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ENHANCING NIGERIA'S CLEAN ENERGY TRANSITION:

MAPPING CHINESE INVESTMENT AND STRATEGIC PRIORITIES

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ACRONYMS

AfCFTA	African Continental Free Trade Area
AfDB	African Development Bank
AGTF	Africa Growing Together Fund
AKK	Ajaokuta-Kaduna-Kano
APRI	Africa Policy Research Institute
AU	Africa Union
BESS	Battery Energy Storage Systems
BEVs	Battery Electric Vehicles
BOC	Bank of China
BoI	Bank of Industry
BOO	Build-Own-Operate
BOS	Balance of System
BRI	Belt and Road Initiative
BRT	Bus Rapid Transit
BU	Boston University
BYD	Build Your Dreams
CATL	Contemporary Amperex Technology Limited
CBAM	Carbon Border Adjustment
CBN	Central Bank of Nigeria
CCECC	China Civil Engineering Construction Corporation
CDB	China Development Bank
CGCOC	CGC Overseas Construction Group Co., Ltd
CHEC	China Harbour Engineering Company
CHEXIM	China Exim Bank
CMB	China Merchants Bank
CMEC	China Machinery & Engineering Corporation
CNCEC	China National Chemical Engineering Corporation
CNEEC	China National Electric Engineering Company Limited
CNOOC	China National Offshore Oil Corporation
CNPC	China National Petroleum Corporation
CNY	Chinese Yuan
COP26	26th Conference of the Parties
CPP	China Petroleum Pipeline Engineering Company Limited
CSCEC	China State Construction Engineering Corp
DARES	Distributed Access Through Renewable Energy Scale-Up
DBN	Development Bank of Nigeria
DC-coupled	Direct Current-coupled
DFC	Development Finance Corporation
DFIs	Development Finance Institutions

ECOWAS	Economic Community of West African States
EPC	Engineering, Procurement and Construction
ES1	Executive Summary 1
ESG	Environmental, Social, and Governance
ETP	Energy Transition Plan
EU	European Union
EVs	Electric Vehicles
FGN	Federal Government of Nigeria
FMCG	Fast-Moving Consumer Goods
FOCAC	Forum on China-Africa Cooperation
FTZ	Free Trade Zone
FX	Foreign Exchange
FX-hedged	Foreign Exchange Hedged
GAC	Guangzhou Automobile Group
GACC	General Administration of Customs of the People's Republic of China
GCF	Green Climate Fund
GGC	Green Green Capital
GVE	GVE Projects Limited
GW	Gigawatt
ICBC	Industrial and Commercial Bank of China
IDA	International Development Association
IEA	International Energy Agency
IEC	International Electrotechnical Commission
IFC	International Finance Corporation
InfraCredit	Infrastructure Credit
IoT	Internet of Things
ISSB	International Sustainability Standards Board
JAC	Jianghuai Automobile Company Limited
JV	Joint Venture
KPIs	Key Performance Indicators
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
MAX	Metro Africa Xpress
MCC	Mutual Commitment Company
MMscfd	million standard cubic feet per day
MoU	Memorandum of Understanding
MOUs	Memoranda of Understanding
MTPA	Million Tonnes Per Annum
MW	Megawatt
MWh	Megawatt-hour
MWp	Megawatt-peak
NASENI	National Agency for Science and Engineering Infrastructure

NBS	National Bureau of Statistics
NCIP	Nigerian Climate Investment Platform
NCSP	Nigeria-China relationship to a Comprehensive Strategic Partnership
NDC	Nationally Determined Contribution
NDRC	National Development and Reform Commission
NEP	Nigeria Electrification Project
NEPAD	New Partnership for Africa's Development
NESI	Nigerian Electricity Supply Industry
NESP	Nigeria Electrification Strategy and Plan
NESREA	National Environmental Standards and Regulations Enforcement Agency
NGN	Nigerian Naira
NLNG	Nigeria Liquefied Natural Gas Limited
NNPC	Nigeria National Petroleum Corporation
NNPCL	Nigeria National Petroleum Corporation Limited
NOCs	National Oil Companies
NOGICD	Nigerian Oil and Gas Industry Content Development
NREIF	Nigeria Renewable Energy Innovation Forum
OECD	Organization for Economic Co-operation and Development
OEM	Original Equipment Manufacturer
OPEC	Organization of the Petroleum Exporting Countries
PAYGO	Pay-As-You-Go
PBoC	People’s Bank of China
PGII	Partnership for Global Infrastructure and Investment
PHEVs	Plug-in Hybrid Electric Vehicles
PPAs	Power Purchase Agreements
PPPs	Public-Private Partnership
PV	Photovoltaic
PwC	PricewaterhouseCoopers
REA	Rural Electrification Agency
RMB	Renminbi
SDG	Sustainable Development Goal
SEC	Securities and Exchange Commission
SEPCO3	Shandong Electric Power Construction Corporation III
SHS	Solar Home System
SME	Small and Medium-sized Enterprise
SOE	State-Owned Enterprise
SON	Standards Organization of Nigeria
SUMEC	Shanghai Electric United Manufacturing and Engineering Company
SUVs	Sport Utility Vehicles
TBEA	Tebian Electric Apparatus, China
UNIDO	United Nations Industrial Development Organization
US	United States

USA	United States of America
USD	United States Dollars
WAPP	West Africa Power Pool
WB	World Bank
WHR	Waste-Heat Recovery

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EXECUTIVE SUMMARY

Nigeria's clean energy transition is unfolding amid a transformative global energy shift. Despite an installed generation capacity of approximately 13 gigawatt (GW), grid transmission constraints limit peak electricity generation to about 5.7 GW against an estimated demand of 20 GW, leaving between 86 and 110 million people without access to electricity. Recent policy reforms, including the Energy Transition Plan (ETP), the third Nationally Determined Contribution (NDC 3.0) and the Electricity Act of 2023, set ambitious goals, such as universal electricity access by 2030, 50% renewable generation share by 2030 and net-zero emissions by 2060.

China has become a key partner in advancing these goals. Its early engagement centered on mega-infrastructure projects like the Zungeru and Mambilla hydropower plants, the Ajaokuta-Kaduna-Kano (AKK) gas pipeline and major transmission upgrades financed through China Exim Bank and China Development Bank (CDB) loans. More recently, under the Belt and Road Initiative "2.0" pivot, China has shifted toward "small and beautiful" projects that emphasize distributed renewables, testing labs, local manufacturing and joint ventures. Recent bilateral agreements include a EUR7.6 billion green hydrogen project with LONGi Green Energy Technology Company Limited (LGETCL), lithium battery plants with Shenzhen LEMI Technology Development Company Ltd and Huawei's solar and mini-grid testing facilities.

This evolving engagement aligns with Nigeria's dual-pathway energy strategy of deploying renewables at scale while using gas as a transitional fuel. Chinese firms, as in other countries across Africa, now dominate the supply of solar panels, inverters and battery systems for Nigeria's off-grid and commercial solar markets. At the same time, new cooperation frameworks such as the 2024 Nigeria-China Comprehensive Strategic Partnership anchor bilateral commitments across critical sectors from photovoltaic (PV) testing to e-mobility.

Comparisons with Western and multilateral actors reveal a complementary ecosystem. While the EU and US prioritize governance, concessional finance, and de-risking models, Chinese actors offer scale, speed and embedded supply chains. Nigeria's pragmatic strategy is to stack these diverse capital sources, Chinese EPC+F deals, World Bank concessional grants, EU guarantees and local pension funds into blended finance packages. This hybrid approach maximizes delivery while balancing transparency, standards and industrial development.

Five opportunity clusters

Looking ahead, five strategic opportunity clusters can shape the next phase of Nigeria-China cooperation, aligned with the Energy Transition Plan (ETP 2060), the African Continental Free Trade Area (AfCFTA) and the West Africa Power Pool (WAPP).

1. **Finance:** Deepen the renminbi (RMB)-naira swap and establish local settlement systems to ease FX pressures and unlock trade liquidity. Expand RMB-linked and commodity-backed credit lines to finance renewable energy, manufacturing and infrastructure projects, creating a stable financial base for green industrialization.

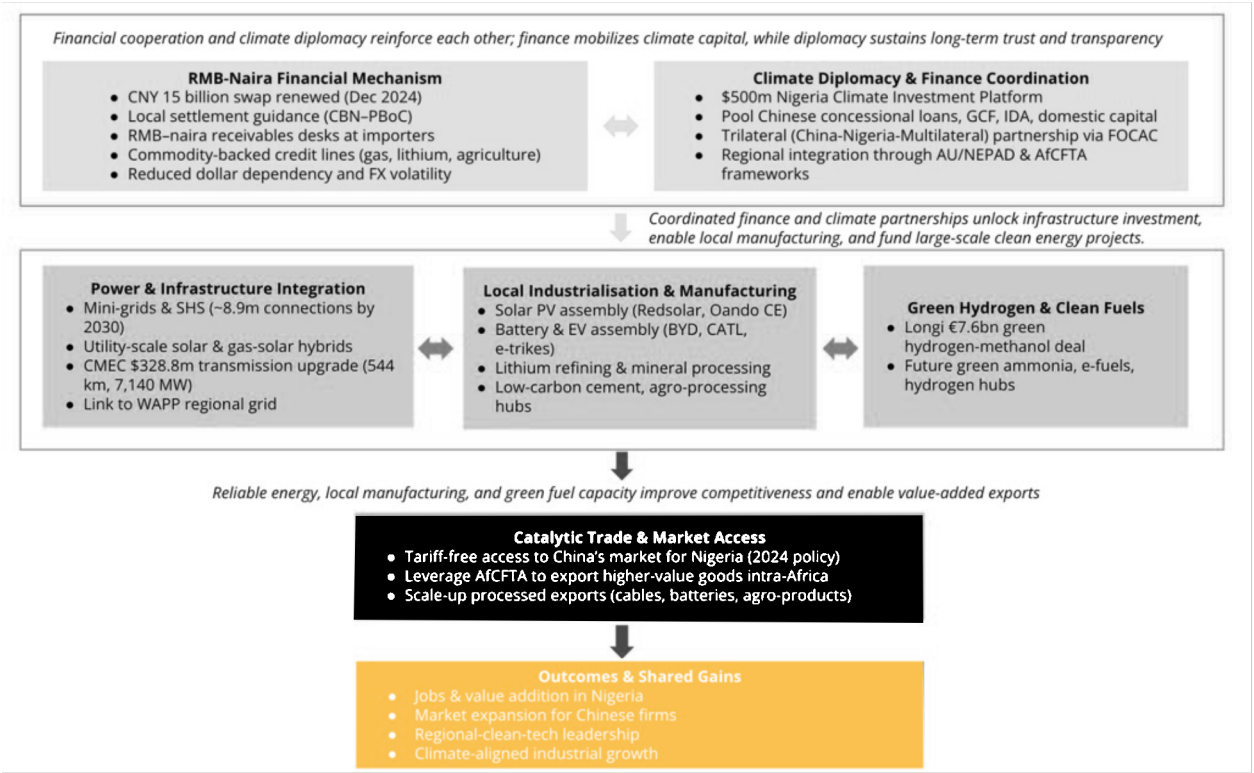
2. **Trade:** Leverage China's tariff-free policy and AfCFTA rules to grow value-added exports to Chinese and African markets. By linking cleaner production and regional trade integration, Nigeria can move beyond raw commodities to competitive, low-carbon goods.

3. **Infrastructure:** Scale up solar mini-grids, solar home systems and grid-scale renewables in partnership with Chinese Engineering, Procurement and Construction (EPC). Integrate new transmission lines and generation assets into WAPP to enable regional power trade and expand access across the Economic Community of West African States (ECOWAS).

4. **Local manufacturing and minerals:** Support Chinese-Nigerian joint ventures in solar modules, inverters, EVs and battery assembly. Advance lithium, cobalt and nickel refining to capture value from Nigeria's transition minerals and strengthen green supply chains under AfCFTA.

5. **Climate Diplomacy and Investment:** Operationalize a Nigeria-China Energy Investment Platform under the Nigerian Climate Investment Platform (NCIP) framework to blend Chinese, Western and domestic capital. This approach can anchor transparent, country-led financing for clean energy and industrial development.

Mapping Nigeria–China clean energy and industrialization opportunities



Source: author's concept

To realize these opportunities, Nigeria must adopt a coordinated implementation framework anchored on triangular partnerships, transparent standards, measurable Key Performance Indicators (KPIs) and strong local ownership. Done strategically, Nigeria-China clean energy cooperation can move beyond ad hoc projects to form the backbone of Nigeria's broader industrial transformation, securing both sustainable growth and energy sovereignty.

1. INTRODUCTION

Nigeria's clean energy transition is taking shape in the midst of a major global energy shift. Across the world, countries are rethinking how to balance energy security, economic growth and climate ambition. This shift is not just environmental; it is geopolitical. Major powers are competing to define the rules of the new green economy, using trade, technology and finance as tools of influence. The European Union's Global Gateway and the G7-led Partnership for Global Infrastructure and Investment (PGII) are both designed to offer alternatives to China's Belt and Road Initiative (BRI), each promoting sustainable, transparent and resilient infrastructure partnerships. For countries like Nigeria, this creates both opportunity and pressure: the opportunity to attract new investment, and the pressure to navigate competing global interests while advancing national priorities.

China has become a leading player in this evolving landscape. Once focused mainly on resource extraction and large-scale infrastructure, China's engagement in Africa is now shifting toward co-developing energy, industrial and digital ecosystems. In Nigeria, this evolution is clear. What began with projects such as the Zungeru and Mambilla hydropower plants and the Ajaokuta-Kaduna-Kano (AKK) gas pipeline has expanded into a diverse portfolio that includes solar power, transmission upgrades, e-mobility, lithium processing and local manufacturing. Between 2018 and 2025, Chinese clean-tech exports to Nigeria grew from about USD 193 million to more than USD 760 million (January to August 2025),[1] a reflection of both nations' growing alignment around clean technology and green industrialization.

The present report examines the depth and direction of China's engagement in Nigeria's energy landscape. It places these trends within the context of Nigeria's Nationally Determined Contribution (NDC), Energy Transition Plan (ETP 2060), the Electricity Act 2023 and regional integration frameworks such as the African Continental Free Trade Area (AfCFTA) and the West African Power Pool (WAPP). It also compares China's approach with other international efforts under the Global Gateway project and PGII, highlighting how Nigeria can attract and blend multiple sources of finance to accelerate its energy transition.

Ultimately, this report argues that Nigeria's partnership with China is not just an energy relationship but a strategic one. It sits at the intersection of global green competition and national development. If properly managed, this partnership can serve as a bridge linking finance, technology and trade to drive inclusive, job-rich and low-carbon growth. By aligning geopolitical opportunities with domestic ambitions, Nigeria can move beyond dependency and take a leading role in shaping Africa's green industrial future.

2. CONTEXT AND POLICY ALIGNMENT

2.1 Nigeria’s energy and climate landscape

The Nigerian energy and climate landscape is characterized by chronic electricity deficits and ambitious policy commitments. This is the local backdrop to the country’s ongoing clean energy transition in the context of a palpable global rethink. Despite an installed generation capacity of approximately 13 Gigawatt (GW), grid transmission constraints limit peak electricity generation to about 5.7 GW against an estimated demand of 20 GW, leaving between 86 and 110 million people without access to electricity.[2] In response, Nigeria has articulated a clear climate-smart policy framework. Its ETP and NDCs set forth a pathway to achieve net-zero emissions by 2060 (announced at the 26th Conference of the Parties, COP26) and universal energy access by 2030.

