



ENERGY SECURITY CHALLENGES IN NIGERIA: Legal Barriers, Policy Gaps, and Climate Change Considerations in Light of U.S. Energy Security Frameworks

By

Omotola Osude, LL.B, B.L, LL.M

Centre for Commercial Law Studies
Queen Mary University of London, UK

Abstract

This paper examines Nigeria's ongoing energy security crisis through the lens of legal and policy frameworks, emphasizing the structural and regulatory barriers to achieving stable, affordable, and sustainable energy. The study evaluates gaps in Nigeria's energy governance, particularly in relation to electricity generation, grid instability, fossil fuel reliance, and the absence of enforceable energy access rights, and their impacts on national development.

To broaden the legal perspective, the analysis incorporates comparative insights from the United States, where federalism, decentralised energy regulation, and strategic reserve systems provide critical benchmarks. Through this comparison, the paper explores what Nigeria can learn from U.S. energy legislation and climate preparedness strategies, especially regarding renewable integration, market liberalisation, and national security.

The paper concludes with legal reform proposals to support Nigeria's just energy transition and climate resilience, including enforceable right-to-energy provisions, diversified energy sourcing, and regulatory realignment toward long-term national energy security.

PART 1

Nigeria's Energy Security Crisis

Energy security generally means having a stable, reliable energy supply at affordable prices. International agencies define it as the continuous availability of energy in diverse forms and sufficient quantities at reasonable cost (International Energy Agency, 2024). In practice, this means keeping the lights on and managing prices and supply risks. However, climate change has added a new dimension to energy security. Policymakers now face the twin challenge of ensuring reliable energy while cutting greenhouse gas emissions (OECD, 2023). For example, the OECD notes that concern about climate change "is bound to radically

change the landscape of energy policy" even as energy security remains a priority (OECD, 2023). Similarly, the IEA warns that extreme weather events increasingly threaten energy infrastructure, so resilience to climate impacts has become part of energy security (International Energy Agency, 2024). In short, countries must now secure affordable energy and shift towards clean sources to meet climate goals.

Nigeria's Energy Crisis

Nigeria's energy sector is volatile. Only a minority of the population has dependable electricity. One study found that persistent "epileptic" power supplies reach only about 40% of Nigerians (World Bank, 2023). The national grid is unreliable and prone to collapse. In 2024 alone, the grid collapsed at least ten times, leaving millions without power (Premium Times, 2024). In one analysis, the World Bank estimated that Nigeria loses roughly \$29 billion annually due to its unstable electricity supply and frequent blackouts (World Bank, 2023). The causes are well-known: decades of under-investment have left ageing lines and substations that trip whenever demand fluctuates (World Bank, 2023). Vandals and saboteurs have repeatedly targeted transmission infrastructure (over 100 attacks were reported in two years) (World Bank, 2023). As a result, many homes and businesses run on backup diesel or petrol generators. Newspapers have documented tragic stories, such as a patient who died during surgery when hospital power was lost in a blackout (Ugwu, 2024). Schools study by dim light in the education and health sectors, and clinics rely on expensive fuel generators to function.

Fuel supply is also insecure and costly. Although Nigeria is Africa's largest crude oil producer, it imports most of its refined petrol because local refineries underperform (NNPC Limited, 2024). This paradox causes chronic shortages. In late 2024, the government ended decades of petrol subsidies, and pump prices jumped. By some reports, petrol was selling for about ₦950-1,030 per litre (roughly US\$0.60-0.63) at official stations (National Bureau of Statistics, 2024). Consumers were forced to queue for hours, and independent stations charged even more (up to \$0.74 per litre) (National Bureau of Statistics, 2024). The state oil company NNPC briefly cut back on imports entirely due to financial strain (NNPC Limited, 2024). High diesel prices hit the industry hard, pushing households to skimp on power. Indeed, surveys show that most Nigerian homes and shops run on portable generators because the public grid is unreliable (Ugwu, 2024).

These failures make energy very expensive for ordinary Nigerians. World Economic Forum data report that Nigeria has among the highest retail electricity prices globally about US\$0.52 per kilowatt-hour on average even though many people still lack service (World Bank, 2023). Roughly 92 million Nigerians (about 43% of the population) have no access to the central electricity grid (World Bank, 2023). Nigeria suffers from frequent blackouts, long fuel queues, and soaring energy costs. These problems stem from an over reliance on fossil fuels for power and transport. For example, roughly 64-75% of Nigeria's electricity is generated by gas-fired power plants (the rest comes mainly from hydro), and the transport system is almost entirely oil-dependent (International Energy Agency, 2024).

This mono-fuel pattern leaves the country vulnerable to upstream disruption or price spikes.

Impacts on Emissions and Climate Targets

Nigeria's energy crisis directly affects its carbon emissions and climate commitments. Nigeria already has a large climate footprint as Africa's most populous nation and a significant oil exporter. In 2019, it ranked about 25th globally in total greenhouse emissions (second in Africa after South Africa) (UNFCCC, 2021). Its economy is heavily tied to oil and gas: fossil fuels account for roughly 90-93% of export earnings (UNFCCC, 2021). This over reliance on oil has "led to a substantial increase in carbon dioxide emissions," one study notes, even surpassing levels in many industrialised countries (UNFCCC, 2021).

