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Technical Paper with Recommendations for Policy Alignment

Summary of Engagement with the NCCC

AUGUST 2024

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Table of Contents

Section 01

05

Nigeria's Clean Energy Transition

Solar Energy - The Primary Renewable Energy Source

Solar Home Systems (SHS) - Accelerating Domestic Adoption of Clean Energy

Wind Energy Potential

Hydroelectric Power

Green Hydrogen Option

Electrifying the Transportation System - EV Adoption

Surmounting the Problems of Current Energy Systems - Energy Storage & Grid Integration

Distributed Energy Systems (DES)

Establishing In-Country Manufacturing

Enabling Environment

The Electric Act of 2023

Carbon Market as an enabler

Targets

Key Federal Agencies engaged in Energy Planning

Recommendations for Accelerating Renewable Energy Development in Nigeria

Section 02

16

NCCC Summary of Engagement Report

1. Preparing Nigeria's Participation in the International Carbon Market
2. National Methane Action
3. Industrial Decarbonization Effort in Support of Nigeria NDCs and Energy Transition Plan
4. Climate Change Response Enhanced Capacity for Climate Risk Mitigation
5. Outcomes of COP28 Global Stocktake (GCT) and Nigeria's National Response
6. Development of Just Transition Roadmap for Nigeria

Section 03

22

Establishment of Transition Milestones

- Petroleum Sector
- Electricity Sector
- Transport Sector

Highlights of Projects that demonstrate Policy Changes recommended for Adoption by other States

Section 04

28

Summary of Methane Mitigation Works in Nigeria by Sector



Section

01



Nigeria's Clean Energy Transition

Nigeria is facing the need for a larger electricity supply and improved grid reliability, and security recognizes the need to transition towards clean energy and has implemented several policies to achieve this goal.

The outcome of the Global Stock Take from COP28 indicates a shift from fossil to Renewable Energy (RE), calling for countries to triple the adoption of renewable energy sources and doubling of energy efficiency by the end of the decade.

As a fossil-export-dependent economy, the low-carbon transition is expected to impact Nigeria significantly, the impact of which must be addressed holistically, with specific intent on ramping up renewable energy sources to power Nigeria's expected economic growth and support a growing population of over 220 million people.

Whatever the case, Nigeria must consider all renewable energy options for advancing its national development targets and climate change ambitions. The wide adoption of renewable energy must examine the following areas of focus:

1. Solar, Wind and Hydroelectric potentials in Nigeria.
2. Distributed Energy Resources.
3. Solar Home Systems.
4. Energy Storage, Grid Integration and Grid Stability.
5. Acquisition of the technology for "Green Hydrogen".
6. Electric Vehicle Adoption

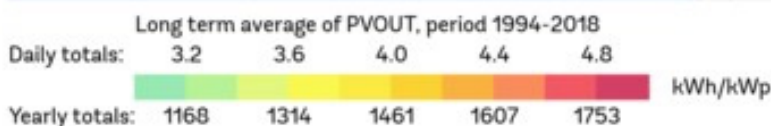
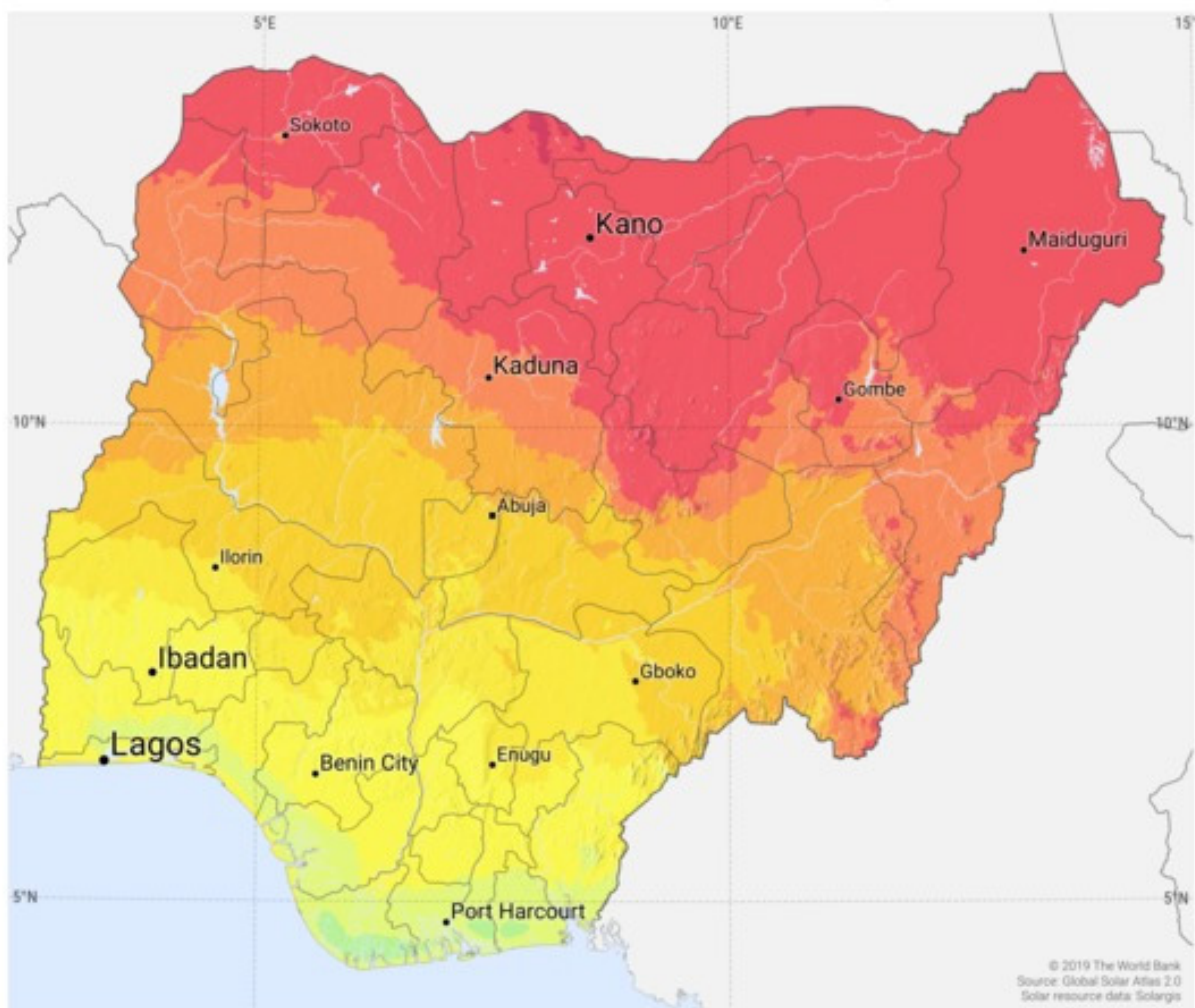