Building on these commitments, Nigeria submitted its third Nationally Determined Contribution (NDC 3.0) in September 2025, which outlines a 29% reduction in emissions by 2030 and 32% by 2035 (relative to 2018 baselines). Aligned with the Mission 300 Compact,[3] NDC 3.0 sets ambitious sectoral targets, including achieving 100% electricity access by 2030, raising the renewable share of power generation to 50% by 2030, and sustaining an annual 9% increase in new electricity connections through the end of the decade. These targets are embodied in the ETP, which aim to expand renewables, reduce gas flaring and close the energy-access gap. For example, the ETP forecasts 209 GW of solar and 11 GW of hydro by 2050.[4] The ETP is a sector-wide strategy, primarily focusing on decarbonization and modernization across power, transport, oil and gas, cooking and industry.

The Electricity Act of 2023 stands as a foundational piece of legislation designed to achieve these goals. It repeals the previous 2005 Act and introduces a liberalized framework that empowers states, companies and individuals to generate, transmit and distribute electricity. A key provision is the prioritization of renewable energy, which includes mandates for a renewable energy share and investment incentives like feed-in tariffs and tax breaks. In short, **Nigerian policy is shifting toward low-carbon power, universal access and local value-added.**

However, a significant element of this transition has been driven not only by policy but by macroeconomic reality. The removal of the long-standing petrol subsidy in 2023, coupled with the unification of foreign exchange rates, tripled household energy costs and made petrol generators an unaffordable luxury. This shock provided a powerful market-driven incentive, accelerating an existing shift toward clean energy that had already begun in the commercial and industrial (C&I) sector and now permeates the mass market.

Despite the momentum in renewables, the transition is not without internal contradictions. Nigeria's climate commitments still position fossil gas as a primary "transition fuel." The plan aims to nearly double gas-fired power capacity to 17 GW by 2035.[5] This is justified as a way to replace higher-emission diesel generators and provide stable baseload power for industrialization. This strategic choice, however, creates a point of tension for international climate finance, which is increasingly divesting from fossil fuel projects, and adds a layer of complexity for investors navigating Nigeria's dual-pathway energy future.

2.2 China's strategic framework

China's global investment strategy is undergoing a fundamental re-orientation, a shift that has profound implications for its engagement with Nigeria. The initial model of the Belt and Road Initiative (BRI 1.0) was characterized by large, state-directed and debt-heavy projects, such as hydropower dams and railways.[6] This approach, while effective at a grand scale, came with challenges related to debt sustainability and political risk. The pivot to "BRI 2.0" represents a change in focus toward "small and beautiful" projects that are more commercially-oriented, environmentally sustainable and directly address local livelihood needs.[7] This new strategy is not a retreat but a pragmatic adaptation driven by global economic pressures and a domestic policy shift toward green development.

The Forum on China-Africa Cooperation (FOCAC) serves as the primary diplomatic and economic channel for this engagement. At the FOCAC 2024 summit, China pledged significant financial support, including a Special Fund for the China-Africa Green Industrial Chain, with a commitment to develop 30 specific clean energy projects.[8] This signals a formal, high-level alignment with Africa's green development goals, moving beyond rhetoric to a more structured and project-specific approach. The new paradigm is one where China exports its subsidized industrial overcapacity in solar, batteries and electric vehicles (EVs) at the very moment when Nigeria's market shocks have created an explosive demand for these products.[9]

2.3 Bilateral agreements

The formal bilateral relationship is anchored in the elevation of the Nigeria-China relationship to a Comprehensive Strategic Partnership (NCSP) in 2024.[10] This high-level framework provides a coordination channel for a series of Memoranda of Understanding (MOUs) that cover a wide range of clean energy technologies.

Table 1: Key Memoranda of Understanding (MoUs) and agreements between Nigeria and China impacting the clean energy transition

Year	Focus Area	Institutions Involved	Key Details	Status
2018	Currency/Liquidity	Central Bank of Nigeria (CBN) and People's Bank of China (PBOC)	Promote trade transactions, and reducing dependence on third-party currencies12	Renewed in 2024
2020	Solar Power	Rural Electrification Agency (Nigeria) and Huawei (China)	Installation of off-grid solar solutions in 1,000 rural communities. Key engagements with Huawei, LONGi Green Energy Technology Company Limited (LGETCL), and other OEMs	Ongoing
2022	Biomass Energy	Nigerian National Petroleum Company Limited, China Machinery Engineering Company (CMEC)	50 megawatt (MW) biomass power plant using agricultural waste in Borno State	Planning Stage
2023	Mixed Renewable Sources	Rural Electrification Agency (Nigeria), Huawei, PowerChina	Comprehensive rural electrification program using mixed renewable sources	Ongoing

Year	Focus Area	Institutions Involved	Key Details	Status
2023	Local Energy Storage Manufacturing	Rural Electrification Agency (Nigeria), National Agency for Science and Engineering Infrastructure (NASENI), and Shenzhen LEMI Technology Development Company Ltd	The tripartite agreement has enabled Nigeria to draw in a USD150 million investment to establish a lithium battery manufacturing factory	Signed, Phase 1 scheduled for operations in Q2 2024- revised- tentatively Q3-2026
2023	Electricity Distribution	Federal Government of Nigeria (FGN) Power Company, China Civil Engineering Construction Corporation (CCECC) and Tebian Electric Apparatus Co., Ltd (TBEA) Energy	USD463 million agreement for upgrading electricity distribution lines	Ongoing
2023	Energy Storage	Federal Ministry of Power (Nigeria), Ministry of Ecology and Environment (China)	USD150 million lithium-Ion Battery manufacturing and processing factory in Nigeria	Signed
2024	Mini-grid simulation	Nigeria's Rural Electrification Agency (REA) and Huawei (Nigeria)	Agreed to build a *mini-grid simulation and standardization center* in Abuja. The facility will simulate extreme weather to test off-grid systems, boosting local R&D and protecting investments.	Signed
2025	Green Hydrogen	APPL Hydrogen Fuels Limited (AHFL), LONGi (China)	EUR7.6 billion deal for green hydrogen production and export infrastructure	Signed
2025	Grid Upgrades	China Machinery & Engineering Corporation (CMEC) under the Presidential Power Initiative	USD328.8 million EPC finance deal. This covers 544 km of 330kV/132kV transmission lines (expanding coverage by 7,140 MW) across 17 sites. It complements Siemens-led generation/transmission upgrades and signals a deepening of Chinese EPC participation in Nigeria's grid modernization.	Signed

Source: Solar Quarter, Green Hydrogen Organization, and Africa Energy Portal

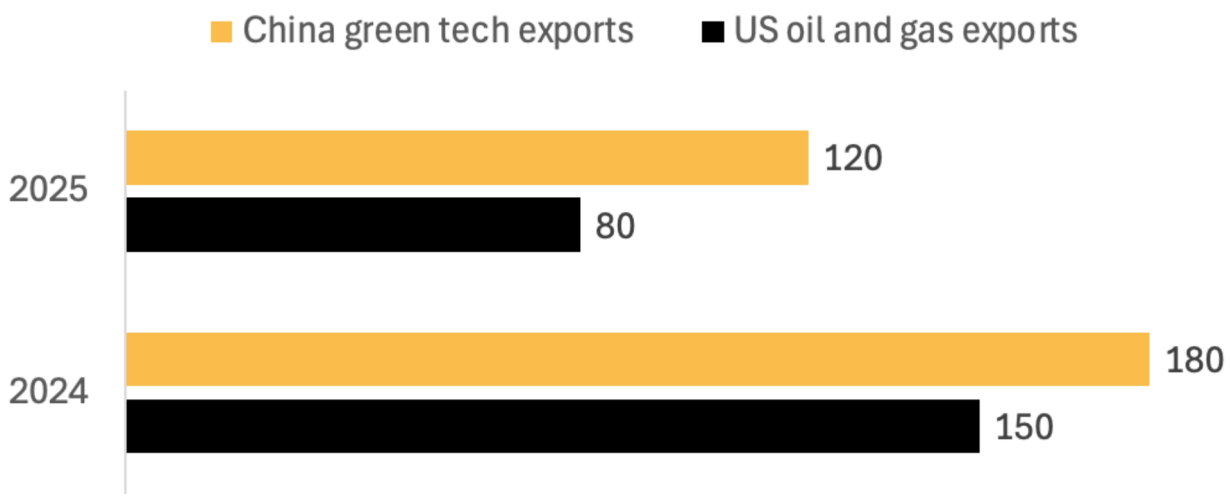
These agreements sit "on top" of existing market dynamics, and when they translate into bankable projects, they can significantly accelerate the pace of Nigeria's energy transition.

3. OVERVIEW OF CHINA'S CLEAN ENERGY INVESTMENT

3.1 Global overview of China's clean energy exports

In recent years, China has rapidly repositioned itself in the global energy transition as a dominant exporter of low-carbon technologies. As Bloomberg recently observed, China's clean energy exports have even outpaced US fossil fuel exports (see Figure 1 below), underscoring how the balance of energy trade is tilting from hydrocarbons toward clean tech.[14]

Figure 1: Energy exports: United States (US) vs. China (USD billions)



Source: *Bloomberg*
Note: *Data for 2025 is through July.*

Key global patterns include:

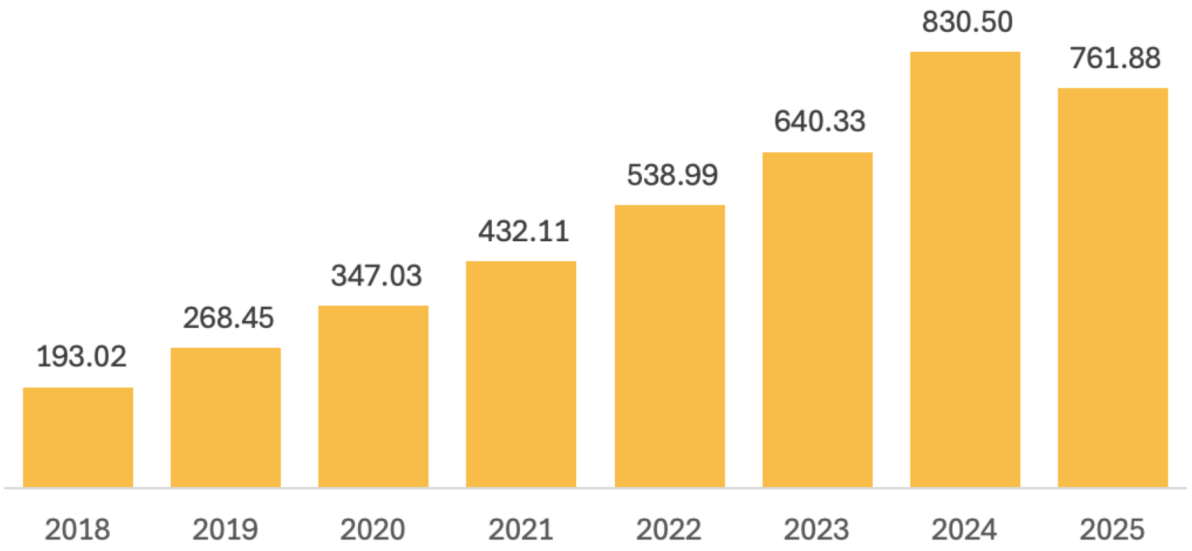
- **Scale and breadth**: Chinese firms now supply a full spectrum of clean technologies, from solar modules and wind turbines to batteries, inverters and electric vehicles. Their scale allows cost leadership, which helps China penetrate emerging markets.
- **"Export-for-infrastructure" model**: Chinese state and commercial actors increasingly bundle technology supply with financing, EPC capacity and long-term servicing contracts. This model embeds Chinese firms deeply into partner countries' energy systems.
- **Risk moderation**: Global investors are pulling back from high-carbon and large coal deals, increasing China's role in bridging finance gaps for renewable and transition infrastructure.
- **Geopolitical leverage**: Clean energy exports strengthen China's soft and hard infrastructure footprint abroad, influencing trade, standards and diplomatic alignments in recipient countries.

Against that backdrop, China's involvement in Nigeria represents a vivid case of exporting **infrastructure, finance and technology** to shape a partner's low-carbon transition trajectory.

3.2 Chinese investment and export trends in Nigeria

Between 2018 and 2025, China's clean energy exports to Nigeria have expanded dramatically, illustrating both nations' growing alignment in the energy transition. Total exports across all clean technology categories, including grid equipment, batteries, electric vehicles (EVs), solar and wind, rose from USD 193 million in 2018 to a peak of USD 830 million in 2024, before reaching USD 762 million between January and August 2025 alone (see Figure 2). This trajectory represents more than a threefold increase in less than a decade, reflecting the acceleration of Nigeria's clean-energy demand and China's capacity to supply affordable technology at scale.

Figure 2: China's cleantech exports to Nigeria (USD billions)

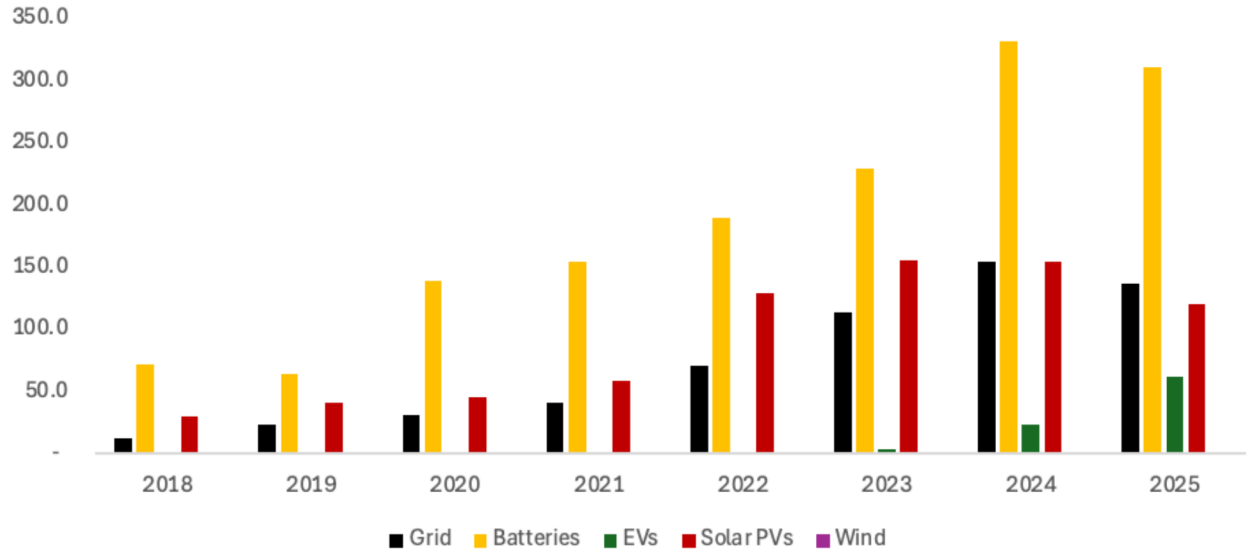


Source: *Ember 2025*
Note: *Data for 2025 is through August.*

Batteries include power storage systems, EV batteries and consumer batteries. EVs include battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs).

Clean energy and related technologies now form a central pillar of Chinese engagement, with 2025 exports already substantial within eight months, covering grid systems, battery storage, electric mobility, solar photovoltaics and, to a smaller extent, wind technologies (see Figure 3). Together, these flows underscore the intensity and immediacy of China's commercial outreach in powering Nigeria's shift toward a more resilient and sustainable energy future.

