



FEDERAL MINISTRY OF ENVIRONMENT
DEPARTMENT OF CLIMATE CHANGE

NATIONAL CLIMATE CHANGE POLICY FOR NIGERIA 2021 – 2030



FORWARD

Climate change is perhaps the biggest challenge facing humanity. It is complex and dynamic and requires dimensional and multi-sectoral mitigation and adaptation initiatives within a dynamic policy framework to properly tackle it. Government recognizes this and is committed to tackling any presumed threat to its national sustainable development.

Since the development of the National Climate Change Policy and Response Strategy (NCCPRS) in 2012, the global discourse on climate change has evolved leading to the adoption of new initiatives that have been domesticated to guide national response to reducing the impact and adapting to the challenge.

Specifically, a major milestone for Nigeria's effective response to the challenges of climate change, is the signing of the 2015 Paris Agreement to which the country ratified in March 2017. This Agreement constitutes a major role in promoting the transition to a low carbon economy. Thus, the purpose of this revised National Policy on Climate Change is to define a new 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 for climate resilient sustainable development.



The National Climate Change Policy (NCCP) review process was conducted within a national participatory process through the engagement and consistent consultation with relevant Ministries, Departments and Agencies at Federal and State levels, private sector operators and the community, using workshops and questionnaires as a tool to reach out and collate information. This approach was undertaken in order to put in place a well-defined national climate change implementation framework and programmatic action plan that incorporates short, medium and long term mitigation and adaptation strategies to assist build a climate resilient nation.

Nigeria welcomes financial and technical support from private sectors and multilateral development partnership towards the implementation of the NCCP. This supportive effort, enables the country adapt effectively to the impact of climate change as well as meet Nigeria's GHG emission reduction target and its global commitment under the United Nations Framework Convention on Climate Change (UNFCCC).

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1. BACKGROUND

1.1 Introduction

Nigeria, like many parts of the world, is experiencing climate change. In particular, the country is becoming warmer. Various studies show that annual and seasonal timescales indicate a significant positive increase in temperatures in Nigeria. They show that mean temperatures have been consistently increasing throughout the country in the last five decades and have been rising significantly since the 1980s, with a change of 1.01°C (0.52 to 1.5°C) in the linear warming for the period 1951 - 2005. The linear warming for the same period for 30-year averages on a decadal slice further revealed positive changes in temperature by an average of 0.2°C/decade.

The mean annual variability and trend of rainfall over Nigeria in the last few decades depict the existence of a number of inter-annual fluctuations that have been responsible for dry and wet years or extreme climate events such as droughts and floods in many parts of the country and at different times.

The year 2019 has been a blockbuster one for extreme weather with persistent record-breaking floods in many parts of the country. The unusual rains also threaten good harvest. More worrisome is the increasing knowledge that the country will be subject to consistent changes in rainfall and temperature conditions, particularly towards the end of the century. Recent analysis of anticipated future climatic trends for the country, as captured in the Third National Communication, indicates that for 2050 and 2070, the minimum temperature increase could range from 1.48°C to 1.78°C and the maximum temperature increase of about +3.08°C to +3.48°C compared to the baseline of 1990. A general increase in the number of days of rain and days with extreme rainfall events that may generate floods are projected over most ecological zones of the country except in the northeast Sahel zone, where the scenario analysis suggests fewer extreme events related to rainfall and flooding.

Climate change is a complex environmental problem because of its long-term uncertain time-frame, scales of occurrence, differential impacts and vulnerabilities, as well as equity and justice within the global power asymmetries. For instance, the impacts of climate change are already driving people back into poverty and undermining growth. Beyond recognizing the potential devastating effects of climate change on the socio-economic and environmental development of the country and implications for the well-being of the populace, the Government of Nigeria intends to strengthen its management of climate-related development challenges through an appropriate policy and institutional arrangements that will not only mainstream climate change into its development priorities, but also encourage the implementation of mitigation and adaptation actions at all levels of governance for climate compatible sustainable development.

In 2012, the Federal Executive Council approved a comprehensive strategy policy on climate change: The Nigeria Climate Change Policy Response and Strategy (NCCPRS), the overarching objective of the policy is to promote low-carbon, high-growth economic development and build a climate-resilient society through the achievement of the following targets:

- i. Implement mitigation measures that will promote low carbon as well as sustainable and high economic growth;
- ii. Enhance national capacity to adapt to climate change;
- iii. Raise climate change related science, technology and R&D to a new level that will enable the country to better participate in international scientific and technological cooperation on climate change;
- iv. Significantly increase public awareness and involve private sector participation in addressing the challenges of climate change; and
- v. Strengthen national institutions and mechanisms (policy, legislative and economic) to establish a suitable and functional framework for climate change governance.

Through the 2012 Policy, Nigeria intends to foster sustainable development by means of national initiatives that strengthen the country's strategies on climate change preparedness, adaptation and mitigation across all segments of society including vulnerable groups. The Policy has been guiding policy decisions and led to action in responding to climate change in the country.

Since the development of the NCCPRS, the global discourse on climate change has led to the adoption of new initiatives that have been domesticated to guide national response to reducing the impact and adapting to the challenge. In particular, a major basis for Nigeria's effective response to the challenge of climate change is the implementation of the 2015 Paris Agreement to which the country ratified in March 2017. This Agreement constitutes an important milestone in promoting the transition to a low carbon economy. Thus, the purpose of this National Policy on Climate Change is to define a new 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 for climate resilient sustainable development.

1.2 Rationale

Climate change is perhaps the biggest challenge facing humanity. It is complex and dynamic and requires dimensional and multi-sectoral mitigation and adaptation initiatives within a dynamic policy framework to properly tackle it. The review of the NCCRPS provides an opportunity to look at the following within the context of the country's vigorous effort to address the challenge of climate change:

- i. the opportunities and challenges of reducing emissions on a sector-by-sector basis;
- ii. the required adaptation strategies in view of growing impact of climate change, particularly those increasing frequency and intensity of extreme weather events;
- iii. the integration of climate change into national development process for effective response to the challenge;
- iv. the role and operation of innovative financing instruments like the Green Bonds in emissions reduction and climate change adaptation;
- v. the opportunities in emerging global climate finance mechanisms in supporting the country to meet its emissions targets;
- vi. the role of research, development and innovation; and

- vii. the imperative for good climate change governance.

