Climate Adaptation Country Compacts

FEDERAL REPUBLIC OF NIGERIA

ACKNOWLEDGEMENTS

Prepared by:

ABOUT THE NATIONAL COUNCIL ON CLIMATE CHANGE (NCCC)

Established by Section 3 of the Climate Change Act of 2021, the NCCC is the Nationally Designated Authority and official focal point charged with climate change policy making in Nigeria. The NCCC is tasked with providing a platform for collaboration and coordination among various government agencies, the private sector, civil society organizations, and other stakeholders in Nigeria to combat, mitigate and adapt to the impact of climate change. In the preparation of this compact, the NCCC was represented by Halima Bawa-Bwari, Director, National Council on Climate Change; Bala Najega Rufai, Chief Scientific Officer, National Council on Climate Change; and Olajumoke Salako, Principal Scientific Officer, National Council on Climate Change.

AFRICAN DEVELOPMENT BANK GROUP

ABOUT THE AFRICAN DEVELOPMENT BANK GROUP

The overarching objective of the African Development Bank Group is to spur sustainable economic development and social progress in its regional member countries, thus contributing to poverty reduction. The Bank Group achieves this objective by mobilizing and allocating resources for investment in regional member countries and providing policy advice and technical assistance to support development efforts. The African Development Bank allocates 67% of its climate financing funding to adaptation. The bank is looking to mobilize $25 billion that will go toward adaptation in addition to its effort to raise up to $13 billion for its African Development Fund, the bank's concessional window for climate action during its latest replenishment phase.

GLOBAL CENTER ON ADAPTATION

ABOUT THE GLOBAL CENTER ON ADAPTATION

The Global Center on Adaptation (GCA) is an international organization that works as a solutions broker to accelerate action and support for adaptation solutions, from the international to the local, in partnership with the public and private sectors. Founded in 2018, GCA operates from its headquarters in the largest floating office in the world, located in Rotterdam, the Netherlands. GCA has a worldwide network of regional offices in Abidjan, Cote d'Ivoire; Dhaka, Bangladesh, and Beijing, China.

ABOUT THE AFRICA ADAPTATION ACCELERATION PROGRAM

An Africa-owned and Africa-led program, the AAAP, is a joint initiative between the African Development Bank (AfDB) and the Global Center on Adaptation (GCA) with the goal of mobilizing $25 billion for adaptation in Africa by 2025 through four pillars: food security, resilient infrastructure, youth entrepreneurship and job creation, and innovative climate adaptation finance. The African Union endorsed AAAP's two financing mechanisms. The first mechanism is the AAAP Upstream Financing Facility hosted by GCA, which has already influenced over $5.2 billion in investment for adaptation in Africa since its inception in 2021. The AfDB administers the second financing mechanism through the climate set aside under the ADF-16 replenishment, which builds on the AfDB's commitment to finance $12.5 billion of adaptation programs – half of the AAAP investment target.

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EXECUTIVE SUMMARY

Nigeria has the highest GDP in Africa and is a fast-growing, lower middle-income country with a large population. Its large size and massive economy make it a country of great regional economic and political significance and opportunities in Africa. The country's fast-growing population of over 200 million people amplifies its climate change vulnerability, and climate-led systemic disruptions in Nigeria have the potential to greatly impact Africa as a whole. These and other factors increase the urgency for strengthening climate adaptation and resilience in Nigeria.

Ranked as one of the top-10 most vulnerable countries to climate change in the world, Nigeria is particularly prone to 4 key Climatic Impact Drivers (sea level rise, aridity, heavy precipitation, mean air temp increase), with resulting climate hazards negatively impacting lives and livelihoods. An estimated 24% of Nigeria's population (approximately 41 million people) live in high climate exposure areas around the country. Up to 53 million people may need to be relocated in response to a 0.5-meter increase in sea level, which is projected for Nigeria by the end of the century. Mean air temperature increase could range from a low of 1.5°C to a high of 3.5°C by 2070 compared to baseline, with attendant heatwaves. 10-20% increase in heavy precipitation days and 5-10% increase in mean precipitation by 2050 are expected, especially in the south and central regions of the country. These climate events could further worsen flooding in those regions. Due to increasing aridity, the annual number of dry days in the North could increase by 10 - 30% by 2100, resulting in massive agricultural losses as well as human deaths from disease & dehydration.

Notwithstanding the arduous task of improving adaptation and resilience in Nigeria, traction has been made across Adaptation and Resilience (A&R) policy and planning, risk assessment and tracking, response, and sector readiness, leveraging the limited available A&R funding (6% of total need). Nigeria's climate policy landscape, for example, is rich with over 28 adaptation-relevant policies enacted over the past 10 years. The main policy thrust is to reduce the population's vulnerabilities and promote community and ecosystem resilience in the face of climate change. A Climate Change Fund has been established in the Climate Change Act 2021 but is not yet fully operational. Over 70 projects have been implemented across the top 3 most vulnerable sectors in Nigeria, with particular emphasis on agriculture/food in 2021.

Gaps however remain in A&R readiness for Nigeria. Overall A&R funding is estimated to be a minimum of 120 billion USD up until 2030, but annual inflows are less than 1 billion USD. The cost of inaction is nonetheless even higher at ~30% of Nigeria's GDP by 2050.

This compact has identified >22 billion USD investments needed immediately to strengthen A&R initiatives in Nigeria as follows: 40 million USD for policy & planning including mainstreaming of adaptation into national development; 265 million USD for risk assessment and tracking including to develop early warning systems and disease surveillance solutions; 610 million USD for response including optimizing disaster response services as well as developing climatic resilience; and 21.1 billion USD for key sectors including agri-food, water & sanitation, forestry & biodiversity as well as some multi-sectoral opportunities.

As immediate next steps, Nigeria needs to fully develop its funding strategy and implementation plan, including identifying potential risks and mitigations. In the near to long-term, Nigeria needs to conduct feasibility assessment of priority sector projects, secure funding, identify key execution partners, and commence implementation of projects (including progress tracking).

INTRODUCTION

Globally, Adaptation and Resilience is becoming a priority topic, but preparedness needs to be addressed for low-emitting countries.

While African countries have historically had comparatively lower carbon emissions, analysis shows that they are most vulnerable to climate change impacts like crop failure, sea level rise, flooding and in some cases, droughts[1].

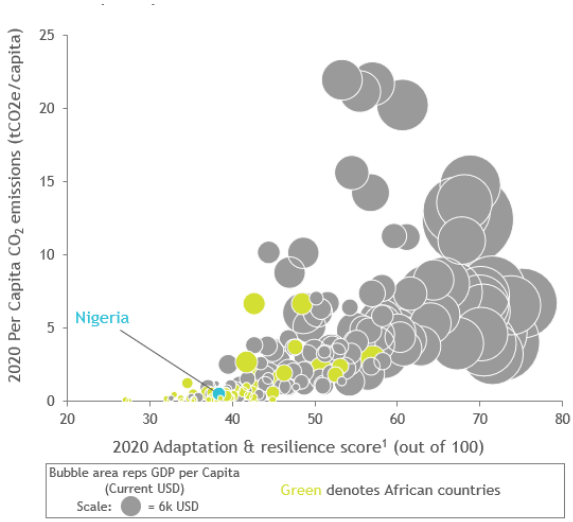

Figure 1: Country ND-Gain index (as proxy for A&R score) vs 2020 per Capita CO2 emissions

As can be seen from the chart in Figure 1, most African countries, including Nigeria, have A&R scores below 50 - indicating high climate change vulnerability and low readiness - but these same countries have had the least CO_2 emissions per capita compared to the rest of the world.

Mobilizing A&R investment is therefore crucial to improving readiness and minimizing risks for these countries. Unfortunately, historical climate financing to the continent has fallen far short of need with Africa receiving only 5% of global climate finance investments on average each year.

With an estimated climate finance need of 579 billion USD through 2030 and only 125 billion USD projected to be received until 2030, there is a significant climate financing gap of 454 billion USD in Africa.

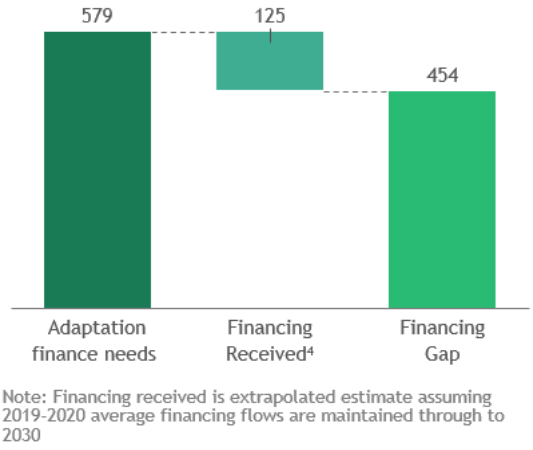

Figure 2: Africa Adaptation finance needs vs commitments (billion USD) through 2030

As Africa's most populous nation and one of its largest economies, Nigeria stands at the crossroads of Africa's future development trajectory and its battle against the adverse impacts of climate change. President Muhammadu Buhari had notably remarked in his speech at COP 27 that "For Nigeria, climate change is not about the perils of tomorrow, but what is happening today".

Indeed, for Nigeria, a fast growing, emerging market economy and a country that is already highly vulnerable to the impacts of climate change, the urgent prerogative on the country's leadership is to chart a path towards long term, low carbon, economic development that does not lock in high emissions along the way.

[1] Global Adaptation Initiative, University of Notre Dame. (2023). Nigeria Country Index. Available at: https://gain.nd.edu/our-work/country-index/

As of 2022, Nigeria had an estimated population of 219 million people and accounted for about 16% of the total population of Africa. Nigeria's population is very young, with a median age of 17.2 years, and accounted for 17.5% of Africa's GDP (477 billion USD) in 2022, making it a country of significant regional economic significance.

In terms of its geographical location, Nigeria is located in West Africa and shares its border with the Republic of Benin to the West, Republic of Niger to the North and Republic of Chad and Cameroon to the East – countries with which it shares strong historical, cultural, and economic ties. To the South, Nigeria has a coastline of over 850 km along the Gulf of Guinea - an area rich in natural resources such as crude oil & natural gas reserves, marine life, and various minerals.

