



EXECUTIVE SUMMARY

Climate Change and Socio-Economic Development in Nigeria

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EXECUTIVE SUMMARY

Climate change is increasing hunger, poverty, disease-burden, migration, conflict and insecurity in Nigeria. It is damaging infrastructure, changing Nigeria's coastlines, fuelling desertification, producing water scarcity, facilitating erosion and resulting in the loss of revenue for states and the national government. The total economic cost of climate change to Nigeria is estimated to be about USD100 billion cumulatively. Climate change may also cause Nigeria to lose trillions of dollars in stranded assets. With these far-reaching negative effects on the country's human and natural systems, climate change has the potential to jeopardise the country's economic development and alter its geographical, social, and political trajectory for decades or centuries. Some of the repercussions of climate change on the nation may be irreversible. Therefore, it should be evident that climate change is not a marginal or peripheral issue that the government and the people of Nigeria can take lightly.



The total economic cost of climate change to Nigeria is estimated to be about USD100 billion cumulatively

Even though climate change poses significant threats to Nigeria's economic development, it also presents an opportunity to diversify the economy, expand the country's energy portfolio, address energy security concerns, and increase global economic competitiveness. To transform climate change from a significant threat into an opportunity requires deliberate planning supported by immediate, bold and courageous action.

There is evidence that successive Nigerian governments recognise the enormous threat of climate change and the necessity for action, as indicated by a plethora of policy declarations, documents, and a new National Climate Change law. However, actual action is still behind schedule. The government has not yet established a clear roadmap for the effective and comprehensive implementation of key policies and commitments, and there are no clear budgetary provisions for their implementation.

Transitioning to a green economy is a complex endeavour that requires meticulous planning, stakeholder participation, and a dedication to sustainable development. Leveraging climate action to pursue economic development in Nigeria is not only a viable but essential strategy. Incorporating climate considerations into economic development strategies can result in inclusive and sustainable growth. Such a move can provide Nigeria with excellent opportunities to construct a climate-resilient economy that not only promotes growth and reduces poverty, but also creates good green jobs and contributes to the reduction of greenhouse gas emissions and environmental sustainability. By proactively addressing the issue of stranded assets, Nigeria will be able to position itself for a more resilient and prosperous future.

The emphasis should be on finding methods to industrialise and transition without substantially increasing the country's emissions profile. To accomplish this, Nigeria will need to implement mitigation and adaptation strategies that considerably enhance its macroeconomic stability, economic transformation, and job creation, while minimising

the negative impacts of climate change on development.

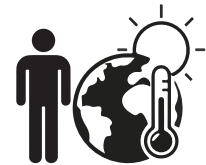
The global transition from a high-carbon economy to a low-carbon economy is already well underway through a multitude of international and national initiatives many of which are led by high-polluting industrialised nations that are keen to transform their economies and position their countries as net beneficiaries of the new global green economy. These strategies and investments will inevitably alter the global political, economic and geopolitical landscape, producing winners and losers across the world. Whether Nigeria will swim or sink in the face of climate change and the global green growth transition will depend on its willingness to take urgent action now and re-align its national development strategies towards a low-carbon economic future.

HIGHLIGHTS

There is a scientific consensus that human activities have resulted in the rapid and widespread warming of the planet with catastrophic consequences.

The industrial revolution ushered much of the developed world to an era of unprecedented mechanisation and economic prosperity based on the burning of fossil fuel. But it is now evident that decades of dumping of Greenhouse Gases (GHGs) in the atmosphere have altered the very climatic system upon which development has depended and now pose a significant threat to the survival of humankind.

The evidence and scientific consensus on climate change have compelled much of the global community to a search for ways to adapt to the impact of climate change and to transition economies to low-carbon paths. The human-induced rapid changes in the global average surface temperature and long-term weather patterns across the world and consequent negative impacts on human and natural systems have resulted in increased rethinking of key economic ideas, practices, and political institutions that have been the bedrock of human civilisation for decades. The significance of this is that how Nigeria fares with regards to climate change will be shaped not just by what Nigeria chooses to do but also by the actions and activities of actors beyond Nigeria's borders.



