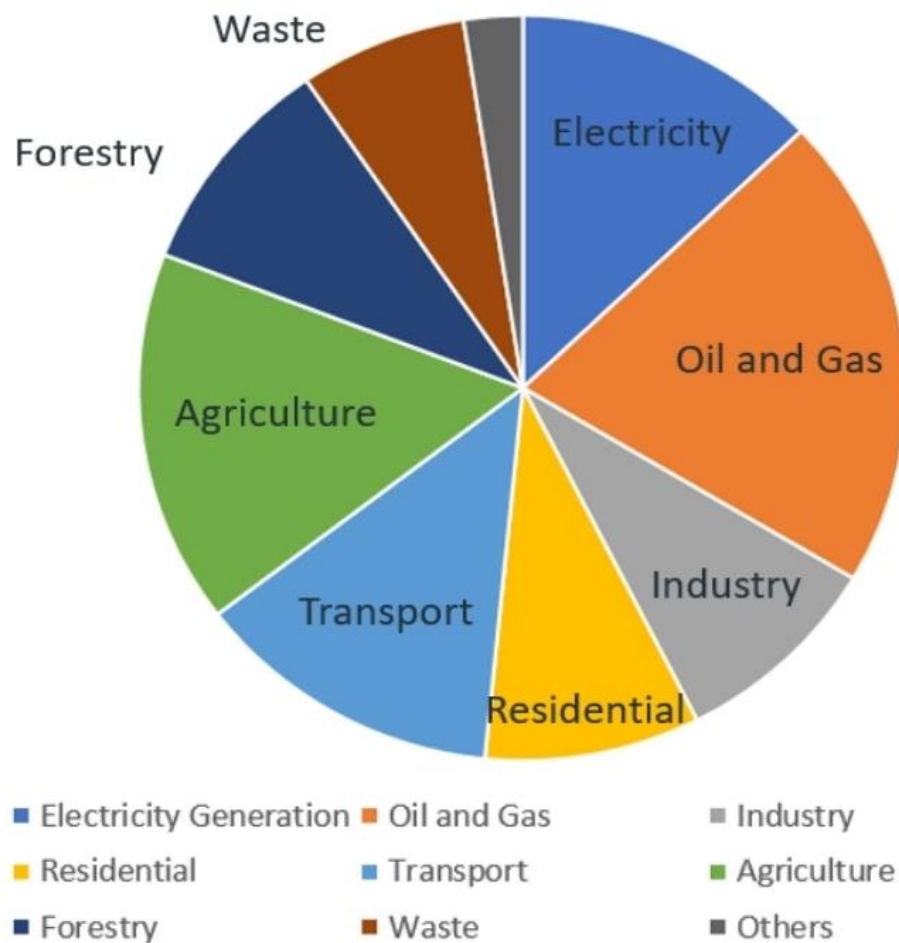


Figure 1. Major GHG Emitting Sources in the Economy of Nigeria. Source: 2050 Long-Term Vision for Nigeria (LTV2050), Federal Ministry of Environment. (Department of Climate Change, 2021).

As illustrated in Figure 1, Nigeria's greenhouse gas emissions are not distributed evenly but are heavily concentrated in specific segments such as electricity generation, oil and gas, transport, and agriculture. Understanding this aggregate distribution provides the necessary foundation for a more granular examination of the economy. To unpack the specific drivers behind these emissions and differentiate between sustainable and degrading practices, the following section (3.3) presents a disaggregated analysis of climate-incompatible versus climate-compatible activities within each major sector, beginning with the energy sector.

3.3 Disaggregated Sectoral Analysis by Activity Type

3.3.1 Energy Sector

Climate-Incompatible Activities

The Nigerian energy landscape is overwhelmingly dominated by climate-incompatible activities, primarily upstream oil extraction, fossil fuel power generation, and routine gas flaring. Nigeria ranks among the top global gas flares, a practice that wastes energy, severely harms the health of Niger Delta communities, and costs the national economy an estimated USD 2.5 billion annually (Stout et al., 2024; ERA and Friends of the Earth International, 2019). The Stakeholder Development Network representative noted below.

“...Gas flaring and methane leaks have precipitated a rise in fatal conditions, including cancer, blindness, and stillbirths. In some communities, residents cannot sleep at night due to the constant daylight effect caused by flared gas...”

This harm was further emphasized by a Traditional Ruler HRC Mene. Amb. Magnus Edoor PR VII from Khana LGA of Rivers State

“It brought hardship, it brought poverty, it denied us access to our core farming... I saw that zinc, a roofing sheet during the gas flaring era within the Yola oilfield... couldn't last for a year when it corroded.”

Furthermore, the national grid's unreliability has led to the proliferation of fossil-fuelled backup generators, deepening the carbon intensity of basic electricity access.

Climate-Compatible Activities:

Compatible activities include decentralised solar photovoltaic (PV) deployment, small hydropower, and off-grid renewable energy systems. While these remain at an early-stage relative to total energy supply, with solar contributing less than 1% of grid power, a growing ecosystem of mini-grid developers, off-grid solar distributors, and hybrid system integrators is expanding access, particularly in underserved rural areas. The establishment of a 100MW solar PV module assembly facility in Lagos further signals emerging local supply chain capacity. Many traditional energy practices, particularly in rural communities, also retain a degree of climate compatibility, though they remain constrained by efficiency and scale limitations. As of the end of 2024, Nigeria's cumulative installed solar capacity stood at 385.7 MW; with 63.5 MW added in 2024 alone, making Nigeria Africa's fourth-largest solar installer that year (AFSIA, 2025). By 2025, cumulative capacity surged to approximately 1.19 GW, driven almost entirely by off-grid and decentralised systems, which accounted for around 96% of installations (Ecofin Agency, 2026). Battery storage also expanded rapidly, growing from approximately 10 MWh to 40.6 MWh between 2024 and 2025, a 305% increase (Ecofin Agency, 2026). Under the Nigeria Electrification Project, approximately 125 mini grids have been developed, and over one million solar home systems have been sold, providing electricity access to roughly 5 million Nigerians and creating over 5,000 private sector renewable energy jobs (World Bank, 2025).

Exposure: The sector's exposure is characterised by the extreme dominance of fossil fuels in export revenues and grid generation (where natural gas provides about 80% of grid electricity). Renewables currently account for a minimal share of the energy mix, with solar providing less than 1% of grid power, highlighting a massive structural lock-in

despite Nigeria's abundant solar irradiation (Department of Climate Change, 2021). By 2024, solar contributed 1.6% to Nigeria's total energy mix; still negligible relative to its potential, though the pace of off-grid deployment is accelerating rapidly (AFSIA, 2025). This exposure is compounded by a further paradox: despite being a major crude oil producer, Nigeria continues to import the majority of its refined petroleum products, creating a dependence on foreign refineries and exposing the country to additional price and supply volatility.

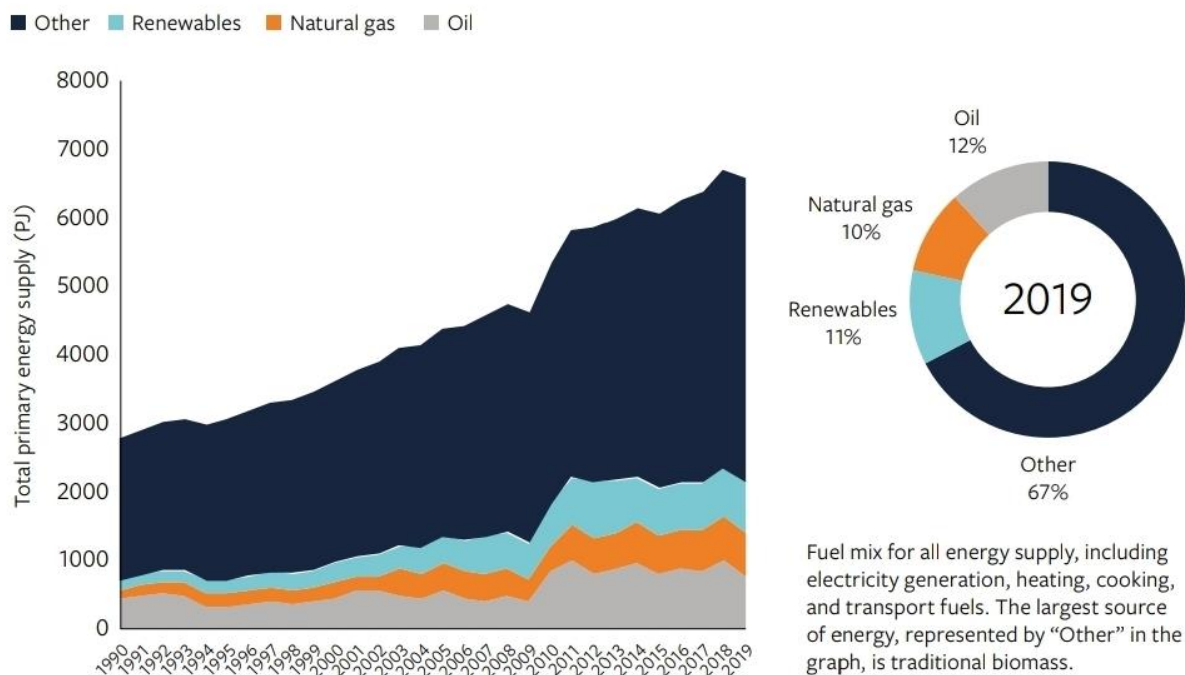


Figure 2: Nigeria's energy mix (1990–2019, petrajoules (PJ)). Source: Climate Transparency (2020) using Enerdata, adapted from Gençsü et al. (2022)

Figure 2 vividly captures the historical and persistent dominance of fossil fuels and traditional biomass in Nigeria's energy mix, highlighting that modern renewable energy remains remarkably marginal. This stark visualisation confirms the extreme structural

lock-in within the energy sector. Furthermore, because the heavy reliance on traditional biomass directly drives massive deforestation and land degradation, this energy imbalance deeply compounds the environmental vulnerabilities in our next focus area: Agriculture, Forestry, and Land Use (AFOLU), which is explored in Section 3.3.2.

3.3.2 Agriculture, Forestry and Land Use (AFOLU)

Climate-Incompatible Activities: While agriculture is vital for livelihoods, many prevailing activities are climate-incompatible. Deforestation-driven expansion is a major threat, with Nigeria losing an estimated 350,000 to 400,000 hectares of forest annually to agricultural clearing and fuelwood gathering (Federal Ministry of Environment, 2006). Additionally, traditional slash-and-burn practices and methane-intensive livestock systems are major emission sources. Enteric fermentation from livestock, particularly cattle, accounts for roughly 74% of the methane produced by the agricultural sector, significantly elevating the country's GHG footprint (Adeyemi and Akinfala, 2021).

Climate-Compatible Activities: Opportunities lie in scaling Climate-Smart Agriculture (CSA), agroforestry, organic farming, and sustainable, solar-powered irrigation. It is worth noting that many traditional Nigerian agricultural practices, including intercropping, fallowing, and small-scale agroforestry, retain a degree of inherent climate compatibility, providing a foundation on which to build. Additional compatible activities include the production of organic fertiliser from agricultural waste, biogas systems, and the greening of export crops such as cocoa through deforestation-free certification.

Exposure: Economic exposure in AFOLU is uniquely high because national employment is heavily concentrated here, and a large share of prevailing activities, including slash-and-burn clearing, rainfed monocultures, and methane-intensive livestock systems, remain climate-incompatible, leaving millions of livelihoods vulnerable to both climate shocks and the transition. A large share of the population remains locked into low-productivity, rainfed, and highly climate-vulnerable practices. Consequently, climate

variability directly threatens the livelihoods of millions, leading to food insecurity and poverty traps (Amaefule et al., 2023). Nigeria's agricultural sector also remains a net food importer: only 57% of the 6.7 million metric tons of rice consumed annually is produced locally (FAO, 2024), and the country's food and beverage import bill rose 30% in a single year, reaching NGN 1.59 trillion in Q1 2024 alone (NBS, 2024). By 2024, food inflation had surpassed 34%, and an estimated 26.5 million Nigerians faced food shortages (FAO, 2024), underlining the urgency of making agriculture more productive and climate resilient. The exposure of the agricultural sector is further compounded by severe environmental degradation from fossil fuel extraction, deeply threatening food security and livelihoods. In the Niger Delta, oil spills, averaging 240,000 barrels annually, have led to the bioaccumulation of toxic hydrocarbons in local crops and water sources, directly causing a devastating 60% drop in household food security (Igwe & Okwurume, 2025). Furthermore, as noted by BudgIT Foundation

“...these environmental impacts alongside rising sea temperatures have altered marine ecosystems, forcing local fishermen into deeper waters to catch essential species like periwinkles and crayfish..”

which significantly increases their operational hazards and costs. This climate disruption extends beyond the fisheries. Chief Ambassador Nsidu described the breakdown of traditional agricultural calendars in his community: “We cannot know when it is wet and dry season. Our season cannot be regulated because of climate change. We cannot plan according to the season.”