Although Nigeria, like most African countries, has not contributed significantly to global greenhouse gas emissions (0.23% of global cumulative CO2 emissions)[2], it is already facing significant consequences of climate change. In 2012, for example, Nigeria experienced a double shock of severe drought in the northeast and widespread flooding that affected nearly the entire country and led to nearly 17 billion USD of damages[3].

Nigeria's Climate Adaptation Country Compact is aimed at mobilizing high level political commitments and scaling up resources from development partners and the private sector to finance its immense adaptation needs. This climate compact will upscale adaptation investments in Nigeria, building on country-specific needs, contexts, and circumstances. Also, it will translate Nigeria's adaptation vision and ambition as expressed in existing plans, such as its NDC, into actual adaptation investments.

[2] ClimateWatch, (2019). "Historical GHG Emissions." Available at: https://www.climatewatchdata.org/ghg-emissions?end_year=2019&regions=SSA&start_year=1990
[3] Federal Republic of Nigeria, (2013). "Post Disaster Needs Assessment 2012 Floods" Available at: https://www.gfdrr.org/sites/default/files/publication/NIGERIA_PDNA_PRINT_05_29_2013_WEB.pdf

1. NIGERIA VULNERABILITY SITUATION

According to the Notre Dame Global Adaptation Initiative (ND-GAIN), Nigeria is ranked 154th out of 185 countries on its country index[4]. The ND-GAIN index expresses in quantitative terms a country's vulnerability to climate change and other global challenges as well as its readiness to improve resilience. ND-GAIN ranks Nigeria as the 53rd most vulnerable and the 13th least ready country in its 2021 rankings.

To provide some context on vulnerability in Nigeria, it is estimated that 24% of Nigeria's population (approximately 41 million people) are living in high climate exposure areas. Some of the highest overall exposure is concentrated in the upper Northern border states (Sokoto, Yobe and Borno), as well as the coastal states (Lagos, Rivers & Delta).

Also, given Nigeria's dependence on climate-sensitive industries (agriculture, forestry, oil, and gas extraction), climate change inaction could cost Nigeria between 6%–30% of GDP by 2050, equivalent to a loss of US$100–460 billion[5].

1.1. Country-level vulnerability analysis

Nigeria has three main climate zones: the south has a tropical wet climate, the central regions have a tropical savannah climate, and the north has a Sahelian hot and semi-arid climate. The amount of rainfall decreases from south to north. The south receives heavy rain from March to October, with yearly totals above 2,000 mm and up to 4,000 mm in the Niger Delta. The central regions have one rainy season (April to September) and one dry season (December to March), when the Harmattan wind blows from the Sahara. The north has rain from June to September, between 500 mm and 750 mm. The rest of the year is hot and dry. The north also has large yearly variations in rainfall, which cause floods and droughts in alternation.

The country is highly exposed to 4 key Climatic Impact Drivers (CIDs) - sea level rise, heavy precipitation, aridity, and mean temperature increase.

Relative sea level rise: The current global estimate of sea level rise is 0.2 m, projected to increase to 1 m by the year 2100. This implies that with the present 0.2 m sea level rise, the inundated area of 3,400 km2 in the coastal regions of Nigeria will increase and attain 18,400 km2 under the projected 1 m scenario[6]. Coastal settlements like Bonny, Forcados, Lagos, Port Harcourt, Warri, and Calabar that are less than 10 m above sea level will be seriously threatened by a 1 m sea level rise under RCP 8.5. Additionally, the country's coastal zone and low-lying islands in the Gulf of Guinea are vulnerable to sea level rise. An estimated 27 to 53 million people in the country may need to be relocated with a 0.5 m increase in sea level. Nigeria's coastal and marine areas are also home to the country's economically important petroleum and fisheries industries.

Heavy precipitation: In Nigeria, precipitation trends have a high degree of variability, and the last several decades have observed a decrease in the predictability of seasonal rains across the

[4] Global Adaptation Initiative, University of Notre Dame. (2023). Country Index. Available at: https://gain.nd.edu/our-work/country-index/
[5] World Bank Group (2020). Country Partnership Framework for the Federal Republic of Nigeria for the Period FY21-FY25. November 16, 2020. Available at: https://openknowledge.worldbank.org/handle/10986/35098
[6] Nigeria (2020). Nigeria's Third National Communication under the UNFCCC. Available at: https://unfccc.int/documents/226453

country. Overall, rainfall has decreased incrementally since the 1960s. Rainfall varies from a very wet coastal area with annual rainfall greater than 3,500 mm to the Sahel region in the northwest and north-eastern parts, which receive an annual rainfall of less than 600 mm. The annual variation of rainfall has resulted in climatic hazards, especially floods and droughts. Observed rainfall patterns indicate that rainfall for the country over the past century declined by approximately 80 cm. By 2050, rainfall is expected to increase by 20 to 30mm per year in susceptible regions under RCP 8.5. Heavy precipitation events are projected to increase in the next decades in Nigeria, as a warmer atmosphere can hold more evaporated water to rain down, increasing the risk of flash floods. Heavy precipitation days refer to days with precipitation in the top two percent of all days with precipitation on record. While in 2000, about 7.5 days of heavy precipitation occurred on average per year, this number is projected to increase to almost 9 days in 2080 for both RCP 2.6 and 6.0 scenarios[7].

Aridity: Factoring in the expected strong population growth for Nigeria in the coming decades, water availability per capita is projected to drop considerably to about 800 m³ per capita per year in 2080 - below the UN water scarcity threshold - making it increasingly difficult to provide enough water to the entire population. At a country aggregate level, soil moisture is projected to stay mostly constant over the course of the century, only slightly decreasing by 1.1 % towards 2080. This is presumably due to the combined effect of an increase in potential evapotranspiration and an increase in precipitation. The picture of soil aridity is expected to differ across various regions of the country and could reach up to a 10% increase in aridity under RCP6.0 scenarios.[8] Rainfall is expected to decrease significantly (10-20% more dry days) in the northern areas (-20 to -25mm rainfall) by 2050 under RCP 8.5.

Mean temperature increase: According to analysis from the German Climate Service Centre (GERICS) of 32 Global Climate Models (GCMs), temperatures across Nigeria are expected to increase by 2.9°C to as much as 5.7°C by the end of the century under RCP 8.5. Night-time temperatures are expected to increase by as much as 4.7°C. An increase in the duration of heat waves by a range of an additional 8 to 55 days is expected by the end of the century. Temperature increases are expected to be lower in the southern areas of the country but will increase much more rapidly in the interior and northern areas in comparison. Climate scenarios for the country indicate a significantly warmer climate in the coming decades. Under the IPCC's A21 scenario, it is expected that Nigeria will experience a temperature increase of 0.04°C per year until the mid-2050s and rise to 0.08°C per year after 2050. Temperature increase is expected throughout the year. Increased heat and extreme heat conditions will result in significant implications for human and animal health, agriculture, and ecosystems.

1.2. Vulnerability of economic sectors

In this section, we deep dive into the vulnerability situation in three key sectors of the Nigerian economy as captured in the NASPA-CCN (2011), the NAP Framework (2020), and the NCCPRS (2021) vis-à-vis Agriculture & Food, Water and Forests & biodiversity.

Agriculture & Food: The agricultural sector is critical to Nigeria's economy and the overall food security situation for the country. Nearly 78% of the total land mass of the country is under agricultural cultivation. Of these, 48.0% constitute arable lands, 42.8% are under permanent meadows and pastures, and the remaining 9.2% are under permanent crop production. The agriculture sector employs 35% of the total labour force and accounts for 25% of GDP in

[7] World Bank Group (2020), "Climate Knowledge Portal," Climate Knowledge Portal, 2020. Available at: https://climateknowledgeportal.worldbank.org/country/nigeria/climate-data-historical
[8] Climate Analytics & ifo Institute. (2021). Climate Risk Profile - Nigeria. Available at: https://www.ifo.de/DocDL/SLICE_Climate-Risk-Profile_Nigeria_EN_17-2.pdf

Nigeria[9]. Nigeria's agriculture is dominated by small-holder farmers who mostly cultivate less than 2 hectares of land each and is characterized by limited mechanization. Additionally, the relatively low soil fertility, climate, and inefficient land management practices are responsible for low productivity in the sector. This low productivity has, in part, resulted in a heavy dependency on importation to meet food demand. Some of the most significant food imports include wheat, fish, and sugar, among others. For a long period, Nigeria was the second-largest importer of rice in the world. Recently, there have been increasing efforts directed at reducing food imports, which include programs to attract the youth to agriculture, initiatives to improve local rice and cassava production (such as the Anchor Borrower Program), and border closure interventions to reduce smuggling and drive local food (rice and poultry) production.

The sensitivity of the agricultural sector to the climate and its high reliance on rainfall and water resources have important implications for Nigeria's farmers and economy.[10] Agriculture in Northern Nigeria is more vulnerable to climate change than anywhere else. This is because Northern Nigeria is more prone to desertification and droughts, which are ongoing and continuous hazards, whereas southern Nigeria is more prone to floods and erosion, which are typically infrequent though highly devastating events.[11] Desertification in the savanna regions reduces farmlands, lowers productivity, and damages crop yields for rainfed crops by making the soil less fertile and less able to retain water. Crops that need a drier climate, such as roots or nuts, can sometimes benefit from desertification because they are better able to tolerate the drier conditions. Crop yield projections under RCP2.6 and RCP6.0 show decreases for maize, millet/sorghum, and wheat. This is because these crops are not as tolerant to the changes in temperature and precipitation that are expected under climate change. Cassava may benefit from climate change, particularly under RCP6.0, because it is tolerant to both precipitation and temperature extremes.