1.3 Review Approach

The review involves close engagements with ministries, departments and agencies at Federal and State levels, private sector operators and the community, using workshops consultations and different questionnaires for different levels of engagement. The purpose is to generate inputs from all sections of the society that will be impacted by climate change. The review also monitors and is informed by developments in international climate policy and discourse. It also builds on parallel processes, including the Nationally Determined Contribution (NDC), to derive policy statements that will guide their successful implementation. In addition, it takes cognizance of the fact that Nigeria is party to several international treaties and conventions governing climate change issues. It is on the combined thrust of these instruments that the revised National Policy on Climate Change rests.

1.4 Linkages with other Policies and Strategies

Nigeria has adopted a number of policies, strategies and action plans that are related to addressing the national development challenge of climate change, as well as integrating environment and climate change management in socio-economic development activities of the country. The main development plans which set strategies and priorities that are related to the pursuit of climate-resilient and climate-compatible initiatives include: (i) Economic Recovery and Growth Plan (ERGP) 2017 -2020; (ii) The Transformation Agenda (2011-2020); and (iii) Vision 20:2020. Other policies and strategies that have direct and indirect bearings on the climate change challenge include:

- i. National Adaptation Strategy and Plan of Action on Climate Change for Nigeria (NASPA-CCN) 2011
- ii. National Renewable Energy and Energy Efficiency Policy (NREEEP) 2015;
- iii. National Gas Policy (2017)
- iv. National Biodiversity Strategy and Action Plan (NBSAP) 2016;
- v. National Forest Policy (NFP) 2010;
- vi. National Forestry Action Plan (NFAP) 1996;
- vii. National Policy on Environmental 2016;
- viii. Nigeria Agricultural Policy 2001;
- ix. Agricultural Promotion Policy (APP) 2016 – 2020;
- x. National Climate Change Policy and Respond Strategy (NCCPRS) 2012;
- xi. National Policy on Drought and Desertification (NPDD) 2007;
- xii. Great Green Wall for the Sahara And Sahel Initiative National Strategic Action Plan (GGWSAP) 2012;
- xiii. National Agricultural Resilience Framework (NARF) 2013;
- xiv. National Health Policy (2016);
- xv. National Water Policy (2012);
- xvi. National Transport Policy (2016)
- xvii. Nigeria Industrial Revolution Plan (2014)
- xviii. National Gender Policy (2006),
- xix. REDD+ Strategy, 2019

This policy review derives from three key parameters – the Constitution of the Federal Republic of Nigeria, the need to make the policy realistic in the light of development trends and the potentially huge negative consequences of climate change. The Constitution of the Federal Republic of Nigeria specifically makes environmental protection a state objective and provides for it in the Chapter 2 on Fundamental Objectives and Directive Principle of State Policy. Its Section 20 expressly contains provision on environmental protection and states that *the state shall protect and improve the environment and safeguard the water, air, land, forest and wild life in Nigeria*. The main aim of the Section is to ensure a healthy environment (including an environment that is less vulnerable to climate change) for the Nigerian citizens. The protection of the environment is essential for the realization of the aim. Thus, safeguarding the air, water, land and plants and animals as stated in Section 20 would extend to making Nigeria's environment including its socio-economic profile, resilient and effective adaptation is critical to this.

The need for the review of the Policy also derives from increasing reality of the serious economic consequences of climate change and the need for concrete initiatives to reduce its impacts. DIFD has, for example, estimated that climate change will cost Nigeria between 6 percent and 30 percent of its GDP by 2050 if no concrete adaptation action is taken. The Policy will assist the country in achieving its goal of meaningfully contributing of reducing greenhouse gas emissions as espoused in the NDC (2015) and reduce the socio-economic impacts of adverse effects of climatic change. The medium-term outcome is to achieve a resilient socio-economic environment that promotes sustainable development and reduce emissions of GHGs. In addition, the Policy will act as a mechanism for coordinating development planning, financing and monitoring of climate change initiatives and programmes in the country. It articulates the goals and objectives for climate change management in Nigeria, as well as principles and strategies to guide implementation of activities aimed at reducing the potential adverse effects of climate change on the country's development.

1.5 Policy Outline

The Policy is subdivided into 7 sections. Section 1 provides a general background on climate change in Nigeria, the rationale for the policy review, approach adopted as well as the link between the Policy and other related national policies, strategies and plans. Section 2 puts climate change in the national context with emphasis on Nigeria's vulnerability and impact, as well as policy, legal and institutional responses to the challenge. The relevance of the Paris Agreement in influencing the national response to climate change is highlighted in the section. The vision, objectives and guiding principles for the Policy are given in Section 3. Policy statements that would accelerate the needed process and implementation of climate change mitigation initiatives are made in Section 4, while section 5 elaborates on the key policy directions for adaptation to climate change in the country. Section 6 addresses a number of enabling conditions that are necessary for actualizing the vision of ensuring a climate resilient economy. Section 7 elaborates on the imperative for functional means of implementation that can propel the country in the path of ensuring climate resilient compatible and sustainable development.

2. NATIONAL CONTEXT

2.1 Nigeria's Vulnerability to Climate Change

All aspects of Nigeria's development are vulnerable to climate-related stressors. Its natural capital (including land, forests, landscapes, water, and fisheries) and physical capital (including cities, infrastructure, and other kinds of produced capital), as well as its human capital, are highly susceptible to the impact of climate change. Nigeria's economy and other sectors of development are equally very vulnerable to climate change. Climate change affects the ability of natural capital, which is the main source of income and livelihoods for the majority of Nigerians, to deliver its wide range of products and services (including food, fodder, timber, and the regulation of water cycles), some of them vital.