Nevertheless, Nigeria has pledged ambitious targets under the Paris Agreement. Its updated climate plan (NDC) aims to cut emissions 20% below "business-as-usual" by 2030 (47% with foreign support) (UNFCCC, 2021). Its 2021 Climate Change Act and related policy documents set a long-term goal of reaching net-zero emissions around 2060 (Federal Government of Nigeria, 2021). Meeting these targets will be hard if the energy crisis persists. At present, blackouts and fuel shortages push Nigerians toward carbon-intensive solutions. Widespread use of diesel generators means that many homes and firms burn more fuel and emit more CO₂ than they would under a stable grid (Ugwu, 2024). Meanwhile, expensive or scarce petrol and diesel tend to be consumed in whatever ways they can be found, without efficiency controls.

Policy choices exacerbate the tension between security and climate. The government has historically subsidised petrol and diesel to keep prices low, encouraging the wasteful use of fossil energy (National Bureau of Statistics, 2024). Analysts note that these subsidies are "a major obstacle" to Nigeria's clean energy transition (National Bureau of Statistics, 2024). Until recent years, cheap fuel has made generators and old vehicles more affordable, boosting emissions. In effect, short-term efforts to keep energy affordable have deepened Nigeria's carbon footprint. Observers warn that without a rapid shift to renewables and storage, Nigeria's emissions may continue rising even as it formally commits to cuts (UNFCCC, 2021).

Nigeria's acute energy insecurity is entwined with its climate challenge. The same gaps that leave people in the dark ageing fossil infrastructure, subsidy-driven demand and lack of alternative power also drive-up CO₂ output. This makes it harder for Nigeria to achieve its stated carbon targets. Addressing the crisis will, therefore, require legal and policy reforms that simultaneously improve supply reliability and accelerate the transition to low-carbon energy (Federal Government of Nigeria, 2021).

PART 2

Overview of Nigeria's Energy and Climate Legal Framework

Nigeria's energy sector operates under a broad legal regime that governs petroleum production, electricity regulation, and climate change. The main laws include the Petroleum Industry Act 2021 (PIA) (Petroleum Industry Act, 2021), the Electric Power Sector Reform Act 2005 (EPSRA) (Nwuke, 2021), and the Climate Change Act 2021 (Climate Change Act, 2021). In addition, fuel subsidy and pricing policies, while largely driven by executive and fiscal instruments, have significant legal and environmental implications. Although each of these instruments contains provisions aimed at promoting investment, protecting the environment, and enhancing access, enforcement gaps continue to weaken their effectiveness and pose challenges to Nigeria's energy security and climate obligations.

The PIA 2021 reorganised the petroleum sector by creating two new regulators: the Nigerian Upstream Petroleum Regulatory Commission (NUPRC) and the Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA) (Petroleum Industry Act, 2021). It also commercialised the Nigerian National Petroleum Company, now NNPC Ltd, with shares held by the Ministries of Petroleum and Finance (Petroleum Industry Act, 2021). One major provision of the PIA is the Host Community Development Trust Fund (HCDTF), which requires oil licensees to contribute 3% of their operational expenditure annually to local development (Petroleum Industry Act, 2021). It also contains anti-gas flaring provisions that impose penalties and direct the proceeds toward environmental remediation (Petroleum Industry Act, 2021). Despite these developments, studies highlight weak implementation of these obligations, particularly in the Niger Delta, where oil companies have historically flouted similar rules (Nwuke, 2021).

The PIA also includes a decommissioning and abandonment framework, requiring licensees to maintain escrow accounts and submit plans for infrastructure decommissioning (Petroleum Industry Act, 2021). However, legal scholars argue that enforcing these environmental provisions remains inconsistent (Nwuke, 2021), and gas flaring continues to rise despite new penalties (Olujobi et al., 2022).

The EPSRA 2005 established the Nigerian Electricity Regulatory Commission (NERC) in the electricity sector. It authorised the unbundling and privatisation of the former Power Holding Company of Nigeria (PHCN) into generation, transmission, and distribution companies (Electric Power Sector Reform Act, 2005). NERC is empowered to set tariffs, issue licenses, and monitor market performance. However, regulatory enforcement has been weak, and generation output remains far below national demand, with frequent grid collapses and poor service delivery across the country (Nigerian Electricity Regulatory Commission, 2014). Private operators have often failed to meet performance standards, while political interference has undermined tariff reforms (Nigerian Electricity Regulatory Commission, 2014).

The Climate Change Act 2021, Nigeria's first stand-alone climate law, created the National Council on Climate Change (NCCC) and committed the country to achieving net-zero emissions between 2050 and 2070 (Climate Change Act, 2021). It also provides for creating a Climate Change Fund, a carbon budget, and mechanisms for carbon pricing (Climate Change Act, 2021). However, the Act does not expressly incorporate Nigeria's Nationally Determined Contribution (NDC) targets, including its pledge to cut emissions by 20% unconditionally and 47% conditionally by 2030 (Federal Government of Nigeria, 2021). Scholars note that this omission reduces the legal enforceability of the NDCs (Noah, 2024).

Fuel subsidies have also shaped Nigeria's energy policy. The government has subsidised imported petrol and diesel for decades, with estimates suggesting costs exceeding \$10 billion in some years (Nigerian Electricity Regulatory Commission, 2014). These subsidies contributed to increased fossil fuel consumption and discouraged investment in renewables. Their removal in 2023 led to significant economic disruptions, inflation, and social backlash (Nigerian Electricity Regulatory Commission, 2014), although some analysts argue it may aid energy diversification in the long term (Ajala, 2023).