Figure 3: China's cleantech exports by technologies to Nigeria (USD billions)



Source: *Ember, author's analysis*

3.3 Investment shifts and project patterns in Nigeria

The arc of Chinese investment in Nigeria's energy sector has evolved significantly. The first phase in early 2000s was characterized by an interest in oil securitization, exemplified by China National Offshore Oil Corporation's (CNOOC) USD2.27 billion acquisition of oil blocks. This was followed by a second phase (from 2012) which was dominated by mega-infrastructure financed by China's policy banks.[16]

- **Hydropower dams:** China Exim Bank (CHEXIM) and China Development Bank (CDB) jointly funded Nigeria's largest planned dams (e.g. Zungeru, Mambilla) with multi-billion dollar loans. For instance, the Mambilla hydropower project (3,050 MW) secured about USD4.93 billion from CHEXIM Bank (co-financed by the Nigerian government). Likewise, Gurara Dam (30 MW) received a USD1 billion CHEXIM loan in 2019.
- **Gas infrastructure:** The China-backed Ajaokuta-Kaduna-Kano (AKK) gas pipeline (614 km) was financed by a USD2.5 billion CHEXIM loan in 2020. A related USD500 million CHEXIM loan was made in 2018 for flare-gas recovery pipelines.
- **Transmission:** Even grid reinforcement saw early Chinese funding: a USD500 million CHEXIM loan in 2013 upgraded transmission capacity in the north.

These big-ticket deals typify China's traditional model of providing policy-bank loans for large, hard infrastructure, often coal or hydroelectricity projects (though Nigeria's are hydro/gas). Chinese EPC contractors (e.g. Sinohydro, China Harbour Engineering Company, CHEC) executed these projects. See table 2 below for examples of major projects and funding.

Table 2: Examples of major clean energy infrastructure projects and funding by Chinese firms

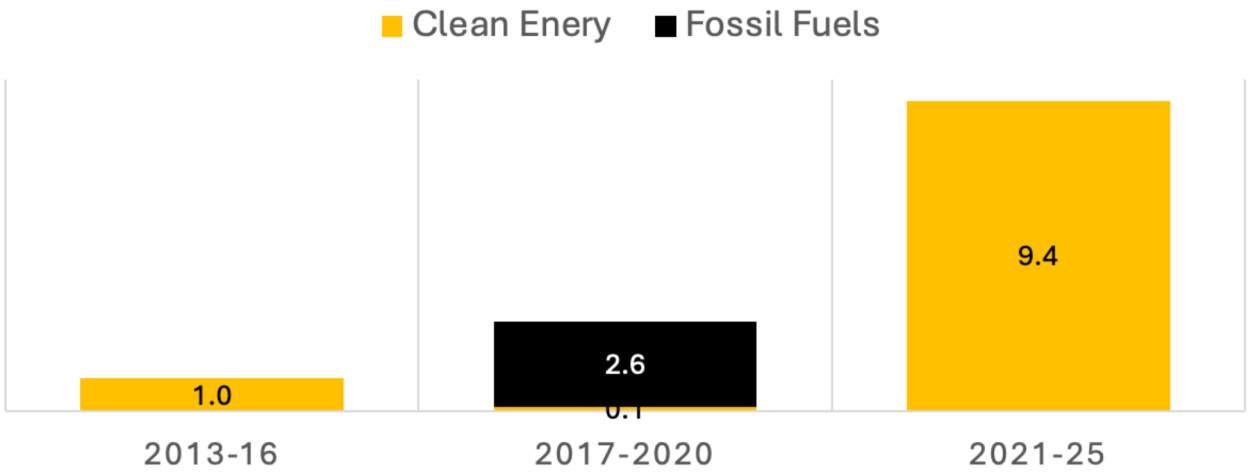
Year	Project	Sector	Chinese Role	Finance
2013	Transmission Upgrade	Grid (T&D)	EPC by Chinese firms	USD500m CHEXIM loan
2018	Flare Gas Recovery Pipeline	Gas	EPC by Chinese firms	USD500m CHEXIM loan
2019	Gurara Hydropower (30 MW)	Hydro	EPC by Chinese firms	USD1,000m CHEXIM loan
2020	AKK Gas Pipeline	Gas	EPC by Chinese firms	USD2,500m CHEXIM loan
2025	Transmission Line Rehab (Presidential Power Initiative)	Grid (T&D)	CMEC EPC and financing	USD328.8m contract

Source: Boston University - Global Development Policy Center[17] and Africa Energy Portal

Shifts after 2015: From 2015 onward, both global Chinese strategy and local conditions shifted. As Chinese policy banks became more cautious (amid capital controls and debt concerns), Chinese commercial actors and alternative financing began to take on a larger role.[19] Chinese contractors now frequently bundle *equipment supply, EPC services and project finance (EPC+F)*, sometimes using Chinese Export Credit insurance (Sinosure) and RMB-naira (NGN) currency swaps.[20] For example, CMEC's 2025 deal included provision of Chinese financing alongside construction. China's domestic firms (e.g. Huawei, LONGi, Sungrow, Deye) have launched supplier-credit arms that effectively provide credit for Nigerian buyers, emerging as critical financiers of distributed solar.

Meanwhile, Nigerian demands have decentralized, calling forth commensurate Chinese responses. The market has opened up to smaller-scale renewable projects financed by private capital. For instance, Chinese solar/OEM companies sold kits for Commercial & Industrial (C&I) solar parks, mini-grids, and millions of home solar systems. Chinese actors also pivoted to *standards and quality support*: the Huawei-led solar testing lab and mini-grid simulation center were agreed during 2024 visits. These help ensure that Chinese-made modules and inverters meet International Electrotechnical Commission (IEC) standards, addressing Nigeria's concerns about counterfeit or substandard imports.[21] These improved standards have helped meet demand in the Nigerian clean energy market with high-quality products at the best prices.

Figure 4: China's clean energy and fossil fuels investment in Nigeria, 2013 – 2025 (USD billions)



Source: AidData's Global Chinese Development Finance Dataset, Version 3.0; author's analysis

3.4 Comparison with EU, US, and multilateral cooperation

The competitive landscape for clean energy investment in Nigeria is complex and multi-polar. While the EU and US often frame their initiatives as alternatives to China's BRI, a closer look at the ground reveals a more pragmatic, multi-stakeholder ecosystem. The EU's Global Gateway initiative, for example, is presented as an alternative that prioritizes governance, transparency, and high standards.[23,24] The US International Development Finance Corporation (DFC), under its Power Africa initiative, focuses on de-risking private sector investment in specific areas like Small and Medium-sized Enterprise (SME) financing and critical minerals supply chains, often with a strategic competition lens. A prime example is the DFC's USD280 million loan to Access Bank to support SMEs and women-led businesses.[25] Multilateral development banks, such as the World Bank and the African Development Bank (AfDB), play a critical role by providing concessional capital and technical assistance, as seen in the Nigeria Electrification Project (NEP) and the follow-on International Development Association (IDA) project, which de-risk the market for private sector entry. For example, the World Bank's Distributed Access Through Renewable Energy Scale-Up (DARES) program channels IDA funding through Nigeria's REA to scale mini-grids and Solar Home System (SHS) for 17.5 million people, while Chinese capital typically flows through commercial loans, EPC arrangements and Original Equipment Manufacturer (OEM) partnerships,[26] with China's product and service delivery consistently standing out for effective implementation across projects of varying scale.

However, Nigerian policymakers and firms do not view these actors as mutually exclusive. The on-the-ground reality is one of cooperation and complementarity. Nigeria's approach is to stack different forms of capital to get projects off the ground. A project might combine a World Bank grant, a Chinese OEM's EPC services and vendor financing, and long-tenor naira debt from a local institution like InfraCredit. This pragmatic approach highlights the fact that the so-called "competition" is largely rhetorical; what matters most to Nigeria is the delivery of tangible results and the creation of economic opportunity.

Table 3: Comparative financing modalities for clean energy in Nigeria

Institution/Actor	Type of Finance	Typical Project Size	Project Type(s)	Conditionalities & Approach	Strategic Rationale
CHEXIM/CDB	Sovereign Loans, EPC Finance	Mega-projects (over USD1B)	Large-Scale Hydro, Rail, Transmission	Sovereign guarantee, tied to Chinese firms	Geopolitical influence, resource security, BRI 1.0 legacy
Chinese OEMs (Huawei, Deye)	Vendor/Supplier Credit	Modular (mid-sized)	C&I Solar, Mini-grids, SHS	Secured by distributor turnover, USD-denominated	Market share acquisition, supply chain control
World Bank/IDA	Concessional Grants & Loans	Large-Scale (over USD100M)	Mini-grids, SHS, Market Dev.	De-risking, technical assistance, Results-Based Finance	Sustainable Development Goal (SDG 7), poverty reduction, market creation
US DFC	Private-Sector Debt & Equity	Mid-sized (USD10M-USD280M)	SME Finance, Critical Minerals	High standards environmental, social, and governance (ESG), counter-China influence	Strategic competition, private sector-led development
EU (Global Gateway)	Blended Finance, Guarantees	Mid-to-Large scale (over USD50M)	Grid upgrades, Renewables, Green Hydrogen	ESG, transparency, untied aid principles	High-standards alternative to BRI, climate action
Nigerian Banks	Commercial Loans	Small-to-Mid (USD1M-USD25M)	C&I Solar, Foreign Exchange Hedged (FX-hedged) projects	Strong corporate balance sheets, hard currency revenues	Profitability, risk aversion, follower model

Source: E-International Relations, Carbon Brief, US Embassy; author's analysis

4. POLITICAL ECONOMY AND PERCEPTIONS

The Nigeria-China relationship is shaped by a mix of opportunity and constraint, underpinned by both countries' core interests. For Nigeria, the pursuit of Chinese cooperation is driven by urgent economic and developmental goals: industrialization, job creation, energy access and infrastructure expansion. Chinese partnerships, whether in solar panel manufacturing, EV assembly or grid upgrades, offer opportunities to localize industry and create employment. China also provides hard currency through loans and trade, including local-currency swaps, which help Nigeria manage its persistent FX crunch.[27] Unlike Western funds, Chinese finance is often more accessible, though usually at commercial terms. Moreover, Chinese partnerships can be viewed as "south–south cooperation," emphasizing mutual benefit and fewer political conditions.

Projects such as the CMEC transmission deal are championed domestically as turning points for industrial growth and social development.[28] More broadly, Nigeria's participation in the Belt and Road Initiative and its special strategic partnership with China are seen as ways to secure infrastructure and technology transfer. Chinese investors have also shown flexibility (e.g. accepting naira payment with RMB hedges), which is an adaptation that Western firms seldom consider.

However, China's growing influence in Nigeria also reflects a deeper asymmetry in capacity that goes beyond technology and cost competitiveness. Over decades, Chinese actors have built what can be called **"transactional literacy"** as regards Nigeria, an ability to navigate local systems with insider fluency. Chinese firms maintain end-to-end control of supply chains, from OEM factories in China to installation by Chinese contractors in Nigeria. They embed financial arrangements such as RMB credit lines, dollar supplier finance, stablecoins and consignment trade that bypass Nigeria's slower banking system. This lowers transaction costs and allows Chinese companies to operate more like insiders than foreign investors. Nigeria, by contrast, has not developed a parallel **"China literacy."** Engagement remains fragmented and reactive, with ministries and regulators lacking standing units or institutional memory. Deal structures are often opaque, producing weak bargaining power, limited leverage in joint ventures and missed opportunities for technology transfer or local content. Political Settlements Theory helps explain why this gap persists.[29] Nigeria's fragmented elite coalitions have little incentive to build long-term negotiation capacity. Institutions reflect short-term rent-seeking and electoral priorities rather than strategic development, the same dynamics that constrain reform in the Nigerian Electricity Supply Industry (NESI) and shape clean energy governance more broadly.

Despite these structural imbalances, the relationship is not without benefits. China is Nigeria's single largest bilateral creditor, with loans totaling around USD5 billion by March 2024.[30] While these loans finance critical projects, they add to Nigeria's debt burden, fueling concerns about sustainability and transparency. Nigerian lawmakers have at times probed the opacity of loan contracts. In 2020, the House of Representatives voted to rescind its prior approval for a CHEXIM Bank loan after the bank declined to proceed.[31] Concerns also extend to project quality and substandard products. Critics point to delays, "grey market" solar imports and equipment failures, all of which have dented confidence in some Chinese technologies.[32] Meanwhile, Nigeria's volatile policy environment, such as sudden threats to ban solar panel imports without clear transition pathways, creates uncertainty for investors including Chinese firms.[33] Security challenges, corruption, and governance lapses further complicate deal-making.

Public perception of China in Nigeria remains notably pragmatic. Afrobarometer and Pew data show that Nigeria is one of the few countries where citizens view Chinese investment more favorably than US investment.[34] Many Nigerians appreciate the visible impact of Chinese-built infrastructure such as railways, airports and power lines, as well as the affordability of Chinese consumer goods and solar components.[35] At the same time, Nigerians tend to look to the West as a governance model,[36] even as they welcome China's material contributions. This duality highlights a form of pragmatism: respect for China's ability to get things done quickly balanced by admiration for Western institutions and concerns about Chinese labor practices, data privacy and long-term supply chain dependence.

Compared to the EU/US, China often enjoys a reputation for "getting things done" quickly. Studies show that Africans in general hold China's economic engagement in higher esteem than Western aid, due to its focus on infrastructure and growth.[37] In Nigeria, recent headlines about China's test labs and training programs have been framed positively, highlighting technology transfer. At the 2024 FOCAC summit, President Tinubu welcomed Chinese investment, highlighting benefits like jobs and diversification. China's broad political outreach has strengthened ties, but Nigerians remain cautious about debt and overreliance. The key challenge for Nigeria is balancing China's ability to deliver with building its own strategic and institutional capacity to protect autonomy.

5. GEOPOLITICS AND GEOECONOMICS

5.1 Global trade wars

Nigeria's clean energy transition is not just a domestic issue; it is inextricably linked to global geoeconomics. The ongoing US-China trade war and the European Union's evolving climate policies have direct, on-the-ground impacts in Nigeria.

US-China trade conflicts: Rising US-China trade tensions have led to retaliatory tariffs on solar panels, EVs and batteries. For example, Chinese electric vehicles now face up to 100% US tariffs,[38] prompting Chinese automakers to pivot more to Africa's markets. While Nigeria is not directly embroiled in the US-China tariff wars, it may feel indirect effects: higher costs for Chinese imports to the US could push Chinese exporters to target African markets more aggressively (as seen when US solar tariffs were imposed).