3.3.3 Industry and Manufacturing

Climate-Incompatible Activities: The industrial sector's emissions are driven by high-emission industries such as cement production and manufacturing processes that are heavily dependent on fossil fuels. Because the national grid cannot meet industrial

demand, manufacturers rely heavily on self-generated power from diesel engines, resulting in high carbon intensity per unit of output (Eleri, Onuvae, and Ugwu, 2013).

Climate-Compatible Activities: The transition requires a shift toward energy-efficient production processes, the adoption of circular economy models (such as waste-to-wealth recycling), and the localisation of green manufacturing. A prime example of compatible activity is the recent establishment of a 100MW solar PV module assembly factory in Lagos, which represents a shift toward domestic cleantech production (Stout et al., 2024).

Exposure: Nigeria possesses a low but growing industrial base. The current exposure to climate-incompatible activities is high due to the embedded energy costs and carbon intensity of production, rendering Nigerian-manufactured goods vulnerable to future international carbon border adjustments. Furthermore, this carbon intensity limits Nigeria's ability to participate in and benefit from the rapidly growing global market for green industrial goods, where demand for low-emission products is accelerating.

3.3.4 Transport Sector

Climate-Incompatible Activities: The transport sector is the highest-emitting sector in Nigeria in terms of energy-related CO₂ emissions, accounting for approximately 60% of the country's total energy-related CO₂ output (Eyinade, 2025). This is driven by road transport, which accounts for 96% of all internal movements and consumes 77% of the nation's Premium Motor Spirit (PMS). The sector is locked into an ageing, highly inefficient fleet of Internal Combustion Engine (ICE) vehicles reliant on petrol and diesel (Eyinade, 2025).

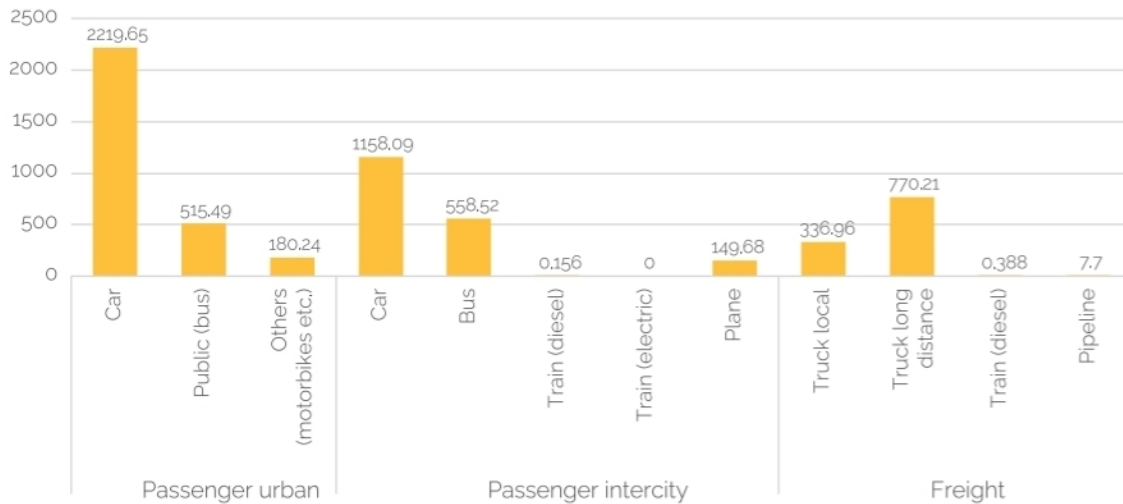


Figure 3: Distribution of Fossil Fuel Consumption Across Transport Modes in Nigeria.
Source: Energy Commission of Nigeria, Model for the Analysis of Energy Demand (MEAD) 2010, adapted from Akujor et al. (2022)

The data in Figure 3 demonstrates that passenger transport consumes the vast majority, approximately 77%, of fossil fuels utilised in Nigeria's transport sector, while more energy-efficient modes like rail and water account for less than a fraction of a per cent. This disproportionate consumption underscores the severe carbon intensity of individual mobility and the urgent need for electrified mass transit. Just as private vehicles lock the transport sector into a high-emission trajectory, a similar reliance on decentralised fossil fuel combustion (via diesel and petrol generators) dictates the operations of Nigeria's services and informal economy, which is analysed in Section 3.3.5.

Climate-Compatible Activities: Compatible activities include the deployment of electric mass transit systems, such as the fully electric Lagos Blue Line Rail, the electrification of public transport fleets (ebuses), and the transition of two and three-wheelers (ekeke). Electrified individual mobility solutions such as cargo bikes and passenger tricycles also offer near-term potential, particularly in urban last-mile logistics. It should be noted that electric rail, while a key decarbonization pathway, is typically treated as a distinct mode rather than part of the EV category.

Exposure: The transport sector is almost entirely climate-incompatible in its current form, with electric and rail modes accounting for a negligible fraction of total transport activity. The sector's climate-incompatibility ratio is estimated at approximately 99:1. Rapid urbanisation and a growing population are exponentially increasing the emissions footprint of the sector. Without a deliberate shift to mass transit and electromobility, the sector remains highly exposed to fuel price volatility (including oil and gas price shocks), escalating urban air pollution, and growing fiscal costs from fuel import dependence.

3.3.5 Services and Informal Economy

Climate-Incompatible Activities: The lifeblood of Nigeria's massive informal economy and services sector is the petrol and diesel backup generator. Over 40% of Nigerian households and small businesses utilise these generators, spending an estimated USD 14 billion annually on fuel and maintenance, effectively locking the informal economy into a high-emission trajectory (Okojokwudu et al., 2025; Eyinade, 2025).

Climate-Compatible Activities: The sector shows immense potential for low-carbon digital services; including fintech platforms, telecommunications, and ecommerce, and for the growth of green Small and Medium Enterprises (SMEs), particularly those involved in the distribution, installation, and maintenance of decentralized solar panels and battery storage via Pay-As-You-Go (PAYG) financing models, including those facilitated by local fintech providers (Stout et al., 2024).

Exposure: The informal sector is highly exposed to the operational costs of fossil fuels. The removal of fuel subsidies has acutely impacted this sector, demonstrating the mixed socioeconomic impacts of maintaining reliance on climate-incompatible energy sources.

3.4 Financial System Exposure

The exposure of Nigeria's financial system reveals a severe misalignment between current capital allocation and national climate goals. Commercial lending is structurally biased toward climate-incompatible sectors. Data from 2015 to 2018 indicates that the oil and gas sector consistently received the highest proportion of credit from Deposit Money Banks (DMBs), securing over N56 trillion in 2018 alone, driven by historically high rates

of financial return (Lagos Business School, 2019). Conversely, highly vital but perceived "high-risk" climate-compatible sectors like agriculture received a negligible fraction of formal credit, averaging just over 3% during the same period (Lagos Business School, 2019).

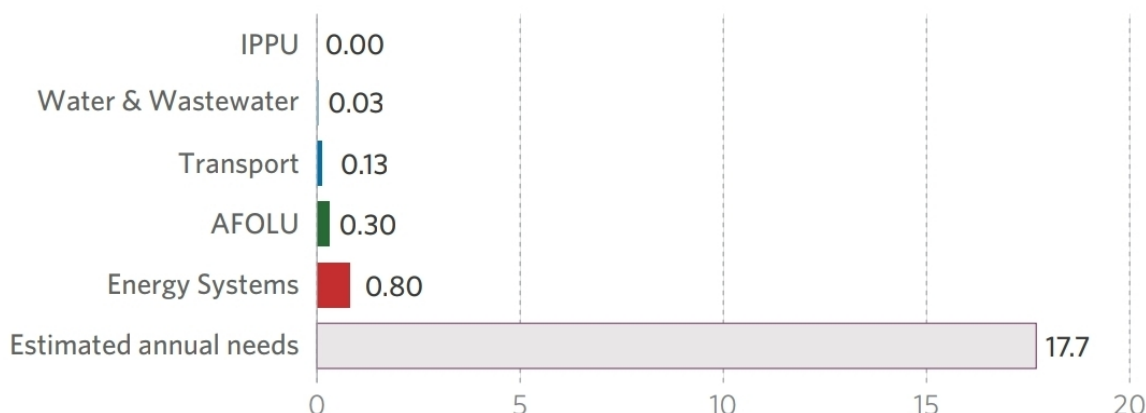


Figure 4: Tracked climate finance, fossil fuel subsidies, and climate-induced loss and damage in Nigeria (2019/2020), USD billion. Source: Climate Policy Initiative (CPI) analysis; UNDP (2023); ODI (2022); DMO (2021, 2022), published in Stout et al. (2024). Note: "Energy Systems," "AFOLU," "Transport" and other bars represent actual tracked climate finance flows to each sector; "Estimated annual needs" reflects Nigeria's NDC-required annual investment; fossil fuel subsidies and loss and damage figures are shown for contextual comparison.

Figure 4 places Nigeria's climate finance into a broader macroeconomic context, revealing a severe misalignment in capital allocation. The USD 2.5 billion tracked for climate finance is entirely dwarfed by the USD 9.3 billion the government spent on fossil fuel subsidies in the same year, as well as the USD 6.7 billion in loss and damages suffered from climate-induced flooding. This stark contrast illustrates how public funds are currently perpetuating carbon lock-in and systemic vulnerability rather than financing green diversification.

Multilateral Development Banks (MDBs) and national Public Development Banks (PDBs) present a mixed exposure. This credibility gap at the institutional level is echoed in broader academic assessments of Nigeria's governance environment. Prof. Heoma Worlu Nsirim of the University of Port Harcourt offered a sobering evaluation:

"My assessment is below average, as there is no sincerity in the actions of the major players. Nigerians do not adopt enduring policies because the spirit of the good of the majority is crucified on the altar of selfishness."

Such structural governance deficits directly constrain the effectiveness of even well-capitalised development finance institutions. While institutions like the African Development Bank (AfDB) and the World Bank are channelling significant funds into climate-compatible activities, such as the Nigeria Electrification Project for rural solar grids and the ACREsAL project for dryland management, including the Mission 300 Project, they concurrently maintain exposure to climate-incompatible activities. For instance, PDBs continue to utilise financial intermediaries to fund fossil gas expansion under the guise of "transition fuels," thereby perpetuating carbon lock-in and contradicting the urgency of the Paris Agreement (Power Shift Africa, 2024; Stout et al., 2024).

3.5 Key Insights: Structural Lock-in vs Transition Potential

The overarching insight from this activity-level assessment is that Nigeria's economy exhibits a profound degree of structural lock-in to climate-incompatible activities. The nation's export revenues, transport networks, industrial power generation, and formal financial lending are deeply entrenched in the fossil fuel value chain. This extreme exposure places Nigeria at high risk of systemic economic shocks from stranded assets as global markets decarbonise and oil demand inevitably declines. This was captured in an interview with a representative of the Stakeholder Development Network working in the Niger Delta,

“Decades of oil spills and gas flaring have destroyed ecosystems, prompting serious concerns about future livelihoods, health crises, social unrest, and long-term economic collapse.”

However, alongside this lock-in, Nigeria demonstrates distinct pockets of diversification readiness and immense transition potential. The rapid uptake of decentralised off-grid solar by SMEs, the integration of electric mass transit in urban centres like Lagos, and the push toward climate-smart agriculture highlight a latent capacity for green economic transformation. The ultimate success of Nigeria's transition rests on the strategic and rapid reallocation of both public and private capital, shifting investments away from sunseting, high-emission activities and directing them toward climate-compatible subsectors that generate genuine economic benefit and guarantee long-term environmental resilience.

