

WHITE
PAPER



A Pragmatic Path to Net-Zero Using the Green Economy, Blue Economy and Forestry

BY THE

NESG SUSTAINABILITY POLICY COMMISSION



This White Paper is the outcome of a dialogue session organised by the Sustainability Policy Commission of the Nigerian Economic Summit Group. The dialogue engaged public and private sector stakeholders in recognising the realities, impediments, and opportunities for achieving a Net-Zero Economy in Nigeria through three thematic areas: Climate change and Green Economy, Blue Economy and Forestry.

As a key outcome of this process, the Paper draws upon contributions by leaders and experts who engaged in dialogue on September 9, 2022. It has, however, since benefited from the inputs of the NESG Secretariat team, who revised earlier drafts to reflect the current realities of achieving a Net-Zero landscape in Nigeria. The Paper is intended to be a resource for governments, industry experts and other stakeholders interested in bridging the gap required to achieve a pragmatic path to a Net-Zero economy.



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Executive Summary

One of the most significant issues of our time is climate change, which is prompting calls for a quick, pragmatic and just energy transition from government agencies, corporations, civil society organisations (CSOs), and society at large. Carbon-intensive businesses are implementing net-zero targets to achieve lower emissions and more environment-friendly operations.

In the same vein, experts are beginning to look towards the Blue economy to achieve net-zero emissions and combat climate change, especially for coastal cities and communities. The Blue economy refers to the sustainable use of the oceans, seas, and marine resources for economic growth, improved livelihoods, and social development. The maritime sector is expected to experience an extraordinary explosion of activity due to the Blue Economy, which is the new route Nigeria wishes to take in its drive to diversify its economy.

In 2021, Nigeria submitted an updated Nationally Determined Contributions (NDCs) to the United Nations Climate Change Framework Convention on Climate Change (UNFCCC) as part of her commitment to the global target of keeping the earth's warming below 2°C. In scaling up her targets, Nigeria included the waste and water resources sectors and articulated other nature-based solutions not included in the 2015 NDCs in the updated NDCs (Federal Ministry of Environment, 2021a).

While hydrocarbon deposits, constituting a part of Nigeria's maritime treasures, have contributed significantly to the Nigerian economy, there have been detrimental environmental and social consequences. Exploring and exploiting the nation's natural resources while causing minimal adverse environmental impacts has therefore been recognised as a credible pathway to achieving a net-zero economy. Another key pathway to achieving a net-zero economy is the green economy, which refers to an economic model that is low-carbon, resource-efficient, and socially inclusive.

Nigeria is one of the countries most vulnerable to the impacts of climate change, including rising sea levels, flooding, more intense storms, and desertification. At the same time, Nigeria has a large and rapidly growing population, which will increase the utilisation of the country's energy and resource base. To mitigate the effects of climate change and meet its net-zero emissions target, Nigeria must transition to a green economy. This entails investing in cleaner/low-carbon energy sources, such as adopting renewable energy sources, improving energy efficiency and strengthening forest conservation in the country. Electricity generation in Nigeria still depends largely on fossil fuels (US Energy Information Administration, 2023).

By increasing the share of renewables to at least 40 percent by 2030 and 80 percent by 2050, Nigeria can significantly reduce its greenhouse gas emissions while creating jobs and improving energy security. The Nigeria Energy Transition Plan (ETP)¹, a home-grown, data-driven, comprehensive strategy, has been developed as a blueprint for achieving net-zero emissions through the transformation of the nation's energy production systems and consumption pattern. It sets out a framework and timeline for achieving emissions reduction across five (5) critical sectors: Power, Cooking, Oil and Gas, Transport and Industry. Understandably, Nigeria, being a gas-rich nation, still requires gas to power base load energy requirements as well as to foster industrialisation, which is why, in the ETP, gas is considered a transition fuel.