Extreme weather events, such as floods, storm surges, and heat waves can strain cities, roads, drainage systems, power plants, ports, and other types of infrastructure. Also, climate change further threatens the national ability to build and maintain its human capital, particularly through health and education. For example, rising temperatures and more frequent floods are likely to make the people more vulnerable to water- and vector-borne diseases. Floods may also prevent children from reaching schools for their education. In general, the combination of frequent natural disasters, large population, poor infrastructure and low resilience to economic shocks, makes Nigeria especially vulnerable to climatic risks. Furthermore, the high incidence of poverty and heavy reliance of poor people on agriculture and natural resources increases their vulnerability to climate change. The 2019 Climate Risk Index published by the Germanwatch Organization classifies Nigeria as a region of high risk, and indicates that the country is one of the top most vulnerable countries in the world.

Studies have shown that the degree of vulnerability will vary from one region of the country to another. They elaborated that the northeast and northwest geopolitical zones that constitute the arid and semi-arid areas of northern Nigeria and where most of the country's livestock are raised are the most vulnerable to climate change in Nigeria. This is attributed to the regions' averagely low adaptive capacity, low sensitivity, high relative exposure and high relative vulnerability. Recent detailed climate vulnerability mapping of the arid and semi-arid northern Nigeria indicates that Adamawa, Bauchi, Borno, Jigawa, Kano and Yobe States have high vulnerability to climate change, while other States like Kebbi, Katsina, Sokoto and Zamfara States have medium vulnerability. Kaduna and Taraba States are areas of low vulnerability to climate change, relative to other parts of the arid and semi-arid northern Nigeria.

There is increased recognition that the causes and impact of climate change as well as the policies, strategies and the capacity to respond to or address it are not gender neutral. Climate change and gender inequality are inexorably linked; they both create obstacles to achieving poverty reduction and have strong potential to reverse development gains. The centrality of SDG 5 (Achieve gender equality and empower all women and girls) to achieving all the SDGs is not in doubt. There is evidence that just like gender inequalities exacerbate the

effect of climate change, climate change also makes existing inequalities worse and generally slows progress toward gender equality.

Adaptation and mitigation efforts would lack sustainability until gender is effectively mainstreamed at every stage. In the words of NAP Global Network (2017), “women, girls, boys and men experience the impacts of climate change in different ways and have different needs, opportunities and capacities to respond”.

2.2 National Response

The Government of Nigeria has initiated ~~undertaken~~ a number of measures ~~steps~~ to address the challenge of climate change. These actions are in the following areas: (i) climate change institutional framework; (ii) promoting enabling climate policies; (iii) NDC; (iv) climate change financing; and (v) donor-supported initiatives.

Institutional Framework: The Department of Climate Change (DCC) in the Federal Ministry of Environment drives the national response to climate change at the national and international levels. It is the nation’s Focal Point to the UNFCCC and also the Designated National Authority (DNA) for the Clean Development Mechanism and works with other Ministries through the *Inter-Ministerial Committee on Climate Change*.

Enabling Climate Change Policies: A number of enabling policies and programmes that ~~are~~ related to climate change mitigation and adaptation have been adopted and include those that have been listed in Section 1.4. Three recent development policies that have clear implications for climate change adaptation include: (i) Vision 20:2020; (ii) the Transformation Agenda (2011 – 2015); and (iii) Economic Recovery and Growth Programme (ERGP) (2017 – 2020).

Nationally Determined Contribution (NDC): Nigeria developed its NDC in 2015 towards the ratification of the Paris Agreement on Climate Change. It intends to reduce its greenhouse gas (GHG) emissions intensity of GDP by 20% by 2030 relative to the emissions intensity of GDP in the base period 2010 to 2014 on an unconditional basis as well as a further 45% on a conditional basis consequent upon receiving climate finance, technology transfer and capacity building from the developed countries. If delivered upon, the NDC will improve standards of living, promote clean energy access and food and water security for all and make the country more resilient to climate impacts, as well as enable Nigeria to be able to contribute to the goal of keeping the global temperature increase to well below 2°C.

Climate Change Financing: Nigeria recognizes that to respond effectively to climate change mitigation and adaptation challenges, the country will require a critical mass of financial resources beyond what governments at all levels can provide. To this end, the government of Nigeria has launched and issued Green Bonds as innovative means and alternative way of raising climate finance, and has released the guidelines for the Green Bonds that target about \$250 million in climate finance to support national projects in key areas that include environment, agriculture, power and energy efficiency-transportation. It will also continue to

mobilize national, regional and global climate finance resources to tackle the challenge of climate change.

Global and Regional Cooperation: Nigeria is strongly committed to the achievement of an effective and equitable international agreement on climate change. It recognized its leadership role in Africa and sub-regional levels. Nigeria is meeting up to its obligations to the United Nations Framework Convention on Climate Change (UNFCCC), and supporting the implementation of climate change initiatives of ECOWAS and African Union.

2.3 Emerging Issues

Some global and national climate change-related and development issues that have emerged after the formulation of the NCCPRS (2012) and would influence the current policy direction include (i) the Paris Agreement and NDC; (ii) Agendas 2030 and 2063; (iii) Economic Recovery and Growth Plan (2017-2020/40); and (iv) security.

The Paris Agreement: The Paris Agreement provides essential building blocks for global action to address climate change. Parties to the UNFCCC are now required to unpack, clarify and track the key tasks and activities outlined in their respective NDCs in order to provide a well-defined pathway to reducing global GHGs emissions by 2030. The NDCs formulated targets for mitigating greenhouse gas (GHG) emissions and for adapting to climate change.

Nigeria's NDC outlines the country's climate change priorities for the post-2020 period and include not only targets, but also concrete strategies for addressing the causes of climate change and responding to its effects. It serves as Nigeria's central pillar of its development policy, thereby integrating it with existing national development agenda and the SDGs. The NDC represents an integrated and comprehensive strategic approach towards promoting a low carbon high growth climate-resilient path for national sustainable development. Nigeria is now implementing its NDC as a catalyst for a comprehensive national climate action that offers the country a number of opportunities to advance the course of sustainable development. They include:

- i. inducing long-term changes in key economic drivers and sectors, such as power, oil and gas, industry, transport and agriculture and land use;
- ii. improved national scope to drive climate change actions at the local level;
- iii. keeping up political momentum at the national level and strengthening climate change legislation;
- iv. inclusion of a longer-term vision for low-emission climate resilient development for social and economic development as well as poverty eradication;
- v. mobilizing finance for climate change from diverse sources and creating an enabling environment for private sector investment in climate mitigation and adaptation;
- vi. providing innovative measures and mechanisms for the integration of climate change into development planning and strategies at all levels of governance in the country;
- vii. presenting a common determination to strengthen national adaptation efforts;
- viii. housing climate policy coordination in a high-level policy-coordinating organ that is better able to influence policy in major sectors of the economy; and

- ix. engaging with government departments, companies and stakeholders in sectors that need to transit into a low-emission resilient development pathway and help mainstream climate action into sectoral policies and investments, among others.