4. Green Growth Potential and Just Transition Opportunities

4.1 Analytical Framework: Path Dependency and Comparative Advantage

A successful transition to a low-carbon economy in Nigeria cannot occur in a vacuum; rather, it must be anchored in the principle of path-dependent diversification. This framework posits that Nigeria's future green sectors should be built incrementally upon its existing assets, leveraging the country's historical economic base, human capital, and natural endowments to forge new, sustainable value chains (Department of Climate Change, 2021). Instead of attempting to construct entirely alien industries from scratch, Nigeria's comparative advantage lies in transforming its current economic mainstays into climate-compatible engines of growth.

To systematically assess this potential, this analysis relies on four core evaluation criteria:

- (a) existing base — the baseline of current economic activities and infrastructure.
- (b) green opportunity — the specific climate-compatible activities that can be developed from that base, drawing on natural resource endowments such as solar irradiation and critical minerals.
- (c) macroeconomic potential — assessed through GDP contribution, employment creation, export potential, and domestic value creation; and
- (d) just transition dimension — the extent to which the sector fosters social justice, regional equity, and inclusive development (Omoju, 2024; Igwe and Okwurume, 2025; CPI, 2024).

Furthermore, to quantify and evaluate the success of these prospective sectors, we employ a specific set of macroeconomic indicators throughout this section. These include:

Production/GDP contribution potential: The capacity of the sector to substitute declining fossil fuel revenues and drive sustainable economic growth.

Employment creation potential: The sector's ability to absorb the rapidly growing youth demographic and transition workers from sunseting industries.

Export potential: The capacity to generate foreign exchange. **Domestic value creation:** The potential for local sales, import substitution, and the development of localised value chains.

Social benefits: The extent to which the sector fosters social justice, regional equity, and inclusive development (Igwe and Okwurume, 2025; CPI, 2024).

Anchored within the Nigerian context, this framework ensures that green diversification is viewed not merely as an environmental compliance exercise but as a strategic pathway for structural economic transformation.

4.2 Cross-Sector Overview of Green Diversification Potential

Navigating Nigeria's green growth trajectory requires a high-level mapping of the economy to differentiate between immediate, highly scalable opportunities and complex, long-term industrial shifts. This can be conceptualised through a "low-hanging fruit vs long-term bets" framework.

High-potential, low-hanging fruit sectors include decentralised solar energy systems and climate-smart agriculture (CSA) value chains. These sectors leverage Nigeria's most abundant natural resources, sunlight and arable land, and intersect directly with the daily livelihoods of the majority of the population. Because the technological barriers to entry are relatively low and consumer demand is immediate (e.g., replacing expensive diesel generators or improving crop yields), these sectors offer high short-term scalability and rapid socioeconomic returns (CPI, 2024; Department of Climate Change, 2021).

Conversely, emerging sectors, such as the Electric Vehicle (EV) ecosystem and the domestic manufacturing of green technologies, represent strategic "long-term bets." While they possess massive potential to drive structural transformation and mitigate the transport sector's massive emissions footprint, they require complex infrastructure (e.g., reliable centralised power, charging networks) and patient, large-scale capital investments (SLOCAT, 2024).

Briefly comparing the two, short-term scalable sectors like off-grid solar provide immediate buffers against energy poverty and macroeconomic shocks, creating localised employment. Longterm structural transformations, such as critical mineral processing and green manufacturing, are essential for decoupling the broader industrial economy from fossil fuels, ultimately positioning Nigeria competitively within the African Continental Free Trade Area (AfCFTA) and the global low-carbon supply chain.

4.3 Sectoral Opportunities Based on Existing Capabilities

4.3.1 Renewable Energy and Decentralised Power Systems

(a) **Existing base:** Nigeria possesses an immense, largely untapped resource endowment in the form of high solar irradiation, which is estimated to be 27 times greater than its fossil fuel capacity (Department of Climate Change, 2021). Concurrently, the country has a massive off-grid and underserved population, with over 85 million citizens

lacking reliable access to electricity. This deficit has birthed a growing, albeit fragmented, mini-grid and off-grid solar ecosystem driven by entrepreneurial demand.

(b) **Green opportunity:** The primary opportunity lies in the rapid deployment of decentralised solar photovoltaic (PV) systems (both utility-scale and distributed off-grid models) and the localisation of the renewable energy supply chain, encompassing local assembly of solar components, battery and energy storage assembly, and engineering and system integration services (including system planning and optimisation). Initiatives are already emerging, such as the establishment of a 100MW solar PV module assembly factory in Lagos (CPI, 2024). Building specialised professional capacity in these areas represents an additional near-term priority.

(c) **Macroeconomic potential:** Scaling this sector holds profound GDP contribution potential via the expansion of energy access, which directly enhances commercial productivity. It offers massive employment creation potential in the distribution, installation, and maintenance of solar systems: the decentralised renewable energy (DRE) sector already employed approximately 50,000 people in Nigeria by 2022, nearly matching oil and gas sector employment of 65,000, and was projected to exceed 76,000 jobs by 2023 (Power for All, 2022). If Nigeria's solar potential were scaled to just 1% of suitable land, IRENA estimates total generation capacity could reach 210 GW (IRENA, 2024). Crucially, it provides immense domestic value creation by reducing the economy's crippling import dependence on diesel and petrol, which currently drains an estimated USD 14 billion annually from households and businesses (Omoju, 2024).

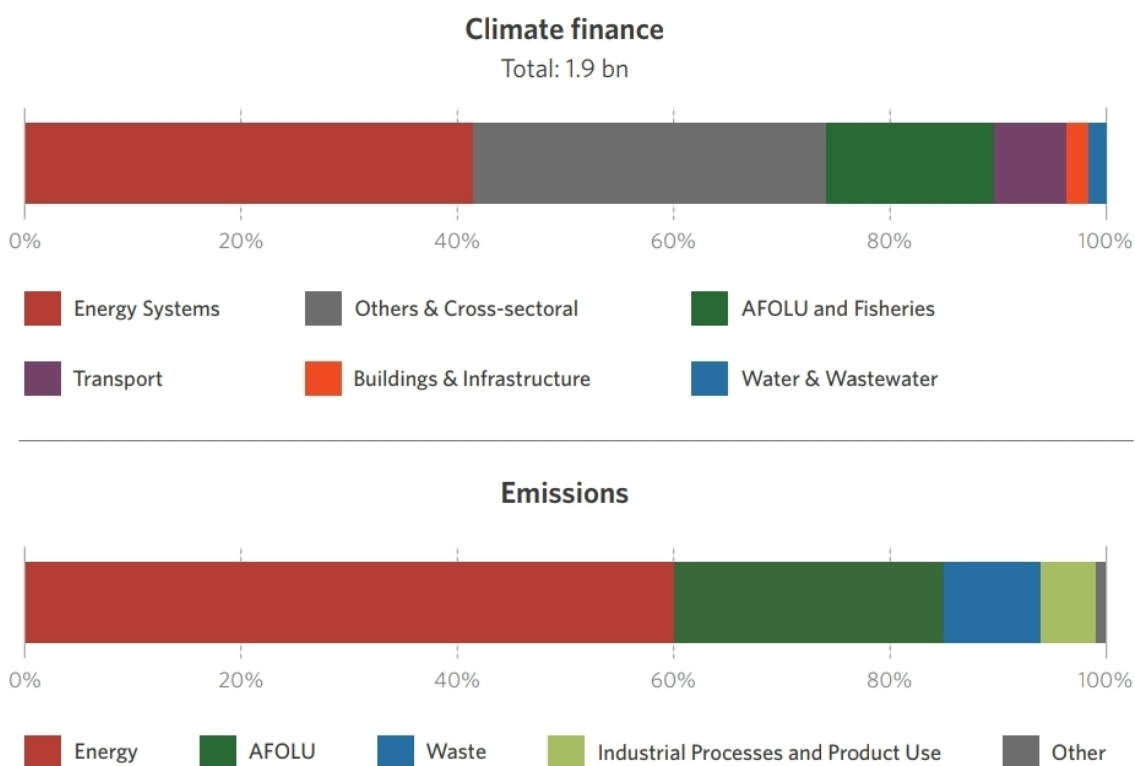


Figure 5: Climate finance and emissions by sector. Source: Landscape of Climate Finance in Nigeria 2024, Climate Policy Initiative (CPI). (Stout et al, 2024)

Figure 5 reveals that out of all mitigation finance directed to the energy sector, decentralised solar photovoltaic projects capture the overwhelming majority of investment, securing USD 565 million. This empirical evidence robustly supports the classification of solar energy as Nigeria's primary 'low-hanging fruit' for green diversification, demonstrating investment interest. However, it is important to note that the concentration of public climate finance in a sector does not by itself demonstrate commercial viability; in some cases, it may reflect the opposite, as with many adaptation-focused investments that require concessional support precisely because market returns are insufficient.

(d) **Just transition dimension:** Decentralised renewables deliver direct social benefits by enabling rural electrification, thereby bridging the urban-rural divide. For Green SMEs, reliable solar power translates to immediate productivity gains, ensuring that the transition simultaneously tackles energy poverty and fosters social inclusion. The demand for this shift is being articulated directly by affected communities. Chief Ambassador Nsidu of Khana LGA called explicitly for clean energy as an alternative:

“We call on all relevant agencies, the government, the NGOs, and all well-meaning individuals to come to the aid of our people... We think about clean energy, such as solar light and other things that will benefit our communities. There is no power supply in our community. That, again, will also improve the entrepreneurship of our people.”

4.3.2 Agriculture and Agro-Processing (Climate-Smart Value Chains)

Existing base: Agriculture remains the backbone of the Nigerian economy, employing up to 70% of the labour force and contributing approximately 24% to 25% of the GDP (Igwe and Okwurume, 2025). The country has deeply established crop value chains and a vast expanse of arable land.

Green opportunity: As explicitly distinguished from the climate-incompatible, unsustainable practices identified in Section 3 (such as deforestation-driven expansion and slash-and-burn clearing), the green opportunity lies in transitioning this massive workforce toward Climate-Smart Agriculture (CSA), sustainable agroforestry, organic farming, regenerative livestock systems, and solar-powered irrigation. There is also a significant opportunity in greening Nigeria’s key export crops; for example, developing deforestation-free cocoa certification, as well as in circular agricultural practices, organic fertiliser production from agricultural waste, and community biogas systems. Furthermore, there is vast potential in green agro-processing and value addition, ensuring raw agricultural products are processed locally using renewable energy.

Macroeconomic potential: By adopting CSA, Nigeria can achieve significantly increased yields, thereby boosting export earnings and reducing reliance on food imports,

a particularly urgent priority given that Nigeria's food and beverage import bill reached NGN 1.9 trillion in 2022, a 121.7% increase from 2018 (CBN, 2024). Nigeria contributes approximately 14% of Africa's agricultural GDP, making it one of the continent's top three agricultural producers (Oyaniran and Omomia, 2018), yet it remains a net food importer in key staples, signalling significant scope for green agro-processing investment. The development of sustainable agro-processing facilities creates robust job opportunities across the entire value chain, from resilient farming to green packaging and logistics.

Just transition dimension: Given the sheer volume of citizens reliant on farming, making agriculture climate-resilient is the most direct route to poverty reduction and national food security. It protects the livelihoods of the most vulnerable rural populations from climate-induced weather shocks, firmly embedding distributive justice into the economic transition.

4.3.3 Green Industrialisation and Manufacturing

Existing base: Nigeria has a nascent but growing manufacturing sector, anchored by established industrial clusters in states like Lagos, Ogun, and Kano. However, this sector is currently heavily carbon-intensive and plagued by an unreliable national grid, forcing reliance on captive fossil fuel power.

Opportunities: The transition offers a pathway to upgrade Nigeria's industrial clusters through the localisation of key segments of the renewable energy value chain, including solar PV assembling, battery storage assembly, lithium processing, and EV assembly, as well as the adoption of energy-efficient industrial processes and circular economy models such as steel recycling, cement recycling, and waste-to-wealth manufacturing. It bears noting that no country typically covers the entire value chain for any product; Nigeria's strategic objective should be to identify and finance those branches of green manufacturing where it has a genuine comparative advantage. Programmes like the Africa Renewable Energy Manufacturing Initiative (Africa REMI) are already beginning to

support domestic cleantech manufacturers in Nigeria (CPI, 2024). The Director of RETTI noted the following with a caveat;

“We imported over 1,700 MW of Chinese panels in 2024 alone... We assemble panels; we do not manufacture cells. Every cell is imported. Employment generation: strong but unrealised.”