Forestry can also play a critical role in mitigating climate change and achieving net-zero emissions, given that Forests act as carbon sinks. Therefore, an important strategy for achieving a net-zero economy is reducing deforestation and promoting reforestation and afforestation. With less than 25 percent of its land area under forest cover (World Bank, 2023a), Nigeria has a unique opportunity to combat climate change through sustainable forest management.

Therefore, this Paper posits that the path to achieving net-zero emissions in Nigeria requires a multifaceted approach that addresses the interrelated issues of climate change, economic development, environmental conservation and social well-being.



¹Nigeria Energy Transition Plan

Introduction

Nigeria is a richly endowed country both in natural resources and human capital, but the country is facing significant challenges from climate change. It is crucial for Nigeria to take bold steps to reduce its greenhouse gas emissions and transition to a low-carbon economy to mitigate these climate change challenges and build a more sustainable future. In 2021, the Nigerian government committed to achieving a net-zero economy by 2060 in response to the global call for climate action. Therefore, the country must undertake ambitious and transformative policy action to achieve this goal.

The United Nations is driving global action to achieve a net-zero carbon footprint by the middle of the century through a number of agreements. Among these are the Paris Agreement of 2016, the Sustainable Development Goals (SDG), and the Race to Zero Initiative. In 2021, Nigeria submitted an updated Nationally Determined Contributions (NDCs) to the United Nations Climate Change Framework Convention on Climate Change (UNFCCC) as part of her commitment to the global target of keeping the earth's warming below 2°C. In the updated NDCs, Nigeria reaffirmed its unconditional contribution of 20 percent below business-as-usual by 2030 and raised its conditional contribution from 45 percent to 47 percent below business-as-usual by 2030, subject to sufficient international support. In addition to the existing sectors outlined in the 2015 NDCs, Nigeria, in scaling up her targets, included the waste and water resources sectors and articulated other nature-based solutions not included in the 2015 NDCs in the updated NDCs (Federal Ministry of Environment, 2021a). The inclusion of waste and water resources sectors in the updated NDCs underscores the increasingly recognised importance of circular and blue economies as critical enablers of the net-zero ambition.

The World Bank defines the blue economy as the sustainable use of ocean resources to achieve economic growth, job creation, better livelihoods, and overall improvement in ocean ecosystem health (World Bank, 2023b). Harnessing the blue economy offers numerous opportunities to countries with substantial coastal communities, including Nigeria, considering the country has more than 853km of coastline. Nigeria's extensive coastline and rich marine environment is home to diverse species and ecosystems that supply ecosystem services to riverine and riparian communities. This underscores the country's advantage in leveraging the blue economy to achieve its net-zero targets while promoting economic development. The blue economy has the potential to play a significant role in Nigeria's efforts to achieve net-zero emissions and combat climate change.

Nigeria could contribute to net-zero emissions through the sustainable management of its marine resources by reducing overfishing, protecting biodiversity, and promoting sustainable fishing practices and aquaculture. While Nigeria's maritime treasures, one of which is the hydrocarbon deposit, have contributed significantly to the economy, there have been detrimental environmental and social consequences. Hence, utilising sustainable practices in exploring and exploiting the nation's natural resources while causing minimal adverse effects on the environment aligns with the pathway to achieving a net-zero economy.

Another pathway to achieving net-zero emissions and combating climate change in Nigeria is by transitioning to renewable energy sources for its energy needs. This decarbonisation approach involves investing in offshore wind, tidal, and solar energy to provide clean and reliable power for the country while creating jobs and economic opportunities.

Finally, Nigeria could also contribute to net-zero emissions through the development of a circular economy, which involves reducing waste and maximising the reuse and recycling of materials. Introducing circularity across value chains has the potential to optimise resource exploitation and utilisation, protect the environment and enhance intrinsic and extrinsic value associated with nature and the natural environment. Notable circular economy initiatives include preventing/reducing plastic pollution, promoting the use of biodegradable and sustainable materials in the marine sector, and recycling metals from electronic wastes to generate raw materials for new production processes without depleting natural reserves of critical metals and causing limited environmental impact.