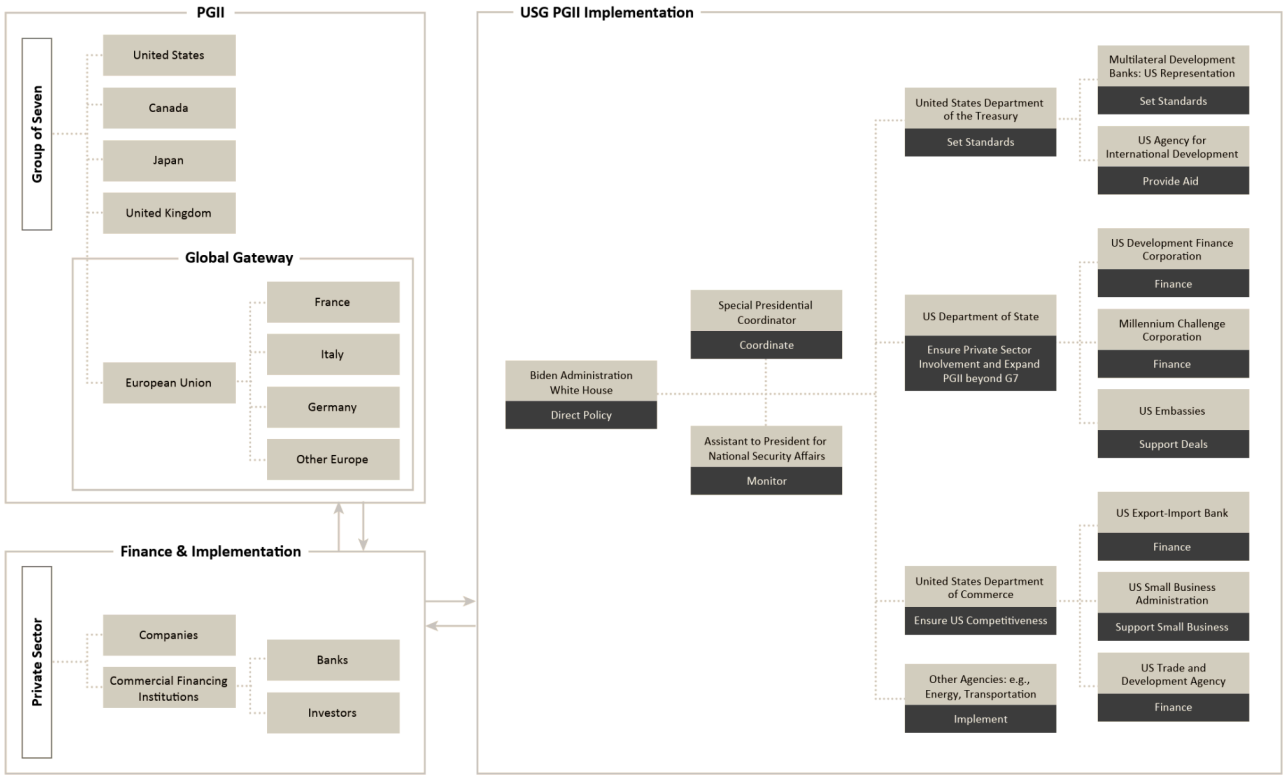
EU Carbon Border Adjustment Mechanism (CBAM): The European Union's Carbon Border Adjustment Mechanism (CBAM) is a carbon tariff on imports of carbon-intensive goods such as steel, aluminum, cement and electricity from countries without equivalent carbon pricing systems.[39] Nigeria's exports to the EU (largely oil and agricultural products) will not be directly impacted by CBAM. However, the CBAM exemplifies how advanced economies are pressuring trade partners to decarbonize. Nigeria's industries – like cement and steel – may face pressure if they export to the EU, and China's push for clean energy may indirectly benefit Nigeria by aligning its products with global green standards.

Mineral export controls: Western countries (US, EU) have begun restricting exports of certain critical minerals and technologies to China (e.g. rare-earth processing equipment). Nigeria's vast reserves of lithium, cobalt, nickel, iron ore and other minerals position it as a potential strategic hub in this shifting landscape.[40] For the Western markets, Nigeria could emerge as an alternative supplier if decoupling from China accelerates. At the same time, China is moving to secure access through investment and partnerships, as reflected in the 2023 minerals MoU.[41]

5.2 How US/EU counter-offers compare to China's BRI

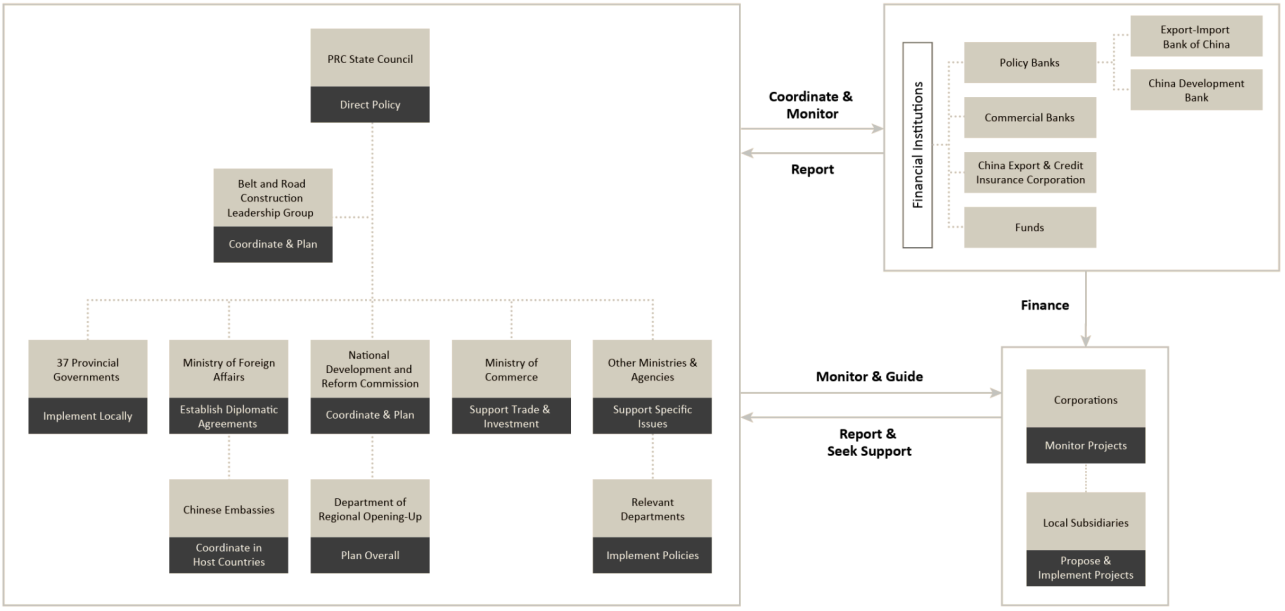
Major Western initiatives, notably the US-backed Partnership for Global Infrastructure and Investment (PGII) and the EU's Global Gateway are explicitly positioned as strategic alternatives to China's BRI.[42] The contrast in capital deployed to sub-Saharan Africa illustrates the vast historical disparity in financing scale. China's policy banks deployed approximately USD23 billion for projects in the region between 2007 and 2020. This amount is over twelve times the USD1.9 billion financed by the US alone during the same period, and it also surpasses the combined total of roughly USD9.1 billion from all other sources.[43] While the G7-led PGII aims to mobilize a collective USD600 billion in global infrastructure finance (with roughly USD317 billion pledged by the EU and USD200 billion by the US and others),[44] the current Western counter-offers have yet to match the established scale of China's direct state-backed lending. The Western model instead relies heavily on multilateral development banks, private capital mobilization and often repackaged aid (see Figure 5), whereas BRI projects are typically financed directly by Chinese policy banks with loans tied to Chinese contractors (see Figure 6).

Figure 5: Conceptualization of the PGII governance structure from the US perspective



Source: Boston University Global Development Policy Center, 2022

Figure 6: Conceptualizing the BRI governance structure



Source: Boston University Global Development Policy Center, 2022

Table 4: Comparing the Belt and Road Initiative and the Partnership for Global Infrastructure and Investment

Category	BRI	PGII
Year announced	2013	2022
Initiating actor	China	United States of America
Number of initiating countries	1	7 and the European Union
Amount announced (billion USD)	Unknown	600
Policy priorities	Policy coordination, facility connectivity, unimpeded trade, financial integration, people-to-people bonds	Climate, Digital Infrastructure, Gender equality and equity, Health and health security
Financing institutions	Policy Banks, Commercial Banks Policy Insurance Institutions, Equity Funds, Multilateral Organizations	Policy Banks, Commercial Banks, Policy Insurance Institutions, Multilateral Organizations
Financing tools	Loans, Equity, Grants	Loans, Equity, Grants
Standards introduced(This is not an exhaustive list of standards introduced)	Standard Connectivity Action Plan 2015-2017, 2018-2020 National Development and Reform Commission (NDRC) Green BRI Directive.	Organisation for Economic Co-operation and Development (OECD) Export Credit Arrangement, Quality Infrastructure Principles, Blue Dot Network Principles, Institutions' Internal Assessments

Source: Boston University Global Development Policy Center, 2022

The differences are most apparent in project focus and governance. The Global Gateway and PGII prioritize "smart, clean and secure connections," aligning with the EU's Green Deal, climate adaptation and digital infrastructure. While China's historic lending through BRI 1.0 was overwhelmingly for hard infrastructure and fossil fuel projects (with less than 1% going to solar or wind),[45] its current "BRI 2.0" signals a strong pivot toward greener, higher-quality projects, with recent pledges to stop funding coal abroad. Conversely, US/EU schemes come with strict standards on environmental, labor and financial governance, stressing transparency and local stakeholder involvement.[46] This contrasts with historical BRI criticisms regarding opaque loan terms, debt dependency and limited local value capture due to projects being tied to Chinese firms and workers.[47]

The competition is intensely geopolitical, as the EU President von der Leyen has said Global Gateway is aimed at countering the BRI and offering a "high-quality alternative."[48] This geopolitical tension has direct geoeconomic consequences for Nigeria. Notably, US and EU tariffs on Chinese solar panels, electric vehicles (EVs) and batteries are driving Chinese firms to pivot their manufacturing and supply chains toward African markets to avoid these tariffs. This is evident in announced plans for Chinese-built EV and battery plants in Nigeria, which will leverage the latter country's vast lithium reserves.[49] Thus, while Western programs offer a model based on sustainability and governance, their strategic competition with China is actively shaping investment patterns and accelerating Nigeria's emergence as a critical node in the global clean energy supply chain.

5.3 Implications for Nigeria's trade, diplomacy and alignment

Nigeria's clean energy trajectory is unfolding against a backdrop of intensifying competition between China, the US and the EU. Traditionally, Nigeria has pursued a policy of balanced diplomacy, engaging with all partners to maximize opportunities. This approach remains essential as the country attracts Chinese infrastructure financing while also courting Western investors in its green industries.[50] Nigeria's mineral reforms and vast reserves of lithium, cobalt and nickel are already drawing both Chinese and Western interests, positioning the country as a critical hub in emerging clean energy supply chains.

The US-China rivalry is opening spaces for Nigeria to advance local manufacturing and value addition. Chinese automakers have announced plans for EV and battery factories in Nigeria,[51] and Chinese-backed lithium processing plants are underway.[52] At the same time, government reforms restricting raw mineral exports and encouraging local content demonstrate Nigeria's determination to capture jobs and technology transfer, rather than simply exporting unprocessed resources. This strategy aligns with Western calls for sustainable supply chains and offers a path to turning resource wealth into long-term industrial capacity.

Global trade rules further shape Nigeria's choices. The EU's CBAM, expected in 2026, will impose levies on carbon-intensive exports such as cement and steel, creating pressure for domestic decarbonization. Yet these same rules also create incentives for Nigeria to develop low-carbon exports, from renewable power to processed minerals. Navigating these shifts will require strong governance and transparent institutions to avoid opaque deals and debt traps. If Nigeria manages to balance external pressures, enforce local value creation and align with emerging green standards, it can transform great-power rivalry into a springboard for becoming a regional hub for clean technology and critical minerals.

In sum, Nigeria stands to gain if it leverages the rivalry rather than falling into dependency. By adopting and developing a balanced, pragmatic model of engagement with China, the US and the EU, Nigeria can extract better deals on infrastructure financing and technology transfer. However, this requires strong leadership and a clear national strategy. Nigeria's trade strategy must adapt to global climate rules (e.g. CBAM), which offers an impetus to accelerate its own clean energy transition. In diplomacy, maintaining neutrality ("balanced diplomacy") gives Nigeria maximum flexibility. In practice there is much promise, as Nigeria continues on all tracks; it attends the FOCAC for Chinese investment, while also negotiating climate finance from the Green Climate Fund and the World Bank.

6. SECTOR DEEP DIVES

This analysis provides a structured, compartmentalized assessment of China's strategic development finance, technological deployment and commercial activity across five critical Nigerian ETP sectors: power, oil and gas, transport, cooking, and industry.

6.1 Power sector

China's engagement in Nigeria's power sector spans both on-grid utility-scale projects and off-grid distributed solutions, reflecting a broadening commitment to Nigeria's energy transition. While off-grid solar has recently captured greater attention, the on-grid system remains critical for long-term energy security and industrial growth. Recent structural reforms, particularly the deregulation of the petroleum sector and the removal of fuel subsidies, have significantly accelerated the proliferation of clean energy products by increasing awareness, demand and the relative competitiveness of renewable solutions. This section examines Chinese-backed investments in on-grid generation and grid infrastructure alongside the rapidly expanding off-grid solar market, underpinned by key policy frameworks such as Nigeria's Electricity Act 2023 and Energy Transition Plan, which open the power market and set ambitious targets of universal electricity access and 50 percent renewable power by 2030. Western and multilateral partners, including the World Bank, the African Development Bank and Siemens, also play an active role, often focusing on policy reform, market de-risking and financing for renewables and grid upgrades, complementing China's infrastructure- and implementation-led approach.

On-grid power

Chinese financing and engineering have propelled Nigeria's biggest generation projects, especially in hydropower and gas. The 700 MW Zungeru Hydroelectric Plant, completed in 2022, stands out as a flagship success. Yet this stands in contrast to the stalled 3,050 MW Mambilla project, which has been hampered by years of legal disputes and governance challenges.[53] Smaller projects like the Gurara Dam and the rehabilitation of legacy assets such as the Kainji Hydropower Station reflect a more pragmatic Chinese approach, extending service life and providing dispatchable renewable power without the risks of greenfield megaprojects.

Transmission and distribution (T&D) is another pillar of Chinese engagement. Chinese contractors have delivered substations and transmission links under various national power programs, and the April 2025 USD328.8 million deal with CMEC to refurbish and build hundreds of kilometers of 330kV/132kV lines injects Chinese EPC capacity directly into Nigeria's grid overhaul.[54] These projects aim to connect more generation to load centers, strengthening grid stability and reliability.

Gas and thermal projects remain central to Nigeria's energy strategy. The Ajaokuta-Kaduna-Kano (AKK) pipeline, built with Chinese financing and contractors,[55] will transport gas to new and existing power plants, supporting the country's NDC 3.0 goal of 17 GW of gas-fired power by 2035, nearly doubling current capacity. This approach is framed as a way to provide baseload power, stabilize the grid and displace diesel and petrol generators. Yet critics warn it risks locking Nigeria into fossil dependence and creating stranded assets, repeating elements of the "oil curse."

China's involvement in Nigeria's energy sector now extends well beyond gas and hydro. In 2024, Nigeria signed an MoU with China on the eve of President Bola Ahmed Tinubu's participation in the Forum on China-Africa Cooperation (FOCAC) Summit to explore nuclear energy development.[56] In the solar PV space, China's role has been strongest as an equipment supplier, with Chinese-made panels dominating solar parks and commercial-industrial (C&I) projects led by Nigerian developers. At the same time, Chinese lithium-processing companies have begun operating in Nasarawa and Kaduna States, adding a new dimension to the partnership. Beyond supplying technology, these firms are helping to build local value in Nigeria's transition minerals, particularly for battery production, a development that complements the country's growing demand for battery storage in solar PV systems. While large-scale wind projects have yet to take off, Chinese companies are well positioned to enter the market once an enabling framework is in place.

Looking forward, batteries and grid modernization represent the next frontier. While Chinese firms already provide small-scale off-grid solar and storage systems, large-scale battery energy storage systems (BESS) to stabilize the grid remain untapped but likely future opportunities for Chinese firms such as Contemporary Amperex Technology Limited (CATL) and Build Your Dreams (BYD). Together, these layers of hydro, gas, nuclear, T&D, and emerging storage highlight how China's engagement in Nigeria's on-grid sector is both diversifying and deepening. For Nigeria, the tension between fossil gas as a short-term stabilizer and the long-term imperative of clean energy will continue to shape how investors perceive and engage with the sector. The table below highlights key Chinese investment in the on-grid sub-sector.