Solar Energy – the Primary Renewable Energy Source

Nigeria has tremendous potential for solar energy receiving very high solar radiation levels. This translates to a massive amount of solar energy available. Estimates suggest it's 23 times more than the projected energy demand in 2030. Under the current energy generation metrics, Nigeria faces a significant gap between electricity generation and demand. Solar power can bridge this gap and provide much-needed power. Also, there are still policy and infrastructure hurdles: Streamlining policies and improving infrastructure to transmit and distribute solar energy is crucial for wider adoption.

SOLAR RESOURCE MAP

PHOTOVOLTAIC POWER POTENTIAL NIGERIA



This map is published by the World Bank Group, funded by ESMAP, and prepared by Solargis. For more information and terms of use, please visit <http://globalsolaratlas.info>

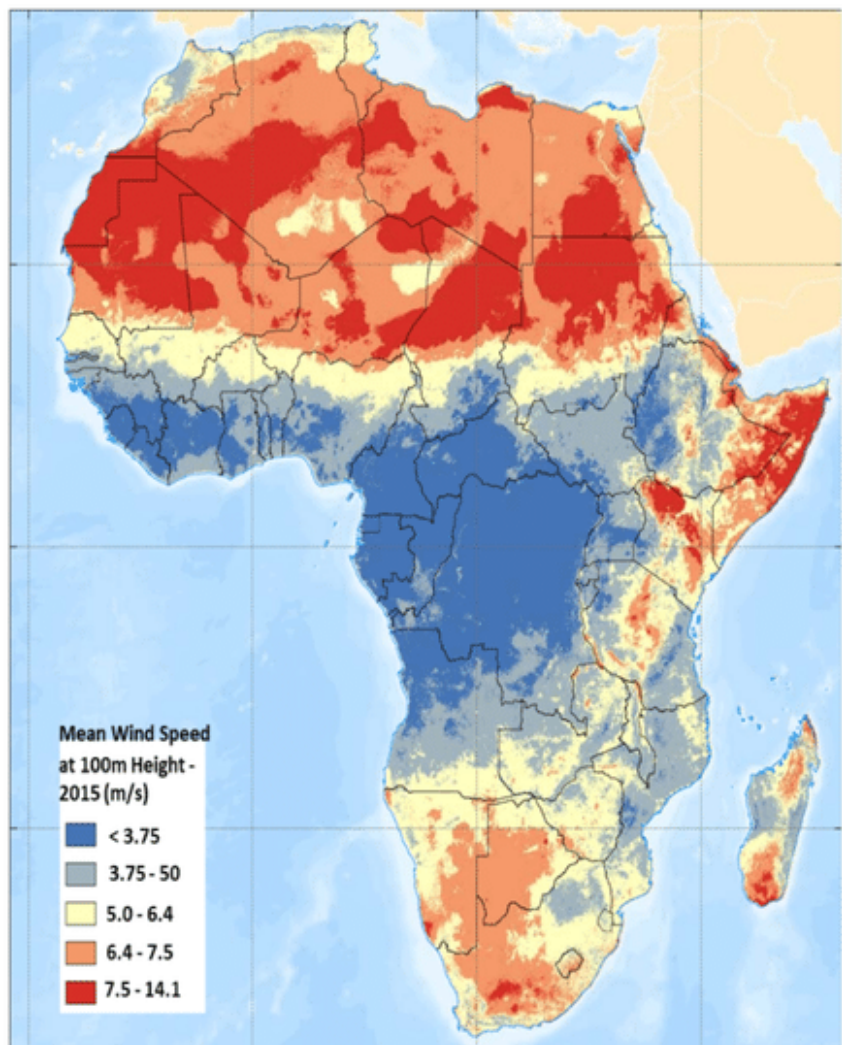
Source: www.solargis.com

Solar Home Systems (SHS) – Accelerating Domestic Adoption of Clean Energy

SHS brings reliable power to homes in Nigeria, especially in areas that are not connected to the national grid. They can therefore help to accelerate clean energy transition in Nigeria. They are also a more environmentally friendly alternative to generators, which can be noisy and polluting. There are several benefits to using solar home systems in Nigeria. First, they can help to reduce reliance on fossil fuels, which can help to improve air quality and reduce greenhouse gas emissions. Second, they can provide a reliable source of power, even in areas where the grid is unreliable. Third, they can be relatively easy to install and maintain.