The focus of the NDC implementation plan is to promote a climate-resilient sustainable society, while fostering low-carbon, high growth economic development.

Agendas 2030 and 2063: The 2030 Agenda for Sustainable Development is a commitment to eradicate poverty and achieve sustainable development by 2030 world-wide. It provides for a shared global vision towards sustainable development for all within a sustainable climate resilient environment. Nigeria is highly committed to this ambitious plan of action. Agenda 2063 is Africa's strategic framework that aims to deliver on its goal for inclusive and sustainable development. It prioritises inclusive social and economic development, continental and regional integration, democratic governance and peace and security amongst other issues, that will also include climate compatible development, aimed at repositioning Africa to becoming a dominant player in the global development arena.

Economic Recovery and Growth Plan (ERGP): The ERGP is a Medium-Term Plan (2017 – 2020), designed to “restore economic growth while leveraging the ingenuity and resilience of the Nigerian people”. The Plan is an economic blueprint for recovery in the short term and a strategy for sustained growth and development in the long term. It is also consistent with the aspirations of the Sustainable Development Goals (SDGs), as its initiatives address the economic, social and environmental sustainability dimensions of development. Government is currently updating the Plan to address long-term development goal of Nigeria that will include low carbon and climate-resilient development in the period 2020 – 2040.

Security: Climate change is a risk-multiplier and can exacerbate risks in stressed environment with low adaptive capacity to climate impacts. There is a growing national concern that climate change is already aggravating the degree of insecurity in the country, leading to climate-induced migration in many parts of Nigeria. This is due to the ability of climate change to destabilise communities living in areas that have been subjected to uncontrolled depletion of natural resources resulting in climate-induced accelerated land degradation. For example, freshwater shortage in the Lake Chad Basin has had severe economic impacts on the fisheries, flood recession agriculture, livestock rearing and other wetland industries in the north eastern part of the country. Consequently, there has been severe food insecurity in the region and a proliferation of diseases. There is significant migration from the Basin to many parts of the country as people flee drought and land degradation, thereby increasing pressure on natural resources in areas where “environmental refugees” settle. This is generating social tension that can escalate into severe national insecurity challenge for the country. In this regard, Nigeria views climate change as a security problem.

There is also an increasing evidence that climate change-induced crisis worsens gender-based violence in several ways. The social and psychological pressure arising from loss of income due to the impact of climate change on the agricultural sector reportedly aggravates violence. Globally, about 20% of women who have been displaced as a result of disasters have also experienced sexual violence. Climate action and greater involvement of women are therefore

important components in the fight to eliminate violence against women and girls in the context of climate security.

3. POLICY DIRECTION

3.1 Policy Vision

The vision of the National Policy on Climate Change is:

A low-carbon, climate-resilient Nigeria.

3.2 Policy Mission

Ensure sustainable development and a climate proofed economy through multi-stakeholder engagement.

3.3 Policy Goal

The Policy's overall goal is to:

Promote a low-carbon, climate-resilient and gender-responsive sustainable socio-economic development.

Some of the expected outcomes of the policy's goal include:

- i. Reduced vulnerability to climate change impacts across all sectors.
- ii. Improved social, cultural, economic and ecological resilience.
- iii. Reduced greenhouse gas emissions.
- iv. Increased awareness of climate change impacts and adaptation and mitigation measures.
- v. Enhanced and strengthened research, innovation and technology development and transfer and systematic observations.
- vi. Enhanced capacity to implement climate change related interventions at national, state and community levels.
- vii. Climate change and its cross-cutting issues mainstreamed in development.

3.4 Strategic Objectives

The goal of Nigeria's Climate Change Policy will be achieved through the attainment of the following objectives:

- i. Implementing adaptation and mitigation measures that promote low-carbon development;
- ii. Strengthening capacities and synergies at local, sub-national and national levels and at individual and institutional levels to implement climate change response;
- iii. Promoting scientific research, technology and innovations to address the challenges of climate change;
- iv. Developing and implementing appropriate strategies and actions to reduce the vulnerability of Nigerians to the impacts of climate change across all sectors;
- v. Mainstreaming gender, children and youth, and other vulnerable groups into all climate change interventions;

- vi. Promoting sustainable land-use systems that enhance agricultural production, ensure food security and maintain ecosystem integrity;
- vii. Promoting climate-proofing of construction and infrastructural development;
- viii. Enhancing national capacity to mobilize international and national resources, both technical and financial, for investment in climate change;
- ix. Developing an effective climate change communication and information management system that facilitates access by all stakeholders to climate information;
- x. Strengthening national institutions and mechanisms (policy, legislative and economic) to establish a suitable and functional system for climate change governance

3.5 Guiding Principles

The following principles are relevant to the attainment of the strategic objectives of the Policy:

- i. Country-driven and country-specific climate change interventions and responses.
- ii. Effective citizenship participation.
- iii. International partnership and cooperation.
- iv. Gender equality and social inclusion.
- v. Sustainable management of the environment.
- vi. Shared vision and responsibility among stakeholders.
- vii. Pre-caution when faced with uncertainty.
- viii. Promotion of environmental quality and ecological equilibrium.
- ix. Comprehensive and coordinated approach among government, civil society organizations and the private sector.
- x. Transparency, accountability and equity.
- xi. Monitoring, evaluation and reporting of all climate change interventions and lessons.