Table 5: China–Nigeria on-grid power investments and engagements

Sub-Sector	Project / Engagement	Capacity / Scope	Year(s)	Status	Notes
Large Hydro	Zungeru Hydropower Plant	700 MW	2013-2022	Completed	CHEXIM Bank loan (USD984m); Sinohydro & China National Electric Engineering Company Limited (CNEEC) contractors
	Mambilla Hydropower Plant	3,050 MW	2017-ongoing	Pledged/ Stalled	USD4.9bn CHEXIM loan pledged; consortium of Sinohydro, Gezhouba, CGC Overseas Construction Group Co., Ltd (CGCOC); legal/political barriers.
	Gurara Hydropower	30 MW	2019-	Pledged / Partial	CHEXIM Bank USD1bn loan (pipeline); smaller hydro initiative
	Kainji Hydropower Station rehabilitation (Chinese contractors)	Legacy asset extension	2010s-2020s	Ongoing	Extends service life of aging plants; pragmatic Chinese engagement
Transmission & Distribution	CMEC grid upgrade deal	USD328.8m, 544 km of 330/132kV	2025	Signed	EPC+Finance deal; complements Siemens Presidential Power Initiative
	Multiple substation & line upgrades	National grid	2010s–2020s	Implemented/ Ongoing	Under national transmission expansion and AfDB-China Africa Growing Together Fund (AGTF) programs

Sub-Sector	Project / Engagement	Capacity / Scope	Year(s)	Status	Notes
Gas & Thermal	Ajaokuta–Kaduna–Kano (AKK) Gas Pipeline	614 km pipeline	2020–	Implementation	USD2.45bn loan (Industrial and Commercial Bank of China, ICBC), Bank of China (BoC)); EPC by China Petroleum Pipeline Engineering Company Limited (CPP) & Brentex; to supply gas to power plants
	Nigeria Liquefied Natural Gas (LNG) Train 7 Expansion	+8 Million Tonnes Per Annum (MTPA) LNG (30 Mtpa total)	2020-2025	Implementation	USD3bn syndicated loan (incl. ICBC & BoC); gas export focus, but power feedstock linkages
	Papalanto (Olorunsogo II) Gas Power Plant	750 MW (Phase 2)	2005-2015	Completed (delayed)	CHEXIM Bank pledge (USD297m); gas-fired thermal
	Omotosho Gas Plant	335 MW	2002-2007	Completed	CMEC supplier credit (USD114m)
	Papalanto Gas Turbine Plant	335 MW	2002-2008	Completed	Shandong Electric Power Construction Corporation III (SEPCO3) EPC; CHEXIM Bank seller's credit (USD114m)
	Utorogu Gas Processing Facility	300 million standard cubic feet per day (MMscfd)	2016-	Pledged	ICBC pledged a USD75m loan. Gas processing for electricity generation
Nuclear	China-Nigeria nuclear MoU	4 GW (proposed)	2024–	Pledged/ Preparatory	Build-Own-Operate (BOO) model; focus on training, design, feasibility

Source: AidData's Global Chinese Development Finance Dataset, Version 3.0;[57] author's compilation

Off-grid

The off-grid sector is the engine of Nigeria's clean energy transition, operating across three distinct but interconnected fronts: commercial and industrial (C&I) solar, donor-backed energy access, and household/SME solar. Together, these segments have quadrupled Nigeria's installed solar capacity to about 386 megawatt-peak (MWp) by 2024, but they also expose the market's fragmentation.

Commercial and industrial (C&I) solar

This segment has emerged as the most professionalized and bankable, driven by patient capital and structured project models. AllON, established by Shell in 2017, played a catalytic role by providing blended finance to de-risk projects for developers such as Daystar Power, Starsight Energy, Auxano, and Arnergy. These developers anchor their business models on long-term power purchase agreements (PPAs) and leases with blue-chip clients like Coca-Cola and Nigerian Breweries, who can absorb currency risks.

Chinese OEMs like Trina, Jinko, JA Solar and Huawei dominate as Tier-1 equipment suppliers, providing panels, inverters and sometimes supplier credit. This reassures lenders about project quality and reliability. Chinese EPCs also play a role in implementing large rooftop or ground-mounted projects. A milestone was Shell's 2022 acquisition of Daystar Power, underscoring the fact that C&I solar in Nigeria has matured into a viable, scalable business. Chinese participation remains mostly via supply chains, but as the market grows, opportunities for direct Chinese investment or joint ventures (in solar leasing, battery storage for C&I, etc.) are increasing.

Donor-backed energy access and mini-grids

Nigeria's Rural Electrification Agency (REA), backed by programs such as the World Bank's Nigeria Electrification Project (NEP), has institutionalized the mini-grid and solar home system (SHS) market. Over 100 mini-grids and more than 1 million SHS units have been deployed across underserved communities and small businesses.

Chinese OEMs supply most of the hardware panels, batteries and inverters for these projects. Their role is expanding beyond equipment supply. The September 2024 agreement to establish a Mini-Grid Simulation and Standardization Centre in Abuja, led by Huawei, represents a shift toward setting quality and performance standards. The lab will test mini-grid systems under extreme conditions, helping to reduce equipment failures and build investor confidence. Huawei is also embedding smart grid controls and IoT modules in solar hubs to enhance performance.

Household/SME solar

This is the fastest-growing but least formalized segment. Fuel subsidy removal, currency volatility, and falling solar costs have spurred millions of households and SMEs to replace petrol/diesel generators with solar kits. Chinese brands like Felicity Solar, Deye, Sun King (Greenlight Planet) and XW Solar dominate the space, often supplying products through informal consignment networks, diaspora-linked remittances or digital platforms that sometimes leverage stablecoins to bypass FX bottlenecks.

However, quality remains a challenge. The Standards Organization of Nigeria (SON) has adopted IEC norms, and Nigerian regulators push for factory audits. The new *PV Test Lab* (under Huawei's auspices) will enforce these standards. Similarly, the mini-grid test lab[58] serves off-grid providers. These facilities exemplify how China is supporting – or at least acknowledging – Nigeria's drive for quality assurance.

Table 6: Nigeria's off-grid and distributed energy landscape

Segment	Key Actors	Chinese Role	Financing Model	Financial Value (USD)	Status / Notes
Commercial & Industrial (C&I) Solar	Daystar Power, Starsight Energy, Arnergy, Auxano; supported by AllON (Shell, USD200m blended fund)	Tier-1 suppliers (Huawei, Jinko, Trina, JA Solar); EPC services; occasional supplier credit	Blended finance, PPAs, leases with corporates (Coca-Cola, Nigerian Breweries, etc.)	About USD200m+ catalyzed by All On; Shell acquired Daystar in 2022 (value undisclosed)	Most bankable segment; attracts strategic investors; corporates absorb FX risks
Donor-Backed Energy Access (Mini-Grids)	Rural Electrification Agency (REA), World Bank's NEP (USD350m World Bank (WB), USD150m AfDB, USD50m AGTF)	Chinese OEMs supply most hardware; Huawei-led Mini-Grid Simulation & Standardization Centre (2024) for USD undisclosed	Concessional loans, grants, Public-Private Partnership (PPPs)	>USD550m (NEP, AGTF, AfDB); Huawei's lab = smaller but strategic investment	Institutionalized; >100 mini-grids with 1m SHS deployed; Huawei shaping standards
Solar Home Systems (SHS)	REA programs, local distributors (Greenlight Planet/Sun King, Lumos, Felicity OEMs)	Chinese brands dominate SHS (Felicity, Sun King, Deye, JA Solar); Huawei-backed PV Test Lab to certify	Donor financing (grants, results-based finance), consumer Pay-As-You-Go (PAYGO)	USD350m (part of NEP dedicated to SHS market scaling)	>1m SHS units deployed; quality control gaps; Huawei-led PV lab expected 2025
Household / SME Solar (Informal Market)	Millions of households & SMEs; informal traders, diaspora-linked suppliers	Chinese kits (Felicity, Deye, Sun King) dominate; consignment networks, remittances, stablecoin-enabled payments	Household self-finance; diaspora remittances; informal credit.	Hard to quantify, but estimated USD100m+/yr in informal imports (based on customs + retail flows)	Fastest growing; least structured; vulnerable to low-quality imports

Source: AidData's Global Chinese Development Finance Dataset, Version 3.0;[59] author's compilation

Looking ahead, Nigeria's off-grid market is set for continued expansion as fuel subsidy reform, unreliable grid supply and rising electricity tariffs sustain demand for decentralized solutions. Battery storage is expected to become a major growth frontier, particularly for C&I systems seeking resilience and load-shifting capabilities, creating new opportunities for Chinese firms with strengths in lithium-ion batteries, inverters and energy management systems. Greater formalization of the household and SME segment, driven by standards enforcement and digital financing models, could also open pathways for Chinese manufacturers to move from informal trade to structured partnerships, local assembly and after-sales service networks. As Nigeria scales its energy transition, the off-grid sector offers Chinese businesses a pathway to deepen engagement not just as suppliers, but as long-term investors and system integrators in Africa's largest power market.

6.2 Oil and gas sector

Nigeria's oil and gas sector is a cornerstone of its economy and a focal point in the country's energy partnership with China. Between 2015 and 2025, Chinese involvement evolved from securing oil equity and financing infrastructure to supporting Nigeria's push to use **gas as a "transition fuel."** Nigeria's policy framework (e.g. the Petroleum Industry Act 2021 and the 2022 Energy Transition Plan) envisions gas not only as an export commodity but as a means to drive industrialization, power generation and regional integration.[60] In this context, China's investments have concentrated on gas pipelines, LNG facilities and upstream stakes, while also exploring downstream opportunities. Meanwhile, Western oil majors (Shell, ExxonMobil, Total, Chevron, etc.) have long dominated Nigeria's hydrocarbons sector, and multilateral finance in recent years has pivoted away from fossil fuels. This creates a scenario where Chinese capital often fills gaps for hydrocarbon projects that struggle to attract Western funding due to climate concerns. Below, we break down China's role in gas infrastructure, upstream oil/gas investments and downstream facilities, and clean cooking initiatives (LPG, etc.).

Gas infrastructure as a transition strategy

The absence of any brand-new, large gas-fired power plants financed by China in the past five years suggests a gradual shift in Chinese engagement from direct investment in power generation toward strategic gas infrastructure initiatives in Nigeria, including financing commitments for pipelines, gas processing facilities and LNG projects. This evolution aligns with Nigeria's energy transition priorities under the ETP and Decade of Gas 2021–2030.

Using natural gas to bridge Nigeria's power deficit is central to national policy, and China has emerged as a key enabler. A flagship project is the **Ajaokuta-Kaduna-Kano (AKK) gas pipeline**, a 614 km artery that will carry natural gas from central Nigeria to the north. Launched in 2020, the AKK's USD2.6 billion cost is 85% financed by Chinese lenders (Bank of China and Sinosure), with the Nigerian National Petroleum Corporation (NNPC) covering 15%.[61] Chinese contractor *CPP* (China Petroleum Pipeline Bureau) is executing the build. Once completed, AKK will supply at least 3,500 MW worth of new and existing gas power plants along its route, directly supporting Nigeria's NDC 3.0 to add 17 GW of gas-fired power by 2035. By displacing dirtier off-grid diesel generation and enabling industrial projects, officials tout AKK as climate-positive despite being a fossil investment. Critics, however, note this could prolong dependence on hydrocarbons and saddle Nigeria with debt if global gas demand shifts. President Tinubu's administration (2023) has doubled down on gas, actively courting Chinese investment for gas infrastructure at FOCAC 2024 as part of USD60 billion in new energy investments that the Nigeria National Petroleum Corporation Limited (NNPCL) seeks by 2030.[62]

Table 7: Major China-related gas infrastructure projects in Nigeria (2020–2025)

Project	Chinese Funding Announced/Committed	Status/Notes
AKK Gas Pipeline (614 km)	Approx. USD2.5–2.6 billion loan (85% of project) committed in 2020	Under construction; completion pushed beyond the original 2023 target
Nigeria–Morocco Pipeline	Approx. USD25–26 billion (projected cost); Chinese firm *Jingye* to supply steel	Planning phase; financing led by others (Islamic Development Bank, Organization of the Petroleum Exporting Countries, OPEC Fund)
Gas Flare Capture & Modular Refineries	USD500 million credit line (MoU in 2018, active by 2020) via China Exim Bank & Nigeria's Bank of Industry (BoI)	Aimed at modular gas processing and flare-gas recovery equipment imports
Nigeria Liquefied Natural Gas Limited (NLNG) Train 7 (LNG Expansion)	USD3 billion syndicated loan (2020) for expansion; Chinese banks (BOC, ICBC) contributed approx. USD115 million in total	Expansion to add 8 MTPA LNG capacity; Chinese participation as minor financiers in a larger international consortium
ALSCON Gas Processing Plant *(Aluminum Smelter gas facility)*	USD1.2 billion revamp deal signed 2025 with China National Chemical Engineering Corporation (CNCEC)	To rehabilitate 135 mmscfd gas plant for aluminum smelter; funding via Chinese State-Owned Enterprise (SOE) and partners

Sources: AidData China Project Database, Boston University (BU) Global Dev. Policy Center; author's compilation

Upstream and downstream investments

Chinese National Oil Companies (NOCs) have been active in Nigeria's upstream oil and gas acquisitions since the mid-2000s and continue to hold significant assets. By 2015, CNOOC, China National Petroleum Corporation (CNPC), and Sinopec together had invested well over USD10 billion in Nigeria's oil fields.[63] However, Chinese NOCs initially faced steep competition from entrenched Western majors that held Nigeria's prime licenses.[64] Often, Chinese companies acquired fields deemed marginal or high-risk by Western firms, for example, fields with complex politics or needing costly rehabilitation. As a result, while no Chinese firm is among the top joint venture (JV) operators (Shell/Total/Exxon/Eni still lead), they have solidified positions in consortia and marginal field operations.

On the **downstream** side, China's involvement has been more sporadic but is now growing under Nigeria's push for value addition. In 2010, China State Construction Engineering Corp (CSCEC) signed an MoU with the NNPC to build three refineries and a petrochemical complex for USD23 billion, with Chinese banks to fund 80%.[65] That plan ultimately stalled amid financing and policy hurdles. In recent years, attention shifted to the private 650,000 bpd Dangote Refinery, built without direct Chinese funding (mainly financed by Dangote and Western lenders), though Chinese contractors supplied some components. Now that Dangote is onstream (2023),[66] Nigeria's refined product imports will drop, and opportunities will emerge for Chinese companies to invest in supporting infrastructure (storage tanks, petrochemicals, industrial parks around the refinery).

Notably, President Tinubu's 2023 visit to China yielded interest from over 70 Chinese companies in oil and gas, part of a new drive to attract investment into everything from oil field revival to petrochemicals.[67] The government's creation of a dedicated Nigeria-China investment coordination office testifies to this strategic courting.[68]

One concrete downstream project with Chinese involvement is the **Lekki Free Trade Zone petrochemical ventures**. The Lekki Free Trade Zone (FTZ), where Dangote's refinery is located, has Chinese stakeholders, and discussions have been held about Chinese firms establishing petrochemical manufacturing there. Additionally, Chinese equipment and services are playing a role in Nigeria's revamp of state-owned refineries. For example, parts of the Port Harcourt refinery rehabilitation were supplied by Chinese firms under an Italian-led contract. In the gas downstream, a Chinese company (TBEA) signed a 50 MW biomass-to-power project MoU with the NNPC in 2022, aimed at using agricultural waste for energy. While small in scale, this indicates Chinese companies exploring non-traditional fuels in Nigeria's energy mix.