Nigeria's legal framework has modernised on paper but suffers from regulatory capture, law enforcement, and poor institutional coordination. These deficiencies prolong Nigeria's energy crisis and jeopardise its ability to fulfil its climate obligations under international law (Noah, 2024). Without vigorous regulatory enforcement, Nigeria's energy sector will remain insecure and misaligned with its climate goals (Climate Action Tracker, 2024; World Bank, 2024).

Case Study: Dangote Refinery -- Energy Security vs Climate Impact

The Dangote Petroleum Refinery in Lekki, Lagos, with a 650,000 barrels-per-day capacity, is the largest refinery in Africa and one of the largest single-train refineries in the world (Dangote Group, 2024). As a mega-infrastructure project in a designated free trade zone, it underwent regulatory procedures involving land acquisition under the Land Use Act, environmental clearance under the Environmental Impact Assessment Act, and downstream licensing under the Petroleum Industry Act 2021. Its licensing was issued by the Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA), and the facility is powered by a 435 MW embedded power plant and supported by a 1,100 km pipeline network (Dangote Group, 2024).

The project's development caused widespread displacement in nearby villages, including Idasho and Okesegun. Affected communities allege inadequate compensation, some receiving as little as ₦81,000 and damage to fishing and farming livelihoods (Environmental Rights Action/Friends of the Earth Nigeria, 2023). Environmental groups have criticised the dredging and sand filling, which destroyed mangroves and access to creeks used for fishing (Environmental Rights Action/Friends of the Earth Nigeria, 2023). Landowners from Oshoroko and Origanrigan later challenged the land title in 2023, claiming procedural irregularities in Lagos State's acquisition process (Premium Times, 2023). These issues raise legal questions under the Land Use Act and the EIA Act, particularly regarding the right to fair compensation and effective consultation.

In 2024, Dangote Refinery filed a lawsuit against NMDPRA, NNPC Ltd, and several private marketers, claiming that issuing petrol import licenses violated the PIA, which requires importation only when local production falls short (Vanguard, 2024). The Federal High Court refused to strike out the case, affirming that the statutory interpretation of PIA section 317 warranted judicial review (ThisDay, 2025). The Federal Competition and Consumer Protection Commission (FCCPC) then sought to intervene, arguing that the attempt to restrict imports raised antitrust concerns under Nigeria's competition law (Punch, 2025).

The refinery's reliance on domestic crude has also sparked regulatory tension. The PIA imposes a Domestic Crude Supply Obligation (DCSO), requiring upstream producers to sell to local refiners before exporting. However, investigations have revealed that many exporters sidestepped this rule, selling crude abroad while refiners like Dangote struggled to source feedstock (Nigerian Upstream Petroleum Regulatory Commission, 2025). In 2025, the Nigerian Upstream Petroleum Regulatory Commission (NUPRC) threatened to withhold export permits for violators of the DCSO (Nigerian Upstream Petroleum Regulatory Commission, 2025).

From a climate law perspective, the project raises significant concerns. Nigeria's Climate Change Act 2021 commits to net-zero emissions between 2050 and 2070 and supports emissions budgeting and carbon market regulation (Climate Change Act, 2021). However, the refinery is a fossil fuel mega-project that could substantially increase Nigeria's national emissions profile. Analysts from ICEED estimate that its operations could lead to a 160% rise in Nigeria's emissions by 2060 without mitigation (International Centre for Energy and Environmental Development, 2024). Experts argue that neither the PIA nor the licensing process required a detailed climate compatibility assessment (Clean Energy Transition Initiative, 2024). Though the Climate Change Act creates a framework for carbon pricing and planning, there is no enforceable obligation linking fossil fuel infrastructure approvals to Nigeria's NDCs or net-zero targets (Climate Change Act, 2021).

In short, while the Dangote Refinery addresses fuel supply shortages and may improve energy security, its development exposes critical legal tensions. These include disputes over lawful land acquisition, regulatory competition, weak alignment with climate law, and the absence of clear enforcement of fossil infrastructure and emissions obligations. As such, it serves as a revealing case study of how Nigeria's legal framework is grappling with energy transition and climate compliance.

Environmental Issues and Weak Enforcement in Nigeria's Energy Sector

Nigeria's energy sector has contributed significantly to environmental degradation through widespread oil spills, gas flaring, and improper decommissioning of petroleum assets. The Niger Delta region, particularly areas like Ogoni and Oloibiri, has endured these problems for decades (Premium Times, 2023). For instance, a massive oil spill in Otuegwe village destroyed farmland and polluted local water bodies, reducing access to clean drinking water and economic survival (Premium Times, 2023). The United Nations Environmental Programme (UNEP) described pollution in Ogoniland as "worse than previously reported" and recommended a 30-year cleanup exercise (UNEP, 2011).

Nigeria flared an estimated 318 billion standard cubic feet of gas in 2023 alone, producing over 9 million tonnes of CO₂ emissions and US\$1 billion in wasted revenue (Nigerian Gas Flare Tracker, 2024). Despite legal prohibitions, gas flaring remains routine across many oil fields. Nigeria has several environmental laws, including the NOSDRA Act 2006, the Environmental Impact Assessment Act 1992, and the NESREA Act 2007, alongside petroleum-specific legislation like the Associated Gas Re-Injection Act 1979 and the flaring penalties imposed by the Petroleum Industry Act 2021 (National Oil Spill Detection and Response Agency Act, 2006; Environmental Impact Assessment Act, 1992; National Environmental Standards and Regulations Enforcement Agency Act, 2007; Associated Gas Re-Injection Act, 1979; Petroleum Industry Act, 2021).