Wind Energy Potential

With the establishment of the Nigeria Wind Energy Council (NWECC), an affiliate of the Global Wind Energy Council (GWEC), the evolving potential for wind energy resources across the continent is estimated to be around 59,000 MW, which is enough to satisfy the entire continent's electricity demand 250 times over. The National Council on Climate Change is currently working with NWECC and development partners to conduct a wind energy study to accurately document the wind opportunities in Nigeria and how they can be integrated into the energy mix to support base electricity load.



Source: www.researchgate.com

Technical potential: Only locations with wind > 8.5 m/s

Rank	Country	P50 [TWh/annum]	Capacity [GW]	CF [%]
1	Sudan	11,705.8	3,294.4	40.5%
2	Mauritania	11,515.5	3,307.1	39.7%
3	Algeria	8,591.8	2,602.2	37.7%
4	Chad	7,470.8	1,994.7	42.7%
5	Libya	5,373.6	1,659.9	36.9%
6	Egypt	4,021.2	1,164.4	39.4%
7	Mali	3,654.0	1,173.6	35.5%
8	Niger	3,174.1	940.8	38.5%
9	Somalia	1,652.3	477.1	39.5%
10	Kenya	533.2	139.6	43.6%
11	Morocco	519.1	143.0	41.4%
12	Tunisia	503.0	150.8	38.1%
13	Ethiopia	355.2	107.4	37.7%
14	Somaliland	324.7	97.4	38.1%
15	Madagascar	320.3	91.2	40.0%
16	South Africa	246.9	75.1	37.5%
17	United Republic of Tanzania	184.7	55.9	37.7%
18	Eritrea	179.3	49.5	41.3%
19	Namibia	139.1	38.3	41.4%
20	Djibouti	97.0	26.0	42.5%
21	Malawi	21.3	6.8	35.7%
22	Nigeria	9.4	2.9	36.9%
23	Zambia	7.7	2.5	35.3%
24	Mozambique	7.2	2.2	37.4%
25	South Sudan	3.5	1.1	37.5%
26	Botswana	1.9	0.6	33.4%
27	Zimbabwe	1.9	0.6	36.0%
28	Democratic Republic of the Congo	0.6	0.2	35.6%
29	Ghana	0.6	0.2	36.3%
30	Cameroon	0.6	0.2	36.9%

Total potential for high-wind only
= 16,600 GW
= 64,700 TWh/year



Source: International Finance Corporation

Hydroelectric Power



Nigeria has significant potential for hydroelectric power generation, but it remains largely untapped. Estimates suggest Nigeria has a theoretical hydropower potential of around 19,816 MW, the highest in West Africa. Despite the potential, only a fraction is currently used. As of 2015, Nigeria had just 1.9 GW of installed capacity for large hydro and 60 MW for small hydro. According to the International Renewable Energy Agency (IRENA), the country has significant room for growth, with hydropower capacity reaching 15.5 GW by 2050. Hydropower can play a crucial role in balancing Nigeria's energy grid by supplementing solar power and offering flexibility. Overall, Nigeria has the resources to significantly increase its reliance on clean and sustainable hydropower, but development is needed to reach that potential.

Green Hydrogen Option

The overall response to green hydrogen production has been tepid, mainly because of the high cost of electrolyzers. The most prominent argument is that Nigeria has abundant natural gas reserves and therefore is more economical to pursue “blue hydrogen”. The gas reformation process that produces green hydrogen also produces large amounts of carbon dioxide, needing a mechanism to capture, process, and use/store the carbon dioxide.

Electrifying the Transportation System – EV Adoption

As a recent signatory to the COP26 zero emissions declaration, Nigeria has committed to rapidly accelerating the transition to zero-emission vehicles to achieve the goals of the Paris Agreement. This commitment involves working towards all sales of new cars and vans being zero emission by 2040 or earlier. In COP28, the president made a pronouncement in support of electrifying the public transport system by the introduction of 100 electric buses and mass transit buses. This is a clear signal of government policy directions supported by direct interventions in the transport sector to incentivize renewable energy adoption in Nigeria.

Electric vehicles (EVs) are still in their early stages of adoption in Nigeria, but the country is taking steps to encourage their use. The Nigerian government has set an ambitious target of achieving 30% electrification of passenger vehicles by 2025 [Down To Earth]. Several challenges need to be addressed before EVs can become more widespread in Nigeria, such as the lack of charging infrastructure, the high cost of EVs, and the unreliable power supply. However, several factors are driving the adoption of EVs in Nigeria. These include:

- The government’s commitment to reducing carbon emissions.
- The rising cost of gasoline.
- The increasing availability of affordable EVs

It is encouraging to note that there are developments in Electric Vehicles in Nigeria:

- i. Stallion Motors and Electric Motor Vehicle Company (EVMC) started assembling various kinds of 4-wheel, 3-wheel, and 2-wheel vehicles, The Hyundai Kona EV, was the first electric car to be assembled in Nigeria, in 2020.
- ii. Cubana group launched a new e-hailing service called Enviabile with an initial fleet of 100 electric vehicles.
- iii. The Lagos Metropolitan Area Transport Authority is working on introducing electric buses for the state’s mass transit scheme in collaboration with Oando.