Looking ahead, China's engagement in Nigeria's oil and gas sector is likely to increasingly align with the country's NDC 3.0 priorities, which further position natural gas as a transition fuel to support emissions reduction, energy security and economic diversification, while committing to a gradual shift toward lower-carbon development pathways. In this context, Chinese participation is expected to remain concentrated in gas infrastructure that enables domestic utilization, including pipelines, gas processing facilities, LNG expansions and gas-to-power projects that displace diesel and petrol generators and reduce routine flaring.

As multilateral and Western financing for hydrocarbons continues to contract, Chinese policy banks and state-owned enterprises are well placed to support projects that Nigeria frames as NDC-consistent, particularly those contributing to methane abatement, flare reduction, grid stabilization and industrial decarbonization. Opportunities are likely to expand in areas such as gas infrastructure rehabilitation, efficiency upgrades, modular processing and integration of gas supply with industrial clusters and power systems, all of which feature prominently in Nigeria's transition narrative.

At the same time, Nigeria's energy transition trajectory underscores the need to avoid long-term fossil lock-in. This creates incentives for future Chinese engagement to evolve beyond traditional EPC and financing roles toward lower-emissions gas applications, carbon-efficient technologies and selective downstream investments that support Nigeria's broader transition goals, including cleaner cooking fuels, petrochemicals with export value, and emissions-reduction solutions. For Chinese firms, sustained engagement in Nigeria's oil and gas sector will increasingly depend on their ability to demonstrate alignment with Nigeria's NDC-anchored transition pathway while delivering reliable infrastructure and near-term economic benefits.

6.3 LPG and clean cooking

Nigeria faces a daunting clean cooking challenge. As of 2023, over 167 million Nigerians (74% of the population) lacked access to clean cooking fuels and relied on firewood or kerosene.[69] The government's ETP calls for universal clean cooking access by 2030, primarily via Liquefied Petroleum Gas (LPG) adoption, and later shifting to electricity and biofuels by 2050. China's involvement in the cooking energy sector has been limited but is poised to grow, given China's own experience in scaling LPG and improved stoves. So far, Chinese contributions can be seen in two areas: LPG supply chain investments and technology transfer for clean cookstoves.

Given Nigeria's plan to boost LPG consumption, there is high potential for Chinese investment in modular refineries and gas processing that can produce more LPG domestically. With Dangote Refinery (which will produce LPG as a byproduct) and the NNPC's interest in pipeline gas exports, more LPG will be available, and Chinese companies could assist in building the distribution network (terminals, trucks, retail storage) to get it to consumers. However, no major Chinese-led LPG project has been publicly reported as of 2025; activity remains at the level of components and proposals.

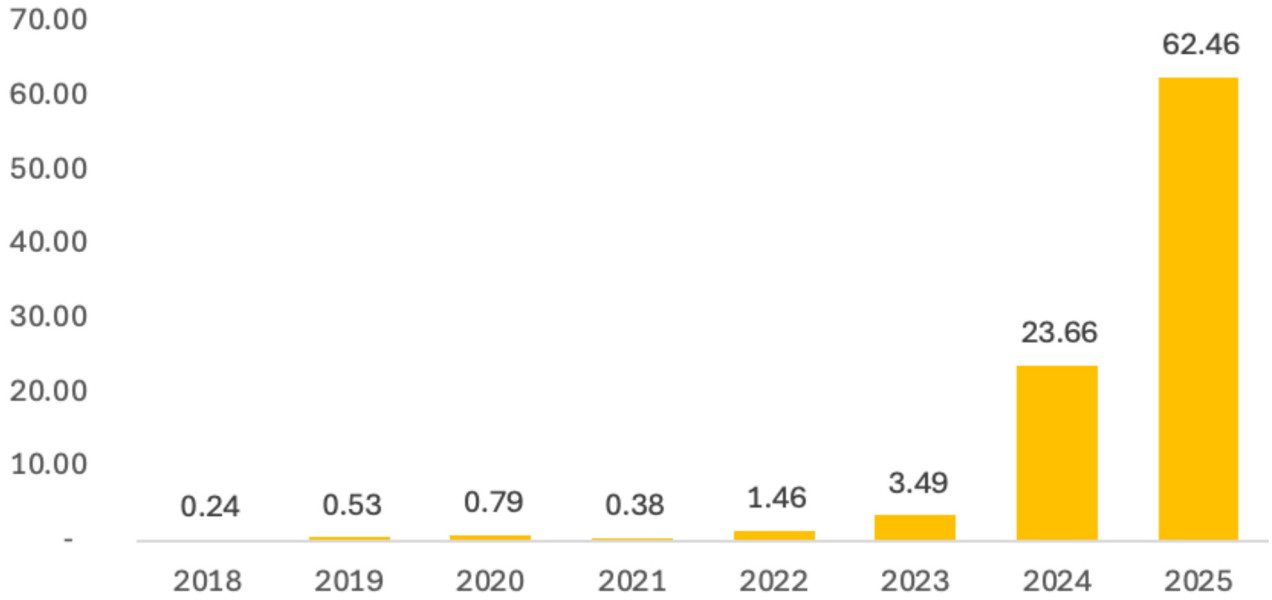
For clean cookstoves, China brings relevant expertise. Its own National Improved Stove Program in the 1980s helped distribute 180 million efficient biomass stoves. In Nigeria, Chinese entities have begun contributing through partnerships. Notably, the **Clean Cookstoves Testing and Development Center** in Nigeria (established in Afikpo, Ebonyi State) has an ongoing collaboration with the **Beijing University of Chemical Technology's biomass energy research center.**[70] Through this partnership, Chinese experts help develop standards and test protocols for improved cookstoves in Nigeria, ensuring products meet efficiency and emissions benchmarks. This kind of capacity building is crucial, as Nigeria plans to deploy *biogas digesters and improved wood stoves,* especially in rural areas post-2030.

6.4 Transport Sector

As Nigeria looks to decarbonize transport, which accounts for about 30 percent of national energy related emissions, vehicle electrification is fast emerging as a policy and investment priority. Following the full removal of petrol subsidies in 2023 and the deregulation of the downstream oil sector, pump prices rose sharply from about NGN198 per liter to around NGN500 per liter in May 2023[71] (an increase of roughly 150 percent). By 2025, petrol prices in major cities had climbed further to well above NGN900 per liter[72] (over 350 percent higher than pre-subsidy levels), fundamentally reshaping the cost structure of mobility. These sustained increases have significantly altered transport economics and intensified consumer and fleet demand for electric alternatives, particularly in high-use segments such as ride hailing, logistics and public transport.

Against this backdrop, Chinese exports of electric vehicles to Nigeria totaled approximately USD 93 million between 2018 and August 2025, with trade volumes remaining modest until 2023, before rising sharply in 2024 at USD 23.7 million and in 2025 at USD 62.5 million between January and August, as shown in Figure 7. This surge represents the first significant wave of Chinese e-mobility engagement in Nigeria, as firms leverage their global leadership in electric buses, two wheelers and passenger EVs to pilot localized solutions aligned with the country's low carbon transport transition.

Figure 7: China's EV exports to Nigeria (USD billions)



Source: Ember, author's analysis

A landmark development came in 2023 when Oando Clean Energy (Nigeria) partnered with China's Yutong, the world's largest electric bus maker, to launch Nigeria's first set of electric buses. In May 2023, Lagos State rolled out two Yutong electric buses on a Bus Rapid Transport (BRT) route for a proof-of-concept, with plans to scale up to 12,000 e-buses by 2030.[73] The pilot, supported by the Lagos government, demonstrated the feasibility of e-bus operation in Nigerian conditions (80-passenger buses running 280 km per charge).[74] Yutong provided not just the buses but also training, technical support and charging infrastructure know-how. The strategic goal, according to Oando, is to establish a local EV assembly plant in Nigeria in partnership with Yutong.[75]

Another breakthrough in 2024 was in electric tricycles (e-trikes) when the Federal Government of Nigeria signed an MoU with Mutual Commitment Company (MCC) Ltd, a Chinese firm, to assemble electric three-wheelers domestically.[76] These e-trikes are aimed at replacing the hundreds of thousands of petrol tricycles used for last-mile transport. The agreement, facilitated by the REA and announced at the FOCAC summit in Beijing, includes setting up assembly lines and training centers for e-trike technology. The **battery-swapping model**, where spent batteries can be exchanged for charged ones, is also being explored, drawing on Chinese cities' experience with e-scooters. A few Nigerian startups (e.g. Metro Africa Xpress, MAX; Metro Africa) are already importing Chinese electric motorbikes and testing swap stations in Lagos.

Chinese automakers are additionally eyeing Nigeria's passenger car market. Brands like BYD, Chery, Jianghuai Automobile Company Limited (JAC) and Guangzhou Automobile Group (GAC) have signaled interest in either exporting EVs or setting up joint ventures under Nigeria's auto policy (which offers incentives for local assembly). In 2022, Jet Motors, a Nigerian EV startup, partnered with Chinese firms to import EV components for assembly of electric vans and Sport Utility Vehicles (SUVs) for corporate fleets. Though volumes are small, it shows the technology transfer channel opening.

However, Nigeria's EV adoption is still nascent. Only an estimated few hundred EVs are on the road. Key gaps include the lack of charging infrastructure, unreliable grid power, higher upfront costs of EVs and limited consumer awareness. Policy is catching up, however; Nigeria's government has hinted at reduced import duties for EVs, tax breaks for assemblers and pilot charging stations in major cities. Learning from China's rapid EV rollout, Nigerian officials are considering battery recycling programs and integrating EV charging with solar mini-grids to mitigate grid strain. The e-mobility pilots by Chinese firms are helping in identifying what works locally (e.g. tropical battery performance, charger adaptations for Nigeria's grid). It is a space where Western players have been mostly absent, except for some technical assistance (the UK-funded "Asia-Africa EV Initiative" which included Nigeria, and United Nations Industrial Development Organization's (UNIDO) support for EV policy development). Thus, China has an early-mover advantage. If Nigeria follows through on its net-zero 2060 vision of 100% electric passenger vehicle sales by 2060, Chinese partnerships will likely dominate the supply of affordable EV models, charging tech, and even electric rail for mass transit.

6.5 Industrial sector

Nigeria's Energy Transition Plan highlights industry as one of five priority sectors, aiming for energy efficiency improvements and a shift to cleaner fuels in manufacturing.

Cement and steel are two of Nigeria's most energy-intensive industries. Cement plants require huge heat and power input (often generating their own electricity), and Nigeria's cement capacity has leapt to ~50 MTPA in 2025 (up from 20 MTPA in 2010), largely due to Chinese-built plants. China's Sinoma International, a leading cement plant constructor, has essentially engineered Nigeria's cement expansion for both Dangote Cement and BUA Cement, the country's top producers.[77] For example, in 2021 Dangote and Sinoma agreed on a new 6 MTPA cement plant in Itori, Ogun State, which will feature a 12,000 tons/day clinker line and its own gas-fired power plant of ~50 MW.[78] Sinoma's integration of captive power and waste-heat recovery (WHR) in these projects is significant; it ensures the factories are not hampered by grid outages and improves energy efficiency by generating electricity from waste kiln heat. Chinese firms have also supplied coal-fired boilers for a few older cement plants, but newer lines are shifting to gas and even exploring biomass co-firing (using palm kernel shells, etc.) for which Chinese technicians have provided trial configurations.

In steel, Chinese firms have focused on downstream steel, such as building a glass manufacturing plant in Ogun FTZ and a ceramics factory in Kogi, each with Chinese-supplied furnaces and their own small power plants. These industrial facilities underline a trend: Chinese enterprises help set up production in Nigeria but often ensure energy self-sufficiency on-site, given Nigeria's grid unreliability. While this solves immediate needs, it can lead to inefficient duplication (many small captive plants vs. a stable central grid). Western investors tend to avoid heavy industries unless the policy environment is favorable, thus Chinese players (often with state backing or higher-risk appetite) are filling the void to meet Nigeria's demand for building materials.

Many Chinese-led industrial projects incorporate energy-efficient designs, sometimes exceeding what was standard in Nigeria. For instance, waste-heat recovery (WHR) systems in cement plants built by Sinoma (Dangote's lines at Obajana and Ibese had WHR installed by Sinoma by 2018) can provide 20–30% of a plant's power needs from waste heat, cutting both costs and emissions.

7. LOCAL MANUFACTURING AND SUPPLY CHAINS

7.1 Import dependency versus assembly/local production potential

Nigeria currently relies heavily on imports for renewable energy hardware. In 2023 alone, over 4 million solar panels worth approximately USD200 million were imported, accounting for more than 90% of Nigeria's new solar supply.[79] These imports are sourced predominantly from China or China-equipped global supply chains. Inverters, mounting structures, cables and batteries are likewise largely imported. This dependence places sustained pressure on foreign exchange reserves, exposes Nigeria's energy transition to external supply shocks and limits domestic job creation and industrial development.[80]

China's role in Nigeria's renewable energy sector is therefore most visible upstream, through manufacturing and export-oriented supply chains, rather than through large-scale local production. That said, there are early signs of Chinese involvement in domestic manufacturing, albeit not yet at scale. Notably, Hunan Red Sun of China has announced plans to establish a 600 MW photovoltaic module manufacturing facility in Kano State, in partnership with Nigeria's IRS Group.[81] The plant is expected to serve off-grid as well as commercial and industrial markets, and represents an initial step toward building a domestic solar supply chain.

While such initiatives remain limited relative to Nigeria's rapidly growing solar demand, they signal the potential for deeper localization of renewable energy manufacturing if supported by consistent industrial policy, market certainty, and complementary investments in skills, infrastructure, and financing.

7.2 Critical minerals and local value addition

Nigeria is endowed with vast reserves of critical minerals essential for the global clean energy transition, including lithium, cobalt, nickel and rare earth elements.[82] For decades, the country's economic identity has been tied to crude oil, leading to the neglect of its mining sector. However, a strategic shift is now underway. The Nigerian government, through the Ministry of Solid Minerals Development, has implemented a policy that prohibits the export of raw ores, insisting on local processing and value addition.[83]

This policy has had an immediate and profound effect on Chinese investment. Instead of disengaging, Chinese firms are doubling down on their commitments by investing in local processing plants. The shift is not merely about securing raw materials; it is a strategic move to localize the value chain and capture a higher share of profits. For example, Chinese firms like Jiuling Lithium Mining and Canmax Technologies have invested over USD1.3 billion in lithium processing facilities in Kaduna, Niger and Nasarawa states.[84] These investments serve two purposes for the Chinese firms; they secure a long-term feedstock supply for their massive domestic and global battery manufacturing operations and they insulate them from future export restrictions or geopolitical risks. For Nigeria, the policy provides a path to industrialization, creating jobs and fostering technology transfer in alignment with the national goal of economic diversification beyond oil.

7.3 PV modules, inverters, BOS

China controls an estimated 53% of global PV raw material production and 89% of component/assembly capacity.[85] Thus, nearly all "Made in China" solar kits in Nigeria trace back to China's supply chain. Some

components (inverters) are made by Chinese firms like Huawei, Sungrow and Deye. Batteries for solar and EVs similarly are mostly Chinese (CATL, BYD, Pylontech, etc). Meanwhile, Balance of System (BOS) racking and cables are imported from Chinese suppliers. Recognizing this, Nigeria's policymakers are debating import restrictions. For example, PricewaterhouseCoopers (PwC) advises phasing in a ban on solar panel imports to protect nascent local industry, while stressing the need to enforce quality standards (e.g. IEC compliance) during the transition.[86] The Minister of Science proposed such restrictions to stimulate local assembly, hoping to create jobs and save foreign exchange.