Under the PIA, companies must eliminate routine flaring and maintain dedicated decommissioning funds, as provided in sections 232 and 233 (Petroleum Industry Act, 2021). Operators must also submit Environmental Impact Assessments and restoration plans before abandoning oil infrastructure. However, in practice, enforcement is inconsistent and weak. Scholars have pointed out that environmental offences are often under-prosecuted and that oil companies continue to operate without effective regulatory oversight (Olujobi, 2022). The Nigeria Extractive Industries Transparency Initiative (NEITI) confirmed that many companies either delay paying flare penalties or ignore them altogether (NEITI, 2022). NOSDRA's annual reports admit to logistical and financial constraints that impair its field operations (NOSDRA, 2024).

These environmental failures also directly challenge Nigeria's climate change obligations. Under its Nationally Determined Contribution (NDC) submitted to the UNFCCC, Nigeria pledged to eliminate routine gas flaring by 2030 and reduce methane emissions by 60% in the oil and gas sector by 2031 (Federal Government of Nigeria, 2021). Climate Action Tracker warns that these targets are at risk due to rising flaring levels and poor compliance mechanisms (Climate Action Tracker, 2023). Without effective enforcement of pollution laws, Nigeria is unlikely to meet its emission reduction commitments under the Paris Agreement or its own Climate Change Act 2021.

To conclude, the environmental degradation in oil-producing communities reveals a troubling gap between Nigeria's written laws and enforcement practices.

PART 3

U.S. Federal Legal Frameworks

The United States has developed a detailed legal regime to address energy security and climate change, relying on federal statutes, administrative agencies, and regulatory enforcement. One of the foundational pieces of legislation is the Clean Air Act (CAA), originally passed in 1970 and amended several times since. The CAA gives the Environmental Protection Agency (EPA) broad powers to regulate emissions from stationary and mobile sources. In the landmark case of *Massachusetts v. EPA*, the U.S. Supreme Court ruled that carbon dioxide is an "air pollutant" under the CAA, which confirmed that greenhouse gases fall within EPA's regulatory scope (*Massachusetts v. Environmental Protection Agency*, 2007). Under this authority, EPA has issued emissions performance standards and vehicle fuel regulations as part of national climate mitigation policy.

The U.S. legal framework also includes dedicated energy statutes. The Energy Policy Act 2005 expanded federal support for nuclear, renewable, and fossil fuel development. It provided loan guarantees for clean energy technology and tax incentives for wind, solar, and biofuel investments (Environmental Protection Agency, 2025). It also addressed fuel efficiency and alternative fuels. The Energy Independence and Security Act of 2007 later increased mandatory fuel economy standards and required a rise in renewable fuel production (US Congress, 2007). These laws operate alongside the National Environmental Policy Act (NEPA), which mandates environmental assessments for federal energy projects, ensuring that climate and environmental impacts are reviewed before authorisation.

In addition, the Federal Power Act (FPA) gives the Federal Energy Regulatory Commission (FERC) the authority to regulate wholesale electricity markets and transmission across state lines. This ensures that electricity supply remains reliable, and prices are not manipulated. FERC's independence is key; it operates as a separate agency, with commissioners appointed for fixed terms and protected from arbitrary dismissal (Federal Power Act, 16 USC §§ 791-828c).

U.S. federal statutes often work in tandem with state law. While federal agencies regulate interstate transmission and air quality, states control electricity generation and distribution. For example, California has special authority under the CAA to set its vehicle emission standards, subject to EPA waiver, and other states can choose to follow California's stricter rules. This dual federal-state approach allows flexibility in implementation while maintaining national oversight.

The legal system also includes financial and technological tools. Agencies like the Department of Energy (DOE) fund research into clean energy and oversee strategic infrastructure such as the Strategic Petroleum Reserve (SPR). Funding mechanisms are often embedded in legislation; for instance, the Inflation Reduction Act 2022 introduced tax credits for electric vehicles and home energy improvements, linking financial incentives directly to climate goals (US Department of Energy, 2025).

In contrast, Nigeria's legal regime is less coordinated. The 1999 Constitution of Nigeria vests exclusive control of oil and gas in the federal government, and climate change legislation is still evolving. Nigeria does not yet have a unified energy and climate statute or a national emissions trading scheme. Its laws are spread across multiple outdated statutes, often enforced by under-resourced regulators. The Climate Change Act 2021 and the Petroleum Industry Act 2021 represent recent progress, but enforcement and harmonisation remain limited.

Legal lessons: Nigeria can draw from the U.S. example by consolidating its legal framework under a single climate law or structured energy code. It could also increase regulatory independence, especially for agencies like NERC and NESREA, which are modelled after the U.S. approach. By combining legislation, agency autonomy, and financial tools, the U.S. demonstrates how a legal framework can advance energy security and environmental protection in a coordinated manner.