Surmounting the Problems of Current Energy Systems – Energy Storage & Grid Integration

The idea behind “Energy Storage” is to capture energy produced at one time for use at a later time to reduce imbalances between energy demand and energy production. A device that stores energy is generally called an accumulator or battery. Energy comes in multiple forms including radiation, chemical, gravitational potential, electrical potential, electricity, elevated temperature, latent heat, and kinetic. Energy storage involves converting energy from forms that are difficult to store to more convenient or economically storable forms.

Energy storage is a critical technology for enabling a clean energy future. It allows us to store energy from renewable sources like solar and wind power and use it when we need it.

When energy storage is integrated into the grid, we can connect new electricity generation sources, particularly renewable energy sources like solar and wind, into the existing power grid. It’s a crucial aspect of transitioning to a clean energy future. This can help to reduce our reliance on fossil fuels and improve the reliability of our electricity grid.

Distributed Energy Systems (DES)

This is an evolving model for energy generation that really challenges the traditional way that relies on a few massive power plants to create electricity that travels long distances. In this case, DES focuses on smaller-scale generation sources spread out closer to where the energy is used. For example, several small-scale energy sources, like rooftop solar panels or wind turbines, can be deployed to generate power for a particular area instead of using a centralized power plant.

When compared to traditional grids, DES provides several benefits like Increased energy security and reliability, reduced environmental impact, potential cost savings, and improved grid efficiency. Distributed Energy Systems are particularly well-suited for integrating renewable energy sources like solar and wind, which can be variable and unpredictable. By generating power closer to where it’s used, DES can help to balance out these fluctuations and improve grid stability.

With DES, consumers have more choice and control over their energy use. For example, homeowners with rooftop solar panels can generate their own electricity and potentially reduce their reliance on the traditional grid. Overall, distributed energy systems are a promising approach for a more sustainable and resilient energy future.

There are pilot projects to demonstrate the effectiveness of the Distributed Energy System with Eko and Abuja Discos under the support to the government of Nigeria from the US NetZero World Initiative (NZW).

Establishing In-Country Manufacturing

Manufacture of RE products in Nigeria is imperative for a successful clean energy transition while helping to create jobs and make RE materials easily available. The overreliance on imported materials to support the clean energy transition puts pressure on foreign exchange, therefore significantly increasing the cost of acquisition. This will make it difficult for the vast majority of the population, who have modest incomes, to be left out, defeating the purpose of the clean transition. Among the many initiatives to jump-start local manufacturing in Africa include the Africa Renewable Energy Manufacturing Initiative (AREMI). It was established to catalyze the growth of green manufacturing industries in Africa in support of low-carbon economic development. Through its efforts, AREMI plans to attract over \$800m in investment for clean energy manufacturing in different parts of the Africa region.

Enabling Environment

An enabling environment provides opportunities for increased investment and service provision for the uptake and widespread adoption of renewable energy products and services in Nigeria.

- a. One notable legislation is the Nigerian Electricity Regulatory Commission (NERC) Mini-Grid Regulation, which provides a regulatory framework for the development of mini-grid systems, including those powered by solar energy, in off-grid and underserved areas.
- b. The Electric Power Sector Reform Act (EPSRA) 2004: This act established the Nigerian Electricity Regulatory Commission (NERC) and opened up the power sector to private investment. It also allows for the generation and sale of electricity by independent power producers, including those using renewable energy sources like solar.
- c. The National Renewable Energy and Energy Efficiency Policy (NREEEP) 2009: This policy sets ambitious targets for renewable energy integration into the national grid and outlines various incentives to promote renewable energy development.
- d. Additionally, the Nigerian government has implemented the Rural Electrification Fund (REF), aimed at promoting rural electrification projects, including off-grid solar solutions. This fund supports the deployment of solar mini-grids and standalone solar systems in remote and underserved communities.
- e. Solar Naija program: Launched in 2019 by the Rural Electrification Agency (REA), this program aims to deploy mini-grids and solar home systems in underserved communities across Nigeria.

- f. National Energy Plan and National Energy Policy developed in 2022 by the Energy Commission of Nigeria, provides the framework for sustainable energy development in Nigeria with the overall objective of providing clean, affordable and reliable energy to Nigerians.

The Electricity Act of 2023

While liberalizing the electricity market and devolving power to the state, the Act mandates generation companies to include renewable energy sources in their mix. It also encourages investment in renewable energy through mechanisms like feed-in tariffs (guaranteed prices for renewable energy) and tax breaks.

Carbon Market as an Enabler

The evolving carbon market in Nigeria will serve to direct the required sustainability-linked finance flows to support investments in renewable energy projects. In general, renewable energy sources generate very little or no GHG emissions, therefore making them attractive for carbon investors seeking projects in Nigeria. The NCCC is at the final stage of the development of a carbon market framework for Nigeria.

For example, the Energy Transition Accelerator (ETA) is a market-driven initiative that is designed to leverage the growing demand for high-quality carbon credits to scale up finance to accelerate the deployment of clean power and the retirement of fossil fuel assets in developing countries. Nigeria is a partner country in the ETA with the United States.



Targets

The Renewable Energy Master Plan (REMP) seeks to increase the supply of renewable electricity from 13% of total electricity generation in 2015 to 23% in 2025 and 36% by 2030. Renewable electricity would then account for 10% of Nigerian total energy consumption by 2025.

The Plan also encompasses installed capacity targets for a set of suitable renewable energies, declining as follows:

- Small-hydro: 600 MW in 2015 and 2, 000 MW by 2025;
- Solar PV: 500 MW by 2025;
- Biomass-based power plants: 50 MW in 2015 and 400 MW by 2025;
- Wind: 40 MW for wind energy by 2025;

Simultaneously to this increase in power supply, the REMP targets higher electrification rates, from 42% in 2005 to 60% in 2015 and 75% by 2025.