In support of its national adaptation strategies and efforts, Nigeria has committed to adopt improved agricultural systems for both crops and livestock. This includes diversifying livestock and improving range management, increasing access to drought-resistant crops and livestock feeds, adopting better soil management practices, and providing early warning/meteorological forecasts and related information. Commitments have also been made for the implementation of strategies for improved resource management, including the increased use of irrigation systems that use low amounts of water, increased rainwater and sustainable groundwater harvesting for use in agriculture, increased planting of native vegetation cover, promotion of re-greening efforts, and intensified crop and livestock production in place of slash and burn practices.

Water: Nigeria has a large amount of fresh water covering a surface area of over 20 million hectares. The country's water resources include 200 dams storing more than 31 billion m^3 of water across the country[12]. However, the country remains highly vulnerable as current water supply is unable to meet demands for domestic, industrial, and agricultural purposes.

The vulnerability in the water sector is affected by declining trends in the in-flow of water into dams due to lengthening dry seasons, an increase in flooding incidences, especially along the

[9] World Bank Group (2021). "Employment in agriculture (% of total employment) (modelled ILO estimate) - Nigeria" Available at: https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS?locations=NG
[10] Nigeria (2020). Nigeria's Third National Communication under the UNFCCC. Available at: https://unfccc.int/documents/226453
[11] Climate Analytics & ifo Institute. (2021). Climate Risk Profile - Nigeria. Available at: https://www.ifo.de/DocDL/SLICE_Climate-Risk-Profile_Nigeria_EN_17-2.pdf
[12] World Bank Group, (2021). "Climate Risk Country Profile. Nigeria." Available at: https://climateknowledgeportal.worldbank.org/sites/default/files/2021-07/15918-WBNigeria%20Country%20Profile-WEB.pdf

Niger and Benue rivers, and the country's limited rural water distribution infrastructure. which is hampering efficient community-level access to and use of its water resources for irrigation. In addition, fresh water sources are polluted through the disposal of domestic and industrial wastes.[13] Nigeria's fresh water sources come from four main hydrological basins: the North Central Plateau (Gongola, Hadejia, Kaduna and Sokoto-Rima rivers, etc.), the Western Uplands (Awun, Moshi, Ogun, Osun, Osse rivers, etc.), the Eastern Highlands (Donga, Katsina-Ala rivers, etc.) and the Uri Plateau (Anambra, Cross, Imo rivers, etc.). The drainage and relief features of the country have impacts on its water resources and land use potentials, particularly for agriculture and human consumption. In rural areas, approximately 88% of all households use surface water, with 83% of those being among the poorest households in the country.

Nigeria can improve its resilience to water related vulnerabilities by implementing Integrated Water Resource Management (IWRM) to holistically manage its water resources, considering both the quantity and quality of water, and ensuring sustainable use.

Forests & biodiversity: Nigeria has ~10 million hectares of forests, representing about 11% of its total land area[14]. 80% of the country's rural economy depends on these forests for their livelihood. The forests are already under great pressures from increasing populations and growing economic wealth, leading to greater demand for forest resources. Climate change is expected to add to these pressures, evidenced by direct impacts of the changing climate on forest growth and development and greater demands on forests by populations adjusting to climate change. From 2002 to 2022, Nigeria lost 166 kha of humid primary forest[15].

In terms of climate change vulnerability, impacts on forestry and biodiversity are typically cyclical in nature. Increased temperature is expected to lead to increased overall aridity which could exacerbate drought potential over the long term, thus causing habitat loss and contributing to decline and death in some tree species. Declining forests are also expected to accelerate the cycle of desertification, impacting food and fodder availability for forest wildlife and livestock.

Projected increase in rainfall, especially in the Southern Forest regions, will potentially cause higher pest incidences and frequency and intensity of flooding events. In open forests (Savanna and Sahel), decrease in rainfall is expected to drive increased drought/aridity/water stress. This will contribute to an overall decline in forest cover and herbaceous undergrowth productivity, thus affecting forest products, including livestock fodder and non-timber forest products (NTFPs) for human consumption and use. Increased flooding can be expected following periods of heavy rain in areas with poor infiltration rates, potentially causing water logging and a decline in non-adapted forest species, which will impact biodiversity.

A number of measures can be taken to improve adaptation and resilience in the forestry sector in Nigeria such as reducing deforestation, planting trees, improving forest management practices, promoting sustainable wood logging and harvesting and developing climate-smart forestry practices.

[13] Nigeria (2020). Nigeria's Third National Communication under the UNFCCC. Available at: https://unfccc.int/documents/226453
[14] Global Forest Watch, (2023). "Forest in Nigeria compared to other areas". Available at: www.globalforestwatch.org
[15] Global Forest Watch, (2023). "Forest in Nigeria compared to other areas". Available at: www.globalforestwatch.org

1.3. Vulnerable groups, social systems and livelihoods

The most vulnerable groups to climate change in Nigeria are predominantly children below the age of 18, women, the elderly, people living with disabilities, and the poor. Climate change significantly affects vulnerable groups because of a variety of factors such as low adaptive capacity, limited resources, and poverty.

Children: Due to climate hazards, about 70,000 Nigerian children under age 5 die of diarrhoea, 10 million children are out of school and face unstable economic prospects for the future, 14 million children aged 5–14 years are engaged in child labour and 23 million girls and women are child brides – the highest of such incidences in Africa[16]. Climate change hazards such as flooding, droughts, heat waves and many others have multidimensional impacts on the lives and well beings of children in Nigeria ranging from dehydration to heat stress as well as malnutrition following crop damage and loss of farmlands.

Women: Nigerian women are more vulnerable to the effects of climate change than men because they constitute the majority of the country's poor, and their livelihoods are more dependent on natural resources that are threatened by climate change. For example, rainfall can increase women's vulnerability when it cuts roads and increases distances that they have to walk to get water, firewood, or travel to market. Flooding also reduces women's economic activity and increases household labour demand. Heat stress can have an increased impact on women due to socio-cultural confinement, which may limit their ability to seek relief from heat. The impact of heat stress is even greater on pregnant and menopausal women who are already prone to heat flashes.[17]

Older people & disabled people: The elderly and people living with disabilities have less mobility to cope with heat stress and are vulnerable to dehydration. Hence, death rates are higher in these groups. Another indirect impact of climate change events on the elderly is that high-intensity rains and flooding may exacerbate already reduced economic activity, thus exposing them to additional financial distress. For persons with special needs, fragile housing can be destroyed by flooding, especially where dwellings are on vulnerable land.

From a geographical perspective, the inhabitants of the Northern parts of the country are exposed to increased aridity, hydrological drought, and extreme heat. These, in turn, have resulted in declines in the flora and fauna of Northern ecosystems, which the inhabitants depend on for their livelihoods[18]. To the south of the country, sea-level rise and increased precipitation have severely impacted rural communities, resulting in reduced access to fresh water due to salt-water intrusion, increased physical impacts of storm surge on the community, and loss of coastal fishery resources. Thus, both groups require keen attention in the development of Nigeria's adaptation plans.

[16] Federal Republic of Nigeria. (2022). Situation Analysis of Children in Nigeria: Ensuring equitable and sustainable realization of child rights in Nigeria Available at: https://www.unicef.org/nigeria/media/5861/file/Situation%20Analysis%20of%20Children%20in%20Nigeria%20.pdf

[17] Nigeria (2012). National Adaptation Strategy and Plan of Action On Climate Change For Nigeria (NASPA-CCN). Available at: https://csdevnet.org/wp-content/uploads/NATIONAL-ADAPTATION-STRATEGY-AND-PLAN-OF-ACTION.pdf

[18] Ebele, N., & Emodi, N. (2016). Climate Change and Its Impact in Nigerian Economy. Journal of Scientific Research and Reports, 10, 1-13

2. PROGRESS ON ADAPTATION TO DATE

The University of Notre Dame Global Adaptation Initiative (ND GAIN) readiness index ranked Nigeria as the 13th least ready country out of 192 countries assessed globally in 2021. The ND GAIN readiness score assesses a country's ability to leverage investments and convert them to adaptation actions based on its economic and business environment, governance and institutional mechanisms, and social structures.

2.1. Country vision, political commitments, and policy directions for greater investments in adaptation

Nigeria's adaptation strategy was first compiled in 2012 in the form of its National Adaptation Strategy and Plan of Action on Climate Change. It envisions a Nigeria in which climate change adaptation is an integrated component of sustainable development, reducing the vulnerability and enhancing the resilience of all economic sectors and of all people -- particularly women, children, and resource-poor men – to the adverse impacts of climate change, while also capturing the opportunities that arise due to climate change.

The goal of Nigeria's adaptation planning effort is to take action to adapt to climate change by reducing vulnerability to climate change impacts and increasing the resilience and sustainable wellbeing of all Nigerians; thus improving adaptive capacity, leveraging new opportunities, and facilitating collaboration inside Nigeria and with the global community.