Strategic Petroleum Reserves -- U.S. vs Nigeria

The United States has one of the most developed legal systems for managing emergency energy supply through its Strategic Petroleum Reserve (SPR). This was established by the Energy Policy and Conservation Act 1975, following the 1973 oil embargo that exposed the country's vulnerability to external supply shocks (Energy Policy and Conservation Act, 1975). The law authorised the U.S. Department of Energy (DOE) to construct and maintain a large government-owned stockpile of crude oil. Over the years, the SPR has grown into the world's largest emergency crude oil reserve, with a capacity exceeding 700 million barrels at its peak (U.S. Department of Energy, 2025). The reserve is stored in salt caverns along the Gulf Coast, a legally chosen location to facilitate domestic use and export if necessary.

Specific federal rules govern the SPR. It can only be tapped under certain legal conditions. For example, the President may authorise a full drawdown if the U.S. faces "a severe energy supply interruption," as defined by statute. There is also a provision for limited drawdowns for minor disruptions or exchange agreements with private companies (Code of Federal Regulations, Title 10, Energy, Part 625). The legal framework is clear about how much oil must be held, under what conditions it can be released, and how the DOE must manage it.

By contrast, Nigeria has historically lacked a structured legal framework for strategic fuel storage despite being one of the largest oil producers in Africa. Until recently, Nigeria's energy security depended almost entirely on its crude oil production and heavily subsidised fuel importation. This exposed the country to market volatility and periodic fuel shortages, often leading to nationwide queues and economic disruption. The Petroleum Industry Act 2021 (PIA) changed this by empowering the new Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA) to license facilities for bulk storage of petroleum products, including those for strategic purposes (Petroleum Industry Act, 2021, s 174).

In 2025, Nigeria announced plans to establish a formal Strategic Petroleum Products Reserve, modelled after the U.S. SPR. The plan is to hold enough refined products such as petrol and diesel to cushion the economy from global supply shocks or refinery outages. However, unlike the U.S., Nigeria has not yet passed a dedicated law that sets out reserve volume requirements, access procedures, or enforcement mechanisms. The current approach relies on policy directives rather than statutory obligations. The country's existing reserves are also insufficient. Reports suggest that Nigeria holds, at best, about 30 days' worth of refined product supply (Asaolu, 2025).

The difference is also institutional. The U.S. DOE manages the SPR under strict legal standards, conducts regular audits, and publishes transparent data. In Nigeria, reserve levels, infrastructure capacity, and distribution logistics data are often unavailable or unreliable. Moreover, Nigeria's pipeline network and depots have suffered underinvestment, vandalism, and mismanagement, affecting the ability to store and distribute fuel effectively (Nigerian National Petroleum Company Limited, 2025).

Legal lessons: Nigeria should move from a policy-based approach to a statutory framework for its strategic reserves. Like the U.S., it could pass a standalone Strategic Reserves Act that sets mandatory storage volumes, identifies the agency responsible for compliance, and specifies legal triggers for releasing reserves. The law should also require transparent reporting and penalties for non-compliance. This would ensure that strategic storage becomes an integral and enforceable part of Nigeria's energy security plan, not just a temporary response to fuel crises.

Regulatory Institutions and Enforcement

In the United States, energy and environmental regulation is distributed across specialised, independent agencies with distinct legal mandates. One of the most prominent is the Environmental Protection Agency (EPA), created under the Reorganisation Plan No. 3 of 1970 and authorised to implement laws such as the Clean Air Act and the Clean Water Act. The EPA has wide-ranging powers to monitor compliance, issue permits, impose fines, and initiate enforcement actions (Clean Air Act, 42 USC §§ 7401-7671q). It can also be compelled to act by judicial review or citizen suits. The Department of Energy (DOE), established by the Department of Energy Organization Act of 1977, sets overall national energy policy and manages strategic assets like the Strategic Petroleum Reserve (Department of Energy Organization Act, 1977). While the DOE's focus is policy and infrastructure, the Federal Energy Regulatory Commission (FERC) is the chief regulator of interstate electricity transmission and wholesale electricity markets under the Federal Power Act. FERC is independent, with commissioners appointed by the President and confirmed by the Senate for fixed terms, and it operates outside executive control to maintain impartiality (Federal Energy Regulatory Commission, 2025).

Each of these agencies enforces specific legal obligations. FERC can impose civil penalties on market manipulators and mandate changes to transmission rules. EPA, under its statutory authority, issues binding regulations on emissions standards, reviews project environmental impacts, and ensures industrial compliance through inspections and legal action. These agencies publish annual enforcement reports, maintain public databases of violators, and engage in stakeholder consultations during rule-making. This institutional transparency helps bolster public confidence and enhances accountability.

In Nigeria, regulatory responsibilities are divided across several bodies, but legal enforcement is often weaker. The Nigerian Upstream Petroleum Regulatory Commission (NUPRC), created under the Petroleum Industry Act 2021, oversees upstream oil activities, including licensing, production quotas, and environmental compliance (Petroleum Industry Act, 2021, ss 4-6, 28-30). The Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA) regulates refining, storage, and fuel distribution. On the electricity side, the Nigerian Electricity Regulatory Commission (NERC) licenses and monitors electricity

operators under the Electric Power Sector Reform Act 2005 (now absorbed mainly into the Electricity Act 2023) (Electricity Act, 2023, ss 62-69).