By transitioning to renewable energy, sustainably managing its marine resources, and developing a circular economy, Nigeria can contribute to a more sustainable and equitable future for all. This Policy White Paper outlines a pragmatic path to net-zero for Nigeria, focusing on three key thematic areas: Climate Change & Green Economy, Blue Economy, and Forestry.

Climate Change & Green Economy

Climate change is one of the most pressing challenges facing Nigeria, with impacts including increased frequency and severity of extreme weather events, rising sea levels, and changes in precipitation patterns. Nigeria is one of the countries most vulnerable to the impacts of climate change, including rising sea levels, flooding, and more intense storms. At the same time, Nigeria has a large and rapidly growing population, which will increase the country's energy and resource needs.

To mitigate the effects of climate change and meet its net-zero emissions target, Nigeria must transition to a green economy. A green economy is an economy that is low-carbon, resource-efficient, and socially inclusive. In Nigeria, a green economy could create jobs, improve public health, and reduce the country's dependence on fossil fuels.

One key strategy is to invest in renewable energy sources, such as solar, wind, and hydropower. Nigeria has enormous potential for solar and wind power, but only a small percentage of its energy comes from these sources. Nigeria still depends on fossil fuels for over 70 percent of its electricity generation (US Energy Information Administration, 2023). By increasing the share of renewables to at least 40 percent by 2030 and 80 percent by 2050, Nigeria can significantly reduce its greenhouse gas emissions while creating jobs and improving energy security.

Nigeria has abundant natural resources that can be harnessed to generate clean energy, such as the Sahelian sun, large rivers and high winds. According to the National Renewable Energy Action Plans (2015-2030), Nigeria has the potential to generate up to 6,000 Megawatts (MW) of solar power and 800MW of grid-connected wind capacity by 2030. This would represent a significant increase in Nigeria's renewable energy capacity and help the country achieve a significant share of its net-zero target. Nigeria is expected to achieve a total renewable energy capacity of 13,800 MW by 2030 (Federal Ministry of Power, 2016). This would put the renewable energy share of the country's total installed electricity generation capacity at 45 percent, representing a significant step in reducing Nigeria's dependence on fossil fuels and transitioning to a low-carbon economy.

The Nigeria Energy Transition Plan (ETP) was developed as a blueprint for achieving net-zero emissions through the transformation of the nation's energy production systems and consumption patterns. The ETP posits that most of the efforts needed to achieve net-zero emissions in Nigeria will be in the energy sector. It sets out a framework and timeline for achieving emissions reduction across five (5) critical sectors: Power, Cooking, Oil and Gas, Transport and Industry. According to the ETP, gas will anchor Nigeria's net-zero pathway as a transition fuel, especially in the power and cooking sectors. Understandably, Nigeria, being a gas-rich nation, still requires gas to power base load energy requirements and foster industrialisation, which is why, in the ETP, gas is considered a transition fuel. The ETP recognises that the nascency of renewables (solar) adoption and current technological limitations requires the utilisation of gas as a transitional fuel, thereby shifting energy consumption from diesel/petrol generators to a low-carbon alternative with less adverse environmental impact.

The ETP acknowledges that the country's development context and priorities require an initial expansion of gas generation capacity to establish baseload capacity in order to meet increasing electricity demand while incrementally integrating renewables. The incremental energy mix offers significant opportunities for market and systemic adjustments, technology innovation and diffusion, and multi-stakeholder capacity building that are essential to achieving and sustaining net-zero ambition. Over time, the scale-up of renewables-backed electrification is anticipated to accelerate decarbonisation in sectors such as cooking, transportation and industry. In effect, Nigeria's energy transition requires a careful analysis of technological feasibility, human capital adequacy, financial resources and commercial viability to achieve a sustainable and just transition that leaves no one behind in terms of shared prosperity and overall social well-being.