2.2. Strategic adaptation documents

Significant traction has been made in Nigeria with respect to its strategic adaptation documents:

a. The Climate Change Act 2021: In late 2021, President Muhammadu Buhari signed the long-awaited Climate Change Bill into law. The Climate Change Act 2021 stipulates among other things, the creation of the National Council on Climate Change, the establishment of the Climate Change Fund and mandates the preparation of 5-yearly National Climate Change Action Plans.
b. National Adaptation Plan (NAP): Nigeria began the process of drafting its NAP in November 2022. The preparation of the document will likely remain ongoing by the end of 2023.
c. Updated Nationally Determined Contribution 2021: Nigeria's updated NDC pledged an unconditional contribution of 20% below business-as-usual by 2030 and a 47% contribution, conditional on international support. This updated version of the intended NDC also highlights Nigeria's commitment to reducing methane emissions by 60% and achieving a net-zero target as early as possible in the second half of the century.
d. National Adaptation Communication 2021: Nigeria's Adaptation Communication to the UNFCCC captures the country's adaptation options and strategies as presently being deployed by the Ministries, Departments, and Agencies. It also identifies gaps, adaptation priorities, needs, and financial mechanisms to deploy climate change actions.
e. National Adaptation Plan Framework 2020: The NAP framework is a step towards the adoption of the Cancun Adaptation Framework in Nigeria and provides a broad-based framework for Nigeria to effectively address its National Adaptation Plan.

f. National Climate Change Policy (NCCP) for 2021 to 2030: The NCCP defines a holistic framework to guide the country's response to the development challenge of climate change. As a framework document, it prescribes sectoral and cross-sectoral strategic policy statements and actions for the management of climate change within the country's pursuit of climate-resilient sustainable development.
g. First and Second Biennial Update Report 2018, 2022: Nigeria's first biennial update report sought to enhance transparency in reporting on mitigation actions, while the second biennial update report dwelt on topics around Nigeria's Green House Gas inventory, Mitigation actions; the Monitoring, Reporting and Verification system; Constraints and Gaps; and Support needed and received.
h. The Nigeria Climate Change Policy Response and Strategy (NCCP - RS) 2013: This precursor to the National Climate Change Policy of 2021 sought to promote sustainable development by strengthening support for the nation's policies on climate change preparedness, adaptation, and mitigation across all societal segments, particularly among vulnerable people.
i. First, Second and Third National Communication 2003, 2014, 2020: Nigeria submitted its First and Second National Communications to the Conference of the Parties in 2003 and 2014 respectively. It then submitted its Third National Communication (TNC) in 2020 to provide a robust update on climate actions in the country and, as a policy document, pave the way for the efficient implementation of the United Nations Framework Convention on Climate Change.
j. National Adaptation Strategy and Plan of Action for Climate Change for Nigeria (NASPA-CCN) 2011: The NASPA-CCN published over a decade ago sought to minimize risks, improve local and national adaptive capacity and resilience, leverage new opportunities, and facilitate collaboration with the global community, all with a view to reducing Nigeria's vulnerability to the negative impacts of climate change.

In its adaptation documents, Nigeria has identified its adaptation priorities, which include sustainable land use and water resource management that results in food security, appropriate urban development, preservation of its biodiversity and ecosystem services, social protection mechanisms, infrastructure resilience, improved health, and disaster risk reduction for reduced vulnerability across the country.[19]

The country is currently implementing the Green Climate Fund Readiness Support Project to advance the NAP process. All the above documents aim to advance adaptation planning in Nigeria.

2.3. Progress on implementing country-level adaptation actions

Nigeria is still at a nascent stage in the development of its national adaptation plans and actions. The NAP, for example is still under development and is facing delays due to challenges with streamlining the decision-making process required to complete the document.

While the National Adaptation Strategy and Plan of Action on Climate Change for Nigeria has a broad list of sectoral level actions recommended as far back as 2012 to improve Nigeria's adaptation and resilience, these projects are still at a very high level of detailing and will require significant effort to be ready for implementation. Despite these limitations, Nigeria is making in-

[19] Nigeria (2021). Updated Nationally-Determined Contributions. Available at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Nigeria%20First/NDC%20INTERIM%20REPORT%20SUBMISSION%20-%20NIGERIA.pdf

roads into implementing its adaptation priorities. Some examples of key adaptation actions initiated or completed in the recent past are highlighted below[20]:

Table 1: Selected programs showing progress on country adaptation actions

Selected Programs	Amount	Donor	Year	Implementer
Agro-Processing, Agricultural Productivity Enhancement and Livelihood Improvement Support Project	$200 million	World Bank	2017–2023	Federal Ministry of Agriculture and Rural Development (FMARD)
Sanitation, Hygiene and Water in Nigeria	$126 million	DFID	2013–2020	UNICEF
Enhancing Transboundary Cooperation and Integrated Water Resources Management in the Lake Chad Basin	$36.3 million	Global Environment Fund	2017–2022	African Development Bank (AfDB)
Green Innovation Centre for the Agriculture and Food Sector Programme	$50 million	German Development Agency (GIZ)	2015–2021	Federal Ministry of Agriculture and Rural Development (FMARD)
The Acumen Resilient Agriculture Fund	$56 million	Green Climate Fund	2018–2030	Federal Ministry of Environment and FMARD
Nigeria Electrification Project for Rural Households	$111 million	AfDB	2019 - 2025	Rural Electrification Agency

The National Council on Climate Change which was set up under the 2021 Climate Change Act is now driving efforts to coordinate implementation of other country level adaptation actions.

2.4. Progress on mainstreaming adaptation into the national development planning and budgeting processes

There has been a gradual, consistent effort to mainstream adaptation into national planning in Nigeria, but effective coordination of adaptation actions across Nigerian ministries and agencies at all levels of government is somewhat limited[21]. For example, quarterly meetings of the Inter-Ministerial Committee on Climate Change (ICCC), a key coordinating mechanism established to promote engagement on Nigeria's climate response across sectors, have been intermittent and ad hoc.

Significant additional political commitment is required to improve mainstreaming of adaptation in national planning by integrating adaptation into subnational planning, including an adaptation lens in Environmental Impact Assessment, regularly engaging the private sector on topics of adaptation, raising awareness about climate change, speeding the passage of climate change

[20] USAID (2019) – Adaptation Thought Leadership and Assessments (ATLAS) – Climate Risk Profile – Nigeria Fact Sheet, Available at: https://www.climatelinks.org/sites/default/files/asset/document/2019_USAID-ATLAS-Nigeria-Climate-Risk-Profile.pdf

[21] NEST (2011). Gender and climate change adaptation: Tools for community-level action in Nigeria. Ibadan, Nigeria: Nigerian Environmental Study/Action Team (NEST) – BNRCC. Available at: https://genderinsite.net/sites/default/files/BNRCC-Gender-Toolkit.pdf

response laws, supporting grassroots participation, and overcoming institutional barriers to inclusion of adaptation in national planning, among other things.

The Climate Change Act 2021 which establishes a framework for mainstreaming adaptation actions and the creation of the National Council on Climate Change under the Act is expected to strengthen and improve adaptation mainstreaming in Nigeria.

2.5. Funding levels for adaptation in national budgets and development partner projects

There is limited visibility on the actual amount of funding being devoted to adaptation in Nigeria's annual budget due to the current absence of federal and/or state budget tagging of domestic climate finance. Notwithstanding this, the Government of Nigeria remains committed to meeting its obligations as stated in the 2021 Nationally Determined Contribution.

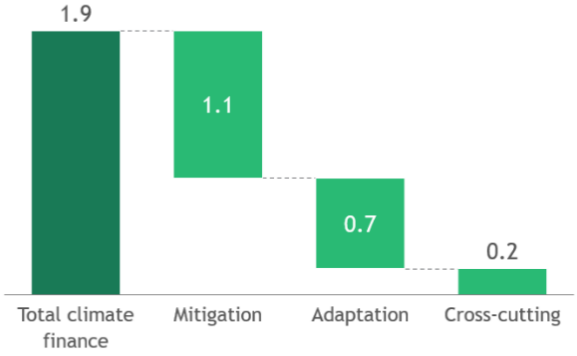

Figure 3: Climate finance tracked by fund use (2020, billion USD)

Figure 4: Climate finance tracked by source (2020, billion USD)

Nigeria received 0.7 billion USD of funding for adaptation in 2020, majority of which was from public sources (95%)[22]. However, the actual amount of this funding attributable to the government is unclear.

It is important to note that the Federal Ministry of Environment provided for a Climate Public Expenditure and Institutional Review (CPEIR) in its 2017 budget. No such formal assessment has been carried out[23].

Nonetheless, a paper by Onyimadu & Uche (2021)[24] which uses an OECD DAC climate budget tagging framework to estimate financial resources committed to adaptation by the Nigerian Government between 2013 and 2020 calculates approximately 88 million USD (31.6 billion NGN) as total climate investment by the Nigerian government over

[22] Climate Policy Initiative. 2022. Landscape of Climate Finance in Nigeria. Available at: https://www.climatepolicyinitiative.org/publication/landscape-of-climate-finance-in-nigeria/
[23] Federal Republic of Nigeria. (2021). "Second Biennial Update Report (BUR2) to the United Nations Framework Convention on Climate Change." Available at: https://unfccc.int/sites/default/files/resource/NIGERIA%20BUR%202%20-%20Second%20Biennial%20Update%20Report%20%28BUR2%29.pdf
[24] Onyimadu, Chukwuemeka Onyebuchi and Uche, Daniel (2021). "Evaluating the Nigerian Government's financial obligations to climate change adaptation strategies." Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3949387

the 8-year period[25]. Most programs targeted flood control, erosion control or irrigation projects, with a view towards reducing the vulnerabilities of Nigerian agriculture.

The government of Nigeria has also launched and issued Green Bonds as an innovative route to raise climate finance. Between 2017 and 2021, the Nigerian government raised 165 million USD of green bonds to support national projects in key areas that include environment, agriculture, power and energy efficiency-transportation. Through the lens of funding source, Nigeria received the bulk of its climate finance (1.3 billion USD) from development partners in 2020.

2.6. Achievements in operationalizing adaptation plans

A significant portion of Nigeria's adaptation policies and instruments are either very recently formulated or under development. While Nigeria submitted its updated NDC in 2021, its NAP is still being formulated.