However, many agencies suffer from inadequate funding, unclear mandates, and political interference. For example, NERC has occasionally faced pressure in tariff setting and enforcement, compromising its independence. Similarly, NESREA, the leading environmental watchdog does not have jurisdiction over the petroleum sector due to legal carve-outs in its establishing Act. This leaves a regulatory gap, as oil pollution is handled by NOSDRA, whose powers are primarily reactive and tied to spill response, not prevention (NESREA Act, 2007, s 7; National Oil Spill Detection and Response Agency Act, 2006, s 6). Furthermore, these regulators do not regularly publish enforcement data or decisions, limiting transparency.

In contrast to the U.S., Nigeria also lacks explicit provisions for public consultation during rule-making. Regulatory orders are often issued without prior notice or comment periods, restricting stakeholder engagement. Moreover, penalties are rarely imposed, and enforcement actions are seldom litigated to a conclusion. Court decisions in environmental cases are also infrequent, reducing the legal deterrent effect on violators.

Legal lessons: Nigeria could strengthen its regulatory institutions by clarifying legal mandates and reducing overlap. For example, enforcement over environmental impacts in the oil sector should be harmonised by expanding NESREA's mandate or consolidating responsibilities under a new unified regulator. Lessons can also be drawn from FERC's independence, insulating Nigerian regulators from political influence through statutory tenure protection and guaranteed funding would improve credibility. Finally, agencies should be legally required to publish compliance reports, penalties issued, and stakeholder consultation outcomes.

Transparency, Litigation, and Citizen Enforcement

One of the pillars of environmental and energy law in the United States is the strong legal emphasis on transparency, public accountability, and citizen participation. This is embedded in multiple federal statutes, such as the Freedom of Information Act 1966 (FOIA), which mandates disclosure of government documents unless specifically exempt (Freedom of Information Act, 1966). Through FOIA, citizens, journalists, and non-governmental organisations can access data on pollution, regulatory enforcement, and energy policy decisions. Similarly, the National Environmental Policy Act 1969 (NEPA) requires federal agencies to conduct Environmental Impact Assessments (EIAs) and Environmental Impact Statements (EIS) before approving major projects. These assessments must be published and subject to public comment, ensuring community concerns are formally considered in decision-making (National Environmental Policy Act, 1969).

The most distinctive legal feature in the U.S. system is the right of private individuals and civil society groups to bring enforcement actions through citizen suits. These are specifically provided for in major environmental statutes. For example, under Section 304 of the Clean Air Act and Section 505 of the Clean Water Act, any person may bring a civil action against emission or discharge limits violators if the government fails to enforce the law (Clean Air Act, 42 USC § 7604; Clean Water Act, 33 USC § 1365). Citizen suits can also be brought against regulatory agencies for failing to perform non-discretionary duties. This empowers citizens to hold polluters and government accountable in court without waiting for agency action.

U.S. courts have frequently entertained and ruled on such cases. A notable example is *Massachusetts v. EPA*, where a group of states and NGOs successfully sued the EPA for failing to regulate greenhouse gases under the Clean Air Act (*Massachusetts v Environmental Protection Agency*, 2007). This case had significant legal consequences, affirming the states' standing to sue and the EPA's duty to act. Public access to emissions data is also required under the Toxics Release Inventory (TRI) established by the Emergency Planning and Community Right-to-Know Act 1986, which compels industrial facilities to disclose their pollution levels annually (*Emergency Planning and Community Right-to-Know Act*, 1986).

Nigeria's legal framework for transparency and public enforcement is comparatively weak. The Freedom of Information Act 2011 provides public access to records, but its implementation is patchy. Agencies often deny requests or fail to respond within the required timeframe. Environmental information is not proactively published, and EIAs, though required under the Environmental Impact Assessment Act 1992, are rarely made accessible or subject to effective public consultation (Environmental Impact Assessment Act, 1992). Furthermore, Nigerian law does not recognise citizen suits as U.S. law does. Civil litigation on environmental issues typically relies on private tort claims or constitutional arguments, such as the right to life or property under Sections 33 and 44 of the 1999 Constitution (Constitution of the Federal Republic of Nigeria, 1999, ss 33 and 44). These cases are rare and often face procedural hurdles.

Some efforts to promote transparency exist. For example, the Nigerian Extractive Industries Transparency Initiative (NEITI) publishes audit reports on revenues and licensing in the oil and gas sector. Nigeria is part of the global EITI network. However, these reports are not legally binding, and agencies are not formally required to act on them. Additionally, regulators such as NUPRC and NESREA are not legally required to disclose their enforcement records or publish compliance data.

Legal lessons: Nigeria can adopt several legal reforms from the U.S. model. First, codifying a right to citizen enforcement particularly for environmental and energy law would allow communities and civil society organisations to seek legal remedies independently. This could be added to laws like the Climate Change Act or the Petroleum Industry Act. Second, transparency rules should be legally enforceable. For instance, agencies could be mandated to publish EIAs, pollution statistics, and enforcement outcomes. Third, the courts can be legally empowered to accept suits based on environmental harm alone, reducing reliance on broad constitutional claims.

Climate Commitments and Clean Energy Targets

In the United States, climate policy is driven by federal executive action, regulatory enforcement, and state legislation. Although the U.S. lacks a single national climate statute with binding carbon reduction targets, it has made formal commitments under the Paris Agreement, rejoining the treaty in 2021. In its updated Nationally Determined Contribution (NDC), the U.S. pledged to reduce net greenhouse gas emissions by 50-52% below 2005 levels by 2030 (United States, 2021). While this target is not directly enforceable by law, it provides a guiding framework for federal climate initiatives.