To support this transition, the government should establish clear, short-term measures and long-term policies to encourage private investment in renewable energy, including feed-in tariffs, net metering, tax incentives, decentralisation of electricity supply to sub-nationals, and mobilisation of long-term local currency capital to accelerate infrastructure development and incentivise private investment in renewables. The government should also invest in research and development to reduce the cost of renewable energy technologies and make them more accessible to Nigerian businesses and households.

Another important strategy is to improve energy efficiency and reduce energy consumption in the industrial, commercial, and residential sectors. This strategy can be implemented through measures such as upgrading and enforcing building codes, promoting energy-efficient appliances and fuel-efficient vehicles, and implementing policies to reduce industrial energy consumption and promote the adoption of sustainable technologies. Applying these measures can have a significant impact on reducing emissions, contributing to the national vision of halving emissions by 50 percent by 2050 (Federal Ministry of Environment, 2021b).

Blue Economy

The "Blue economy" has gained popularity in development circles lately as a policy choice for developed and developing nations to promote their economic objectives. Historically, the oceans have been used for trading, expanding territories, and harvesting natural resources. Even with the rise in global carbon emissions, the seas have been essential in keeping the earth cool and habitable. The blue economy aims to balance sustainable economic benefits with long-term ocean health in a manner consistent with sustainable development and its commitment to intra- and intergenerational equity (Keen, 2018).

As rightly stated by Smith-Godfrey (2016), the blue economy is the sustainable industrialisation of the oceans for the benefit of all. It refers to a holistic approach to the sustainable development of the ocean economy, which includes sectors such as shipping, fisheries, aquaculture, tourism, marine minerals, maritime transport and many others. The blue economy has the potential to provide significant economic, social, and environmental benefits for Nigeria, including through the sustainable exploitation of marine resources such as fish, oil and gas, and minerals. In addition to contributing to the country's economic development, it can help address climate change challenges by reducing GHG emissions and enhancing ecological resilience.

In Nigeria, the development of the blue economy can focus on increasing the production of sustainable fish and seafood, developing a marine transport system that is more efficient and less polluting, and increasing the use of marine renewable energy. Therefore, a critical lever for Nigeria to achieve its net-zero target is harnessing the potential of the blue economy. However, there is a pervasive challenge of sea blindness² that needs to be creatively addressed to unlock the tremendous opportunities inherent in the blue economy. Despite having seas and oceans across the country, Nigeria has not learned to appreciate its economic potential and has limited knowledge of the gamut of threats that undermine its integrity. It is crucial to leverage the economic and socio-ecological potential offered by the sea and oceans to be on a path towards achieving net-zero.

The government should establish policies and regulations that encourage sustainable management of fish and seafood resources, such as setting quotas and implementing conservation measures. It should also invest in the infrastructure and technology needed to support a sustainable and efficient marine transport system, such as building ports and developing ocean observation systems. Moreover, the government should create investment opportunities for marine renewable energy, including wind and wave power, which can provide clean, reliable energy to coastal communities and reduce dependence on fossil fuels.

Another key opportunity for Nigeria in the Blue Economy is the development of the offshore oil and gas sector. Nigeria is one of the largest oil producers in Africa and is heavily dependent on the revenue generated from this sector. However, this also results in environmental degradation and GHG emissions from flaring and venting of associated gases. The government should implement the Nigeria Gas Flare Commercialisation Programme³, which provides for the collection and monetisation of associated gases rather than flaring and venting them. This can provide an important source of revenue while also reducing emissions.

² "Sea blindness" figuratively refers to the inability to see or understand certain issues or situations, such as those related to maritime security, environmental protection or climate change. This can be caused by negligence, ignorance or lack of interest or resources to address these issues.