4. MITIGATION

Nigeria's total GHG net national emissions for the year 2015, including removals, amounted to 712,638 Gg CO₂-eq from the agriculture, forestry and other land uses (AFOLU), energy, industrial processes and product use (IPPU) and waste. AFOLU headed the sectors with 476,949 Gg CO₂-eq (66.9%) of total aggregated emissions, followed by energy with 28.2%, waste 3.0% and the remaining 1.9% from IPPU. Regarding the direct GHGs, CO₂ was responsible for 82.3% of the emissions, CH₄ for 12.4% and N₂O for 5.3%.

Nigeria is committed to becoming a low-carbon economy as a means of promoting sustainable development as well as contributing to global efforts to reduce GHG emission. The Government has taken note of the urgency for nationally-based mitigation actions needed to contribute to the goal of keeping the global temperature increase to below 1.5°C by 2030 in order to avert catastrophic climate change. To achieve this goal, and in line with the country's NDC, Nigeria has, within the context of this policy, identified some options for reducing GHG emissions to include increasing the availability of carbon sinks (biological absorption of GHGs) or reducing the level of emissions released into the atmosphere, ideally in sectors such as energy generation, oil and gas, AFOLU, transport, mining, manufacturing (industry) which produce the greatest amounts of emissions in the country.

Nigeria's NDC is high in mitigation actions as the nation pledged to embark on unconditional 20 percent GHG emissions reduction by 2030 compared to business as usual levels. Clearly, strict actions need to be taken to ensure climate resilience particularly in the area of expansion of energy supply based on renewable and other low carbon technology alternatives. Careful considerations of GHG abatement measures will also be needed in options adopted with regard to agriculture, land-use changes and transportation.

With international financial, technological and capacity building support, Nigeria can achieve emissions by 45 percent below business-as-usual levels. Accordingly, priority mitigation action will focus on emissions reduction potential, alignment with national development plans, contribution to sustainable development, promotion and harnessing technological innovations from research institutions and financial feasibility. The policy measures outlined herein are aligned largely with sectors identified in the NDC as the main contributors to the country's GHG emissions. The sectors are energy, oil and gas, agriculture and land use, industry and transport. In addition to these sectors, the waste and water sectors are being included in updating of the NDC in view of their increasing potentials in curbing the national GHG emission pathway.

The overall policy objective of the measures for mitigation is to strengthen measures to reduce greenhouse gas emissions (direct and fugitive emissions), mainly from the energy (including power generation), oil and gas, biomass (agriculture, forest and land use), health, industry, transport, water and waste sectors.

4.1 Agriculture, Forestry and Other Land Use

Agriculture and forests are part of the country's natural capital that provides direct source of income and employment for a large proportion of Nigeria's people. The sector is highly vulnerable to climate change, but was also responsible for about 67% of national emissions as at 2015. In particular, emissions from the livestock sector in Nigeria increased significantly from 21877 Gg CO₂-eq in 2000 to 29375 Gg CO₂-eq in 2015 which represented an increase of about 34%.

A major challenge when increasing agricultural production is minimizing GHG emissions associated with production. Agricultural production is a biological process from which the production of methane and nitrous oxide are direct consequences. The production of ruminant livestock leads to direct methane emissions and nitrous oxide arises from the use of fertilisers and management of manures. The challenge is to adopt practices that optimise production while minimizing GHG emissions; thereby reducing carbon intensity. Strengthening climate smart and gender-responsive approaches in the agricultural system is necessary to minimise GHG emissions and enhance the resilience of the sector.

Ensuring food security while contributing to climate change mitigation and preserving the natural resource base and vital ecosystem services require transition to agricultural production systems that are more productive, gender-sensitive, socially inclusive, use inputs more efficiently and are more resilient to risks, shocks and climate variability. Productive and resilient agriculture requires a major shift in the way land, water, soil nutrients and genetic resources are managed sustainably. This would require changes in national legislation, policies and financial mechanisms to enhance producers' access to markets.

By reducing GHG emissions per unit of land and/or agricultural product, significant contributions to climate change mitigation can be achieved. The required shift to productive agriculture will be operated within the climate-smart agriculture (CSA) framework. The CSA approach will be designed to identify and operationalize sustainable agricultural development within the explicit parameters of climate change. The forestry and land use sectors also provide extensive carbon sinks which are threatened by change. Changes occurring in forest cover due to afforestation, reforestation and deforestation have direct impact on carbon sequestration, air quality and watershed protection, as well as on regional temperatures. Thus agriculture, forestry and land use have major roles to play in mitigation in terms of reducing atmospheric concentrations of GHGs. A major policy objective is to reduce greenhouse gas emissions in agriculture, forestry and other land use without compromising food security, while increasing the carbon sink potential of the country's natural capital.

Policy Measures

- i. Reduce forest loss and degradation
- ii. Increase the use of alternative domestic fuel to fuelwood in rural areas
- iii. Increase soil carbon sequestration in agricultural lands
- iv. Increase livestock productivity through improved grazing and feeding management and management of feed crop production

- v. Improve genetics in the dairy herd
- vi. Promote wide adoption of climate-smart and ecologically resilient agricultural practices among small-holder farmers, including women and youth
- vii. Document and promote the use of appropriate indigenous knowledge and best practices for climate-resilient cropping and livestock systems
- viii. Promote agro-forestry, reforestation and afforestation, including community-based forest management and recovery
- ix. Increase the country's network of forest reserves and conservation areas
- x. Protect forest and land tenure and resource rights as well as ensure gender-equitable, inclusive and transparent benefit sharing
- xi. Enhance public and private investment in the agriculture and forestry sector

4.2 Energy

Achieving high socio-economic growth requires sufficient energy to meet the needs of households, businesses and industrial processes in a gender-responsive and socially-inclusive manner. The energy sector is the second major contributor of GHG in Nigeria. Producing adequate energy for the country's development needs and minimizing GHG emissions in the process remain critical challenges to achieving high socio-economic growth in Nigeria. These will require improved investment, regulatory control and critical review of existing approaches, as well as the adoption of low-cost but efficient energy generation technologies. The options will also require rapid and extensive transitions in energy, agricultural land, infrastructure, urban systems and overall lifestyle changes. The balance of energy mix will also consider the impacts such choices may have on the rapidity of required transitions, the socio-economic implications with regard to competing needs and technological implications. In addition, the adopted measures will have the potential to deliver a low carbon growth plan for Nigeria. The focus is to deliver clean and affordable energy to the country's growing population and drive social development and economic prosperity. Such measures will also have the potential to deliver on national targets on power generation and energy access enunciated in national development policies and plans. The overall objective is to reduce greenhouse gas emissions principally from the power sector.