7.4 Enabling local policies

Nigeria's local content policy, originally formalized in the oil and gas sector through the Nigerian Oil and Gas Industry Content Development (NOGICD) Act of 2010, provides a blueprint for the clean energy sector.[87] Local firms are already demonstrating the viability of domestic manufacturing. Auxano Solar, Nigeria's first private PV assembly plant, operates a 100 MW capacity line,[88] proving that local production can serve the C&I market. Furthermore, the National Agency for Science and Engineering Infrastructure (NASENI) has partnered with LEMI on lithium battery pilots, signaling an intent to capture value in the battery assembly segment.

Likewise, the government has proposed green-tariff guarantees for locally-made solar, and SON plans mandatory testing (supported by labs). Any import policy must be phased to avoid curbing the current off-grid boom.[89] Inverters and batteries may also see future performance standards. This debate highlights tensions. Consumers want cheap imports now, but the state wants an indigenous supply chain. Chinese firms that invest in local plants (like Red Sun) stand to gain if Nigeria restricts imports. The challenge remains in creating a coherent industrial policy with robust incentives, tariffs and a skilled labor force that can compete with the subsidized scale of Chinese imports.

8. FINANCE ARCHITECTURE

8.1 Chinese financing

Historically, Nigeria's Chinese-backed projects relied on **policy-bank loans**. CHEXIM Bank and CDB financed major projects like dams and pipelines.[90] These loans often came with long tenors and low interest (though not as concessional as multilateral aid). Today, Chinese financing is diversifying:

- **Policy banks + supplier credit:** CHEXIM/CDB still lend to the government or SOEs (e.g. the AKK pipeline). But Chinese equipment suppliers now offer buyer's credit: a solar panel manufacturer might finance a portion of a project with export credit insurance (Sinosure). This "EPC+F" model was used in the CMEC grid deal[91] and is typical for Chinese-led solar or microgrid contracts.

- **Commercial banks:** ICBC, China Merchants Bank (CMB), and even local Chinese provincial banks are increasingly active, especially in smaller deals. They often provide loans to importers or local project companies. Chinese tech firms (Huawei, LONGi, Sungrow) have launched finance arms or partnerships with banks, effectively lending in RMB to Nigerian buyers. This blurs the line between trade and finance, reflecting a shift to **"small and beautiful"** projects funded through Chinese supply chains.

- **Currency swaps:** In 2024 China renewed a naira–RMB currency swap line, allowing Chinese banks to settle imports in RMB. Though usage is limited, it provides a tool to ease dollar needs for Chinese purchases. Nigeria's Debt Management Office notes a growing portion of debt is now in Chinese currency, which may shift risk profiles.[92]

8.2 Western/multilateral financing

Nigeria also has access to other models:

- World Bank (IDA): The largest recent program is **DARES** (USD750m IDA with approx. USD1.5bn co-finance) focused on distributed renewables.[93] It uses a blended finance model: IDA grants/credits de-risk private mini-grids and SHS developers.

- EU: Besides small grants (e.g. Electrifi EUR30m)[94], the EU and AfDB support the Nigeria Electrification Project (NEP) (USD550m WB/AfDB) for mini-grids and SHS. They also offer policy support via Nigeria Electrification Strategy and Plan (NESP) and the Continental Climate Change Program. The EU launched an "Infrastructure Trust Fund" (NSIA) which can co-finance projects with China.

- United States of America (USA): US Development Finance Corp (DFC) invests in Nigerian power ventures (e.g. equity in Azura-Edo gas plant, mini-grid funds) and has provided support for the NEP.[95] The scale is smaller than China's direct loans, but often includes expertise and high standards.

Best practices now highlight the importance of blended, transparent and modular deals. Combining Chinese EPC capacity with World Bank risk guarantees can mobilize private funds, while Nigeria is exploring "country platform" models to aggregate credits, donor funds and local revenue into unified pipelines. Many

argue for "trancheable" projects, in multiple phases tied to clear KPIs, and competitive procurement to ensure value. The DARES program exemplifies this results-based approach.

8.3 Nigeria's new finance architecture

Building on these external options, Nigeria has begun overhauling its own financial system to move beyond ad-hoc deals. The core challenge is to de-risk projects and create a predictable framework capable of attracting patient, long-term capital. Over the past 18 months, the government has laid the foundations of a repeatable, standardized architecture:

- **Sovereign green spine:** The launch of the NGN50 billion FGN Green Bond III[96] program creates a ring-fenced refinancing channel for de-risked clean energy assets, thereby freeing up bank balance sheets.
- **NCIP as a "front door":** The USD500 million Nigerian Climate Investment Platform (NCIP) aims to serve as a single portal for project intake.[97] It could standardize origination documents, pre-screen for bankability, and aggregate project pipelines, significantly lowering diligence costs for investors.
- **Credit enhancement stack:** The Infrastructure Credit Guarantee Company Limited (InfraCredit)[98] and the Nigerian Sovereign Investment Authority's (NSIA) Green Guarantee Company could provide first-loss guarantees and credit enhancements that mobilize local institutional investors.[99]
- **Wholesale lines:** The Development Bank of Nigeria, accredited by the Green Climate Fund (GCF),[100] intermediates concessional and wholesale flows into C&I solar and productive-use systems.
- **Disclosure plumbing:** Nigeria's Securities and Exchange Commission (SEC) has unveiled plans to drive the adoption of International Sustainability Standards Board (ISSB) disclosure frameworks in Nigeria. The SEC asserts that alignment with global standards will strengthen market transparency, reduce information risk and attract international capital flows into the country's capital markets.[101]

Together, this "finance plumbing" addresses long-standing problems of fragmentation and opacity. It is designed to attract diverse sources of capital, from Chinese OEM credits and multilateral loans to local pension funds, by making investments more transparent and predictable. The key test will be whether Nigeria can consistently channel a pipeline of bankable projects through this system, ensuring the architecture translates into real-world deployment.

Table 8: Comparative financing models for Nigeria's clean energy transition

Dimension	Chinese Financing (BRI 2.0)	Western/Multilateral Financing	Nigeria's Emerging Domestic Architecture
Main Actors	CHEXIM, CDB, ICBC, Huawei, LONGi, Sungrow, provincial banks	World Bank (IDA), AfDB, EU (Electrifi, NEP, Trust Fund), US DFC	FGN (Green Bonds), NCIP, Development Bank of Nigeria (DBN), InfraCredit, Green Green Capital (GGC)
Instruments	Supplier credit (EPC+F); Policy-bank loans (selective); Commercial loans; RMB buyer finance; Currency swaps	Concessional loans, blended finance, grants, guarantees, equity	Green bonds, credit guarantees, statutory funds, concessional wholesale lines, disclosure standards
Scale	Pivot to "small and beautiful": targeted clean energy, grid upgrades, battery plants; legacy of mega-projects (dams, pipelines) still in pipeline	Smaller than China's, but structured, transparent, and governance-driven	Designed for repeatability; aims to crowd in both foreign and local capital systematically

Dimension	Chinese Financing (BRI 2.0)	Western/Multilateral Financing	Nigeria's Emerging Domestic Architecture
Main Actors	CHEXIM, CDB, ICBC, Huawei, LONGi, Sungrow, provincial banks	World Bank (IDA), AfDB, EU (Electrifi, NEP, Trust Fund), US DFC	FGN (Green Bonds), NCIP, Development Bank of Nigeria (DBN), InfraCredit, Green Green Capital (GGC)
Instruments	Supplier credit (EPC+F); Policy-bank loans (selective); Commercial loans; RMB buyer finance; Currency swaps	Concessional loans, blended finance, grants, guarantees, equity	Green bonds, credit guarantees, statutory funds, concessional wholesale lines, disclosure standards
Scale	Pivot to "small and beautiful": targeted clean energy, grid upgrades, battery plants; legacy of mega-projects (dams, pipelines) still in pipeline	Smaller than China's, but structured, transparent, and governance-driven	Designed for repeatability; aims to crowd in both foreign and local capital systematically
Project Focus	More diversified under BRI 2.0: on-grid (grid upgrades, hydro rehabilitation), off-grid (mini-grids, SHS testing, solar EPC), and emerging niches (batteries, EVs, green hydrogen)	Mini-grids, SHS, distributed renewables, climate adaptation, policy support	All-inclusive: grid, gas transition, off-grid, renewables, green industrialization
Risk Profile	Still relatively opaque, but trend toward smaller, lower-risk projects bundled with equipment and services	Lower risk via blended finance and guarantees; high ESG conditionalities	Risk-sharing through credit enhancement stack and green bonds; predictable disclosure standards
Strengths	Scale, speed, embedded supply chains; growing focus on clean, modular, and commercially viable projects	High standards, transparency, concessional terms, policy support	Predictable architecture, mobilizes local pension/insurance capital, reduces fragmentation
Weaknesses	Loan opacity, variable quality, limited local content; transition from legacy megaproject model still incomplete	Smaller financial volumes, slow disbursement, heavy conditionalities	Still early-stage; execution capacity and pipeline preparation are key challenges

9. OPPORTUNITIES PORTFOLIO

9.1 Strengthening RMB-naira mechanisms

Nigeria should deepen the use of the RMB–NGN currency swap and formalize local settlement mechanisms to strengthen trade and investment ties with China. In December 2024, Nigeria renewed a Chinese yuan (CNY) 15 billion (= USD2 billion) swap agreement with the People's Bank of China to "deepen trade ties and ease FX pressures."[102] To translate this into real economic impact, Nigeria could establish RMB–naira receivables desks at major importers and distributors, while the Central Bank of Nigeria (CBN) and the People's Bank of China (PBoC) issue joint settlement guidance for cross-border transactions.

Such measures would make it easier for Nigerian importers to settle directly in local currencies, reducing dollar dependency and volatility. Additionally, commodity-backed credit lines, similar to oil-for-loan models, could be adapted to finance gas, lithium or agricultural exports that support industrial production and clean-energy value chains. This would not only expand access to liquidity for Nigerian firms but also provide China with a reliable pipeline of resource inputs for its growing green-technology sector. Overall, enhanced RMB–naira cooperation provides a financial foundation for green industrialization, anchoring predictable trade flows, easing foreign-exchange constraints and creating new channels for Chinese development and commercial banks to support Nigeria's clean-energy infrastructure.

9.2 Trade and Industrialization

Parallel to financial reforms, Nigeria should leverage China's new tariff-free African trade policy and regional AfCFTA rules to expand industrial production and export diversification. Under China's current framework, countries such as Kenya, South Africa and Nigeria already benefit from duty-free access for selected products,[103] opening China's 1.4 billion-person market to Nigerian exports like palm oil, solid minerals and agro-processed goods. Indeed, it was noted that China's new "tariff-free" African policy could let Nigeria export a wider range of goods (beyond oil) without import duties.[104]

Yet the true opportunity lies in transforming raw exports into value-added, low-carbon products. By attracting Chinese investment in clean manufacturing technologies, for instance, solar-powered agro-processing, battery assembly, low-carbon cement production and green industrial parks, Nigeria can move up the value chain while aligning industrial growth with its ETP 2060. This transformation presents a win-win pathway:

- For Nigeria, it means increased jobs, export revenues, and technology transfer through clean-energy-enabled industries.
- For China, it offers expanded market access for its clean-tech manufacturers, long-term industrial cooperation and greater participation in Africa's green transition.

Within the AfCFTA framework, Nigeria could also scale up production of higher-value goods such as processed cables, battery components and electric-vehicle parts for intra-African export. This dual strategy would help Nigeria achieve industrial scale while reinforcing China's role as a partner in building green supply chains across Africa.

9.3 Distributed and utility-scale power infrastructure

There is a need to scale up proven "small & beautiful" projects while preparing for GW-scale rollout, and it is also necessary to expand the catchment of peri-urban solar mini-grids and solar-home systems (SHS) with strong community contracts and anchor customers. Nigeria's ETP envisions approximately 8.9 million mini-grid connections (104.8k mini-grids) and 5 million SHS by 2030.[105] Chinese firms can deploy Direct Current-coupled (DC-coupled) solar-plus-storage microgrids in clusters of villages, and negotiate commercial-offtake (C&I) power purchase agreements with creditworthy local factories or Fast-Moving Consumer Goods (FMCG)/agro-processing plants. Utility-scale projects should also grow: Nigeria aims for about 200 GW of solar by midcentury, and Chinese EPCs could partner on multi-megawatt solar parks or gas/solar hybrids, given China's strong gas-to-power and solar track record. In fact, the Federal Government has just signed a USD328.8-million contract with China's CMEC to upgrade 330kV/132kV lines (544 km, 7,140 MW capacity), demonstrating China's role in major transmission work. Importantly, these infrastructure plans should tie into the **West Africa Power Pool (WAPP)**. WAPP is an ECOWAS initiative to integrate electricity markets (currently linking 13 of 14 member states) so that "areas of low generation" receive power from "areas of high supply," promoting economies of scale.[106] By aligning new generation and grids with WAPP, Nigeria can export surplus power regionally.

9.4 Local assembly and manufacturing

Here, the need is to build out on-shore renewable-energy industries using Chinese capital and know-how.

Solar modules and inverters: encourage Chinese manufacturers to localize assembly (and eventually cell production). Recent deals show this is feasible: Redsolar (a China-Nigeria JV) signed for a *600 MW* PV module factory in Kano State,[107] and Oando Clean Energy has launched a *1.2 GW* solar module assembly project (Africa's first with a recycling line for old panels).[108] Supporting such projects with land, incentives and joint-venture financing will help build a solar supply base. Investment should also target after-sales services and quality-assurance hubs to address Nigeria's warranty gap for off-grid kits.

Batteries and EVs: foster Chinese-Nigerian joint ventures to assemble battery packs (initially using imported cells) and establish recycling plants. China's BYD, CATL and other battery leaders could share gigafactory and recycling expertise. At the same time, expand e-mobility assembly: Nigeria has already signed MoUs with Chinese partners to build electric tricycle ("e-trike") assembly lines. Notably, top officials have urged China to help develop "full-cycle" EV manufacturing in Nigeria (from battery to vehicle).[109] Chinese industry is responding. A recent announcement confirmed plans to build an EV plant in Nigeria, linking Nigerian lithium to EV battery production. Support for these ventures should include technical training, factory floor financing and integration with grid projects (e.g. solar-charging stations for vehicles).

Green hydrogen and fuels: use Nigeria's abundant solar, wind and natural gas to produce green hydrogen and derivatives. Chinese electrolyzer firms can lead gigascale projects. For example, China's LONGi (traditionally a PV maker) agreed a **EUR7.6 billion** preliminary deal to build a giant green-hydrogen-to-methanol complex in Nigeria (capable of 1.2 million tonnes/yr of green methanol). Similar projects could target green ammonia (for fertilizer or export) or compressed hydrogen. Nigeria should offer joint-venture land/loans for these ventures, potentially co-locating solar parks with electrolysis. Linking hydrogen to China's supply chains (e.g. as fertilizer) would deepen clean-tech ties.