The REMP also implements a set of fiscal and market incentives to support RE deployment. In the short term, the plan includes a moratorium on import duties for renewable energy technologies. In the longer run, the plan advises the design of further tax credits, capital incentives, and preferential loan opportunities for renewable energy projects.

Key Federal Agencies Engaged in Energy Planning

The following federal entities are involved in energy planning in Nigeria with varying roles.

- Federal Ministry of Power (FMP)
- Rural Electrification Agency (REA)
- National Council on Climate Change (NCCC)
- Nigerian Electricity Regulatory Commission (NERC)
- Energy Commission of Nigeria (ECN)
- Transmission Company of Nigeria

Recommendations for Accelerating Renewable Energy Development in Nigeria

- 1. Transmission and Distribution Network:** The existing grid infrastructure faces limitations in capacity and efficiency, hindering the integration of large-scale renewable energy sources. Upgrading the grid with smart technologies, expanding transmission lines, and decentralizing distribution networks are crucial.
- 2. Energy Storage:** Integrating energy storage solutions like battery systems is essential to address the intermittent nature of renewable energy sources like solar and wind. This allows for storing excess energy during peak production periods and releasing it when demand is high.
- 3. Streamlined Permitting and Licensing Processes:** Simplifying the process for obtaining permits and licenses for renewable energy projects can attract investments and expedite project development.
- 4. Stable and Transparent Regulatory Environment:** A clear and predictable regulatory framework with long-term policies and incentives is crucial for attracting investments and ensuring the financial viability of renewable energy projects.
- 5. Decentralize the Electricity Grid Systems:** To provide electricity access to rural and remote communities. This will hopefully be achieved when state governments begin to create their electric markets and regulations that will attract investments.
- 6. Facilitating Access to Finance:** Implementing mechanisms like green bonds, loan guarantees, and other financial instruments can make it easier for renewable energy projects to access the necessary capital for development and implementation.
- 7. Fiscal Incentives:** Easing of tariffs and tax regimes for the development of renewable energy products and services are essential to the wider adoption of renewable energy in the country.
- 8. Capacity Building and Skills Development:** Investing in training and upskilling programs to develop a skilled workforce across the renewable energy sector, from engineering and construction to operation and maintenance, is essential for the long-term sustainability and success of the transition.



Section

02

NCCC Summary of Engagement Report

This is a summary of engagements in support of climate action in Nigeria across the private sector and government, including sub-nationals.

01

Preparing Nigeria's Participation in the International Carbon Market

The Carbon Market framework for Nigeria is at the final stages of development with the first in-country mission for a national stakeholder engagement to obtain public input. The development of Nigeria's carbon market is supported by UNDP under the "Climate Promise 2" program.

The participation of subnationals was essential in this effort given that carbon projects will be carried on their jurisdictions. States like Ekiti, Niger, Katsina, Lagos, Enugu and Cross Rivers, Taraba, Edo have been fully engaged. Additional representation from the state government was through the Nigeria Governors' Forum (NGF). See the attached concept note for the development of the carbon market.

02

National Methane Action

With the support of the Climate and Clean Air Coalition, the National Council on Climate Change (NCCC) hosted a stakeholder event to map and coordinate methane activities in the oil and gas sector in Nigeria, including current goals and objectives to ensure synchronization across partners and better alignment between government's priorities and donors' sectoral interventions. Participants include:

Nigeria:

- NNPC
- NLNG
- NUPRC
- NMDPRA
- NOSDRA
- International Oil Companies
- Domestic Oil Companies and other Operators
- Service Providers
- NGOs

International Partners:

- United Nations Environment Program - International Methane Emissions Observatory
- Climate and Clean Air Coalition,
- Clean Air Task Force
- U.S. State Department
- Office of the Special Presidential Envoy for Climate
- U.S. State Department, Bureau of Energy Resources
- U.S. Agency for International Development
- U.S. Department of Energy
- U.S. Trade and Development Agency
- U.S. Environmental Protection Agency+ Global Methane Initiative
- UK Foreign Commonwealth and Development Office
- World Bank

03 Industrial Decarbonization Effort in Support of Nigeria NDCs and Energy Transition Plan

The NCCC, Energy Transition Office, and UK Foreign, Commonwealth & Development Office's (FCDO) Manufacturing Africa Programme jointly co-hosted a webinar to socialize the initial outcome of a market study on cement decarbonization opportunities in Nigeria in collaboration with McKinsey. This collaborative effort aims to comprehensively assess the current status of decarbonization efforts, identify and curate decarbonization opportunities within the Nigerian cement industry as well as pave the way for the development of effective strategies for sector decarbonization.

In the course of this study, some of the insights that have been identified include:

- There are various levers to decarbonize the cement industry such as alternative fuels, clinker substitutes, and energy efficiency techniques which together, have an emissions reduction potential of 40% for the cement industry by 2035.
- In the short term, alternative fuels (e.g., agricultural waste and municipal solid waste) are the most feasible lever for decarbonizing the Nigerian cement industry and have an emissions reduction potential of 25% by 2035 i.e., 25% of potential emissions from the cement industry could be averted by 2035 through alternative fuels usage.
- Agricultural waste and municipal solid waste could potentially account for 30-50% of the Nigerian cement industry's fuel mix by 2035 if waste collection rates and the share that the cement industry captures increases.
- There could be 2 potential projects for the cement industry to consider – 1) development of material recovery facilities for processing municipal solid waste, located about 100km from major cement plants, and 2) development of integrated biomass facilities for processing agricultural waste, located 100km from major cement plants.