³ [Nigeria Gas Flare Commercialisation Programme](#)

Furthermore, there is a need for the development of the Nigerian aquaculture sector. With a vast coastal zone and a growing population, this sector has significant potential for sustainable development. This can be done through the promotion of sustainable and responsible aquaculture practices, including reducing the use of fishmeal and fish oil in feeds and increasing the use of plant-based feed ingredients. Nigeria should focus on sustainable fisheries and aquaculture to harness the potential of the blue economy. Nigeria is one of the largest fish-producing countries in Africa, but its fishery sector is facing major challenges, such as overfishing and illegal, unreported, and unregulated (IUU) fishing. By implementing sustainable fisheries management practices, Nigeria can increase its fish production and reduce its greenhouse gas emissions. Furthermore, developing the aquaculture sector in Nigeria could also help mitigate climate change by reducing the pressure on wild fish stocks and decreasing the emissions from the sector.

Forests

Forests play a critical role in mitigating climate change and achieving net-zero emissions. Forests act as carbon sinks, absorbing and storing carbon dioxide from the atmosphere and storing it in biomass and soil. The country's forests also provide ecosystem services such as water regulation, biodiversity conservation, and recreation. In Nigeria, forests are under significant pressure from deforestation and degradation. Deforestation and land use change is a major contributor to global emissions, and Nigeria is no exception. With less than 25 percent of its land area under forest cover (World Bank, 2023a), Nigeria has a unique opportunity to combat climate change through sustainable forest management.

To protect and manage these resources, the government should implement the strategies outlined in the National Forest Policy (2020), including reforestation, afforestation, agroforestry programs, and innovative policy incentives to promote sustainable logging and non-timber forest product utilisation. Nigeria can work towards establishing a Forest Carbon Offset program, which would provide financial incentives to communities and the private sector to reduce deforestation and promote reforestation.

The government should also invest in the necessary infrastructure and personnel to monitor and enforce these policies. In addition, the government should provide financial and technical assistance to local communities to help them manage and protect the forest resources on which they depend. By working with local communities, the government can ensure that the benefits of forest conservation are shared equitably and that the costs of protection are minimised.

To mitigate the effects of climate change, Nigeria must protect its forests and promote sustainable forest management. One way to do this is through the use of REDD+ (Reducing Emissions from Deforestation and Forest Degradation) programs. These programs provide financial incentives to countries and communities to reduce emissions from deforestation and forest degradation.

According to the Forest Carbon Partnership Facility, Nigeria could potentially receive up to \$1 billion per year by 2030 through REDD+ programs. Through a World Bank Grant for REDD+ Readiness Preparation (World Bank, 2018), Nigeria has made significant strides in building capacity for mitigating emissions in the forestry sector through the following activities- the country:

- Developed and launched a bankable National REDD+ Strategy that is environment-friendly and socially inclusive.
- Developed Nigeria's REDD+ Finance Framework, including the Forest Carbon Offsets /Credit Programme.
- Developed a Forest Reference Emission Level (FREL), which was submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2019. This has helped in NDCs reporting and local planning.
- Developed and rolled out a Safeguards Information System, which will be used to monitor the socio-economic impact of REDD+ activities/projects.
- Established a National REDD+ secretariat to oversee programme management at the national and sub-national levels. The Secretariat oversees the activities of local governments, NGOs, civil society, academia, the private sector, local communities, and traditional authorities working in the fields of environment, forestry, and natural resource management.

While the nation has achieved these important milestones, Nigeria's climate action in the forest sector will only contribute to the Net-Zero agenda through efficient and effective implementation of the strategies and tools. The country should explore public-private and local-international partnerships to set up a Nigerian National Carbon Market Facility (NNCMF) to build and strengthen the domestic carbon market.

Also, Nigeria needs to enhance accessibility and transparency in its forest data management architecture - the National Forest Monitoring System (NFMS), which is not yet publicly accessible. Finally, the National Council on Climate Change should coordinate with the ministries, departments and agencies associated with the forest sector to develop guidelines and resources for implementing forest carbon credit trading schemes in Nigeria.