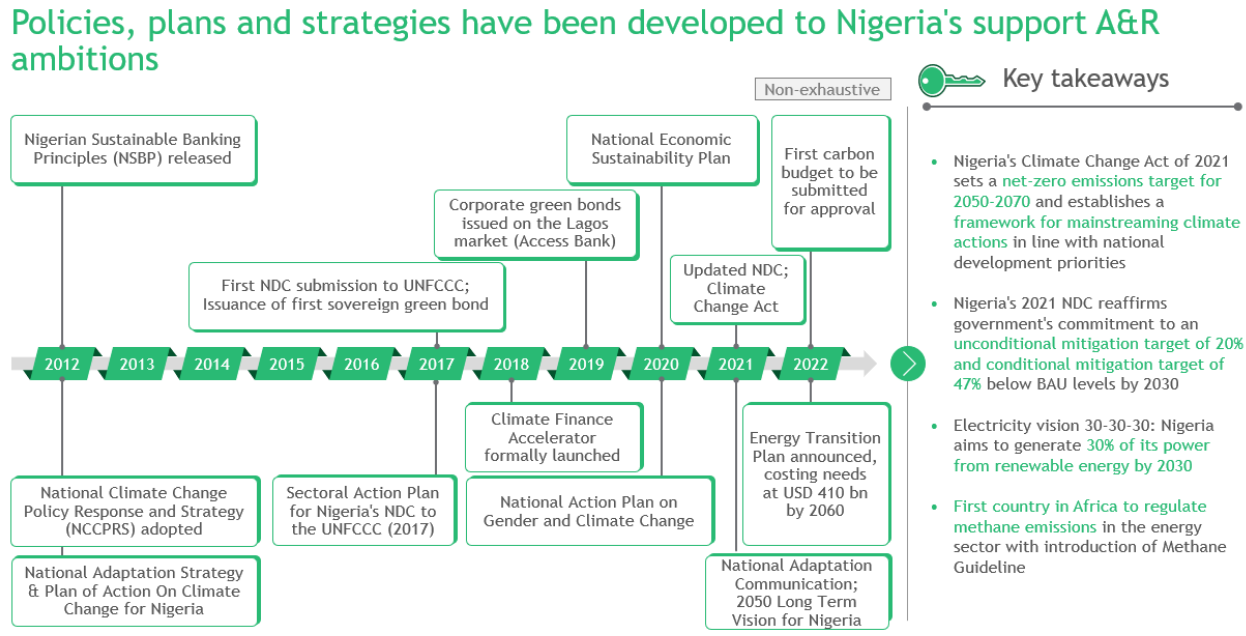

Figure 5: Timeline of Nigeria's climate related policies, plans and strategies

In terms of operationalizing the NDC, Nigeria has formulated its 2050 Long Term Vision which aims to reduce the current level of emissions by 50% by 2050[26] and move towards net zero emissions across all sectors by 2060. The LTV also includes some sectoral targets and measures. A Long-Term Strategy is presently also under development.

2.7. Challenges faced in investing in adaptation plans, programs and projects

Faced with tight fiscal constraints, particularly in the aftermath of the COVID-19 pandemic, as well as the economic impacts of the Russia-Ukraine war, financing the NDC – approximately

[25] Onyimadu, Chukwuemeka Onyebuchi and Uche, Daniel (2021). "Evaluating the Nigerian Government's financial obligations to climate change adaptation strategies." Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3949387
[26] Climate Action Tracker (2022) Climate Governance in Nigeria. Available at: https://climateactiontracker.org/publications/climate-governance-in-nigeria/

4% of GDP – will require engaging with Development Finance Institutions as well as the private sector. A few specific constraints have however plagued investing in adaptation plans, programs and projects in Nigeria:

1) Insufficient financial resources: Nigeria is a developing country with huge infrastructural deficits. As such it has limited financial resources which can be specifically committed to climate change topics such as adaptation. Insufficient financial commitment from the government somewhat hinders private sector fund mobilization.
2) Uncertainty about future climate impacts: Although more data is beginning to emerge to support the current perspectives on climate change and its impacts, it is still quite difficult to predict with certainty how climate change will affect Nigeria in the future due to data and analytical gaps. This uncertainty makes it difficult to prioritize adaptation investments and to therefore measure the effectiveness of these investments with accuracy.
3) Limited coordination between different levels of government: In Nigeria, responsibility for climate change adaptation is shared between different levels of government but the coordination mechanism for linking these various levels of government during decision making is relatively weak. The Inter-ministerial Committee on Climate change, for example, only meets intermittently and this can lead to duplication of efforts and incoherence in policy making and implementation which constrains finance flows towards adaptation.
4) Limited awareness and capacity: There is limited awareness about climate change adaptation among many stakeholders in Nigeria. This, coupled with limited capacity to plan and implement adaptation measures, can hinder progress in adaptation investments.
5) Insecurity: The spate of insecurity in certain regions of the country such as the North-East have made it particularly challenging to develop and implement adaptation programs for those regions. Risk of vandalization of intervention facilities in these regions is particularly high making it difficult to convince investors to finance programs in those regions.
6) Overconcentration of the limited funds towards mitigation: 60% of the funds received towards climate finance in Nigeria in 2020, went towards mitigation actions and this appears to be the trend across developing countries. One reason for this is that mitigation activities tend to be more bankable and as such attract more funding. The result of this is that adaptation actions are less likely to receive funding.

3. CLIMATE ADAPTATION COUNTRY COMPACT: OPPORTUNITIES FOR SCALING INVESTMENTS IN ADAPTATION

3.1. Investment opportunities in adaptation and resilience

The Climate Adaptation Country Compacts will provide countries with a solid foundation for decision making, resource allocation, and for attracting investments in their adaptation projects and programs.

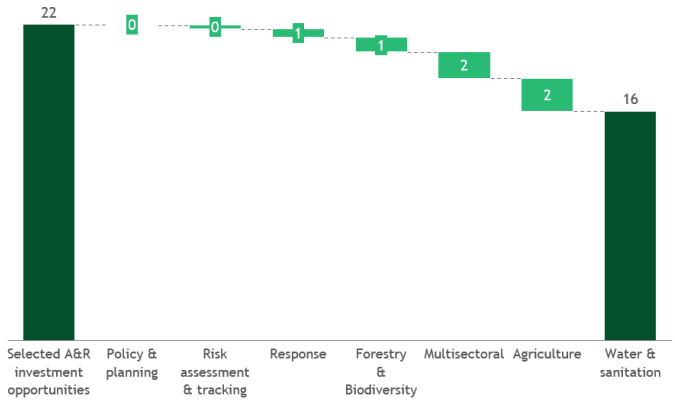

Figure 6: Selected A&R investment opportunities for Nigeria (billion USD)

In this section, we lay out a long list of potential opportunities for scaling investments in adaptation in Nigeria.

In total, over 22 billion USD investment is needed in the near term to strengthen A&R initiatives in Nigeria.

This 22 billion USD investment is broken into the following baskets:

- Policy and planning: 40 million USD to support mainstreaming of adaptation policy into national development programs among other policy programs.
- Risk assessment and tracking: 265 million USD for risk assessment and tracking including to develop early warning systems and disease surveillance solutions among other things.
- Response: 610 million USD for response including setting up a post-disaster recovery fund, optimizing disaster response services as well as developing climatic resilience.
- Sectoral investment opportunities: 21.1 billion USD for key sectors including agri-food, water and sanitation, nature and biodiversity as well as multi-sectoral investment opportunities.

3.2. Flagship adaptation projects

Table 2: Flagship adaptation programs for Nigeria

Sector	Opportunity	Description	Funding (M USD)
	Improve and mainstream adaptation policy	Integrate the adaptation vision, goals, and strategies in the different policies in a coherent manner to	10

Policies and planning	development in national planning	enable seamless implementation and prevent duplications	
	Conduct capacity building to support adaptation planning and implementation	Invest in the development of knowledge, tools, and other resources to support adaptation policy development and planning	20
	Strengthen institutional gender lens towards climate change impacts	Conduct capacity assessment of institutions at Federal and State levels on gender and climate change awareness and develop trainings on gender and climate change mainstreaming in policies and programs	10
Risk assessment and tracking	Set up data collection facilities	Strengthen data collection facilities for weather, river flow and sea level across relevant vulnerable states	25
	Improve monitoring of adaptation efforts at all govt. levels	Develop formalized or systematic approach to assessing, monitoring, reviewing, or reporting ongoing adaptation efforts at all government levels	200
	Improve risk assessment framework at sub-national levels	Review risk assessment framework and develop/implement tailored risk assessment plans across 36 states of Nigeria and the FCT	40
Response	Provide early warning services in risk prone communities across the country	Introduce systems to alert residents about imminent weather events, enabling timely actions and evacuations	100
	Train state officials in emergency management planning and implementation	Train 1800 state officials across 36 states and FCT (50 per state) in emergency management planning and implementation.	2.7
	Setup post-disaster recovery fund	Develop a pool of funds to be drawn in the aftermath of climate related risks to manage recovery	500
	Develop localized disaster risk reduction programs for the highest risk locations	Develop and implement disaster risk reduction programs such as emergency evacuation drills in the most vulnerable communities across the country to ensure that actual impacts of climate hazards are minimized	10
Agriculture	Expand climate smart agriculture to all parts of the country	Expand climate smart agriculture practices including capacity building for esp. youths and women farmers in high need areas such as the Lake Chad basin	1 000
	Improve agriculture related infrastructure to adapt to the effects of climate change	Provide needed agriculture mechanization infrastructure to boost productivity	500

	Upgrade grazing reserves and provide commercial fodder for pastoralists	Provide enabling environment. for sustainable all year pasture production and ensure adequate feed availability for livestock in drought prone areas	500
	Improve crop varieties and farming practices	Improve crop varieties and farming practices to cope with changing weather patterns	300
Water and Waste	Build sewage treatment plants as well as set up waste to energy production and composting facilities	Invest in 30 state of the art sewage treatment plants to prevent the risk of spread of communicable diseases in the event of flooding	6 000
	Promote effective sanitation and waste management practices in communities	Conduct advocacy programs on waste management and waste recycling practices	10
	Increase access to safe drinking water in both rural and urban communities	Invest in alternative sources of potable drinking water to meet needs of vulnerable communities in either areas of SLR or reduced precipitation	10 000
Nature and forestry	Mangrove restoration	Restore 500-ha of mangrove across coastal states of Nigeria	1 000
Multisectoral	Agro-Climatic Resilience In Semi-Arid Landscapes (ACReSAL)	A six-year World Bank assisted Project committed to landscapes restoration in Northern Nigeria	700
	Lake Chad Climate Change Resilience Action Plan	A 3 year programme to rehabilitate communities in the Lake Chad region and minimize impacts of drought and desertification on their communities	300
	PROPCOM+ Climate Smart Agriculture Program	Seven year FCDO funded project, which aims to promote market systems development for climate-smart agriculture in Nigeria	120

3.3. Investment needs to retrofit existing infrastructure, cities, coastal protection

Table 3: Selected investment opportunities to retrofit existing infrastructure

Sector	Opportunity	Description	Funding (M USD)
Multisectoral	Construction & rehabilitation of critical transport links (highways)	Construction and rehabilitation of critical transport links (highways and interstate roads incl (Lekki-Epe and Gbagada-Apapa)	270
	Floodproofing power and communication assets	Floodproofing of 42 affected power assets (power grid and power substations) and 44 affected communication assets (Communication mast)	450

3.4. Specific opportunities and programs for private sector investment

All of the sectoral and multisectoral opportunities listed in the table under section 3.1 are expected to be attractive for private sector involvement however, there may be need to engage with key stakeholders from the Nigerian government through the National Council on Climate Change to understand the specific modalities for partnership and investment in these opportunities.