Scientific evidence indicates that Nigeria is experiencing rapid climate change with figures suggesting the situation will get worse with time. Since the 1980s, the temperature over Nigeria has risen significantly, and climate projections show a significant increase in temperature across all ecological zones in the next few decades. Based on the results of various climate model scenarios published in Nigeria's Third National Communication and Nigeria's Climate Risk Profile, temperatures across Nigeria are expected to increase by 2.9°C to as much as 5.7°C by end of the century. Nighttime temperatures, currently between 20°C and 27°C, are expected to increase by as much as 4.7°C. The impacts of climate change manifest in rising temperatures, variable rainfall, increases in the frequency or intensity of some extreme weather events, such as floods and droughts, and rising sea levels.

Climate change is compounding poverty challenges in Nigeria and impeding the attainment of Sustainable Development Goals (SDGs) in the country. Climate impacts are complex, interrelated and they affect several aspects of our lives and

well-being. It is evident that climate change is compromising Nigeria's economic development through multiple and compound negative impacts. Nigeria is very vulnerable to the impacts of climate change as much of its agricultural sector, which contributes about 24% to its GDP, is rain-fed and climate-sensitive. Other sectors of the economy such as health, transportation, energy, and water resources are also vulnerable to the impacts of climate change.



Agriculture is one of the sectors most sensitive to global warming in Nigeria and a major source of climate-induced economic loss in the country. Agriculture is a crucial sector in Nigeria, employing a significant portion of the population and contributing to food security and economic growth. Climate change could result in the decline of agricultural productivity between 10 to 25 percent by 2080¹. For some areas in the northern part of the country, the decline in yield in rainfed agriculture could be as much as 50 percent. Increased warming trends will also make the storage of root crops and vegetables challenging for farmers without access to refrigerators, thereby increasing the already high level of post-harvest loss. In 2021, the Global Hunger Index ranked Nigeria as 103rd out of 116 countries.² Climate change could contribute towards further worsening these realities. Given that Nigeria has 35 million children under the age of five, of which 12 million are stunted, with 23.5 million being anaemic owing to poor nutrition³, the threat posed by climate change has the potential to further worsen the situation.

Climate change will worsen water-scarcity challenges in the country. The World Bank predicts that climate change would lead to a drop of 25% in the amount of water that is available in Nigeria by the year 2050. This will significantly affect water supply for agriculture, industry, and home consumption. Reduced water availability will also pose severe threats to irrigation agriculture, industrial activities, and domestic water supply, threatening the livelihoods of farmers/labourers (employment) and GDP.



Climate change will alter Nigeria's coastlines, result in displacement of hundreds of thousands of people and possibly the submergence and disappearance of Nigerian communities. Calculations show that the potential increase in sea levels due to global warming, known as accelerated sea-level rise (ASLR), for Nigeria ranges from 0.5 to 1 metre. This would result in the radical alteration of Nigeria's coast line. A shoreline retreat of 100 metres is expected by the year 2060, with worst-case scenarios predicting erosion rate of up to 600 metres by the year 2060. With ASLR of about 1.0 m (in no development and no mitigation/adaptation measures scenario), about 75% of the delta could be lost. Capital values at risk could be as high as US\$17.5 billion.



1 Cervigni, R., Riccardo, V., and Monia, S, eds. 2013. *Toward Climate-Resilient Development in Nigeria*. Directions in Development. Washington, DC: World Bank

2 Mohammed Hadiza and Badi'a Hassan Ramatu, "Mitigating the Effects of Climate Change to Achieve Food Security in Nigeria", *BusinessDay*. <https://businessday.ng/opinion/article/mitigating-the-effects-of-climate-change-to-achieve-food-security-in-nigeria/>

3 Ihejirika Iviw Patience, "How Climate Change, Insecurity Is Exacerbating Nigeria's Malnutrition Burden", *Leadership*. <https://leadership.ng/how-climate-change-insecurity-is-exacerbating-nigerias-malnutrition-burden/>

Flooding represents one of the most widespread and recurring impact of climate change in Nigeria.

The Global Rapid (Post Disaster) Damage Estimation (GRADE)⁴ Assessment report presented by the Minister of Humanitarian Affairs, Disaster Management and Social Development on the 2022 flooding indicated that all 36 states and the Federal Capital Territory were affected by the floods, with varying degrees of damages. According to the report of the United Nations Office for the Coordination of Humanitarian Affairs (OCHA)⁵, over 3.2 million people spread over 34 of the 36 States in the country were affected by the flood, with over 600 deaths and 1.4 million people displaced. In addition, more than 569,000 hectares of farmland were damaged by floods, at the height of harvest seasons, which may further aggravate the already precarious food insecurity in the country. Nigeria reportedly lost an estimated \$6.68 billion.