Key Considerations For Achieving Nigeria's Net-Zero Target By 2060

Achieving net-zero with a focus only on energy transition in the energy sector is impracticable

Relying on an energy transition plan for a net-zero emission is not feasible because the non-energy sector accounts for a significant share of the emissions. Existing strategic documents, i.e. the Nationally Determined Contributions and the Long-Term Low Emission Development Strategy, identify the energy sector as a primary emitter, which accounted for 60 percent of green gas emissions in 2018. However, there is a need to develop a robust approach to exploit other areas that complement energy sector decarbonisation. For example, improved technology for upstream oil and gas operations to enhance oil recovery and reduce gas flaring will need to be complemented by other initiatives that lower emissions in the maritime sector. The Long-Term Emission Strategy complements the ETP by focusing on a decarbonisation pathway that includes the energy sector and other sectors such as Agriculture, Forest and Land Use (AFOLU). Thus, a holistic decarbonisation approach requires a multisectoral focus that leverages the complex interconnection and interdependence that characterise many sectors.

Developing a blue taxonomy to solve the problem of sea blindness

Despite having seas and oceans across the country, Nigeria has not learnt to appreciate their economic potential. For example, having made some notable progress in green bond issuance, Nigeria is yet to issue a blue bond to raise capital for investing in aquatic infrastructure and exploiting climate-smart opportunities that could contribute significantly to its gross domestic product. Although the Nationally Determined Contributions and the Long Term, No Emission Development Strategy 2050 are excellent documents that aim to set Nigeria on the path to achieving net-zero by 2050, these documents do not make any explicit reference to the blue economy.

Defining a blue taxonomy will be instrumental in reducing sea blindness and attracting private sector investments to other sub-sectors beyond maritime operations that are yet to be fully explored and exploited. A blue taxonomy will support the issuance of blue bonds by private investors and deepen the capital markets operations, contributing to protecting the ecological integrity of marine ecosystems and mitigating GHG emissions in the interconnected sectors.

Enhancing sustainable waste management infrastructure and practices

In the area of Circular Economy, the National Environmental Standards and Regulations Enforcement Agency (NESREA) has the mandate to implement the Extended Producer Responsibility (EPR) Framework. NESREA currently has 35 environmental regulations, and 9 of these regulations have provisions for EPR. The EPR framework ensures that waste producers take responsibility for environmental stewardship. The essence of the EPR is to achieve a circular economy so that all generated waste is recycled as raw materials. Therefore, it is pertinent for industries with intensive production processes to earmark funds for sustainable management of their waste streams to reduce pressure on landfills.

With Nigeria's growing population, waste generation is expected to increase through domestic consumption and industrial activities; hence, it is necessary to upgrade existing waste management infrastructure and build new climate-smart ones to bridge the existing infrastructure gap. Waste-to-Energy opportunities can be exploited to generate power from landfills, further diversifying electricity generation options that contribute to low carbon development pathway. Importantly, Nigeria needs to educate the citizenry on the detrimental impact of poor waste management practices, especially in rural environments where waste burning is prevalent and in urban areas where waste dumping in aquatic environments is common practice. Finally, the government should establish incentives for promoting private sector investments in waste management infrastructure across states and local governments to build robust recycling infrastructure to spur micro and nano-scale interventions that are increasingly championed by fledgling start-ups in the sector.

Lack of data-backed policies

The challenge in Nigeria is that there are so many pronouncements on emission reduction, but the quantitative integrated assessment model does not back them. The country does not clearly understand energy balance and the quantitative analysis scenarios that can offer practical quantitative solutions and options for emission reductions. For instance, Nigerians do not have access to the data on which the ETP plan had been produced. This is a significant weakness compared to other countries like the UK, where the data that goes into modelling is available to the public. The updated NDCs acknowledges that there is a challenge of data deficiency in the waste sector, so reported emissions are only estimates that do not provide a complete understanding of the sector's emission profile. The issue of data paucity is not peculiar to the waste sector; it applies to almost all sectors, especially at the sub-national level, where capacity inadequacy and administrative inefficiencies are rife.