3.5. Summary of country investment priorities for upscaling adaptation actions

The biggest investment priority area for Nigeria's adaptation actions is the agriculture sector. This is partly because of its high impact potential on the lives and livelihoods of Nigeria's most vulnerable groups and also because of the wide array of co-benefits that investments in Agriculture provide.

Next to agriculture is Water and sanitation. Here the rationale is simple, across all eco-geological zones of the country, water is and will continue to be at significant risk due to climate change and investments that improve resilience in this sector will have knock-on effects on other sectors such as agriculture and health

4. COUNTRY ADAPTATION FINANCING NEEDS, COMMITMENTS, AND GAPS

4.1. Estimates of adaptation financing needs

It is estimated that 177 billion USD will be needed between 2021-2030 to deliver on Nigeria's conditional NDC targets. Nigeria does not specify how much will be needed to achieve its adaptation and resilience targets by 2030 but expert estimates put the figure at 120 billion USD through 2030.[27]

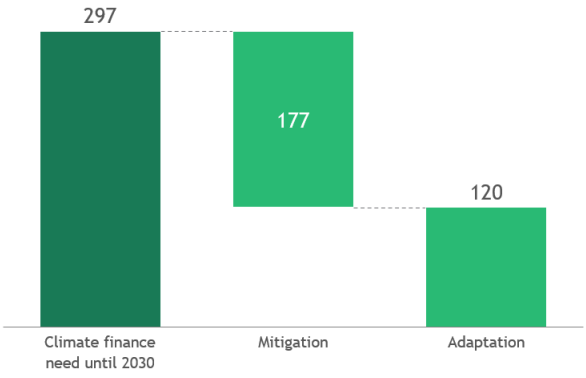

Figure 7: Estimated adaptation financing need up to 2030 (billion USD)

This estimate of 120 billion USD until 2030 assumes an annual A&R financing need of 60 USD per person across Nigeria and can be triangulated from a range of statistical techniques including using the Nigeria to Africa GDP ratio to determine Nigeria's portion of Africa's A&R need as well as extrapolating from the A&R spend per Km2 versus A&R spend per capita for similar countries that specify their adaptation finance needs in their NDCs.[28]

Since these sums are needed over a decade, it is safe to assume that Nigeria will need on average, 17.7 billion USD per annum for mitigation actions and 12 billion USD per annum for adaptation and resilience. The minimum amount of climate finance which Nigeria will need per annum for mitigation and adaptation actions is therefore 29.7 billion USD.

This sum, which is likely an underestimate since it does not include a sector lens in determining climate funding need and is not built up from specific mitigation and adaptation actions, will require participation of public, private, and blended finance instruments from both international and domestic actors.

4.2. National government commitments of funding adaptation

Nigeria's NAP is still under development and as such, there is limited visibility on actual funding commitments made towards adaptation. The Climate Change Act however provides for the creation of a Climate Change Fund to be administered by the National Council on Climate Change.

[27] Nigeria (2021). Updated Nationally-Determined Contributions. Available at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Nigeria%20First/NDC%20INTERIM%20REPORT%20SUBMISSION%20-%20NIGERIA.pdf

[28] UNFCCC Adaptation Committee (2022) Efforts of developing countries in assessing and meeting the costs of adaptation: Lessons learned and good practices - Synthesis report by the Adaptation Committee in the context of the recognition of adaptation efforts of developing country Parties - Available at: https://unfccc.int/documents/621859

The Climate Change Fund will warehouse amounts paid to the government by way of carbon taxes, emission trading schemes, appropriations from the National Assembly, funding from international organizations, fines issued to private & public entities, subventions, grants etc. The proceeds of the Fund are to be then disbursed towards funding climate change mitigation and adaptation initiatives, incentivizing private and public entities that meet their GHG emission reduction targets, conducting climate change impact assessments, and running the NCCC.

Aside from this, there are also efforts to raise funding for climate change adaptation through the Development of Natural Resources Fund (DNRF), the Ecological Fund Office (EFO), Great Green Wall funding, Clean Technology Investment Fund (CTF), and the Forestry Trust Fund.

Nigeria's Green Bond Market, another source of climate finance, has a target of ~250 million USD set aside for critical sectors and has successfully catalyzed 165.1 million USD in climate finance from public and private issuers between 2017 and 2021.[29]

Table 4: Nigeria green bonds tracked by issuer and use of proceeds

Year	Amount (million USD)	Green Bond Issuer	Use of proceeds
2017	29	FGN	Solar energy and afforestation
2019	49	FGN	Wind & solar energy; rural electrification; afforestation/reforestation
2019	23.5	North-South Power Company Limited	Hydropower
2019	41	Access Bank Plc	Flood defenses; solar energy
2021	15.3	North-South Power Company Limited	Solar energy
2021	7.3	One Watt Solar Limited	Solar energy
Total	165.1		

4.3. Funding contributions from development partners

While it is unclear what the full quantum of funding contributions for adaptation from key partners is, key sources of public climate finance were the World Bank Group and the French Development Agency, AFD, providing 41% and 17% of the 1.5 billion USD public climate funding total received in 2020 respectively. Public funding was received almost entirely via low-cost project debt.

Over the 2013 - 2020 timeframe, other multilateral institutions which have participated in financing adaptation in Nigeria are the African Development Bank Group, the European

[29] Climate Policy Initiative. 2022. Landscape of Climate Finance in Nigeria. Available at: https://www.climatepolicyinitiative.org/publication/landscape-of-climate-finance-in-nigeria/

Investment Bank, the International Fund for Agricultural Development and the Green Climate Fund among others.

The USA, Canada, Denmark, and the UK were key bilateral providers, each providing approximately 36 million USD in 2020.

93% of all climate finance (or 1.3 billion USD) from multilaterals and bilateral DFIs and development partner countries was provided through loans (75% concessional and 25% non-concessional). In terms of grant providers, USAID was the dominant provider (18 million USD) followed by the Bill & Melinda Gates Foundation (14 million USD).

Given the country's debt and revenue profile – exhibiting high debt exposure, with over 80% of its foreign exchange earnings dependent on the oil and gas sector – the dominance of debt over other financial instruments could be a cause for concern over the long term.

4.4. Estimates of adaptation funding and investment gaps, and expected donor contributions

Nigeria received 1.9 billion USD of climate financing in 2020[30]. Of the 1.9 billion USD received in 2020, 0.7 billion USD was geared towards adaptation actions while the balance was for mitigation actions. Assuming the same annual adaptation inflow per annum and assuming an annual adaptation funding need of 12 billion USD per annum, Nigeria's adaptation investment gap would be 11.3 billion USD per annum.

In 2020, climate finance in Nigeria accounted for 7% of tracked climate finance in Africa (29.5 billion USD) and 27% of West Africa's flows (7 billion USD). However, climate investment remains insufficient compared to the estimated levels needed to achieve Nigeria's unconditional NDC target of 47% reduction in business-as-usual emissions by 2030.

[30]Climate Policy Initiative. 2022. Landscape of Climate Finance in Nigeria. Available at: https://www.climatepolicyinitiative.org/publication/landscape-of-climate-finance-in-nigeria/

5. GOVERNANCE OF ADAPTATION INVESTMENT PROGRAMS AND REQUISITE FUNDING

5.1. Governance structure for the Climate Adaptation Country Compact

While the formal governance structure of the Climate Adaptation Country Compact is being ironed out, the National Council on Climate Change which is the focal agency on climate change matters in Nigeria is already thinking through the ramifications of the compact and ways to harness support from all key stakeholders in Nigeria's climate change ecosystem to actualize the terms of the compact.

On the basis of the stipulations of the Climate Change Act 2021, the likely governance structure for Nigeria's Adaptation Country Compact could conform with the below structure:

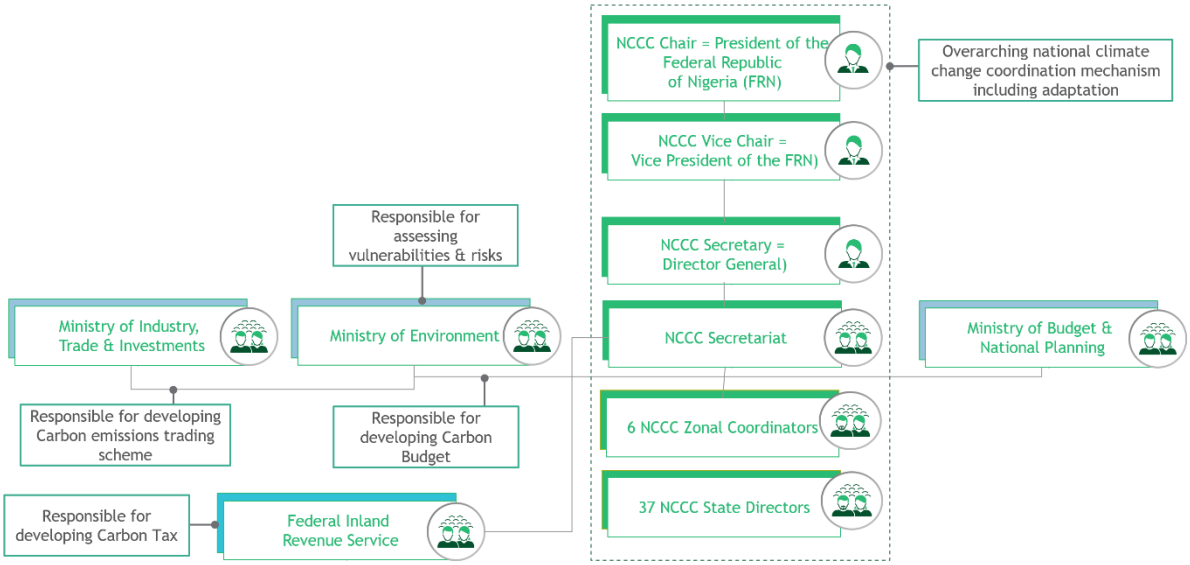

Figure 8: Governance structure of Nigeria's Climate Adaptation Country Compact

Some guiding principles which will inform the governance process are listed below:

- Inclusivity and representation: To succeed, the governance framework for the compact must involve all key stakeholders across National and Sub-national levels with each stakeholder group leaning in to ensure proper implementation of Nigeria's adaptation action plans. Governance of the climate adaptation compact must ensure representation from governments, businesses, NGOs, academic institutions, and affected communities.
- Partnership and collaboration: Each stakeholder group will have clearly defined roles with the Federal Government providing overarching policy and legislative leadership while the States and Local Governments lead in the regions and at the grassroots. The Organized Private Sector will hedge against and seize opportunities presented by

Climate Change alongside support from Civil Society Organizations such as the Climate Change Network of Nigeria which will play the role of catalysts at the adaptation frontline.