These concerns extend beyond the assembly line. Dr Emmanuel Ojile raised a pointed warning about the governance of Nigeria’s upstream mineral supply chains that feed green manufacturing:

“Critical minerals exploitation is hidden from the public view but well exploited and exported through cartel-based channels. They have zero consideration for environmental protection and management; the minerals are not processed within Nigeria, and thus lose value chain addition. Governance and sustainability structures are therefore zilch.”

This emphasises the urgent need to formalise and regulate Nigeria’s green manufacturing inputs alongside scaling its production capacity.

Macroeconomic potential: Green manufacturing provides a dual macroeconomic benefit: massive import substitution (retaining foreign exchange currently spent on importing solar tech from Asia) and immense export potential under the African Continental Free Trade Area (AfCFTA). As global carbon border adjustment mechanisms (like the EU's CBAM) become stricter, greening Nigeria's industrial output will be essential for maintaining competitiveness; but it also presents a proactive opportunity: if Nigerian green manufactured goods are demonstrably lower emission than those of competitors, this can create market differentiation and new export revenues (Omoju, 2024).

Social benefits: This sector promises the creation of high-quality, skilled jobs (engineering, technical manufacturing), facilitating industrial upgrading and transitioning the urban workforce away from precarious informal labour into formal green employment.

4.3.4 Transport Electrification and EV Ecosystem

Existing base: Nigeria's transport sector is characterised by massive, rapidly growing urban transport demand, heavily reliant on highly polluting petrol and diesel vehicles. It features deeply entrenched, expansive informal transport networks, particularly two and three-wheelers (locally known as keke). Nigeria also has an existing, though limited, railway network, a critical asset for future electrified rail expansion. As of recent assessments, approximately 28 out of 36 states have intra- or interstate public transport services, providing a baseline infrastructure on which electric rail and bus rapid transit systems could be developed. As of early 2025, an estimated 15,000 to 20,000 EVs were on Nigerian roads, representing roughly 0.5–1% of the total vehicle fleet, up from approximately 5,000 five years earlier (Climate Scorecard, 2025). The government has pledged 100% zero-emission sales for all new cars and vans by 2040 (ZEV Declaration, 2024), and the 2025 Green Mobility Bill introduces VAT waivers and mandates charging infrastructure at fuel stations.

Opportunities: Transitioning this sector involves the rollout of an Electric Vehicle (EV) ecosystem, encompassing the local assembly and maintenance of electric two and three-wheelers and buses, the deployment of widespread solar-powered charging infrastructure, and the development of battery-swapping services. Separately, the electrification of rail (which is distinct from the EV category) represents a major decarbonization pathway for intercity and freight transport. Explicit examples of this emerging opportunity include the fully electric Lagos Blue Line Rail and the partnership between LAMATA and Oando to deploy electric mass transit buses across Lagos (SLOCAT, 2024). Furthermore, piloting electric keke in cities like Kano highlights the potential to electrify the informal transport sector (CPI, 2024). India's rapid scale-up of electric two-wheelers offers a relevant comparator for Nigeria's trajectory. Local manufacturing is also gaining momentum: in September 2024, Innoson Vehicle

Manufacturing introduced the “IVM Fox,” Nigeria’s first locally produced electric car, while SAGLEV’s Imota plant is assembling approximately 2,600 EV units annually, with planned expansion to 10,000 units to meet 2030 local content requirements (Ecofin Agency, 2025; EV24Africa, 2026). The Federal Executive Council also approved NGN 58 billion for 200 electric buses in December 2025 (Climedg Hub, 2026).

Macroeconomic potential: The EV ecosystem represents a completely new industrial subsector, offering significant GDP contributions. It will drive localised job creation in automotive engineering, fleet maintenance, and infrastructure development. Additionally, it fosters local value chains through battery swapping services and localised charging networks. Nigeria’s renewable energy market (including EV-compatible infrastructure) is projected to grow from 3.13 GW in 2024 to 5.01 GW by 2029, a compound annual growth rate of 9.88% (Powerelec Nigeria, 2025).

Social benefits: Electrifying mass transit yields profound social benefits, most notably the drastic reduction of severe urban air pollution and respiratory diseases. Over time, EVs lower the aggregate transport costs for citizens, mitigating the severe economic sting of recent fossil fuel subsidy removals.

4.3.5 Green SMEs and Informal Sector Activities

Existing base: The informal economy in Nigeria is vast, agile, and underpinned by a highly resilient entrepreneurial ecosystem. Currently, this sector operates almost entirely on petrol generators and inefficient resource use.

Opportunities: The informal sector can be rapidly retooled to drive domestic green activities. Opportunities abound for Green SMEs to operate as solar installation and maintenance businesses, facilitated by Pay-As-You-Go (PAYG) consumer financing models provided by local fintech platforms. Additionally, there is massive potential in recycling and circular economy services, for example, businesses that collect and process plastic waste into construction materials, e-waste recovery ventures that reclaim metals from discarded electronics, and steel or cement recycling operations that serve local manufacturers. These circular economy activities represent some of the most accessible low-hanging fruit for the informal sector, requiring relatively low capital and building on existing waste-handling networks (Igwe and Okwurume, 2025).

Macroeconomic potential: Because SMEs are highly labour-intensive, greening this sector offers exceptionally high employment elasticity. Circular economy and decentralised energy businesses create localised economic multipliers, keeping capital circulating within communities rather than exiting the country to purchase imported fossil fuels.

Social benefits: Empowering Green SMEs directly fosters inclusive growth and youth employment. It democratises the energy transition, ensuring that the economic benefits of decarbonization are felt at the grassroots level rather than being monopolised by large corporations.

4.3.6 Critical Minerals and Resource-Based Green Value Chains

Existing base: Nigeria possesses significant, newly mapped deposits of critical transition minerals, including commercial quantities of lithium across at least 13 states (particularly Nasarawa, Kaduna, Kogi, and Cross River), as well as cobalt, copper, rare earth elements, and columbite tantalite (Omoju, 2024; SLOCAT, 2024). Nigeria's Minister of Solid Minerals Development has estimated the country's total unexplored critical mineral deposits at over USD 700 billion (Alake, 2023). Nigeria's lithium ore grades [with lithium oxide concentrations ranging from 1% to 13%; exceed global exploration thresholds and position the country as a potentially high-quality supplier (African Leadership Magazine, 2024). The global lithium market was valued at USD 37.8 billion in 2022 and is projected to grow at a CAGR of 22.1% through 2030 (Global News Wire, 2023), with basic domestic processing estimated to double the export value of raw lithium (Semafor, 2024).

Opportunities: The transition presents a strategic opportunity to integrate into the upstream global clean energy supply chain through the responsible sourcing of these minerals. Crucially, the opportunity relies on local processing and value addition (e.g., establishing lithium processing units for battery manufacturing) to avoid the historical "raw export trap" that has plagued Africa's extractive industries (CPI, 2024). The Nigerian government has moved to enforce this: President Tinubu directed that no mining licences be issued to companies that do not establish in-country processing plants, and policy now mandates at least 30% local processing of mined ores before export, rising to 35% by

2030 (Alake, 2024). A first lithium processing plant was inaugurated in Kangimi, Kaduna State, in May 2024, with a stated capacity of 1,500 metric tons of lithium concentrate per day (Climate Home, 2025). However, early implementation challenges have underscored that processing mandates alone are insufficient without accompanying governance, community engagement, and infrastructure support (Climate Home, 2025).

Macroeconomic potential: If properly managed, critical minerals can provide the export revenues necessary to replace declining oil and gas receipts. Furthermore, local processing creates deep industrial linkages, supplying the raw materials needed for domestic EV and solar battery assembly.

Social risks and justice considerations: This sector carries profound justice considerations. Without stringent regulatory oversight, critical mineral mining risks repeating the "resource curse" of the Niger Delta, leading to severe environmental degradation, water pollution, and community displacement (Guidebook on Nigeria Energy Transition, 2024). SDN raises a key issue when it comes to oversight below

“Government roles in Rivers and Bayelsa focus on regulatory oversight... but face significant implementation gaps due to oil dependence and weak enforcement”

Therefore, any expansion of critical mineral extraction must ensure that host communities receive equitable revenue shares, that environmental and social safeguards are firmly in place, and that local added value, through processing and manufacturing, is prioritised over raw export. The Director, RETTI, added that

“‘Just transition’ is used as language, not as a design principle... Any transition that does not begin with Delta communities, Delta jobs, and Delta justice will fail politically.”

4.4 Comparative Assessment: Where Nigeria Has the Strongest Advantage

To prioritise policy and capital deployment, these green sectors must be ranked based on their immediate feasibility, scalability, and broader economic impact.

Immediate priorities for Nigeria undoubtedly lie in decentralised solar energy and climate-smart agriculture value chains. These sectors possess the strongest comparative advantage because they require less centralised, capital-intensive infrastructure to launch and exhibit massive, immediate scalability. The regulatory frameworks for off-grid solar are already relatively mature, and the technology directly solves the immediate pain points of energy access and food insecurity. Consequently, they offer the highest short-term employment and GDP impact for the lowest barrier to entry.

Conversely, strategic future sectors such as the EV ecosystem, critical mineral processing, and large-scale green manufacturing must be viewed as medium- to long-term bets. While their ultimate economic impact, particularly regarding import substitution and export revenue, is theoretically massive, their feasibility is currently constrained. They require the resolution of severe infrastructure deficits, sophisticated technological transfer, and billions in patient capital. Therefore, while policy frameworks for EVs and critical minerals must be established today, the immediate transition dividends will primarily be reaped from solar and agriculture.

Table 1. Sectoral Prioritisation for Nigeria’s Green Structural Transition

Sector	Transition Category	Scalability Potential	Key Constraints / Risks
Decentralised Solar Energy	Immediate priority (lowhanging fruit)	High	Financing gaps, grid integration challenges, import dependence
ClimateSmart Agriculture	Immediate priority (lowhanging fruit)	High	Limited extension services, low technological adoption, climate

			vulnerability
Green SMEs / Circular Economy	Immediate priority (lowhanging fruit)	High	Access to finance, weak regulatory incentives, limited formalisation
Waste to Energy and Recycling Industries	Immediate priority (lowhanging fruit)	Medium–High	Infrastructure deficits, weak waste collection systems
Green Industrialisation & Manufacturing	Strategic longterm bet	Medium	Energy infrastructure deficits, high capital intensity, industrial skills gap
Transport Electrification / EV Ecosystem	Strategic longterm bet	Medium	Grid reliability, charging infrastructure, import costs
Critical Minerals Processing	Strategic longterm bet	Medium	Governance risks, environmental safeguards, processing capacity
Green Hydrogen / Advanced CleanTech Manufacturing	Strategic longterm bet	Low–Medium	Technology costs, infrastructure requirements, limited domestic capability
LargeScale Carbon Capture and Storage (CCS)	Weak alignment / limited nearterm feasibility	Low	Extremely high costs, technological complexity, weak institutional readiness
Fully Domestic Solar Panel Manufacturing	Weak alignment / limited nearterm feasibility	Low	Global competition, supply chain dependence, high capital requirements

4.5 Constraints to Realising Green Growth Potential

Despite the vast potential outlined above, realizing Nigeria's green growth is currently hindered by severe structural bottlenecks.

Infrastructure gaps

The unreliability of the national grid, dilapidated transport networks, and a lack of EV charging infrastructure fundamentally constrain the scale-up of green manufacturing and e-mobility (CPI, 2024).

Financing constraints

There is a staggering disconnect between transition ambitions and available capital. The Energy Transition Plan requires an estimated USD 1.9 trillion by 2060 yet tracked climate finance in Nigeria recently stood at a mere USD 2.5 billion annually, stifled by a lack of bankable projects and high capital costs (CPI, 2024).

These bottlenecks are corroborated by primary data. As the interview from the Federal Ministry of Finance study confirmed the multilayered nature of the barriers:

"Green sectors offer strong potential for growth, job creation, and export diversification, but are constrained by funding, skills gaps, and weak policy alignment. Major constraints include high investment costs, limited fiscal space, inconsistent policies, and weak institutional capacity."

This convergence of structural and institutional barriers makes the case for a coordinated, well-resourced policy response rather than piecemeal interventions.