Policy Measures

- i. Expand the production and use of renewable energy, particularly solar and wind, both on-grid and off-grid
- ii. Promote energy efficiency and management activities that include new and innovative energy efficiency methodologies and techniques in power generation, including the use of gas-fired power stations, as well as retrofitting buildings and other infrastructure;
- iii. Reduce transmission and distribution losses
- iv. Facilitate full transition to clean cooking fuel
- v. Provide sustainable incentives and financial mechanisms to encourage and support the use of renewable sources of energy
- vi. Support cities in the country to undertake ambitious climate change mitigation actions

4.3 Health

The health care delivery system in Nigeria has performed very poorly ranking 187th out of 191 Countries, based on the 2000 WHO ranking. The Vision 2020 Sector report on the Health Sector also observed that: the public health care facilities whether at the secondary or tertiary (both state and federal) were in complete state of disrepair; and, that the budgetary provisions for the public health care system declined precipitously due to the devaluation of the naira, resulting in decrepit state of facilities. In addition, Immunization coverage had declined from about 80% in the early 1990s to 13% by 2003. The reality of this poor state of health system and services has been challenged by the recent Corona-Virus (COVID-19) pandemic, which stretched the health care facilities to the limit.

With increased and urgent need for the establishment of clinical laboratories, isolation and treatment centers for COVID-19 cases, government is determined to focus on health facilities and infrastructure that are climate resilient regardless of the urgency requires in the provision of these facilities. The main policy direction is to promote and provide climate resilient and quality health facilities and infrastructure for all the inhabitants of Nigeria.

Policy measures

- i. Promote equitable, efficient, high quality but affordable health services based on the primary health care approach to all citizens
- ii. Deploy renewable energy for health facilities and infrastructure
- iii. Promote efficient use and sustainable management of medical wastes
- iv. Support and fund primary, secondary and tertiary health systems and sector actors to adopt key elements of climate-smart healthcare
- v. Promote low-carbon procurement policies for pharmaceuticals and medical equipment
- vi. Improve basic sanitation and water supply to reduce the environmental and social risk factors people are exposed to
- vii. Increase Nigeria's capacity to manufacture essential drugs, vaccines and consumables from 40% to 80% of national need
- viii. Promote the integration of climate-smart healthcare into health sector strategies for universal healthcare coverage
- ix. Provide a blueprint for low-cost, health-promoting systems that reduce the effects of epidemic and pandemic diseases and viruses, mitigate greenhouse gas emissions and local pollution.
- x. Provide a blueprint for resilient systems that address both infrastructure-specific and disease-specific climate impacts
- xi. Strengthen the resilience of the citizens to the effects of epidemic and pandemic diseases and viruses

4.4 Industry

Nigeria's industrial sector currently contributes about one tenth of the nation's Gross Domestic Product¹. It is a key source of growth, jobs and food security. High consumer

¹ Nigeria's NDC Implementation Action Plan for the Industry sector (2017)

demand is the main force behind non-oil sector growth. However, inadequate power and infrastructure, quality issues and limited access to finance obstruct the path to industrialisation. The cost of energy tops the list of barriers. Insufficient power generation capacity is driving companies to use natural gas and diesel to self-generate power. Thus, while their growth and success help to reduce the level of unemployment in the country, their rapidly increasing rate of GHG emissions remains a source of concern.

The government is attempting to fast-track the renaissance of Nigerian manufacturing as a key source of growth, jobs and food security. The country's comprehensive industrial policy is set out in the Nigeria Industrial Revolution Plan (2014). With the current use of natural gas and diesel to generate power, increasing the industrial output of the country may lead to increasing rate of GHG emissions. The current industry sector's GHG emissions could increase from 4.2 Mt CO_{2e} in 2010 to 14.8 Mt CO_{2e} in 2030 if no measures to improve energy efficiency are implemented. Thus, government recognizes that as the sector grows there must be a coordinated shift to low emission production systems. The use of the best technology to ensure efficiency from the building of the facility to the fabrication of production equipment will reduce the demand for fuels and enhance overall efficiency.

Specific industrial energy efficiency plans that will be implemented with the overall objective of reducing GHG emissions in the industrial sector include the National Renewable Energy and Energy Efficiency Policy (2015), the National Energy Efficiency Action Plan (NEEAP) (2016), and the Sustainable Energy for All (SE4ALL) Action Agenda (2016). In particular, the NEEAP sets out a number of measures that work towards achieving the SE4ALL proposed targets for industrial energy efficiency. These targets were to improve on 2015 energy consumption levels by 20% by 2020 and by 50% by 2030 through energy efficiency, as well as making energy audits compulsory to all energy-intensive sectors by 2016.

Policy Measures

- i. Pursue an alternative and sustainable path to industrialisation that takes advantage of innovations, technologies and business models for improved energy efficiency in the industrial sector
- ii. Create and adopt green technology in industry and support low emission manufacturing systems
- iii. Pursue greening of industry to continuously improve environmental performance of industry
- iv. Accelerate industrial development utilizing energy mix with emphasis on renewables
- v. Promote energy efficiency networks for industrial enterprises
- vi. Set efficiency benchmarks for manufacturing and businesses against international best practice for industrial energy usage
- vii. Support local research and development of ICT capabilities to promote energy "smart technologies"
- viii. Promote appropriate financing mechanisms for climate-friendly and energy efficient investment projects

4.5 Oil and Gas

The Oil and Gas sector contributes up to 14% of the country's GDP, and is responsible for 95% of the foreign exchange earnings. It also contributes to 65% of the federal budget. The main GHG emissions in the sector are from gas flaring, fugitive methane emissions, on-site fuel use (upstream and midstream) and on-site fuel use from refineries. The combined contribution of flaring and venting to the environment is about 80% of emissions in the sector. The target is to reduce flaring down to less than 10% by the year 2020 and or end it completely by 2030. Eliminating flaring by 2030 could save around 64 million tonnes of CO₂ per year, and have large development co-benefits. This target is achievable if the right legislation and strategies are implemented. The Nigerian Gas Flare Commercialization Programme (NGFCP) (2016), Nigerian Gas Policy (2017), Flare Gas (Prevention of Waste and Pollution) Regulation (2018) and the Petroleum Industry Roadmap as well as the Nigeria Gas Masterplan contain indications to achieve the target.