- Expertise and knowledge sharing: Academic and research organizations in Nigeria such as NIMET will drive localization of climate risk assessment with strong technical support from the international community.

The office of the Director General of the National Council on Climate Change is also available to provide guidance and support to any potential investment partners or agencies seeking clarifications in respect of the compact.

5.2. Institutional arrangements

The primary institution leading Nigeria's adaptation plans is the National Council on Climate Change (NCCC) which was setup under the Nigerian Climate Change Act of 2021. Prior to the creation of the NCCC, a special unit within the Federal Ministry of Environment, the Department of Climate Change (DCC) held this responsibility.

The National Council on Climate Change (NCCC) is chaired by the President of the Federal Republic of Nigeria and oversees implementation of the country's national adaptation plan, supports the Federal Ministry of Environment (FME) in coordinating climate action, and administers the Climate Change Fund. The NCCC is also the National Designated Authority for the UNFCCC and coordinates all its climate change activities in Nigeria.

The NCCC is empowered by the Climate Change Act 2021 to make policies and decisions on all matters relating to climate change in Nigeria, the Act provides that the NCCC will collaborate with the Federal Inland Revenue Service (FIRS) to develop a mechanism for carbon taxation in Nigeria. The proceeds of which will then be used to fund the Climate Change Fund proposed by the Act[31].

An Inter-Ministerial Committee on Climate Change (ICCC) established by the Federal Ministry of Environment to facilitate cross-sector coordination on climate change issues brings together stakeholders across ministries and other relevant government bodies, the private sector, civil society and academia to discuss climate change related issues once each quarter. Under the new Climate Change Act, the Federal Ministry of Environment is separately tasked with setting the national carbon budget[32]

The country regularly works with international organizations to support the policy development process. Implementation of key provisions of the Climate Change Act have the potential to improve governance structures for climate action and for achieving Nigeria's net zero ambitions.[33]

5.3. Human capacities to support the Climate Adaptation Country Compact

[31] Federal Republic of Nigeria. (2021). "Climate Change Act" Available at: https://faolex.fao.org/docs/pdf/NIG208055.pdf

[32] Okereke, C., & Onuigbo, S. (2021). Key Features And Significance Of Nigeria's New Climate Change Law. CCCD AE-FUNAI. Available at: https://cccd.funai.edu.ng/keyfeatures-and-significance-of-nigerias-new-climatechange-law/

[33] Climate Action Tracker (2022) Climate Governance in Nigeria. Available at: https://climateactiontracker.org/publications/climate-governance-in-nigeria/

Across the country's entire climate change knowledge ecosystem, there is sufficient human capacity to support the Nigerian Climate Adaptation Country Compacts. This capacity is drawn from public sector players as well as the private sector. Members of academia are not left out as the academic research sector has also been instrumental in developing a granular, bottoms up view of country vulnerability and resilience.

Where there are knowledge gaps, it is not uncommon for the ministries and agencies to seek support from external consultants and development partners.

6. DATA GAPS

6.1. Data gaps identified in the preparation of the Compact

There have been some important data and information gaps encountered in the development of this compact, including:

- Limited data, information, and knowledge on climate change impacts, vulnerability, and adaptation options at the sub-national level in Nigeria
- Limited climate forecasting and climate scenarios data especially around specific climate impact drivers such as sea level rise, severe heat and aridity
- Limited data linking past climates projections with vulnerabilities across sectors from a national to community level
- Limited data on sector-specific and socio-economic vulnerability and impacts across various spatial dimensions, scenarios, socioeconomic models of Nigeria's future growth path, and integrated assessment models
- Limited information on sector-specific practices and technologies for adaptation to biophysical impacts of climate change, including information on least-cost approaches to implement adaptation priorities
- Absence of a comprehensive baseline dataset to assess future progress towards the achievement of adaptation and reduction of vulnerability.
- Limited information on adaptation finance needs both at the national aggregate level as well as at the sectoral and sub-national level

6.2. Areas with insufficient information or analysis

While Nigeria has made significant progress in defining policies and plans related to climate change, some climate change topic areas are plagued with insufficient information or analysis, including the following:

- Adaptation financing need: Nigeria's adaptation financing needs are not clearly spelt out in any of its climate change policy instruments such as the NDC
- Priority Investments: There are no clearly prioritized investment plans for adaptation. The list of projects highlighted in this compact has been selected based on consultations with senior members of the NCCC and may likely change over time as the NAP gets fleshed out.

6.3. Proposed program of studies and strategic plans to fill gaps identified

To build the requisite body of knowledge needed to fully operationalize this compact, the National Council on Climate Change will have to work with Federal Ministries, research institutes, and other groups to:

- Expand the network of long-term weather data stations, and data stations that measure key environmental indicators
- Invest in climate science and modeling and in climate change impacts and adaptation research, taking advantage of partnerships between research organizations

- Generate and disseminate regionally relevant climate data and information, climate change projections, and other types of information to support sector-specific and community-based adaptation decisions
- Facilitate collaboration among governments, the private sector, and research organizations to make existing adaptation-relevant scientific and technical data and information more accessible and user-friendly
- Build knowledge and experience with new adaptive technologies and practices, and facilitate use of this knowledge and experience through improved information dissemination and technology transfer
- Learn from international initiatives by, for instance, promoting international research collaborations, and linking into databases and information clearing houses
- Commission studies to assess the feasibility and impact of highlighted adaptation projects in order to arrive at a prioritized list of investment opportunities for adaptation

The cost estimate and timeline to achieve all of the above activities will need to be detailed out over time and built into the policy and planning opportunities for investment in adaptation.

7. RESOURCE MOBILIZATION STRATEGY

7.1. Opportunities and steps for domestic resource mobilization

Providing for climate change adaptation action in Nigeria's national budgets is one important way to signal high commitment to climate adaptation action. This will be Nigeria's first level of domestic resource mobilization.

In addition to national budgets, the Climate Change Fund which is to be managed by the National Council on Climate Change will be made available for implementation of adaptation action. Through this mechanism, the Federal Government will mobilize additional domestic finance through the imposition of carbon taxes, fines and duties as well as emissions trading schemes on activities that increase greenhouse gas emissions or degrade the environment.

7.2. Mobilizing bilateral and multilateral resources

Due to tight fiscal constraints which were exacerbated by the aftermath of the COVID-19 pandemic, financing Nigeria's NDC – approximately 4% of GDP[34] – will require engaging with bilateral and multilateral agencies for financial support.

Nigeria must ensure that it obtains maximum benefits from the financial mechanisms it prioritizes for implementing the Conventions and Protocols it has ratified.

Potential multilateral climate financing resources will include the Green Climate Fund, the Global Environment Facility, the Climate Investment Fund and the Adaptation Fund[35]:

Table 5: Opportunities to enhance climate finance from multilateral DFIs

Multilateral Fund	Financing Approved	Probable size of additional finance	Suggested steps
Green Climate Fund	188 million USD for 14 multi-country projects. 3.4 million USD for 2 readiness activities	Large	Establish Direct Access Entity and propose projects for assessment
Global Environment Facility	86.1 million USD for 24 national projects 73.3 million USD for 15 regional projects	Medium	Work through GEF's implementing partners e.g., AfDB, EBRD, FAO, IFAD, UNDP, UNEP, WBG, etc.

[34] Nigeria (2021). Updated Nationally-Determined Contributions. Available at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Nigeria%20First/NDC%20INTERIM%20REPORT%20SUBMISSION%20-%20NIGERIA.pdf

[35] Sustainable Solutions for Africa (n.d.) "Opportunities for Nigeria to Enhance Access to Climate Finance"

Climate Investment Fund	22.5 million USD for projects including in total 349 million USD of co-financing including blended finance	Medium	Work through CIF's implementing partners: AfDB, WBG, EBRD
Adaptation Fund	14 million USD on a regional program	Small to medium	Work through AF's Implementing Entities, e.g., AfDB, EBRD, FAO, WBG, UNEP, UNDP, WADB

In addition, to these dedicated climate funds, Nigeria is testing the appetite of multilateral agencies to support Debt for Climate Swaps whereby Nigeria's outstanding debt is forgiven by its creditors in exchange for its commitment to use the outstanding debt service payments for national climate action programs[36].

The Nigeria Sovereign Investment Authority, manager of Nigeria's sovereign wealth fund, through its special purpose vehicle – Carbon Vista - has partnered with Saudi Arabia's Regional Voluntary Carbon Market Company for offtake of carbon credits generated in Nigeria. Revenues from this venture will go towards implementing further climate and adaptation programs across the country thus mobilizing additional bilateral finance for climate action.