Federal agencies have responded by using their existing statutory powers to regulate emissions. For instance, the Environmental Protection Agency (EPA) has proposed rules under the Clean Air Act to reduce methane from oil and gas operations and to tighten performance standards for power plants and vehicles (Environmental Protection Agency, 2023). The Inflation Reduction Act 2022 (IRA) is the most comprehensive climate-related legislation in U.S. history, providing over \$369 billion in tax credits, grants, and investments to support renewable energy, electric vehicles, and carbon capture projects (U.S. Department of Energy, 2023). Although the IRA does not legally bind the U.S. to specific emission targets, it includes financial tools to achieve the NDC goals.

In addition to federal measures, many U.S. states have enacted binding Renewable Portfolio Standards (RPS) and net-zero legislation. For example, California has committed to 100% clean electricity by 2045, New York requires 70% renewables by 2030, and Massachusetts mandates an 85% emissions cut by 2050 under its Global Warming Solutions Act (National Conference of State Legislatures, 2024). These state-level mandates are enforceable, and utilities that fail to meet clean energy targets can face penalties. In some cases, courts have intervened to require more decisive state action, demonstrating the legal force of these commitments.

In contrast, Nigeria's climate targets are largely aspirational and contained within policy documents rather than binding laws. Nigeria submitted its updated NDC in 2021, pledging a 20% unconditional and 47% conditional reduction in emissions by 2030 compared to business-as-usual projections (Federal Republic of Nigeria, 2021). It also announced a net-zero by 2060 goal and published a Nigeria Energy Transition Plan to guide the shift from fossil fuels to cleaner energy (Federal Government of Nigeria, 2022).

The Climate Change Act 2021 is a step forward, establishing the National Council on Climate Change, a Climate Change Fund, and requiring ministries and large companies to prepare carbon budgets (Climate Change Act, 2021, ss 3-9). Nevertheless, this Act does not include binding national emissions caps or clean energy quotas. Nigeria has also launched policies such as the Renewable Energy and Energy Efficiency Policy (REEEP), aiming for 30% renewable electricity generation by 2030. However, these targets are not codified in law and lack a precise enforcement mechanism (Federal Ministry of Power, 2015). Moreover, Nigeria does not operate a carbon pricing system or emissions trading scheme.

Another significant gap is subnational engagement. Unlike the U.S., where states lead on climate ambition, Nigerian states are not formally integrated into the national climate framework. While some pilot projects exist locally, they are driven by development partners rather than state laws.

Legal lessons: Nigeria can enhance its climate ambition by embedding its targets into enforceable laws. One approach would be to amend the Climate Change Act to include statutory emissions caps and renewable energy quotas, with designated agencies responsible for oversight. Nigeria could also empower the Nigerian Electricity Regulatory Commission (NERC) to issue clean energy mandates similar to U.S. state RPS schemes. Furthermore, state governments could be granted legal powers to implement climate action plans backed by budgetary allocations and technical support.

Legal Lessons for Nigeria

The comparison between the United States and Nigeria reveals several legal strategies that could strengthen Nigeria's approach to energy security and climate change. These lessons cut across regulatory design, legislative enforcement, transparency, and federal-state coordination.

The first and most important lesson is the need for clear, enforceable statutory mandates. In the U.S., core energy and environmental obligations are rooted in federal laws such as the Clean Air Act, the Energy Policy Act, and the Federal Power Act, all of which define institutional responsibilities and include enforcement powers (Clean Air Act, 42 USC §§ 7401-7671q; Energy Policy Act, 2005; Federal Power Act, 16 USC §§ 791-828c). Nigeria has recently modernised its legal framework through the Petroleum Industry Act 2021 and Climate Change Act 2021. However, these laws still lack some of the prescriptive and enforceable elements seen in U.S. legislation. For example, while the Nigerian Climate Change Act establishes a Council and a Climate Fund, it does not impose binding emissions caps or penalties for non-compliance (Climate Change Act, 2021, ss 1-9).

A second lesson lies in regulatory independence and accountability. U.S. regulators like FERC and the EPA operate with legal and financial autonomy, supported by public transparency and judicial oversight. In Nigeria, although the NUPRC, NMDPRA, and NERC are set up by statute, they often struggle with interference and insufficient funding. Nigeria could revise existing laws to include fixed-term appointments, transparent reporting obligations, and public access to regulatory decisions, safeguarding independence and credibility (Petroleum Industry Act, 2021, ss 4-6, 29-30).

Third, citizen enforcement mechanisms are a powerful tool for compliance in the U.S. model. The legal right to bring citizen suits under U.S. statutes ensures that communities and NGOs can act when government regulators fail to do so. Nigeria does not provide a statutory route for public interest litigation on

environmental or energy matters outside limited constitutional claims (Constitution of the Federal Republic of Nigeria, 1999, ss 33 and 44). Amending the Climate Change Act or environmental statutes to include a legal right of action for citizens or NGOs could close this accountability gap.

Another area is the integration of climate goals into binding national and state law. In the U.S., state-level Renewable Portfolio Standards (RPS) are often mandatory and enforced through fines or licensing conditions. By contrast, Nigeria's energy transition targets remain policy goals with little legal force. Legally mandating renewable energy quotas through the Nigerian Electricity Regulatory Commission (NERC) or including emissions caps in licensing frameworks could turn intention into action (Federal Ministry of Power, 2015).