Skills mismatch

Nigeria currently lacks the technical workforce required for a green economy. There is an acute shortage of specialised engineers, solar technicians, and EV mechanics, threatening to limit local value creation.

Policy inconsistency

Progress is continuously undermined by fragmented regulatory environments and policy reversals, such as the simultaneous promotion of renewable energy targets alongside ongoing investments in fossil fuel infrastructure and the fluctuating status of fuel subsidies (Omoju, 2024).

4.6 Key Insights: Linking Green Diversification to Just Transition

The overarching insight from this sectoral analysis is that green economic diversification does not automatically equate to a just transition; the two must be deliberately linked through targeted policy. Not all green sectors are equally inclusive. While off-grid solar and sustainable agriculture inherently decentralise wealth and empower rural

communities, the extraction of critical minerals and large-scale green manufacturing run the risk of consolidating wealth among elites and displacing local populations if governance is weak.

To achieve a truly just transition, the Nigerian government must prioritise the deliberate transition of workers from fossil fuel sectors, investing heavily in skills development and reskilling programmes to ensure oil and gas workers are absorbed into emerging green industries (Omoju, 2024). Equally important is the creation of local green value chains, ensuring that the economic benefits of green manufacturing, renewable energy deployment, and agro processing are captured domestically rather than flowing to foreign suppliers. Furthermore, regional balance is paramount; policymakers must ensure that as the economic centre of gravity shifts away from the oil-producing Niger Delta toward solar-rich northern regions or mineral-rich central states, marginalised regions are not left economically stranded. The gap between policy aspiration and implementation reality was captured by Dr. Ojile, whose professional experience spanning over 300 technical reports across Nigeria and West Africa informs a measured view:

"Nigeria's readiness in terms of production capacity, employment generation and export potential is ambivalent. In one breath, the policy framework seems to suggest a 'let us go' mentality, but on the other hand, headlong implementation of the policies attendant to such growth is hamstrung with incompatibilities."

Closing this ambivalence gap, between stated commitment and operational follow-through, is arguably the central governance challenge of Nigeria's green transition. Ultimately, unlocking Nigeria's green growth potential requires inclusive policy design that protects vulnerable communities, democratizes energy access, and ensures the economic windfalls of decarbonisation are equitably distributed.

5. Political and Policy Anchoring of Green Diversification

5.1 Analytical Approach: Policy Alignment Framework

To effectively translate Nigeria's green growth potential (identified in Section 5) into tangible economic transformation, these opportunities must be deeply anchored within the country's political and policy frameworks. This section assesses the degree of alignment between Nigeria's identified climate-compatible sectors, such as decentralised solar energy, climate-smart agriculture, and electric vehicle (EV) ecosystems, and existing national and regional policies.

The evaluation framework utilizes three core criteria: **Explicit support**, where policy documents provide clear, direct backing and implementation pathways for green sectors; **Implicit support**, where policies indirectly align with green diversification through broader developmental goals (e.g., job creation or rural electrification); and **Contradictions**, where active policies, legislation, or fiscal mechanisms actively support climate-incompatible activities (such as fossil fuel extraction), thereby undermining green growth. Anchored within Nigeria's complex political economy, this framework reveals whether the nation's regulatory environment serves as a catalyst or a bottleneck for sustainable structural transformation.

5.2 National Climate and Transition Strategies

Nigeria has developed a robust architecture of high-level climate strategies designed to signal its commitment to the global energy transition.

Nationally Determined Contributions (NDCs):

Nigeria's updated 2021 NDC sets an unconditional target to reduce greenhouse gas (GHG) emissions by 20% below business-as-usual by 2030, rising to 47% conditional on international financial and technical support (Federal Ministry of Environment, 2021). The NDC explicitly prioritises key green sectors, targeting the deployment of 13GW of off-grid solar, the introduction of 100,000 additional buses powered by Compressed Natural Gas

(CNG) by 2030 (NLC, 2025) and the promotion of climate-smart agriculture (Federal Government of Nigeria, 2021).

Energy Transition Plan (ETP) 2021:

The ETP provides a detailed, albeit ambitious, pathway to achieve net-zero emissions by 2060. It explicitly supports the green potential identified in Section 5, targeting universal energy access by 2030, expanding utility-scale solar to 197GW by 2050, and achieving 60% EV penetration in the passenger vehicle mix by 2050 (Energy Transition Plan, 2022).

Long-term Low Emission Development Strategy (LTLEDS 2060):

The LTLEDS expands the transition vision beyond energy, offering long-term decarbonization strategies for agriculture, industry, and waste management to achieve sustainable economic growth (Department of Climate Change, 2021).

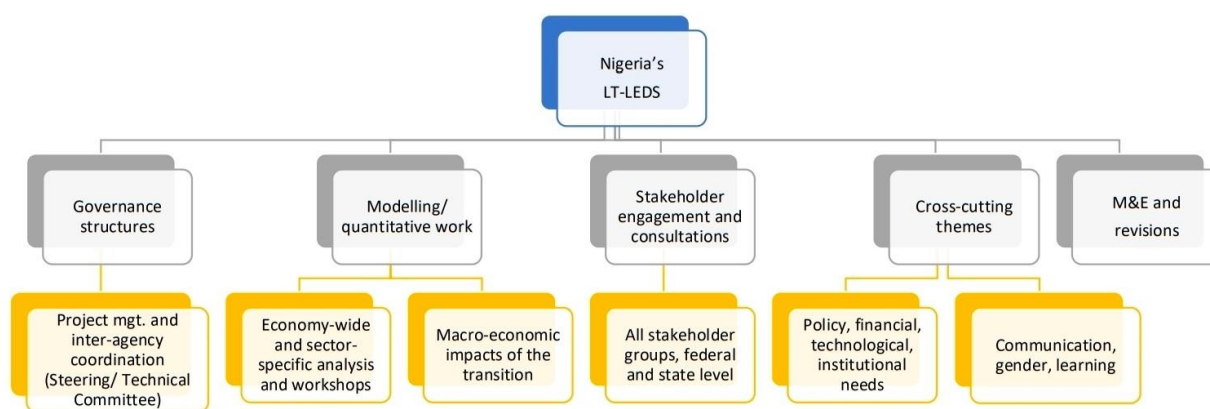


Figure 6: Proposed pathway for Elaborating Nigeria's Full Blown Long-Term Strategy (Department of Climate Change, 2021:34)

Figure 6 outlines the complex structural governance and interagency coordination required to operationalise Nigeria's Long-Term Low Emission Development Strategy (LTLEDS). While this pathway presents a robust theoretical framework for macroeconomic modelling and stakeholder engagement, its ultimate success relies

heavily on how well these high-level ambitions are translated into concrete mandates. The next section (5.3) examines whether this vision is adequately reflected in the day-to-day sectoral development policies governing agriculture, industry, and transport.

Analysis of Gaps and Overreliance on Gas:

While these strategies provide explicit support for green sectors, they suffer from a severe gap between ambition and execution. The ETP requires an estimated USD 1.9 trillion up to 2060, yet the plan lacks a detailed implementation roadmap or pipeline of bankable projects to secure this capital (Georgelkoli and Chinery, 2024; Stout et al., 2024). Furthermore, a major point of contention is the strategies' overreliance on natural gas as a "transition fuel." The ETP heavily incorporates gas for power generation and clean cooking through to 2030 (Omoju, 2024). While Nigeria's domestic gas reserves make outright asset stranding less likely than in import-dependent economies, continued investment in gas infrastructure carries significant risks: persistent negative health and safety impacts on communities near gas facilities; high long-term infrastructure maintenance costs; uneven geographic access to gas networks; and the risk of delaying the buildout of renewable energy infrastructure despite Nigeria's formidable solar and wind potential, ultimately prolonging rather than bridging the energy transition.

5.3 Sectoral Development Policies: Agriculture, Industry, and Transport

For high-level climate strategies to succeed, they must be operationalised through sectoral development policies. However, a review of these frameworks reveals varying degrees of alignment with green diversification potential.

Agriculture:

The National Agricultural Resilience Framework (NARF 2014) and the Agriculture Promotion Policy recognise the vulnerability of the sector to climate shocks. There is growing implicit and explicit policy support for climate-smart agriculture (CSA) to replace conventional expansion methods that drive deforestation. However, implementation is weak, and the sector remains dominated by rainfed, low-input practices. The alignment exists in policy, but significant capital and technical extension services are required to

shift the massive agricultural workforce toward sustainable, green value chains (Department of Climate Change, 2021).

Industry:

The Nigeria Industrial Revolution Plan (NIRP 2014) aims to fast-track manufacturing to create jobs and reduce import dependence. However, the policy implicitly relies on natural gas and diesel to power this industrial renaissance, given the grid's unreliability (Department of Climate Change, 2021). There is currently a gap in explicit support for green industrialisation. While initiatives like the Africa Renewable Energy Manufacturing Initiative (Africa REMI) aim to localise solar and battery tech, national industrial policy has yet to formally mandate or heavily incentivise the domestic manufacturing of renewable energy technologies over conventional heavy industries.

Transport:

The draft National Transport Policy (2010) is significantly outdated; while it acknowledges environmental soundness, it lacks actionable climate-smart strategies (Eyinade, 2025). There is also an absence of a dedicated policy on rail electrification, despite Nigeria's existing rail network offering a viable decarbonization pathway. Conversely, emerging subnational initiatives, such as the Lagos E-Mobility Project and the rollout of electric mass transit buses by LAMATA, provide strong explicit support for electrification. Furthermore, the ongoing review of the Nigerian Automotive Industry Development Plan (NAIDP) presents a critical opportunity to mandate assembly plants for EVs, aligning transport policy directly with the NDC targets for zero-emission vehicles (Eyinade, 2025).

5.4 Policy Coherence and Contradictions

Despite the presence of progressive climate strategies, Nigeria's governance framework is plagued by severe policy incoherence and contradictions that undermine green diversification.

The most glaring tension lies between renewable energy ambitions and the continued financial support for fossil fuels. While the government promotes off-grid solar and EV adoption, it concurrently spends billions subsidising fossil fuels. For instance, in 2022, the government spent an estimated USD 9.3 billion on fossil fuel subsidies, dwarfing the USD

2.5 billion tracked for total climate finance (Stout et al., 2024). Although the petrol subsidy was formally removed in 2023, frequent policy reversals and proposed multitrillion-naira stabilisation interventions continue to distort the market, making it difficult for clean alternatives to compete commercially (Eyinade, 2025).

Additionally, the Petroleum Industry Act (PIA) 2021, while introducing minor decarbonization compliance metrics, is fundamentally designed to attract investment to expand crude oil and fossil gas production, and the government continues to spend significantly on fossil fuel exploration and new infrastructure, compounding the contradiction (Opeyemi, Makanjuola, & Imiera, 2026; Nwuke, 2021). This creates direct incoherence across ministries: the Ministry of Environment pledges emission reductions under the Paris Agreement, while the Ministry of Petroleum Resources actively pursues expanded hydrocarbon extraction and other priorities unrelated to the climate agenda. A respondent from Niger Delta University's Ministry of Finance study summarised this contradiction: "Nigeria has strong policy frameworks but weak implementation. Fiscal pressures and oil dependence continue to limit progress." For investors and Public Development Banks (PDBs), these contradictions create a highly volatile regulatory environment, increasing investment risk and deterring the long-term capital required for green infrastructure (Georgelkoli and Chinery, 2024).

5.5 Regional Policy Alignment and Opportunities

Green diversification in Nigeria cannot be achieved in isolation; it must be anchored within regional trade and integration frameworks.

African Continental Free Trade Area (AfCFTA):

The AfCFTA provides a transformative framework to enable green industrialisation and trade. By establishing a liberalised continental market, the AfCFTA allows Nigeria to scale its nascent green manufacturing sectors, such as solar panel assembly and EV production, beyond its domestic borders to serve the broader African market. However,

realising this requires integrating green initiatives into Nigeria's national AfCFTA implementation strategy and utilising the agreement to eliminate tariffs on Environmental Goods (EGs) and Environmentally Preferable Products (EPPs) (Montfaucon & Majune, 2024). A critical and currently underexplored question is whether the AfCFTA framework, or ECOWAS, can coordinate national green production niches across member states, enabling a regional division of labour rather than all countries competing in the same green markets. Nigeria's competitive position relative to other AfCFTA members in key green sectors warrants further analysis.