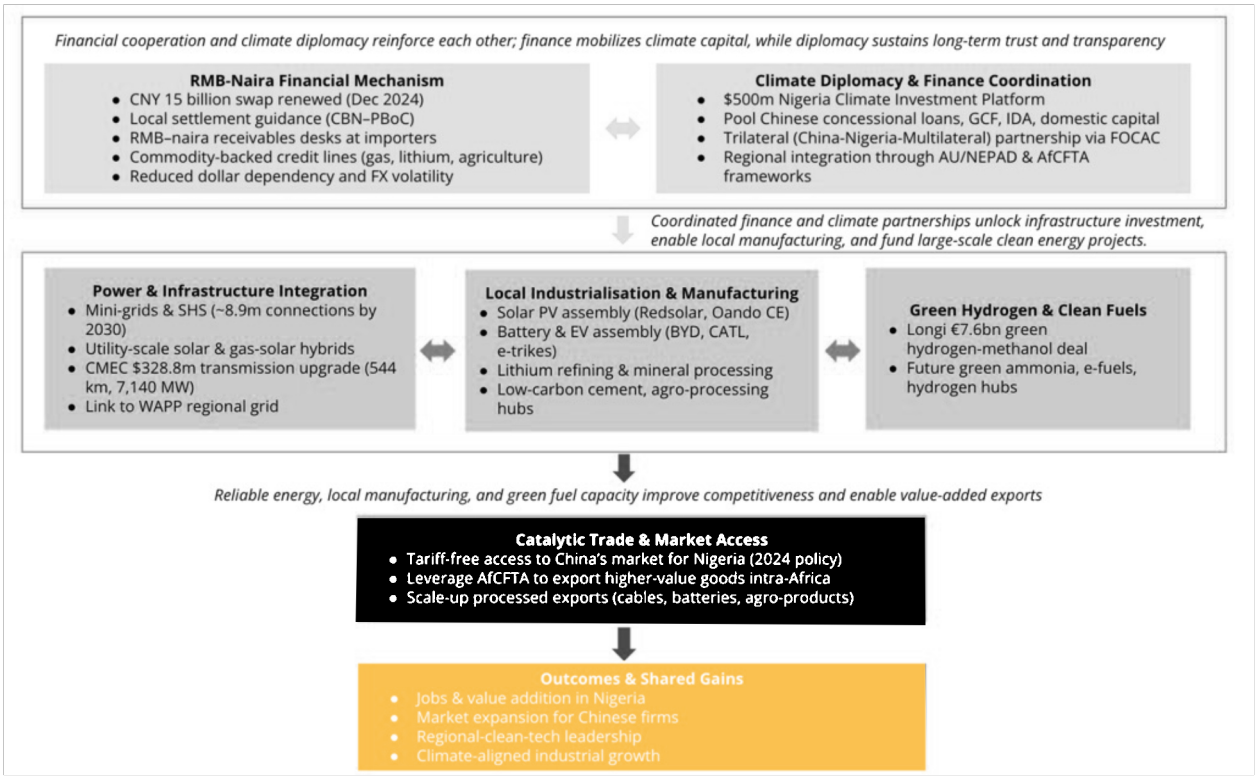
Critical minerals value chain: Nigeria should leverage its new policy barring raw ore exports by attracting Chinese investment in domestic refining and processing. Already, Chinese firms are deploying large lithium plants. A USD600-million lithium processing plant (Kaduna/Niger border) and a USD200-million refinery near Abuja are being commissioned this year with about 80% Chinese funding.[110] Under Nigeria's "local value-add" mining reforms, exporters must show plans for in-country refining.[111] Sustained Chinese engagement here can turn Nigeria from a raw-miner exporter into a midstream supplier of battery-grade inputs (e.g. lithium salts, nickel cathodes). Similar opportunities exist in cobalt, manganese and other minerals critical for batteries and solar manufacturing.

9.5 Climate diplomacy and finance

Nigeria can build a transparent country platform blending Chinese and global climate finance. For instance, Nigeria could expand its new *Climate Investment Platform* (NCIP) into a multi-stakeholder "Green Industrial Development Platform." The NCIP (launched in 2025) is designed to mobilize USD500 million by having the Nigeria Sovereign Investment Authority (NSIA) partner with the Green Climate Fund and local stakeholders.[112] By co-creating this platform, Nigeria can string together Chinese concessional credit lines (e.g. for grid or renewable projects) with GCF grants, World Bank/IDA loans and domestic capital. As one GCF official noted, the goal is to "co-create a country platform that aligns with Nigeria's climate strategy." In practice, the Platform could match, say, a China-backed loan for a solar grid with an IDA grant for resilience training or a GCF grant for battery storage. Such integration ensures investments support Nigeria's broader industrial policy (not just short-term sales). Nigeria should also pursue trilateral arrangements (China-Nigeria-multilateral coalitions) in forums like FOCAC and AfCFTA. For example, coordinated Africa Union's New Partnership for Africa's Development (AU/NEPAD) initiatives on critical minerals and renewable tech-transfer (funded by mixed Chinese and Western sources) would formalize Africa-wide cooperation. Overall, by using its NCIP/NCSP frameworks, Nigeria can pool Chinese climate finance with Western climate funds and domestic investment in a transparent way, positioning the country as a hub for Sino–Western climate partnership.

In sum, Nigeria can leverage China-Africa trade and investment ties across multiple fronts. Clear examples and references include China's tariff-waiver policy for Nigeria, the RMB-naira swap mechanism, large Chinese-backed power projects and recent Chinese-Nigerian deals in solar, EVs and lithium processing. By knitting these opportunities into Nigeria's own plans (ETP, AfCFTA, NCIP) and regional initiatives (WAPP, AU/NEPAD), the country can maximize jobs, industrial growth and climate gains from its China partnership.

Figure 8: Mapping Nigeria-China clean energy and industrialization opportunities



Source: author's concept

10. IMPLEMENTATION ROADMAP

To realize these opportunities, Nigeria should adopt a **coordinated implementation framework**:

- **Triangular partnerships:** Structure new projects as *triangular cooperation*. For example, use EU/World Bank concessional money to absorb initial risk, while Chinese EPC firms deliver engineering and credit. An illustrative model: For a solar park, an EU grant could cover land acquisition and technical assistance, Chinese commercial loan (via Sinosure) finance equipment, and the Nigerian state government provide partial guarantees. This leverages "Team Europe" grants with Chinese builder price-competitiveness, mitigating each side's weaknesses.

- **Country platform:** Establish a **Nigeria-China Energy Investment Platform**, aligning China's Belt & Road Action Plan with Nigeria's NDC and Investment Plans. This platform (e.g. through the NCSP or NCIP) would standardize project screening, set ESG safeguards and aggregate diverse funding sources. It would follow the "country platform" concept where Development Finance Institutions (DFIs, e.g. World Bank, AfDB), Chinese banks, and private investors co-finance a pipeline under Nigerian oversight. In practice, this could mean a joint project preparation facility, a pipeline tracker and a mechanism to blend funds (e.g. first-loss guarantee from AfDB, second-loss by Nigeria, final tranche by Chinese loan).

- **Policy and regulatory KPIs:** The federal government should set clear targets to measure progress: e.g. "X MW of renewable capacity added per year; Y megawatt-hour (MWh) off-grid energy deployed; Z jobs created in clean energy manufacturing; T tons CO_2 avoided." These KPIs can be embedded in National plans (e.g. NDC 3.0's investment framework) and in contracts with Chinese partners. For instance, each Chinese-financed project could be required to report on job creation (with a percentage of Nigerians hired), local content utilization and emissions reduction.

- **Transparency and standards:** Ensure all deals are **transparent**: publish MOUs and loan terms, adhere to OECD anti-corruption guidelines (even if not legally binding) and require Chinese and Nigerian parties to follow International Finance Corporation (IFC) Performance Standards on social and environmental issues. Use harmonized standards (IEC for equipment, IFC for infrastructure) so that Chinese supply meets global benchmarks. Develop an independent monitoring system (possibly through the National Environmental Standards and Regulations Enforcement Agency – NESREA) to verify compliance.

- **Capacity building:** Invest in Nigerian technical expertise. Alongside Chinese financing, Nigeria should insist on Chinese assistance in skills training. For example, all Chinese-led projects might include training components: engineers trained in China's nuclear/hydro design institutes; solar technicians certified by Huawei labs; local staff seconded at Chinese EPC sites. This builds the long-term capacity that Nigeria currently lacks.

- **Local ownership:** Finally, emphasize local anchoring. Encourage joint ventures between Chinese companies and Nigerian firms/institutions. Use Nigerian domestic funds (e.g. the Sovereign Wealth Fund, Central Bank green bond proceeds) to co-invest, thus sharing profits and risks domestically. An

example: A proposed solar farm could be co-owned by CHEC and the Nigerian Sovereign Investment Authority, with equal oversight, ensuring Nigeria captures some returns.

Key Performance Indicators: For each priority area, define metrics, such as:

- *Capacity/Access:* MW of renewables connected, number of mini-grids built, percentage of households with electricity access.
- *Quality/Standards:* Definite percentage of imported solar panels certified by local labs, inverter safety compliance rate.
- *Economic:* Jobs created in energy projects and manufacturing, value of USD of local content procured, trade balance effect.
- *Environmental:* CO_2 emissions avoided annually (using baseline), reduction in diesel generator usage (measured by fuel import declines), volume of gas flared reduced (from flare gas projects).
- *Finance:* Volume of blended finance leveraged, loan terms (interest rates, tenors), private co-financing ratio and timely debt-service records.

In conclusion, Nigeria's clean energy diplomacy with China must be **strategic and structured**. By harnessing Chinese capital and capabilities within a transparent, multi-stakeholder framework, Nigeria can accelerate its transition while safeguarding national interests. Done correctly, China-Nigeria cooperation, from small solar kiosks to gigawatt projects, can become a cornerstone of a broader development model that delivers both energy security and sustainable growth.

APPENDIX: RESEARCH METHODOLOGY

Research design

This study adopted a mixed-methods approach, combining desk research, stakeholder consultations and targeted data analysis to map Nigeria's clean energy transition and the external engagements shaping it. The study examines Nigeria's broader clean energy ecosystem, spanning renewable electricity, energy efficiency, green fuels (e.g., hydrogen) and clean industrial technologies.

The approach combined four elements:

1. **Transaction mapping**: Tracked clean energy investments, covering solar, mini-grids, batteries, green hydrogen and industrial decarbonization, using customs records, company filings, bilateral MoUs and project disclosures.

2. **Survey instruments**: Distributed structured surveys to Nigerian developers, financiers and technology providers to collect primary data on financing models, supply chains and implementation challenges.

3. **Key informant interviews**: Conducted with developers, regulators, DFIs, Chinese and European OEMs, as well as government stakeholders across energy, industry and finance sectors.

4. **Comparative analysis**: Benchmarked Nigeria's experience against clean energy transitions across Africa and emerging markets, to identify unique patterns and actionable insights.

To strengthen the evidence base, the report incorporated consultations with over 40 actors across the clean energy value chain. These included developers, donor agencies, technology providers, public institutions, financial institutions and foreign government missions. Stakeholders were consulted bilaterally and via a stakeholder workshop organized on July 31, 2025. Crucially, the Nigeria Renewable Energy Innovation Forum (NREIF) 2025 was leveraged to validate insights, provide updated information on newly signed MoUs between Chinese companies and Nigerian actors, and surface emerging clean energy initiatives across power, industry and green fuels.

The traffic light coding system (🔴/🟡/🟢) indicates levels of engagement:

- 🟢 Consulted directly (e.g., Daystar, REA, CBN, Auxano, Huawei, JA Solar)
- 🟡 Inferred from secondary reports (e.g., Beebeejump, Deye, development finance institutions)
- 🔴 No response despite outreach attempts (e.g., certain Gulf investors, some OEMs)

Stakeholder engagement

Summary of Stakeholder Workshop: Unlocking Nigeria's Clean Energy Potential - A Strategic Partnership with China

This workshop was convened on 31 July 2025 at the Chinese Cultural Centre in Abuja, Nigeria, bringing together

policymakers, private sector actors, researchers and development partners to review and validate findings from APRI's study on Chinese engagement in Nigeria's clean energy transition. Discussions focused on how Nigeria's rapidly expanding renewable energy market, driven largely by Chinese imports, can be more effectively aligned with national development, industrialization and climate objectives.

Context and rationale

Following Nigeria's 2023 macroeconomic reforms, demand for distributed renewable energy surged, with over 90% of solar panels and batteries imported from China. While this informal, market-driven expansion has improved access to clean energy, it has also revealed institutional gaps, weak coordination and limited domestic value capture. The workshop examined how Nigeria could transition from a reactive, informal system to a more strategic and policy-led engagement with Chinese partners.

Key findings discussed

- Energy access and reliability: Despite progress, nearly 87 million Nigerians remain without electricity, and reliability disparities persist across customer bands.
- Market dominance of Chinese firms: Chinese companies dominate supply chains due to pricing, logistics strength and adaptability to Nigeria's FX constraints, while government-led initiatives account for less than 5% of market penetration.
- Informal trade and shadow countertrade: Informal FX arrangements, mineral swaps and parallel value chains play a significant role in financing and trade but operate largely outside regulatory oversight.
- Institutional capacity gaps: Nigeria's limited "China literacy" contrasts with Chinese firms' strong understanding of Nigerian market dynamics, weakening Nigeria's negotiating position.
- Underutilized bilateral tools: Mechanisms such as the Nigeria-China RMB currency swap remain largely inaccessible to Nigerian firms.

Core recommendations

- Strengthen Nigeria's negotiation capacity and institutional coordination in engagements with Chinese firms.
- Translate national energy and climate strategies into clear, credible investment signals.
- Formalize informal market dynamics without undermining speed and affordability.
- Promote domestic value addition, OEM ecosystem development and technology transfer.
- Prioritize smaller, well-structured pilot projects over large, high-risk megaprojects.
- Invest in deeper data and research on informal markets and financing costs.

Key takeaways

Participants agreed that Nigeria's clean energy transition is advancing rapidly, but not yet on Nigeria's terms. Bridging informal market dynamism with structured policy frameworks is essential to ensure transparency, long-term value capture, and industrial development.

Agreed next steps

- Integrate stakeholder feedback into the final study.
- Establish a national coordination platform to strengthen Nigeria's strategic engagement with China.
- De-risk early-stage clean energy pipelines and pilot high-impact, scalable projects.
- Expand research and data collection to support evidence-based policymaking and investment planning.

Bilateral engagements:

Stakeholder Group	Actors	Role in Clean Energy Value Chain	Engagement Method	Consultation Status
Nigerian Private Sector Players	Sosai Renewable Energies, GVE Projects Limited (GVE), Maypatronic, Ecozar Technologies, Wavetra Energy	Importers, Distributors, EPCs, Installers	Virtual interview	🟢 Sosai, GVE 🔴 Maypatronic, Ecozar Technologies, Wavetra Energy 🟡 Daystar, Startsight, Rubitec, Crossboundary, Anergy, Auxano, NASENI
Chinese Tech Manufacturers and Suppliers	Sun King, JA Solar, Beebeejump, Blue Carbon, Felicity Solar, Grotech	SHS Manufacturers, OEMs, Component Suppliers	Virtual interview	🟢 JA Solar, Huawei, Grotech, Beebeejump, Blue Carbon 🟡 Sun King, 🔴 Felicity Solar
Nigerian Banks & Financial Institutions	Central Bank of Nigeria (CBN), Zenith Bank, Access Bank, Sterling Bank	Currency conversion, foreign exchange access, banking support	Key informant interviews	🟢 CBN, Sterling Bank, Luno, Payzeep 🔴 Zenith Bank

Source: author

Limitations and mitigation

Limitation	Mitigation Strategy
Low survey response	Triangulated with investor reports, customs data, and secondary interviews to compensate for the survey response rate being less than 30%
Incomplete investment disclosures	Supplemented with customs data, MoU repositories, and press reports
Fragmented statistics	Employed cross-checking of data from multiple sources, including the International Energy Agency (IEA), National Bureau of Statistics (NBS), and industry estimates, to validate estimates in the absence of a central database for installed capacity or imports
Under-reporting of non-solar segments	Mapped hydrogen, energy efficiency, and clean industrial zones via bilateral MoUs and state-led pilot initiatives

Source: author

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