Clearly, the journey to net-zero requires more than conjectural statements of potential emission reduction; rather, Nigeria needs to drive climate action based on real scientific data with as much granularity as possible. Climate scenario planning requires quality data obtained across all relevant sectors and associated carbon-emitting activities. It is important to understand energy balance to achieve low long-term emissions reduction, i.e. energy generated from all key sectors and then come up with scenarios on how to reduce emissions from the identified sectors. It is also essential to understand the economic, social, political and institutional repercussions of the proposed emission reduction trajectories.

The proliferation of policies without concrete implementation plans

Nigeria has many great plans and policies but continues to proliferate policies without implementation. Nigeria is the country with the highest amount of excellent reports and policies, which are yet to be translated into concrete changes. Beyond the issuance of strategic reports or formulation of policies, there is a need to focus on the delivery channels to convert excellent plans on Paper to better the lives of the general populace. There is a need to harmonise proliferated policies into a few concrete and pragmatic ones, avoiding complexities and redundancies that could hinder a smooth net-zero transition.

Biomass for energy development

According to a joint report by the United Nations Development Programme (UNDP) and the International Labour Organisation (ILO) in 2021, biomass is considered a major energy source in Nigeria, contributing to about 75 percent of Nigeria's primary energy supply. From agricultural crops, agricultural crop residues, forestry resources, municipal solid waste, and animal waste, Nigeria has a high potential for renewable energy generation from biomass.

The Nigerian Renewable Energy and Energy Efficiency Policy (NREEEP) aims to add 23,000MW of renewable energy capacity to the country by 2030. To achieve this goal, it is crucial to invest in biomass-based electricity generation infrastructure and technology to complement solar, wind and other renewable energy alternatives. Energy production through biomass offers two advantages: first, raw materials for electricity generation are abundantly available, and the cost of access is low to negligible; second, it supports a circular economy through the use of biowaste, which mitigates emissions and environmental pollution. Nigeria needs to develop an Action Plan for integrating biomass-based electricity generation into the existing strategies and roadmap for decarbonising the energy and agricultural sectors.

Disconnect between the oil and gas industry and electric power producers

There is a clear disconnect and lack of synergy among several stakeholders working to address Nigeria's numerous developmental challenges. A scenario where companies in the oil and gas industry produce biogas without infrastructure and offtake capacity from power generation companies undermines the prospects of improving electricity access before 2030 and achieving net-zero by 2060. Uncoordinated efforts result in avoidable waste of resources and delays in achieving critical development milestones.

The government needs to create a suitable environment to catalyse private sector investments in developing the requisite infrastructure to capture economic opportunities at each node of the oil and gas value chain. Furthermore, it is highly pertinent to remove cross-sectoral interoperability barriers and foster synergistic relationships among entities with complementary operations. Not only will such interventions contribute to abating the emission intensity associated with the sector, it would also offer a tremendous advantage in accelerating the electrification of unserved and underserved cities and communities through renewable energy alternatives.

Climate Literacy and Environmental Education

Nigeria needs to get the National Orientation Agency (NOA), Department of Climate Change, and other relevant MDAs to develop and implement climate literacy and communication strategies for educating the citizenry, considering the different levels of literacy and access to information. Exploring partnerships with local NGOs, CSOs, and other organisations will improve climate literacy and contribute to mindset shifts and behavioural adjustments in the country.

For example, the provision of requisite infrastructure in coastal communities and sensitisation initiatives through local networks and associations will contribute to abating water pollution and reducing harm to aquatic ecosystems. Thus, it is important to implement climate literacy campaigns and encourage sustainable practices that support long-term livelihood resilience.