Policy Measures

- i. Pursue low-carbon transition for oil and gas companies in the country
- ii. Support low-cost, technically feasible solutions to reduce methane emissions in oil and gas operations, including recovery and use of escaping gas
- iii. Incentivize the deployment of natural gas as Nigeria's major fuel for power generation, industrialization, and domestic use, particularly cooking, towards stopping gas flaring
- iv. Facilitate sustainable regulatory frameworks and incentives, as well as financial mechanisms to end gas flaring by 2030
- v. Investment and use of smart technologies in oil refining
- vi. Reduce fugitive emissions in the sector

4.6 Transport

The major transportation modes in Nigeria are road, water, air, rail and pipelines. Of these, the road is the most developed form of transport with Federal highways covering 34,340 km and the railway spanning 4000 km. The transport sector directly contributes an average of 3% to national GDP, and this is projected to increase to 5% in the next five years. The transport sector is a major source of GHG emissions. Nigerian vehicles emitted 1.49 trillion tons of CO_{2e} from 2000 to 2016. Under a business-as-usual (BAU) scenario, with an almost universal reliance on the road network for transport of passengers and freight in the country, GHG emissions from the transport sector could increase by up to 50% by 2035 and almost double by 2050. The BAU scenario would not only increase emissions, it would also put an even greater strain on infrastructure and services that are already struggling with demand and would, therefore, severely restrict socio-economic development. In addition, a lack of investment in climate resilient infrastructure would put current and new transport infrastructure at risk from the impact of climate change with the potential to disrupt, damage and destroy transport networks.

Nigeria is committed to promoting the integration of science, technology and innovation into sustainable transport systems by tapping into technological opportunities in the decades to

come. This is to bring about fundamental, transformative changes towards climate-compatible and climate-resilient transport systems. The country's vision for the transport sector is a fast, safe, efficient, affordable, gender-responsive, socially-inclusive, integrated and inter-modal transport system for goods and people. Inter-connectedness is central to ensuring an efficient and resilient inter-modal system. The policy direction is to induce a modal shift which prioritises moving freights from road to rail and inland waterways. Additionally, cost-effective mass transit alternatives for inner and inter-city passenger travel from road and air to rail and public buses will be developed to reduce GHG emissions from the sector.

Policy Measures

- i. Avoid inefficient transport or unnecessary travels
- ii. Improve the quality and coverage of public transport
- iii. Promote cycling and walking opportunities to help reduce CO₂ emissions
- iv. Facilitate and promote gender-friendly and socially inclusive modal shift from road travels
- v. Improve environmental performance of the transport sector
- vi. Promote the adoption of polluter pay principle
- vii. Incorporate BRT and light rails special requirement in urban areas
- viii. Promote public, private participation (PPP) in the development of the sector

4.7 Waste

The waste management methods in Nigeria are largely ineffective and rudimentary. Solid wastes are dumped haphazardly in ill-prepared landfills and open spaces. Wastes are generally handled through use of landfills, open-air burning, and open dumping in burrow pits and bushes. One of the most worrisome areas is the handling of municipal solid wastes, especially driven by non-biodegradable products such as plastics. In general, wastes constitute health hazards and contribute to the GHG emission in the country. The largest source is usually landfill methane (CH₄), followed by wastewater CH₄ and nitrous oxide (N₂O); in addition, minor emissions of carbon dioxide (CO₂) result from incineration of waste containing fossil carbon (C) (plastics; synthetic textiles). In 2015 wastes contributed 3 percent of GHG emissions in the country, and emissions from the sector are increasing at annual rate of 1 percent.

The key approaches to waste handling for GHG removals and overall climate mitigation include recycling, waste reduction, waste to wealth and energy recovery from wastes. The main policy direction is to significantly lower emissions from the sector with appropriate waste management and wastewater treatment.

Policy Measures

- i. End landfilling of untreated waste and transit into properly designed and managed landfills with state-of-the-art gas collection
- ii. Encourage and support adoption of environmentally friendly and gender responsive technologies to mitigate emissions from waste

- iii. Promote transition towards circular economy
- iv. Increase infrastructure for wastewater management to provide multiple benefits including improved public health and sanitation, conservation of water resources, and elimination of untreated discharges to surface water, groundwater, soils and coastal zones
- v. Support cities in the country to undertake ambitious climate change mitigation actions in the waste sector
- vi. Prevent dumping of manufactured goods and electronic wastes from other countries
- vii. Promote private, public participation in sustainable waste management

4.8 Water

Analysis of the water sector in the Report of the Vision 2020 National Technical Group on Water and Sanitation revealed that the total water supply coverage for the year 2006 was only 47%, implying that only about 68 million Nigerians had access to improved water supply source, leaving 77million without access. In addition, only about 18.45 million, 24.82 million and 43.42 million Nigerians within the rural, urban and national populations respectively, had access to Improved Sanitation facilities. The total drinking water demand by 2020 is 33.89 million litres per year disaggregated into: 8.65, 5.50 and 19.74 million litres per year for Rural, Small Town and Urban inhabitants, respectively. These translate into 280,000, 89,000 and 148,000 water points in the rural, small town and urban areas. In other words, these require the provision of 43,000 water points across the country, annually. Using standard requirement of one improved latrine to ten people, a total of 19.4million improved latrines will be required by 2020 to achieve 100% access. This translates to about provision of 1.6million latrines annually. The provision of drinking water and the treatment of wastewater require tremendous amounts of energy, the production of which is responsible for high amounts of CO₂-emissions. The policy goal of mitigation in the water sector is to promote climate-resilient water supply and sanitation facilities and infrastructure.