Economic Community of West African States (ECOWAS):

ECOWAS provides strong regional policy alignment. The ECOWAS Regional Climate Strategy and the updated ECOWAS Energy Policy explicitly promote low-carbon trajectories, regional value chains, and an optimal energy mix based on renewables (ECOWAS, 2022). Furthermore, frameworks like the ECOWAS Green Hydrogen Policy signal a regional readiness to participate in advanced green tech markets.

Currently, Nigeria is positioned to leverage these platforms, but effective utilisation requires harmonising domestic green manufacturing standards with regional frameworks, a step not yet fully taken, to ensure Nigerian eco-products are competitive and certifiably compliant across borders.

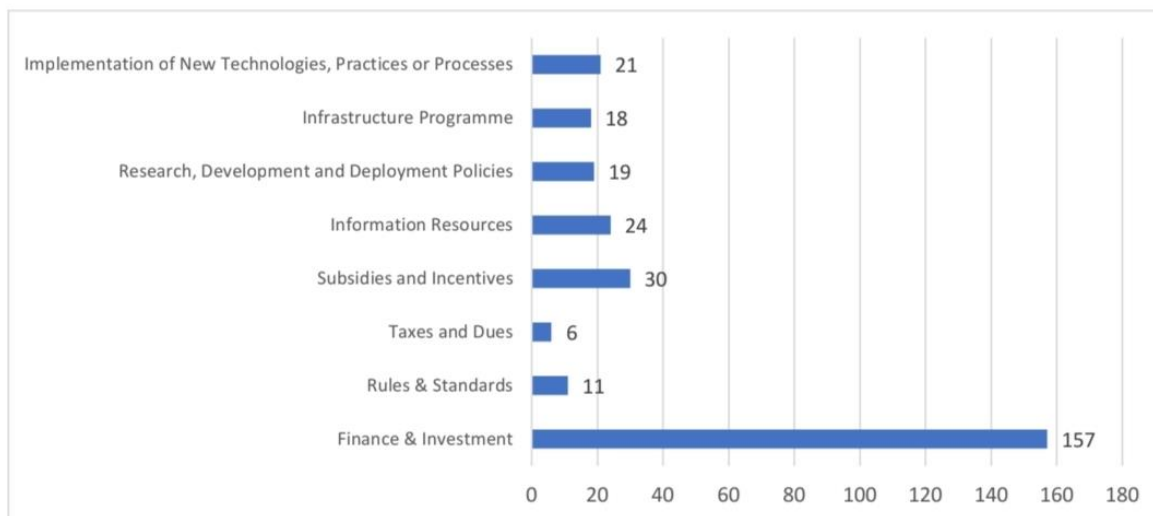


Figure 7: Types of mitigation actions envisaged in ECOWAS Member States' revised NDCs. Source: (ECOWAS, 2022:86)

Figure 7 demonstrates the wide variety of mitigation actions, ranging from taxes and subsidies to infrastructure programmes and research deployment, prioritised across the regional bloc. By aligning its domestic policies with these regionally envisaged actions, Nigeria can better leverage cross-border value chains and scale its green manufacturing under the AfCFTA. However, fully capitalising on these regional alignments is frequently obstructed by domestic hurdles, bringing us to the entrenched political economy constraints discussed in Section 5.6.

5.6 Political Economy Constraints

The transition toward climate-compatible sectors is fundamentally constrained by Nigeria's entrenched political economy.

Oil Dependence and Fiscal Reliance: The Nigerian state is fiscally tethered to fossil fuels, which account for over 80% of foreign exchange earnings and the majority of government revenue (Igwe and Okwurume, 2025). This heavy reliance creates a "resource curse" dynamic, where political survival is tied to the continuous extraction and export of oil, making structural shifts toward green sectors politically unpalatable in the

short term. Thereby negating the just transition principle, as Prof Heoma of the University of Port Harcourt added

“Principles of a Just Transition are reflected in the parochial nature of the leaders... mediocrity is upheld rather than meritocracy.”

Dr Ojile provided important context on how this fiscal entrenchment translates into persistent regional instability:

“The Niger Delta contains vast reserves of oil and gas... Despite these abundant natural resources, the region is marked by poverty, underdevelopment, environmental degradation, and insecurity. Historical tensions and a proliferation of armed groups contribute to the changing conflict and security dynamics in the region.”

Beyond the national macroeconomic level, this fiscal fragility is acutely felt at the subnational level. Oil-producing states depend heavily on Federal Account Allocation Committee (FAAC) transfers, which are themselves funded largely by oil revenues. When global oil markets deteriorate and federal oil revenues decline, FAAC transfers fall correspondingly, leaving states like Bayelsa (which depends on these transfers for over 90% of its total revenue) and Akwa Ibom and Delta (approximately 80%) (BudgIT Foundation, 2026) without the fiscal resources to maintain public services. Paradoxically, these are the same communities most exposed to the negative externalities of oil extraction, yet they remain the most financially dependent on its continuation. This vicious cycle illustrates how deeply entrenched fossil fuel dependence is at all levels of governance, and why the transition must be accompanied by alternative fiscal mechanisms for oil-producing states.

Stakeholder Resistance:

The transition faces fierce resistance from powerful vested interests. Multinational oil companies, domestic fuel importers, politically influential labour unions (such as NUPENG and PENGASSAN), and the political class and government officials whose patronage networks benefit from fossil fuel revenues all act as powerful pressure groups opposing rapid decarbonization (Omoju, 2024).

The consequences of this political economy extend directly to the prospects for a just transition. Prof. Iheoma was unambiguous about what the current political culture means for equitable outcomes:

"There would be no Just Transition principles as exclusion, marginalisation, oppression, intimidation and denial are the actual way. No political will; as individual interest supersedes national interest."

This assessment points to the need for externally enforced accountability mechanisms, including conditionalities from PDBs and civil society monitoring, to counterbalance the tendencies of a political class that has historically captured resource revenues at the expense of the broader population.

Institutional Fragmentation:

Climate governance is scattered across multiple Ministries, Departments, and Agencies (MDAs) with overlapping mandates and competing interests. This institutional fragmentation leads to territorial disputes, delayed decision-making, and an inability to implement cohesive green policies effectively (Okojokwudu et al., 2025).

5.7 Key Insights: Degree of Policy Alignment with Green Diversification Potential

In summary, the political and policy anchoring of green diversification in Nigeria presents a highly fractured landscape.

Strong alignment exists at the macroeconomic planning level; national strategies like the NDC, ETP, and LTLEDS explicitly recognise the necessity of the transition and provide high-level targets for scalable green sectors, particularly renewable energy and climate-smart agriculture. Furthermore, regional frameworks like AfCFTA and ECOWAS policies provide a robust external architecture to support green trade and industrialisation.

However, severe gaps persist in translating these high-level ambitions into actionable sectoral policies. Industrial and transport policies remain largely tethered to fossil-fuel-dependent models, and the necessary financial frameworks required to derisk green investments are critically underdeveloped.

Ultimately, profound contradictions undermine progress. The state's continued pursuit of expanded oil and gas extraction under the PIA, combined with the persistent fiscal drain of fossil fuel subsidies, actively conflicts with the nation's decarbonization commitments. Overcoming these political economy constraints and harmonising policies across all levels of government is essential if Nigeria is to leverage its green diversification potential into a just and sustainable economic transition.

6. Public Development Banks and Green Diversification in Nigeria

6.1 Analytical Lens: From Projects to Strategy

Evaluating the role of Public Development Banks (PDBs) in Nigeria's energy transition requires an analytical shift from merely counting isolated green projects to assessing whether these institutions integrate green diversification as a systemic, economy-wide objective. Given the massive financial requirements of the transition, estimated at USD 1.9 trillion up to 2060 (Stout et al., 2024), PDBs are indispensable for derisking investments and crowding in private capital. However, their effectiveness must be scrutinised through a multidimensional lens.

This section evaluates PDBs based on three assessment dimensions: **strategic alignment** (the extent to which long-term country strategies prioritise structural green transformation over isolated mitigation projects); **operational practice** (the actual flow of financing, tracking instruments and allocations); and **consistency** (the tension between financing climate-compatible green growth versus continued support for climate-incompatible fossil fuels). Anchored in the context of Nigeria's complex political economy, this lens reveals whether PDBs are genuinely catalysing a just transition or merely operating at the margins while reinforcing the fossil fuel status quo (Dauda, Okon, and Ogbeche, 2025).

6.2 Mapping the PDB Landscape in Nigeria

The landscape of public development finance in Nigeria is shaped by a mix of national, regional, and international institutions. This analysis focuses strictly on public development finance, excluding private commercial banks.

At the national level, the key institutions driving development finance include the Bank of Industry (BOI) and the Development Bank of Nigeria (DBN). The BOI focuses heavily on industrial growth and has recently partnered with agencies like FSD Africa to develop decarbonization pathways and expand its climate finance capabilities (Udo Udoma & Belo Osagie, 2026). The DBN operates primarily as a wholesale development finance institution providing funding to Micro, Small, and Medium-sized Enterprises (MSMEs). Crucially, the DBN recently achieved accreditation by the Green Climate Fund (GCF), positioning it to directly channel international climate finance into Nigeria's green economy (Nigeria Climate Innovation Centre, 2026).

At the regional and international levels, the African Development Bank (AfDB) and the World Bank Group remain the dominant actors. These institutions possess the capital scale and technical capacity to drive large-scale infrastructure projects, policy-based lending, and sovereign-backed transition initiatives. Together, these national and international PDBs form the primary architecture for financing Nigeria's structural transformation.

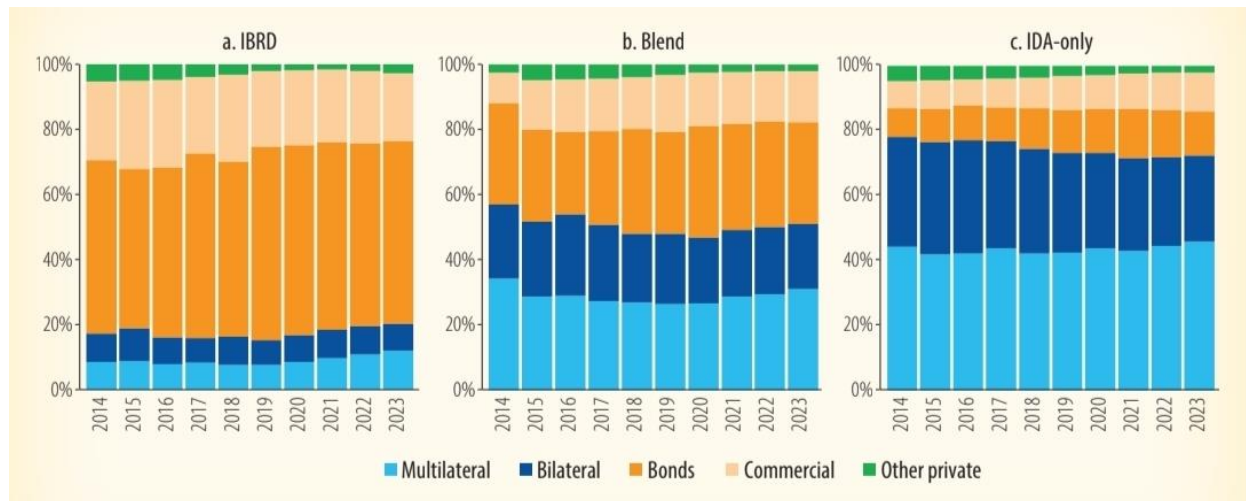


Figure 8: Composition of External Public and Publicly Guaranteed Debt in Sub-Saharan Africa, by Type of Creditor, 2014–23. Source: (World Bank, 2024)

Table 2. Nigeria's External Debt Stock as at December 31, 2025.