Climate change will increase the case of malaria burden in Nigeria. Malaria is a major public health concern in Nigeria, with an estimated 68 million cases and 194 000 deaths due to the disease in 2021. Nigeria has the highest burden of malaria globally, accounting for nearly 27% of the global malaria burden. A recent study finds that climate change could result in an additional 4.7 million cases of malaria in Nigeria per year by 2050.⁶ The economic impacts of these diseases include increased healthcare costs, loss of workdays, and decreased productivity. One study suggests that the economic burden of malaria in Nigeria is estimated to be around \$1.1 billion annually.⁷



It is hard to accurately calculate the economic cost of climate change in Nigeria but available estimates suggest a cumulative of up to \$100 billion by 2020 and \$460 billion by 2050. In 2006, the World Bank assumed that between 2-10% of Nigeria's Gross Domestic Investment and about 40% of official development assistance would be sensitive to climate change.⁸ A more recent estimate indicates that without climate-proofing Nigeria's economy and society through concrete adaptation action, it is estimated that climate change will cost the country between 6% and 30% of its GDP by 2050, equivalent to a cumulative loss of \$100-460 billion.⁹ In addition, estimates for losses in the country's priority sectors (agriculture, water resources, health and transport), without adequate mitigating measures are at \$3.06 billion annually from 2020 which is expected to rise to about \$5.50 billion in 2050.¹⁰ Without climate-



4 GRADE is developed by the World Bank's Disaster-Resilience Analytics and Solutions (D-RAS) Team

5 Nigeria Flood Response: Flash Update 2 OCHA - <https://reliefweb.int/report/nigeria/nigeria-floods-response-flash-update-2-last-updated-1-november-2022>

6 Ogonnaya, U., Ajayi, C. A., Uzochukwu, B. S. C., & Nduka, I. I. (2021). Malaria burden in Nigeria: A systematic review and meta-analysis. PLOS ONE, 16(1),

7 Sonaiya et al. (2017),

8 World Bank, 2006. Investment framework for clean energy and development. World Bank, Washington, DC., USA.

9 Federal Ministry of Environment (2021). *National Climate Change Policy for Nigeria*. Abuja: Federal Ministry of Environment, p. 9.

10 Federal Ministry of Environment (2021). *Nigeria's Adaptation Communication to the United Nations Framework Convention on Climate Change*. Abuja: Federal Ministry of Environment,

proofing, an expected project life of 30 years could be truncated to 20 years.

Nigeria can lose billions and up to trillions in stranded assets due to climate change and global climate policy action.

Asset stranding is the process of collapsing expectations of future profits from invested capital (the asset) as a result of disruptive policy and/or technological change.¹¹ As the world attempts to achieve net-zero carbon emissions and penalise climate-unfriendly investments and activities, vast quantities of recoverable fossil fuels will have to remain underground in order to stabilise the global climate and energy-intensive equipment will have to be retired at a quicker pace in favour of less carbon-intensive ones.¹² With this transition, therefore, many assets will become stranded.



Climate change offers opportunities for economic competitiveness, energy security, and sustainable development.

Even though climate change poses significant threats to Nigeria's economic development, it also presents an opportunity to diversify the economy, expand the energy portfolio, address energy security concerns, and increase global economic competitiveness. Climate change also offers opportunities to strengthened integrated agriculture, forest, and water management by promoting climate-smart agriculture (CSA) and integrated water and coastal management, reducing deforestation. Far-reaching opportunities also exist in the areas of better natural gas management, green transportation and low carbon housing.



The Government of Nigeria recognises the challenge that the climate crisis poses to its development, and that there is a need to address the challenge for national sustainable development, however, action has not kept pace with pronouncements and pledges.