7.3. Attracting private finance

Although Nigeria has a relatively mature capital market, private sector finance for climate action has only accounted for a fifth of tracked climate finance. In a constrained fiscal setting, mobilizing private climate finance is of utmost importance if Nigeria is to meet its climate obligations.

With Nigeria's core infrastructure stock estimated to be only 30% of GDP - compared to an international benchmark of 70%[37] - the growing infrastructure finance gap offers a key entry point for leveraging private sector participation in the climate finance space.

Institutional investors and asset managers also represent an untapped pool of capital. Nigeria's pension sector is the second largest in Sub-Saharan Africa, growing over nine times since 2006 and valued at approximately 33.3 billion USD in 2019[38].

[36] Premium Times (2022). "Energy Transition: Nigeria proposes debt-for-climate swap deal" Available at: https://www.premiumtimesng.com/news/headlines/551993-energy-transition-nigeria-proposes-debt-for-climate-swap-deal.html

[37] Centre for Climate Change & Development (CCCD), (2022). "Okereke Outlines Key Steps to Scaling Up Climate Implementation in Nigeria." Available at: https://cccd.funai.edu.ng/okereke-outlines-key-steps-to-scaling-up-climate-implementation-in-nigeria/

[38] European Investment Bank (EIB), (2021). "Finance in Africa: for green, smart and inclusive private sector development." Available at: https://www.eib.org/attachments/publications/economic_report_finance_in_africa_2021_en.pdf

However, no climate finance was tracked from pension funds and asset managers in 2020. Here again, the Nigeria Sovereign Investment Authority (NSIA) could play a pioneering role by seeding a fund which could then be used to mobilize private sector funding for Nigeria's adaptation actions targeting infrastructure development.

Additionally, while progress has been made establishing a robust regulatory framework for green bonds, the bond market is still nascent and has only seen limited engagement from private actors. This could provide a unique opportunity to mobilize additional climate finance from the private sector in Nigeria. Access Bank Plc., for example, raised 41 million USD in 2019 through Green bonds.

7.4. Resource allocation process

Nigeria's Climate Change Act 2021 authorizes the creation of a Climate Change Fund to be administered independently by the National Council on Climate Change. It is expected that this fund will serve as a significant channel for inflow of capital for adaptation projects in Nigeria.

Since the council will have as part of its constituents the Honourable Minister of Finance and the Honourable Minister of Environment, resource allocation towards adaptation action at the national level will benefit from supervision by the Ministry of Finance with support from the Ministry of Environment which will be responsible for feasibility and impact assessment of relevant initiatives put forward for funding.

8. SUMMARY OF INVESTMENT AND IMPLEMENTATION STRATEGY

8.1. Investment Plan

Nigeria's adaptation investment plan will provide a clear view to potential investors on the returns profiles of prioritized investment opportunities which will enable them to assess their appetite for specific projects. Key considerations for the country adaptation investment plan will include:

1) A clear overview of the country's climate risks and vulnerabilities including sufficient analysis of the current and future climate risks that the country faces at a macro as well as at a sectoral and community level. This will enable potential investors to determine which investment opportunities align with their overall objectives in terms of impact.
2) A well-defined set of adaptation investment priorities based on Nigeria's climate risks and vulnerabilities, as well as its development goals.
3) A robust investment strategy that is aligned with the country's development goals. This strategy will identify the specific investments that are needed to address the country's adaptation priorities, as well as the ideal sources of financing, potential returns and instruments for funding these investment opportunities.
4) A strong institutional framework for managing and implementing the investment plan, ensuring that the investment plan is effectively implemented and that the benefits of adaptation are realized and quantified.
5) Adequate financial resources to support the investment plan such as domestic commitments already made available by the government of the federal republic of Nigeria alongside public and private financing.

Also just as important, an effective monitoring and evaluation mechanism to track progress and ensure that the investment plan is achieving its objectives will be essential.

8.2. Implementation arrangements

The National Council on Climate Change will spearhead the implementation of the Nigeria Climate Adaptation Compact and will coordinate closely with the Nigerian Ministry of Finance as well as the Ministry of Environment to deliver on the ambition and priorities of the Climate Adaptation Country Compact.

8.3. Monitoring and reporting

Preliminary Guidelines for Monitoring, Verification and Reporting of the achievements of the Climate Adaptation Country Compacts will include the following:

1. The Nigeria Climate Adaptation Country Compact will be formally reviewed and updated once every 2 years. During this review process, projects which have been successfully completed will be delisted from the compact, funding estimates for ongoing or new projects will be revised and additional opportunities for adaptation action, updated in the compact.

2. In addition, implementation of the Nigeria Climate Adaptation Country Compact should be monitored on an ongoing basis, and evaluated on a quarterly basis, to measure and verify progress and provide a basis for improved performance and enhanced results.

3. The National Council on Climate Change will be responsible for the coordination of this monitoring, measurement, verification, and reporting process at the national level with relevant climate desk offices at the sub-national level responsible for percolating data upwards to the NCCC for its verification process.

5. Ministries, departments and agencies responsible for the various individual sectors will develop internal mechanisms for monitoring progress and evaluating impact. For example, the department responsible for health planning research and statistics will develop indicators for measurement of performance of adaptation actions in the health sector.

6. The Inter-Ministerial Committee on Climate Change will meet from time to time to assess progress of adaptation programs. This committee will be supported by sectoral technical experts, as well as community representatives. An ad-hoc accreditation sub-committee will be set up periodically to verify indicators.

CONCLUSION

Investing in adaptation actions in Nigeria is an important and urgent imperative for four key reasons:

1) Climate change is already having a negative impact on Nigeria, and this impact is expected to worsen in the future: The country is already experiencing more extreme weather events, such as floods, droughts, and heat waves. These events are causing damage to infrastructure, crops, and livestock, and displacing people from their homes. Climate change is also expected to lead to more water scarcity, food insecurity, and health problems in Nigeria.
2) Investing in adaptation can help Nigeria to reduce the negative impacts of climate change and build resilience to future shocks: There are a number of adaptation measures that can be taken, such as promoting climate smart agriculture, investing in infrastructure to protect coastal communities from flooding, developing drought-resistant crops, and improving early warning systems for extreme weather events. These measures can help to protect people's livelihoods, property, and health.
3) Investing in adaptation can also help Nigeria to grow its economy: Adaptation measures such as climate smart agriculture and green energy investments will create jobs and boost economic activity and a resilient economy is better able to withstand shocks and stresses, such as those caused by climate change.
4) Investing in adaptation is cheaper than doing nothing: Climate change is a major threat to the lives and livelihoods of millions of Nigerians and will cost Nigeria up to 30% of GDP by 2050 if no action is taken. Hence, investing in adaptation is essential to protecting people from the worst effects of climate change and ensuring a sustainable future for Nigeria.

To promote adaptation actions in Nigeria however, additional investments are needed to scale up adaptation efforts.

Nigeria received 0.7 billion USD in 2019/2022 for adaptation funding but needs 12 billion USD per annum of funding to meet its adaptation and resilience objectives and to improve its readiness for climate change impacts. Assuming a similar level of future financial commitment as historical adaptation inflows, the annual adaptation funding gap will be approximately 11.3 billion USD per annum

As potential next steps, Nigeria will need to do the following:

Immediate:

- Fully develop the funding strategy and implementation plan for the Nigeria Adaptation Country Compact
- Expedite the development of the National Adaptation Plan and relevant other climate change policy instruments
- Undertake detailed costing of adaptation initiatives for investment planning purposes

Near-term:

- Secure funding, identify key execution partners, and commence implementation of projects (including progress tracking)
- Launch the Climate Change Fund as stipulated in the Nigerian Climate Change Act 2021

- Open lines of communication with multilateral and bilateral financial organizations to align on mutually beneficial funding instruments to meet Nigeria's adaptation and resilience objectives
- Provide the needed enabling environment to crowd-in private sector finance for adaptation actions
- Track the achievements of these adaptation actions and communicate the impacts to stakeholders

Long-term

- Develop additional projects and update list of priority projects requiring funding over the next 5 years
- Track progress and implement lessons learnt from previous projects

The National Council on Climate Change will remain central to the implementation of this Climate Adaptation Country Compact and will be responsible for coordinating efforts at the national level with support from the Federal Ministry of Finance, the Federal Ministry of Environment, and other relevant national and sub-national stakeholders.

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APPENDICES

APPENDIX 1 – Abbreviations and Acronyms

AAAP	Africa Adaptation Acceleration Program
ACReSAL	Agro-Climatic Resilience in Semi-Arid Landscapes
ADCOM	Adaptation Communication
AfDB	Africa Development Bank
BNRCC	Building Nigeria's Response to Climate Change
BUR	Biennial Update Report
CAF	Cancun Adaptation Framework
CCN	Climate Change Network of Nigeria
COP	Conference of the Parties
DCC	Department of Climate Change
DFID	Department of International Development
EBA	Ecosystem-based adaptation
ERGP	Economic Recovery and Growth Plan
FCDO	Foreign, Commonwealth and Development Office
FCT	Federal Capital Territory
FGN	Federal Government of Nigeria
FME	Federal Ministry of Environment
GCA	Global Centre on Adaptation
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GGW	Great Green Wall
GIZ	German Agency for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit)
INDC	Intended Nationally Determined Contribution

LTV	Long Term Vision
MDAs	Ministries, departments and agencies
MFIs	Multilateral Finance Institutions
NAP	National Adaptation Plan
NASPA CCN Nigeria	National Adaptation Strategy and Action Plan on Climate Change for
NCCPRS	National Climate Change Policy and Response Strategies
NSCCTF	National Strategic Climate Change Trust Fund
NDC	Nationally Determined Contribution
ND-GAIN	Notre Dame Global Adaptation Initiative
NEST	Nigerian Environmental Study/Action Team
NEWMAP	Nigeria Erosion and Watershed Management Project
NIMET	Nigerian Meteorological Agency
NEMA	National Emergency Management Agency
R&D	Research and development
REDD	Reducing Emissions from Deforestation and Forest Degradation
SDGs	Sustainable Development Goals
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WEP	Women Environmental Programme