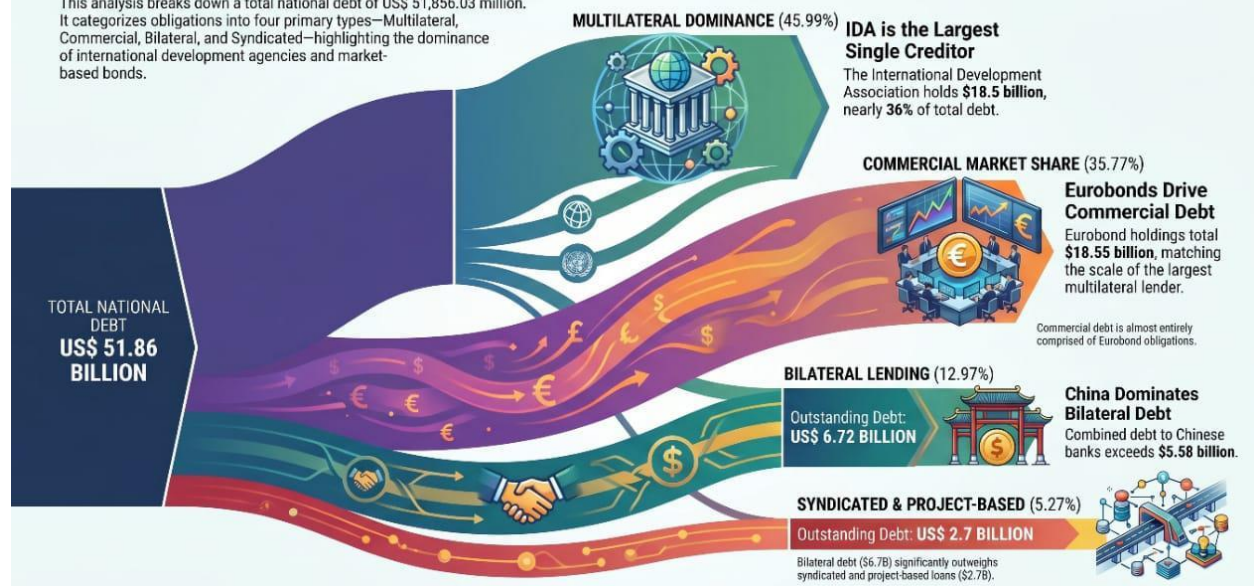
Creditor Category	Creditor / Institution	Outstanding Debt (US\$ Million)	Share of Total Debt (%)
Multilateral	International Development Association (IDA)	18,506.74	45.99
	International Bank for Reconstruction and Development (IBRD)	1,384.87	
	African Development Bank	2,177.21	
	Africa Growing Together Fund	56.89	
	African Development Fund	1,019.48	
	Arab Bank for Economic Development in Africa	4.41	
	European Development Fund	46.08	
	Islamic Development Bank	347.44	

	International Fund for Agricultural Development	308.04	
Subtotal – Multilateral		23,851.16	
Bilateral	China (Exim Bank of China)	5,064.07	12.97
	France (Agence Française de Développement)	911.43	
	Japan (Japan International Cooperation Agency)	130.84	
	India (Exim Bank of India)	13.38	
	Germany (Kreditanstalt für Wiederaufbau)	87.71	
	China Development Bank	517.37	
Subtotal – Bilateral		6,724.80	
Commercial	Eurobonds	18,547.47	
Subtotal – Commercial		18,547.47	35.77
Syndicated / Project Loans	Deutsche Bank A.G	56.09	5.27
	Standard Chartered Bank PLC	4.63	
	UniCredit SPA	159.97	
	Syndicated Loans (Projects)	2,511.91	
Subtotal – Syndicated Loans		2,732.60	
Grand Total		51,856.03	100

Source: Nigeria Debt Management Office (DMO),

National Debt Landscape: Analyzing Major Creditor Obligations

This analysis breaks down a total national debt of US\$ 51,856.03 million. It categorizes obligations into four primary types—Multilateral, Commercial, Bilateral, and Syndicated—highlighting the dominance of international development agencies and market-based bonds.



A Chart showing the National Debt Landscape

As Nigeria's external debt profile illustrates, multilateral and bilateral institutions account for a significant share of the country's external public borrowing, making the strategic priorities of PDBs such as the World Bank and AfDB highly consequential for the country's development trajectory. Given this outsized influence and their access to concessional capital, it is imperative to examine whether the core strategic priorities of these institutions genuinely align with Nigeria's structural transition needs, as assessed in Section 6.3.

6.3 Strategic Alignment: Is Green Diversification a Core Priority?

A review of PDB country strategies, partnership frameworks, and strategic action plans reveals a landscape of partial alignment with Nigeria's green diversification potential.

At the regional level, the AfDB's Climate Change and Green Growth Strategic Framework 2021–2030 sets a comprehensive vision for Paris-aligned action, explicitly prioritising adaptation, low-carbon development, and the mobilisation of climate finance (AfDB, 2021). Locally, the AfDB's Country Strategy Paper (CSP) 2020–2024 for Nigeria places climate resilience at its core, focusing on sustainable infrastructure and social inclusion through agribusiness (Hassamal, Abolo, and Ogaga, 2021). National institutions show similar strategic shifts: the DBN has integrated environmental and social risk management into its core lending frameworks and partnered with the European Investment Bank (EIB) on a EUR 200 million initiative targeting green and digital MSME financing (EIB, 2023). The Bank of Industry (BOI), meanwhile, has partnered with FSD Africa to develop decarbonization pathways and expand its climate finance capabilities, though no transformative green agenda for agriculture, industry, energy, and transport has yet emerged from any of these institutions' strategies.

However, when interrogating whether these documents explicitly prioritise structural transformation into green sectors (such as local manufacturing of renewable technologies) rather than just isolated climate mitigation, the alignment weakens. While climate is frequently mentioned, the strategic framing often lacks a systemic diversification approach. Crucially, PDB strategies in Nigeria continue to formally endorse natural gas as an indispensable "transition fuel" to meet industrial baseload requirements (Njume, 2025). Consequently, strategic alignment is partial: climate mitigation and adaptation are acknowledged, but they are often pursued in parallel with, rather than as a structural replacement for, fossil-fuelled industrialisation.

6.4 Operational Reality: What Are PDBs Actually Financing?

6.4.1 Climate Compatible Investments

In operational practice, PDBs have successfully channelled significant capital into climate-compatible projects. The flagship example is the Nigeria Electrification Project (NEP), cofinanced by the World Bank and the AfDB, which targets millions of off-grid solar connections to address rural energy poverty (Dauda, Okon, and Ogbeche, 2025). The AfDB has also supported the Jigawa Solar Independent Power Producer (IPP) project, aiming to add significant renewable capacity to the grid. Furthermore, PDBs are increasingly targeting SME green enterprise financing. The BOI manages a Solar Energy Fund to provide concessional financing for off-grid solutions (CFA, 2019), while the DBN utilises facilities from the EIB, Agence Française de Développement (AFD), and KfW to improve long-term finance for MSMEs operating within the green and agricultural value chains (EIB, 2023).

6.4.2 Climate Incompatible or Contradictory Investments

Despite these green investments, the operational reality of PDBs in Nigeria is heavily contradictory, at least as evidenced by the AfDB. An analysis of the AfDB's portfolio reveals that approximately 59% of its investments in Nigeria's energy sector between 2010 and 2023 were allocated to gas-based infrastructure (Dauda, Okon, and Ogbeche, 2025). This heavy fossil fuel bias contradicts the Bank's stated commitments to sustainable energy. Moreover, international PDBs frequently utilise financial intermediaries to sustain fossil fuel financing. For example, AfDB provided a USD 15 million subordinated loan to InfraCredit in Nigeria; while ostensibly targeting green projects, InfraCredit concurrently provides guarantees for entities like Green Liquified Natural Gas Limited to expand fossil gas infrastructure (Power Shift Africa, 2024; Udo Udoma and BeloOsagie, 2026).

6.4.3 Instruments Used

The instruments used by PDBs to finance the transition in Nigeria heavily favour debt. International public climate finance to Nigeria is largely channelled via concessional debt (54%) and market-rate/non-concessional debt (35%), with grants accounting for only a minor fraction (Stout et al., 2024). Given Nigeria's severe sovereign debt burden, where over 80% of government revenue is consumed by debt servicing, the reliance on project-level and policy-based lending raises concerns about the affordability of the transition (Stout et al., 2024). Additionally, PDBs utilise guarantees to derisk private capital, and technical assistance to build pipeline capacity and strengthen the enabling environment for green investment (though TA alone does not directly derisk capital; it works by improving project preparation and regulatory conditions). The scale of these blended finance instruments remains insufficient to close the infrastructure gap.

The interview response from the Federal Ministry of Finance also highlighted that current financing approaches fail to adequately reach the most vulnerable:

“Current policies do not adequately target vulnerable populations or regional disparities, risking increased inequality during the transition. Funding remains insufficient, and access is constrained.”

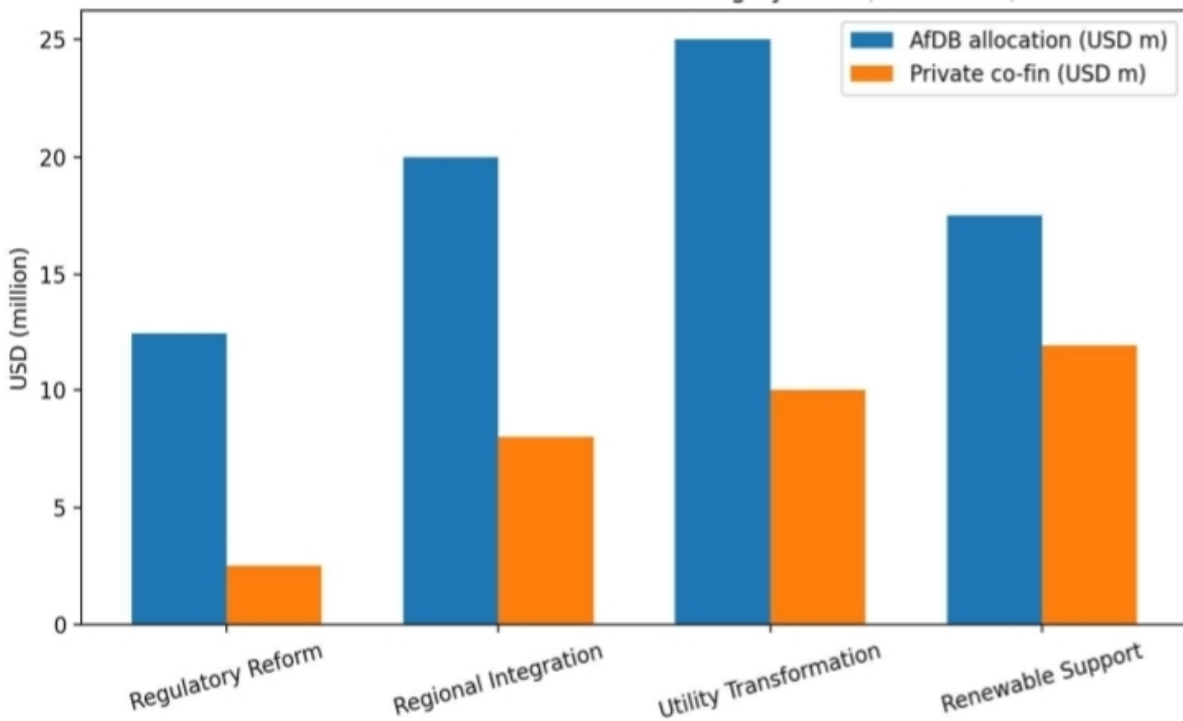


Figure 9. AfDB Allocations vs Private Co financing distribution across reform and integration components. Source: (Dauda, Okon, & Ogbeche, 2025).

As illustrated in Figure 11, there is a stark contrast between the capital allocated by public development partners like the AfDB and the volume of private cofinancing actually mobilised across different energy reform pillars. This gap underscores the operational reality that while PDBs are deploying concessional capital, their current instruments (such as project finance and guarantees) are struggling to sufficiently derisk projects and crowd in the massive private investments required. This failure to adequately leverage private capital brings us to a critical evaluation of whether these public funds are genuinely targeting the right high-potential areas, explored next in Section 6.5 on sectoral alignment.

6.5 Sectoral Alignment with Nigeria's Green Potential

When comparing actual PDB financing against the high-potential green sectors identified in Section 5, it is evident that PDBs are selectively investing where Nigeria has a comparative green advantage.

Solar and Decentralised Energy:

Alignment here is exceptionally strong. Off-grid and mini-grid solar systems are recognised by PDBs as the most viable "low-hanging fruit" for Nigeria. The vast majority of multilateral mitigation finance is directed toward solar PV deployment, evidenced by the heavy capitalisation of the NEP and rural electrification initiatives (Stout et al., 2024; Dauda, Okon, and Ogbeche, 2025).