The government has put in place several policies in response to climate change. These include an ambitious Nationally Determined Contributions (NDC), the Energy Transition Plan (ETP), National Climate Policy (NCP), a Long-term Vision (LTV) and an innovative National Climate Change Act. A few green projects have also been financed across the country in a variety of sectors of the economy. Nevertheless, the scale of action has not matched the statements of ambition and the need for bold action is imperative. The government is yet to put in place a clear roadmap for the effective and holistic implementation of the NPCC for impact and the initiatives identified in the NCCP so far have no clear-cut budgetary provisions for their implementation.

The global transition from a high-carbon economy to a low-carbon economy is well underway and will likely make Nigeria poorer unless the country acts

p. xviii.

11 Van der Ploeg, F. & Rezai, A. (2020). Stranded assets in the transition to a carbon-free economy. *Annual Review of Resource Economics*, 12: 281–298; Aldecott, B. (2017). Introduction to special issue: stranded assets and the environment. *Journal of Sustainable Financial Investment*, 7: 1–13

12 Baron, Richard and Fischer, David (2015). Divestment and Stranded Assets in the Low-carbon Transition. Background paper for the 32nd Round Table on Sustainable Development 28 October 2015 OECD Headquarters, Paris. Paris: OECD.

strategically. Nigeria needs to understand is that the ground has shifted and that things are no longer business as usual. The energy transition from fossil fuels and even gas into greener energy is already happening. Major players in the oil and gas sector are already re-aligning their business strategies towards a low-carbon economy framework. This will have broad implications for the energy landscape of Nigeria, a country that is currently heavily-dependent on its vast oil and gas reserves to drive its national development. By addressing the challenge of stranded assets proactively, Nigeria can position itself for a more resilient and prosperous future.

Transitioning to a green economy in the presence of abundant fossil fuels and gas is a complex endeavour that requires careful planning, stakeholder engagement, and a commitment to sustainable development. The goal is to minimise climate change threats to development and maximise the opportunities the challenge provides by promoting growth and social development through a low-emission development path, without compromising development goals of poverty reduction and inclusive development. A major step is to strengthen institutional capacity for climate action and the legal framework. This may include anchoring in law NDC climate policy priorities and the establishment of a legal framework for participation in global carbon markets. It is also imperative to standardise monitoring, reporting, and verification (MRV) procedures and mainstream climate change in public financial management, public investment management, green public procurement, and government-owned enterprises



Leveraging climate action to pursue economic development in Nigeria is not only a viable strategy but also an essential one. Integrating climate considerations into economic development plans can lead to sustainable and inclusive growth, and provides good opportunities for Nigeria to build a climate-resilient economy that will not only promote growth and reduce poverty as well create good green jobs, but will also contribute to GHG emission reductions and environmental sustainability. The emphasis is to find ways to industrialise and transition without significantly increasing the emissions profile of the country. To do this effectively, Nigeria will need to pursue mitigation and adaptation strategies that will significantly improve its macroeconomic stability, economic transformation and job creation, while reducing the negative impacts of climate change on development.

Policy Recommendations:

- **Strengthen national climate policy frameworks:** Nigeria needs to synergise and align its various policies and declarations on climate change with its national needs. Emphasis should be to focus the country's macro and micro-level efforts on solid mitigation and adaptation policies, with strong governance structure and a reliable and expanding energy mix to ensure an investor-friendly environment.
- **Deepen institutional capacity for climate action and the legal framework:** This may include anchoring in law NDC climate policy priorities and the establishment of a legal framework for participation in global carbon markets. It is also imperative to standardise monitoring, reporting, and verification (MRV) procedures and mainstream climate change in public financial



management, public investment management, green public procurement, and government-owned enterprises.

- **Ensure adequate climate funding:** To meet the high cost of mitigation and adaptation, the government should consider the use of other financing instruments, such as *Green and Sustainable Bonds*, for financing climate-smart projects in line with Nigeria's NDC, ETP and other national development medium-term strategies to encourage private investment on climate change initiatives and projects. Other carbon pricing instruments such as Carbon Tax, Emission Trading System, Crediting mechanism and Results-Based Climate Finance may also be considered to attract private sector investment in national climate change response.
- **Ensuring a just and fair energy transition:** Nigeria will need to properly manage her need to be part of the global transition to a cleaner energy future and a cleaner means of production, especially the move away from oil, coal and other fossil fuels, so as to not be at a competitive disadvantage, which may stall her economic growth and development. An unjust and unfair global transition to a diversified green economy may be risky for the country and disrupt her economy. This could have serious socio-economic consequences, such as increasing poverty and inequality, threatening social stability and organisations' social licence to operate¹³. In this regard, Nigeria must explore all opportunities available at the global level to ensure that the implementation of her ETP ensures a just and fair transition in her pursuit of low-carbon climate resilient development.