Recommendations

Incorporate the blue economy in Nigeria's journey to net-zero.

The Nationally Determined Contributions (NDCs) document paid little or no attention to the blue economy. The NDCs should include the energy sector analysis to show elements relevant to the blue economy. Aquaculture has significant potential to boost economic activities, provide employment, and reduce poverty, so it needs to be treated as a standalone component. There is a need to see the blue economy as an area of focus and develop the blue bonds and blue financing system. Further, there is the need for full-scale implementation of the blue economy, mapping and survey around coastal areas and deep advocacy around life underwater.

Encourage low-emission practices in the Nigerian shipping sector.

The shipping sector is a business run by individuals who are profit-oriented. For this reason, cost-friendly methods are the default practices. As a way of discouraging these harmful practices, the government can add incentives to encourage these individuals to source alternative sources of energy. Another way is to enhance regulations relating to the use of carbon-generating energy sources to discourage its use. Aside from the energy demands, there is also waste generation in the shipping sector. On course, en route or stationary, ships emit wastes that are not properly handled. Sunken ships become a habitat for aquatic animals, contributing to waste. Policies should be put in place to ensure the proper management of wastes generated from the shipping ecosystem. Furthermore, the infrastructure needed to salvage sunken ships should be put in place to encourage wreck recycling. Penalties should also be put in place against countries dumping or abandoning wrecked ships on the coasts of Nigeria.

Develop a clearly defined regulatory framework for the blue economy market space.

There are a lot of opportunities for the private sector in Nigeria's journey to a Net-zero economy. Areas with income-generating potentials include fishery and aquaculture, transportation, shipping, mariculture, tourism and hospitality, oil-gas renewable energy, carbon capture and storage, biodiversity and ecosystem services. However, the government needs to put a framework in place to define the blue economy market space, clearly stating areas open to private investors and to what extent. This also brings to the fore the need for collaboration between the public and private sectors to harness cross-sectoral opportunities that the blue economy can unlock.

Public awareness and incentivisation

Harmful practices by indigenous communities add to pollution and endangerment of life underwater. Knowledge of sustainable management of natural resources should be accessible to indigenous people through advocacy to increase their awareness of the benefits of environmental stewardship, thereby reducing pollution while adding value to aquatic life. A participatory approach should be adopted in coordinating stakeholder engagements and consultations to ensure people whose livelihoods will be impacted by various sustainable interventions are well informed of the economic, social and ecological benefits of alternatives.

For instance, small businesses that generate a lot of emissions have to be enlightened about the non-financial cost of environmental pollution and the long-term implications for business resilience. Also, people should be encouraged through tax and other incentives to adjust their lifestyles and consumption preferences in order to reduce their ecological footprints and contribute to achieving the country's net-zero target.

Develop a roadmap to operationalise the energy transition plan

There is a need to look at the policy drivers of the energy transition plan and develop a roadmap to operationalise the policy. This way, there will be a clear understanding of the country's challenges as a developing oil-dependent country. There is also the need to look towards the adoption of domesticated technology in the clean energy economy. It is expected that the energy transition will require clean technologies.

While Nigeria is still struggling to provide basic amenities and facilities, it is not feasible for the country to import foreign technologies to drive the energy transition process as a result of reduced earnings. In addition, it is crucial to address the capacity shortage and poor access to electricity that is endemic in the country through an efficient progressive energy mix that reduces emissions and cushions socio-economic shocks and stresses associated with the transition.

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ABOUT THE NESG

The NESG is an independent, non-partisan, non-sectarian organisation, committed to fostering open and continuous dialogue on Nigeria's economic development. The NESG strives to forge a mutual understanding between leaders of thought so as to explore, discover and support initiatives directed at improving Nigeria's economic policies, institutions, and management.

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