Agro-processing and Climate-Smart Agriculture:

Alignment is moderate to strong. PDBs like the World Bank (through the ACREsAL project) and the AfDB (via the National Agricultural Growth Scheme) are actively directing capital to build landscape resilience and improve sustainable agricultural value chains (World Bank Group, 2024; AfDB, 2025).

Green Manufacturing and Transport Electrification:

Alignment is weak. Despite the massive economic potential for green industrialisation (e.g., local assembly of solar panels or EV manufacturing), PDB financing in these areas is nascent. PDB operations predominantly finance the consumption of imported renewable technologies rather than building domestic manufacturing capabilities, representing a missed opportunity for true structural transformation (SEforALL, 2023). Similarly, there is little evidence of PDB engagement in Nigeria's transport electrification, a sector with significant emissions and economic transformation potential. The Director of RETTI (Renewable Energy Technology Training Institute) captures the manufacturing gap succinctly:

“PDBs have moved real capital into renewables... But they fund deployment, not manufacturing or R&D. That is the gap.”

6.6 Systemic vs Project-Based Approaches

A critical evaluation of PDB interventions reveals that their approach remains largely fragmented and project-based rather than systemic or transformational.

While the scale of investment in programmes like the NEP suggests a transformational ambition, the implementation reality reflects fragmented, isolated pilot projects that struggle to catalyse sector-wide change. Applying fuzzyset Qualitative Comparative Analysis (fsQCA) to AfDB energy interventions in Nigeria demonstrates that institutional coordination and external financing alone are insufficient to overcome domestic governance bottlenecks (Dauda, Okon, and Ogbeche, 2025). These bottlenecks include elite capture, a dynamic where PDB-financed projects and the revenues or contracts they generate are disproportionately appropriated by politically connected individuals and firms rather than benefiting target communities. PDB projects often operate as technical enclaves; they are poorly integrated with broader national policies and suffer from limited community engagement, high reliance on foreign contractors, and elite capture within implementing ministries (Dauda, Okon, and Ogbeche, 2025). Consequently, while PDBs inject vital capital, their interventions lack the continuity and inclusive policy reform support required to drive a systemic, economy-wide structural transformation.

6.7 Key Barriers Limiting PDB Support

The ability of PDBs to effectively anchor green diversification in Nigeria is hindered by overlapping structural, institutional, and strategic barriers.

Structural Barriers: The foremost structural barrier is the lack of a robust pipeline of bankable green projects. Private project developers, such as independent power producers, EV assembly ventures, or green manufacturing enterprises, frequently lack the technical and financial skills required to structure deals that meet the stringent risk-return expectations of PDBs, resulting in high transaction costs and small ticket sizes (Stout et al., 2024). For civil society and community-based organisations, a different but related barrier applies, as noted by Stakeholder Development Network (SDN):

“Many international donors demand extensive documentation, financial reporting, and complex project designs that small, grassroots NGOs struggle to provide.”

Additionally, severe macroeconomic volatility, specifically currency devaluation and high inflation, drastically increases the opportunity cost of capital and impedes long-term, local currency lending (Ozoemena, Gide, and Akinyebi, 2026). The InterAmerican Development Bank (IDB) has developed instruments specifically designed to reduce currency risk in local currency lending, an approach that could serve as a model for PDBs operating in Nigeria.

Institutional Barriers: There are profound capacity constraints within the domestic financial sector. While commercial banks are signatories to the Nigerian Sustainable Banking Principles, they often lack the tools and data required to properly assess climate risks or tag green assets, making it difficult for PDBs to use them effectively as intermediaries for green credit lines (Climate Transition Limited, 2022). Furthermore, there is weak coordination between PDB climate objectives and the conflicting mandates of various government ministries (Dauda, Okon, and Ogbeche, 2025).

Strategic Barriers: PDBs exhibit significant risk aversion, often requiring sovereign guarantees that the heavily indebted Nigerian government struggles to provide. More fundamentally, the persistent strategic designation of fossil gas as a necessary "transition asset" creates a structural lock-in, diverting scarce developmental capital away from genuine green diversification and perpetuating reliance on hydrocarbon infrastructure (Power Shift Africa, 2024).

6.8 Key Insights: Are PDBs Enabling or Constraining Green Diversification?

The evidence leads to a nuanced but clear conclusion: Public Development Banks in Nigeria currently act as partial and uneven catalysts, deploying meaningful capital in a handful of sectors while simultaneously reinforcing fossil fuel lock-in in others, rather than as systemic drivers of structural transformation.

The gap between institutional promise and community experience was expressed directly by Chief Ambassador Nsidu:

“We need power and the road network, assisting our children with scholarship to further our education... If there is a continual exploitation, there should be continual improving on the life and health of my people, of the Niger Delta in general. Government should take that as a matter of policy to institutionalise the means of supporting the people in my community.”

On one hand, PDBs are vital enablers; their concessional finance, technical assistance, and blended finance instruments are practically the sole drivers keeping Nigeria’s decentralised solar and climate-smart agriculture sectors afloat. They have successfully expanded basic energy access and provided essential liquidity to green MSMEs.

On the other hand, PDBs actively constrain deep green diversification, at least as evidenced for the AfDB, through substantial financial support for fossil gas infrastructure and through their failure to systematically fund domestic green manufacturing value chains. By prioritising project-by-project risk mitigation over systemic policy reform, and by maintaining lending portfolios that hedge between green ambitions and fossil fuel realities, PDBs inadvertently reinforce Nigeria’s path dependency. For PDBs to become true catalysts of structural transformation, they must pivot from fragmented investments to coherent, policy-based finance that strictly enforces fossil-fuel exclusions while systematically backing Nigeria’s localised green industrialisation.

RECOMMENDATION: Policy and Practice:

1. Context and Strategic Framing

Nigeria faces a critical economic transition challenge due to its deep dependence on fossil fuels for fiscal revenues, exports, and foreign exchange. As global momentum shifts toward decarbonization, declining oil demand exposes the country to macroeconomic instability, stranded assets, and socioeconomic risks, particularly in oil-producing regions such as the Niger Delta.

At the same time, Nigeria has strong potential to diversify into climate-compatible sectors, including renewable energy, green manufacturing, climate-smart agriculture, and green services. However, this potential remains underutilised due to policy incoherence, weak industrial capacity, fragmented institutional frameworks, and limited access to long-term finance.

The central challenge is therefore not a lack of opportunity, but the absence of coordinated policy direction, targeted industrial strategy, and aligned development finance.

2. Core Recommendations

2.1 Reposition Green Diversification as an Economic Strategy

Green diversification should be embedded within Nigeria's macroeconomic framework, including fiscal policy, industrial strategy, and national development planning. Moving beyond a narrow climate framing will enhance economic resilience and reduce exposure to fossil fuel volatility.

2.2 Shift Toward Domestic Green Industrialisation

Nigeria must move from renewable energy deployment to building domestic value chains. This includes local manufacturing in solar technologies, batteries, electric mobility systems, agroprocessing equipment, and circular economy products. Such an approach will strengthen local content, create jobs, and reduce import dependence.

2.3 Reform Fossil-Linked Fiscal and Regulatory Systems

Fossil fuel subsidies and policies supporting hydrocarbon expansion should be gradually reformed. Governments should seek to redirect an increasing proportion of revenues from fossil fuel exports to dedicated instruments, such as green transition funds, budget lines for green SMEs, or concessional lending facilities, that support green diversification and the energy transition. In addition, independent funding instruments should be developed that are not contingent on fossil fuel revenues, including green bonds and carbon pricing mechanisms. Public finance should be redirected toward renewable energy, green SMEs, sustainable transport, and climate-smart agriculture, while improving regulatory clarity to attract investment.

2.4 Strengthen Green Diversification in PDB Strategy

Public Development Banks, including the African Development Bank, World Bank, Bank of Industry, and Development Bank of Nigeria, should formally embed green diversification as a core strategic objective and adopt a structural transformation approach. This involves financing full green value chains (not just deployment), supporting MSMEs and domestic manufacturers, deploying concessional and blended finance instruments, including green equity for startups and green investment funds, issuing green bonds, and adopting 1.5 °C-aligned investment exclusion policies.

2.5 Align Finance with Just Transition Principles

Development finance should support long-term decarbonization while ensuring social inclusion, livelihood protection, and equitable outcomes, particularly in fossil-dependent communities.

3. Policy Priorities

3.1 Ensure Policy Coherence

Nigeria should align its Energy Transition Plan, industrial policy, trade policy, and climate commitments into a unified green industrialisation framework to avoid contradictions that undermine credibility.

3.2 Develop a Green Industrial Policy Framework

Government should introduce targeted incentives for:

- Renewable energy manufacturing
- Electric vehicle assembly and infrastructure
- Sustainable agroprocessing
- Green construction materials
- Circular economy enterprises

These should be supported through tax incentives, local content policies, public procurement reforms, export promotion, regulatory measures, and certification programmes for green construction materials. Financial support instruments should include not only credit lines but also grant programmes, green equity for startups, and long-term stable price contracts for companies that electrify or decarbonise their operations. Nigeria should also explore whether it has issued green bonds and, if not, develop a sovereign green bond framework.

3.3 Strengthen Green Finance Architecture

Nigeria should expand its green finance ecosystem by developing:

- Climate risk assessment tools
- Green taxonomies and asset classifications
- Credit lines for green SMEs
- Green equity instruments for startups and early-stage green enterprises
- Green investment funds
- Green bonds (sovereign and corporate)
- Blended finance mechanisms
- Coordinated climate finance governance

3.4 Leverage Regional Integration

Regional frameworks such as the African Continental Free Trade Area and the Economic Community of West African States should be used to scale green manufacturing, enhance competitiveness, and build regional value chains. Critically, Nigeria should engage with these frameworks to promote a coordinated regional division of labour in green production, where each country specialises in the green sectors where it holds a comparative advantage, rather than all competing in the same markets.

4. Additional Strategic Measures

4.1 Build a Green Data and Intelligence System

A centralised system should track investments, employment, and sector performance, enabling evidence-based policymaking and improved transparency.

4.2 Establish Green Special Economic Zones

Dedicated industrial hubs should support renewable energy manufacturing, electric mobility, agroprocessing, and circular economy activities through infrastructure (including

dedicated solar PV parks and grid-connected storage for reliable electricity supply), incentives, and access to sustainable finance.

4.3 Promote Technology Transfer and Innovation

Nigeria should strengthen partnerships with international actors, invest in R&D, and support green startups to build local technological capacity and reduce import dependence.

4.4 Strengthen Subnational Implementation

State governments should develop localised green strategies, promote decentralised energy systems, and support green SMEs to accelerate implementation.

4.5 Invest in Green Skills Development

Education and vocational training systems should be aligned with emerging green sectors to unlock employment potential and support industrial growth.

4.6 Expand Risk Mitigation Instruments

Government and development finance institutions should scale guarantees, blended finance, and concessional funding to reduce investment risks and attract private capital.

4.7 Promote Decentralised Energy Systems

Mini-grids, solar home systems, and community-based energy models should be expanded to improve energy access and support local economic development.

4.8 Strengthen Accountability and Transparency

Improved monitoring of development finance is needed to ensure alignment with green diversification goals and avoid reinforcing fossil fuel dependency.

5. Practice Implications

For Government

- Establish interministerial coordination mechanisms
- Redirect public expenditure toward green sectors
- Support green industrial clusters and innovation hubs

For Public Development Banks

- Finance full value chains rather than isolated projects
- Expand support for MSMEs, manufacturing, and technology transfer
- Align investments with long-term decarbonisation pathways

For Private Sector

- Invest in renewable energy, agroprocessing, e-mobility, and circular economy solutions
- Build local supply chains linked to regional markets

For Civil Society and Research Institutions

- Monitor and demand accountability around fossil fuel finance, including cases where PDBs or governments claim climate goals while continuing to finance fossil fuels
- Generate evidence on employment, inclusion, and transition outcomes
- Support policy advocacy for equitable transition pathways

6. Strategic Conclusion

Nigeria's pathway to a sustainable and resilient future depends on its ability to transition from fragmented initiatives to a coherent, investment-driven green industrial strategy. The country already possesses strong potential across key sectors; the decisive factor is aligning policy, institutions, and development finance toward structural transformation.

With deliberate action, Nigeria can convert the risks of fossil fuel revenue decline into an opportunity for inclusive growth, economic diversification, and global competitiveness in the emerging green economy.

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