- Key actions various stakeholder groups need to take to harness the opportunities identified e.g., ownership of such facilities, provision of concessional funding, establishment of policies that allow waste to be managed in a way that allows for ease of use among many other actions.



Manufacturing Africa



Over the past 8 weeks,
UK FCDO's Manufacturing Africa has sponsored

A Cement Decarbonisation Study

in collaboration with Nigeria's Energy Transition Office,
National Council on Climate Change
& Sustainable Energy For All.

Join us on the **28th of March, 2024 at 9:30am**
as we share the insights and

- A. The waste-to-energy opportunity including potential projects and commercial value propositions for the cement industry
- B. A high level view on actions stakeholders need to take to implement the required waste-to-energy projects to further decarbonize the cement industry.



#CementDecarbonization
#WasteToEnergy #GreenManufacturing

04

Climate Change Response: Enhanced Capacity for Climate Risk Mitigation

The NCCC has secured Technical Assistance from the Global Risk Modelling Alliance (GRMA) to enhance the local capability for climate and disaster risk analysis in Nigeria to strengthen resilience and ensure effective management of climate and disaster risks, thereby mitigating socio-economic impacts. The expected outcomes are:

- Improved understanding of climate and disaster risks
- Enhanced local capacities.
- Continuous access to open risk modeling tools
- Development and or improvement of national risk management strategies

Again, this work involves the active involvement of the subnational being that climate risks and exposures occur in communities, especially the more vulnerable locations in the hinterland.

05 Outcomes of COP28 Global Stocktake (GST) and Nigeria's National Response

As a fossil-fuel-dependent country, Nigeria must craft a fit-for-purpose response to a vastly evolving climate regulatory landscape and the decarbonizing policies of its trading partners.

After COP28, the NCCC sought and obtained two distinct technical assistance from the World Bank and the OECD's Inclusive Forum on Carbon Mitigation Approaches (IFCMA) to support policy modeling in the following areas:

- i. The NCCC requested the World Bank's support towards the development of economy-wide response measures for Nigeria to the decision to transition away from fossil fuels. The World Bank is undertaking an Assessment of the risks and Modelling for various economy-wide response options that Nigeria can adopt to increase economic resilience to the transitioning risks and strengthen new drivers of sustainable growth. The interim report is attached for your review while the final report is expected at the end of May 2024.
- ii. Similarly, NCCC also requested Technical Assistance from the OECD's Inclusive Forum on Carbon Mitigation Approaches (IFCMA), of which Nigeria is a member, for an Assessment of the Benefits and Impacts of Petrol Subsidy Removal. The work will focus on the assessment and modeling of the impacts of Petrol Subsidies on the Transport and AFOLU sectors.
- iii. NCCC supports the expansion of renewable energy in Nigeria through a number of actions:
 - collating the report of its consultation with RE sector practitioners to determine required response measures and potential support from the government.
 - Working with Nextier and Global Wind Energy Council (GWEC) to establish Nigeria Wind Energy Council (NWECC). It is expected that a wind energy study of Nigeria will begin soon to assess where the opportunities are for wind energy and to direct the required financing for the development of wind projects in Nigeria.
 - Working with the US State Department is co-creating a project to help direct private sector financing for RE projects in Nigeria.
 - NCCC is supporting the establishment of a Solar Marketplace by the Royal Netherlands Embassy. The Marketplace acts as a trusted platform that will aggregate sector players for more robust project development.

In other areas, Nigeria is also taking the following actions:

- a. Establishment of PCNGI to increase the adoption of CNG-powered vehicles to replace diesel and gasoline.

- b. Establishment of EV Adoption Policy for Nigeria to be delivered by the end of the Third Quarter of 2024.
- c. Development of a policy framework for the adoption and operationalization of the technology for Carbon Capture Utilization and Sequestration (CCUS) to support the decarbonization of hard-to-abate sectors in Nigeria.
- d. Exploring the use of Hydrogen as an alternative to fossil fuels.

06

Development of Just Transition Roadmap for Nigeria

Nigeria like many of the other developing countries, faces unique challenges and opportunities in its transition to a sustainable low-carbon economy. As one of Africa's largest oil producers, Nigeria is heavily dependent on fossil fuels, making it vulnerable to global energy market dynamics and climate change impacts. However, Nigeria also possesses abundant renewable energy resources, including solar, wind, and hydroelectric power, which present significant opportunities for a clean energy transition and green job creation.

Given the significance of Nigeria's workforce and labor sector, ensuring decent work, social protection, and workers' rights are paramount throughout the transition process. The proposed Just Transition Roadmap will prioritize job creation, skills development, and capacity-building to facilitate the transition of vulnerable sectors from carbon-intensive industries to emerging green sectors. It will also promote the inclusion of trade unions and workers' voices, ensuring their active participation and representation in the decision-making processes. The roadmap will also address gender and social inclusion challenges specific to the Nigerian context. It will prioritize gender-responsive policies, recognizing the unique roles, opportunities, and vulnerabilities of women in the transition process while focusing on inclusivity, taking into account the needs and perspectives of youth, marginalized groups, and Indigenous communities, ensuring equal access to opportunities, benefits, and social protection measures.

This work is led by the NCCC, Ministry of Labour, Ministry of Transport, and Ministry of Petroleum and supported by the International Labour Organization (ILO), United Nations Development Program (UNDP), and United Nations Industrial Development Organization (UNIDO).