Finally, Nigeria's federal structure offers potential for decentralised innovation, similar to how U.S. states lead climate efforts. The recent constitutional amendment allowing states to generate and distribute electricity independently provides a legal foundation for state-led clean energy initiatives. However, further reforms are needed to empower state governments with the authority and resources to design and enforce their own renewable energy and climate programs (Constitution of Nigeria, 1999, s 14(b); Electricity Act, 2023, s 63).

Legal reforms in summary: Amend the Climate Change Act to include enforceable targets and compliance mechanisms. Introduce citizen enforcement provisions modelled on U.S. environmental statutes. Strengthen the independence of regulators by enshrining tenure protections and mandatory public reporting. Make climate targets and renewable energy quotas binding under Nigerian law. Expand legal powers for state governments to design and implement their climate policies.

By adopting these legal tools and structures from the U.S., Nigeria could transform its climate and energy policy from aspiration to action. Legal clarity, institutional strength, and public accountability are essential for long-term sustainability.

PART 4

Legal and Policy Gaps in Climate Change and Energy Transition

Nigeria's climate commitments (in its Paris Agreement NDC) are ambitious, yet implementation has fallen short. The country's 2021 NDC pledges substantial emissions cuts to end routine gas flaring by 2030, but actual mitigation actions remain weak. Analysts warn that Nigeria's current policies "do not put [it] on track to meet either of its targets" (Climate Action Tracker, 2024). The result is a significant gap between formal climate goals and on-the-ground action.

Renewable energy development faces significant legal hurdles. Nigeria still lacks a unified renewable-energy law, so regulations and incentives are fragmented. One study observes that the government "has no comprehensive laws on renewable energy, while strategies and policies...are dispersed and incoherent" (Olujobi, 2020). This uncertainty has deterred investors. As my former colleague Professor explains, "the absence of an effective legal framework to encourage and promote investment in renewable energy is a major challenge" (Oniemola, 2015). Project financing is complex, and renewables often lack guaranteed grid access or priority connections (Oniemola, 2015). Historical issues like short licence durations and unclear institutional roles have frustrated development. Only recently has new legislation begun to address renewables; until then, the legal regime offered little support for solar or wind projects.

A closely related gap is the lack of rules for waste and decommissioning clean-energy equipment. Until 2024, Nigeria had virtually no end-of-life solar PV systems or batteries regulation. Only in October 2024 did the government issue new Battery Control regulations imposing extended-producer responsibility for batteries (International Energy Agency, 2024). By contrast, solar modules and off-grid systems remain essentially

unregulated. The 2011 e-waste rules do not explicitly list solar products, so retired panels default to general waste. One report found that "there are no clear guidelines for collecting, managing, and disposing of [stand-alone solar] e-waste in Nigeria" (Africa Clean Energy Technical Assistance Facility, 2021). Without an official framework, many companies run informal take-back schemes, but without legal enforcement or public awareness, end-of-life solar and battery waste are likely to be dumped or incinerated, creating pollution risks.

Even where decommissioning is mandated, enforcement is virtually non-existent. Nigeria's first oilfield (Oloibiri) was capped and abandoned in the 1970s, and locals report that some wells there "still leak crude oil, and no formal cleanup has taken place" (Adam, 2025). Likewise, pipelines and platforms have never been dismantled adequately in Ogoniland and other delta areas. Commentators warn that "without decommissioning, old and corroded pipelines continue to leak oil, causing ongoing environmental damage" (Adam, 2025). In short, despite legal obligations (for example, under the Petroleum Industry Act), Nigeria has failed to enforce basic abandonment plans, exposing communities to chronic oil pollution.

Finally, weak enforcement, poor coordination and low public awareness compound all these gaps. Nigeria has many climate and environmental laws, but compliance is often only on paper. Analysts of the Climate Change Act note that regulators lack resources and political backing and that public awareness of climate commitments is "also lacking" (Olujobi, 2024). Coordination across ministries is similarly poor: a report finds that "effective coordination across Nigerian ministries and agencies... is currently limited" (Climate Action Tracker, 2022), meaning climate concerns remain marginal in planning.

Conclusion

The final part of this essay reveals that Nigeria's climate and energy laws are rife with gaps. Ambitious targets (in NDCs, the Climate Change Act and the Petroleum Industry Act) have not been backed by coherent domestic legislation or vigorous enforcement. To exemplify, there is still no comprehensive renewable-energy law, and until recently, there has been no framework for solar or battery waste. Historic oilfields have been abandoned without cleanup. Agencies remain poorly coordinated, and penalties for violations are minimal. The legal implication is clear: Nigeria's commitments will remain hollow promises without enforceable domestic rules.

The way forward is comprehensive legal reform. Nigeria should enact a dedicated renewable-energy law to clarify roles and incentives for clean power. It should establish enforceable decommissioning and waste-management rules for all energy infrastructure, including mandatory cleanup funds or take-back programs for PV panels and batteries. Enforcement agencies (NOSDRA, NESREA, NERC) need stronger powers, resources and penalties. Institutional coordination must improve to illustrate, fully empowering the National Council on Climate Change and requiring integrated climate planning across ministries.

To conclude, Nigeria should boost transparency and public engagement (namely, through mandatory environmental reporting and community consultations). These measures would conform domestic law with Nigeria's climate pledges and ensure that energy policy yields sustainable, secure outcomes.

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