- **Increase the level of public awareness for climate change:** Most Nigerians are unaware of climate change. Surveys conducted by Afrobarometer suggest that only 30% of Nigerians are aware of both climate change and its anthropogenic cause, compared to an African average of 39%.¹⁴ This is geographically uneven, as climate literacy ranges from 5% in Kano to 71% in Kwara.¹⁵ A more informed and engaged public would be able to better plan and limit exposure to climate risks. By increasing individuals' internalisation of costs of climate adaptation for themselves, this would help reduce the costs incurred by the government in responding to climate shocks.



Improving public awareness of climate change, therefore, is very critical to any national effort to respond to the challenge of climate change in Nigeria. This requires initiatives, resources and projects dedicated to educating public servants, farmers, civil society and other groups, and upskilling relevant national institutions such as the National Orientation Agency (NOA), national television and radio stations such as the Nigerian Television Authority (NTA) and the Federal Radio Corporation of Nigeria (FRCN) as well as the News

13 Deloitte, "Did COP26 lay the groundwork for a just transition to net zero?", 2022

14 Simpson, N.P., Andrews, T.M., Krönke, M. et al. (2021). Climate Change Literacy in Africa. *Nature Climate Change*, 11: 937–944.

15 Ibid.

Agency of Nigeria (NAN). Working with the NCCC, these institutions can reorient Nigerian citizens on climate change, its mitigation and the need for adaptation.

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- **Pursue a collaborative approach to low-carbon development future:** Nigeria needs to strengthen its partnerships with various national and international climate change actors to accelerate transformational and collaborative climate action to respond to the urgency of climate change in Nigeria.



Other sectoral policy interventions may include:

- **Strengthening integrated agriculture, forest, and water management** by promoting climate-smart agriculture (CSA) and integrated water and coastal management, reducing deforestation, strengthening tree tenure and rights of landholders, and enhancing integrated landscape management. There is need to immediately deploy landscape management plans at the local government level, scale-up community-level natural resource management, reform land and tree tenure, and strengthen charcoal regulation.
- **Creating the conditions for resilient cities and infrastructure** by integrating risk data into land use and city-wide infrastructure plans, reduce urban sprawl, introduce zoning in flood risk areas, and implement climate-informed design criteria for urban and new residential infrastructure.
- **Enhancing national capacity for climate-induced disaster risk management** by developing early warning systems in priority areas, strengthen emergency response capacity, and pilot options for disaster risk financing.
- **Setting the foundations for low-carbon development in the transport sector** by improving vehicle regulations and fuel standards, and improving traffic management that will include making available walkways and bus/bike-only lanes. Immediate action on mitigation in transport will create conditions to leverage opportunities from technology, innovation and financing.
- **Boosting climate resilience in the housing and construction sector** by adopting green building standards into the National Building Code and providing demand-side and supply-side subsidies to incentivize investments in green buildings and catalyse Nigeria's green building subsector.

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- **Promoting climate-resilient infrastructure development** by revising the Nigeria Integrated Infrastructure Master Plan to incorporate climate resilience as a major component of the government's infrastructure plans.



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About Agora Policy

Agora Policy is a Nigerian think tank and non-profit committed to finding practical solutions to urgent national challenges. We conduct policy research, facilitate frank and purposeful dialogues, and build capacity for governance, policy and advocacy.

About the IIAPP Project

The Informed, Inclusive and Accountable Public Policies (IIAPP) project is designed to achieve three things: one, to maximise the opportunity provided by the electioneering and transition periods and beyond to sustain attention on and further mainstream transparency, accountability, gender equity and social inclusion into policy and governance discourse in Nigeria; two, to generate original and credible evidence before, during and after the 2023 elections to focus the attention of the country on key policy areas and, ultimately, the adoption of sensible, inclusive and effective policies on key national challenges; and three, to deepen the capacity of state and non-state actors to undertake evidence-driven policy analysis, design, implementation and advocacy. The IIAPP is supported by the MacArthur Foundation.



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