Section

03

Establishment of Transition Milestones

This report summarizes notable milestones in the listed sectors.

Petroleum Sector

a. Nigeria Gas Flare Commercialization Project (NGFCP)

In October 2023, the Nigeria Upstream Petroleum Regulatory Commission announced the outcome of the bidding exercise and award to successful companies that bided for 49 Flare sites that were auctioned in 2022. NUPRC re-launched the NGFCP programme in consonance with the Petroleum Industry Act (PIA) provisions.

A notable outcome of this exercise is the economic and climate change benefits of the NGFCP. A recently presented calculation presented to the stakeholder event attended by the National Council of Climate Change (NCCC) indicated that the total GDP impact of implementing the NGFCP could be well over One Billion USD (\$1 Billion). In addition, the program is expected to eliminate over 6 million mtCO₂e from the atmosphere in a business-as-usual scenario.

b. Methane Mitigation in the Upstream Oil and Gas Sector

A set of regulatory guidelines has been established to oversee the actions and mechanisms that operators shall adopt for the prevention and control of Green House Gas and Methane emissions from Upstream oil and gas Operations. The provisions of these Guidelines shall apply to new and existing facilities within the upstream Nigerian Oil and Gas sector.

To achieve Nigeria's emission mitigation and reduction targets in the revised NDCs in the Oil and Gas, the key abatement measures and their targets are - the elimination of routine gas flaring (100% of gas flaring eliminated by 2030) and fugitive emissions/leakages control (60% Methane Reduction by 2030). This notwithstanding, the exemption provisions of the relevant sections of the Petroleum Industry Act (PIA).



Electricity Sector

a. Electricity Act of 2023

At the heart of the Electricity Act 2023 is the further deregulation and privatization of the Nigerian electricity market. The Act provides guidelines for the privatization of state-owned assets in the power sector, encouraging private sector participation. One important development is that States now have the mandate to enact their laws and set up electricity regulatory commissions as regards generation, supply, and transmission. The Act also allows states to operate and establish power stations within their territory and the authority to regulate electricity markets, grant licenses to private investors, operate independent power plants and distribute to electricity users.

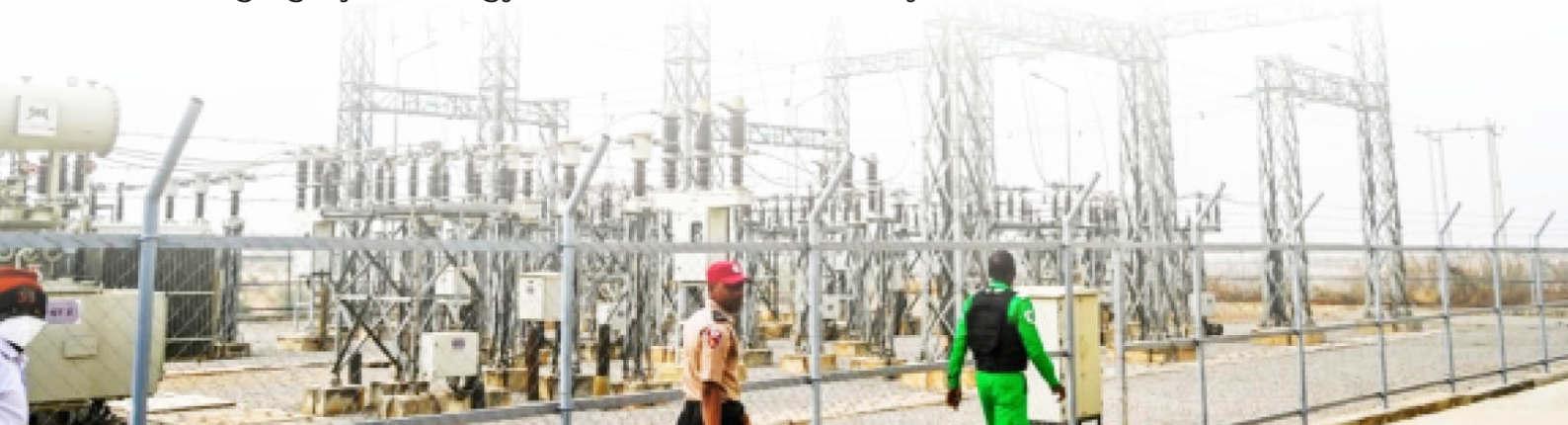
This landmark legislation aims to address the shortcomings of previous regulatory frameworks and lay the foundation for a robust and sustainable electricity market.

b. Development of an Integrated Resource Plan for Nigeria

For many decades, Nigeria has grappled with the problem of power generation, transmission, and distribution owing to several factors, including severely degraded transmission and distribution infrastructure. Also, the diverse and often confusing regulatory landscape has exacerbated the problem. The revision of the Nationally Determined Contributions (NDC) and the approval of the Energy Transition Plan (ETP) by the Federal Government emphasized the need for a comprehensive plan to achieve the country's low carbon transition.

United Kingdom Nigeria Infrastructure Advisory Facility (UKNIAF) collaborated with the Federal Ministry of Power (MoP) and the Nigeria Electricity Regulatory Commission (NERC) to conduct a scoping study for the development of Nigeria's Integrated Resource Plan (IRP). The IRP serves as a planning framework to establish the optimal combination of resources to meet the country's long-term electricity requirements.

According to UKNIAF, the IRP serves as this comprehensive plan by integrating various factors that impact electricity supply and delivery. It considers federal and state government regulations, expectations, and physical assets such as transmission lines, as well as customer demand. The IRP relies on specific data relevant to Nigeria and incorporates global best practices. It plays a crucial role in managing a just energy transition for the country.



Transport Sector

a. Frameworks for the Adoption of Electric Vehicles in Nigeria

This Readiness support will contribute to the delivery of such a system through the development of an electro-mobility policy for the deployment and scale-up of electric vehicles (EVs). The Readiness proposal will support national stakeholders and engage with key beneficiaries in prioritizing technologies and overcoming barriers. Project development and implementation will also engage with key beneficiaries of the project throughout its various phases. Beneficiaries could include technology installers, technicians and transport and power engineers, financiers, investors, and commercial lenders. Engagement with government stakeholders and wider beneficiaries will aid the development and submission of environmentally sound, robust, and financially scalable project actions resulting from the technical assistance.

Engagement with government stakeholders and wider beneficiaries will aid the development and submission of environmentally sound, robust, and financially scalable project actions resulting from the technical assistance. A focus will be placed on the means of implementation through a roadmap and action planning exercise that will respond to challenges that may hinder technology deployment and upscaling of EVs, including upfront costs associated with the capital investment. Stakeholders/ beneficiaries will be selected from representative groups and industry federations across civil society, NGOs, academia, and business. Efforts should be included to ensure participation from vulnerable and minority groups and gender-balanced representation.

The framework is jointly developed by the National Council on Climate Change (NCCC), Federal Ministry of Transport (FMT), and National Automotive Design and Development Council (NADDC) with support from the Green Climate Fund (GCF) and United Nations' Climate Technology Centre and Network (CTCN).

b. Transformation of Nigeria Transport Sector - Transition Readiness Study

With the removal of petroleum subsidies in May of 2023, the National Council on Climate Change conducted a preliminary assessment of the commercial readiness for the adoption of electric and CNG-powered vehicles in Nigeria, including a calculation of the Total Cost of Ownership of EV and CNG Vehicles compared to gasoline and diesel driven vehicles. Supported by technical assistance from RMI, the results of the analysis show.

- Nigeria is poised to be the second-largest population on earth by the end of the century.
- Nigeria must start now to plan for efficient and cost-effective public and private transportation systems.
- Global trajectory is toward zero-emissions vehicles by 2050.

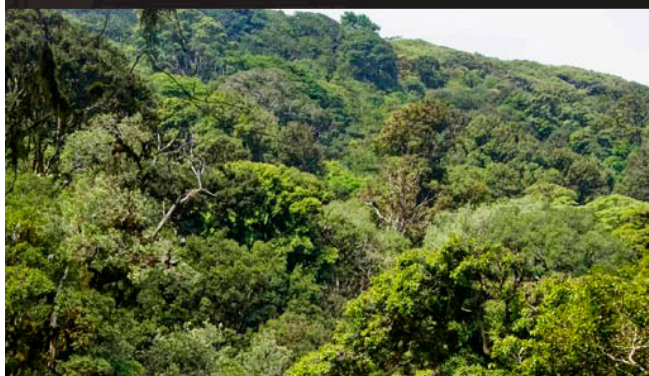
- Short-term and medium-term multi-fuel options but plan for EV in long term.
- Preliminary TCO analysis shows both CNG and electric vehicles are currently lower-cost options than petrol.
- Both EV and CNG offer significant opportunities for localizing parts of the manufacturing process in Nigeria.
- Investment in CNG infrastructure for light-duty vehicles risks obsolescence and stranded assets as EVs can undercut them on cost at any moment.
- Opportunities exist to leverage Nigeria's economic advantage to lead in clean energy manufacturing in Africa.



Highlights of Projects that demonstrate Policy Changes recommended for Adoption by other States



Currently, only Lagos, Edo, and Kaduna states have electricity market laws and can independently regulate their markets while other states be regulated by the NERC. The advantages of the state-led regulations were previously highlighted in the electricity sector section above.



Ekiti State developed a roadmap for sustainable management of forests 2021 – 2035. The roadmap outlines among others, a target to reverse the loss of production forest stock targeting 4,000-5,000 hectares of forest restoration per year through enrichment planting/artificial regeneration with greater inclusion of indigenous (native) tree species.



Launch of Electric Mass Transit by Lagos Metropolitan Area Transport Authority (LAMATA) has plans to deliver 12,000 electric buses as part of the state’s public transport fleet in the next five years.



Section

04



Summary of Methane Mitigation Works in Nigeria by Sector

Nigeria intends to increase its methane reduction target in the next NDC revision to include Agriculture (Rice & Livestock), Waste Management, and Wastewater sectors.

1. Oil and Gas Sector Methan Action

Oil and Gas sector guidelines under NUPRC have been operationalized and applied in the sector but the high cost of methane mitigation in the sector is hampering action.

The Nigeria Gas Flare Commercialization Program is hoping to drive additional financial support in the sector to increase gas capture to eliminate flaring.

Improvements in Leak Detection and Repair (LDAR) will improve the sector's performance in fugitive methane Emissions Leakages Control.

2. Waste Sector:

- Nigeria worked with RMI to recently publish a guideline for managing organic waste to reduce methane in the waste sector.
- RMI has recently undertaken to do conduct the scoping work and a pilot project in this area.

3. Agriculture Sector:

- This sector is important but is not getting enough attention, especially because it supports food security.
- Reduction of methane from rice farming using Alternate Wet and Drying (AWD) Technology is receiving attention and NCCC is working with rice farmers to find funding for implementation to increase food security while reducing emissions.
- Reduce methane emissions from enteric fermentation in livestock.



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