Policy measures:

- i. Improve the provision of water supply and sanitation facilities and infrastructure
- ii. Deploy renewable energy for water and sanitation facilities and infrastructure (eg installation of energy-efficient pumping systems; reduction of non-revenue water (NRW), i.e. leakage, metering errors and water theft; and. metering of water consumption)
- i. Introduce reforms in the establishment, management, operation and maintenance of water supply and sanitation schemes and services
- i. Develop a robust and effective operations and maintenance programme to ensure sustained water supply and sanitation services
- ii. Establish effective and sustainable Public Private Partnership for the provision of climate -smart water supply and sanitation facilities and infrastructure

5. ADAPTATION

Climate change is significantly affecting all sectors of our socio-economic development, including the natural ecosystems of the country. The sectors which are considered most vulnerable to climate change are agriculture and food security, forests and biodiversity, water resources, energy and infrastructure, health, human settlement, industry and commerce, transportation and communication. Climate change is also aggravating issues in education, livelihoods and security, as well as amplifying natural hazards (e.g. drought and flood) to becoming disasters, stress, migration and insecurity. The most vulnerable regions are the coastal areas in the extreme southern part and erosion and desertification-prone areas in the southeastern and northern parts of the country respectively. The most vulnerable groups include farmers, fisherfolks, the elderly, women, children, persons with disabilities and poor people.

As climate change is expected to increase the frequency and intensity of severe weather events, the country may become increasingly vulnerable to its impacts. For instance, sea level rise may lead to increasing coastal inundation and flooding of low-lying areas. Diseases such as malaria may likely have wider ranges and impact more poor people that are already most affected. Climate change may also have direct impacts on biodiversity. While some species like grasshoppers or other pests may increase in abundance or range, climate change may increase existing risks of extinction of many threatened species and lead to greater loss of biodiversity. Changing rainfall patterns could devastate the rain-fed agriculture on which so much of the population of Nigeria depends to survive. Increased occurrence of drought may lead to declining agricultural yields and diminished food security. Water supplies may also be altered, primarily through changes in temperature and rainfall.

The Government of Nigeria recognises that responding to climate change through adaptation initiatives would require concerted effort, over the near- and long-term, seek out opportunities and design actions to reduce its vulnerability. In doing so, it will explore a number of opportunities that exist to build a climate-resilient society that is able to withstand or recover quickly from difficult conditions caused by the adverse effects of climate change, including climate-related hazards and disasters by strengthening its coping or adaptive capacity. It will promote the efficient and sustainable use of its resources and combine new and old strategies and knowledge, as well as focus on finding alternatives to promote and implement long-term strategies that will deal with climate change to make the country's development process climate-resilient and climate-compatible.

Adapting to climate change entails taking the right measures to reduce the negative effects of climate change by making the appropriate adjustments and changes. It may also involve exploiting the positive effects of climate change. The general country's policy direction in adaptation is to reduce vulnerabilities of the people and promote community and ecosystem resilience to the impact of climate change, while ensuring that women, girls and other vulnerable groups are engaged and involved in planning and implementing long-term climate change adaptation interventions.

5.1 Agriculture

Nigeria's agriculture and food production systems are based on exploitation of natural resources, with extensive crop and livestock production systems, rain-fed agriculture, hunting, and fishing from natural water bodies. Climate change, in addition to non-climate drivers such as soil degradation, land tenure arrangements and poor technology, is expected to have significant impacts on these systems, and consequently food security. In particular, climate change is expected to intensify existing problems and create new combinations of risks. Farmers and agricultural practitioners need to employ adaptation strategies to cushion the effects of climate change. The common agricultural adaptation strategies include the use of drought resistant varieties of crops, crop diversification, changes in cropping pattern and calendar of planting, conserving soil moisture through appropriate tillage methods, improving irrigation efficiency and afforestation and agro-forestry. In the face of increasing complexity in the nature and character of climate change, government will improve national capacity (human, institutional, financial and technological) to adapt to the impact of climate change in the agriculture sector.

Enhancing resilience of agriculture to climate risk is of paramount importance, especially for protecting livelihoods of small and marginal farmers, particularly women and youth. Having effective climate change-induced agricultural adaptation policy measures will not only improve food security but will also contribute synergistically to carbon sequestration, enhanced conservation and biodiversity, improved quality of soil and water, protection of the watershed, healthier natural eco-systems as well as socio-economic stability. The main policy direction is to enhance the resilience of agricultural systems to climatic variability and change.

Policy Measures

- i. Promote efficient, gender-responsive, socially inclusive and climate-smart crop production, fishery and livestock development practices
- ii. Promote and support effective research and knowledge development and management to connect farmers, policy-makers, businesses and researchers to adapt to dynamic current and future climates scenarios
- iii. Develop and apply improved production and risk management technologies in agriculture
- iv. Increase the uptake of adaptation measures at farm and community levels
- v. Reinvigorate extension services, capacity building and technology transfer approaches to provide support to a wider group of farmers, including women and youth
- vi. Strengthen indigenous knowledge-based adaptation measures
- vii. Facilitate an enabling environment for enhanced public and private sector participation and financial investments to achieve adaptation at scale
- viii. Increase access to adaptation finance through economic incentives and value chain initiatives
- ix. Strengthen regulatory and institutional capacity to implement and disseminate technical solutions in adaptation to agriculture

5.2 Forestry

The forest sector is an important sector of the Nigerian economy and has been a major contributor to the national GDP, albeit with a declining influence to only about 2% in recent years. Forests, and the broader landscapes of which they are part, are key sources of livelihoods for millions of people in Nigeria. The forests have been dwindling at an annual rate of 3.5% during the last three decades due largely to pressure from agriculture, industry, human settlement and infrastructure. In addition, extraction of forest products, illegal logging, cutting trees for fuelwood and charcoal, and grazing of livestock have also contributed to the degradation of forests. Climate variability and change, combined with land conversion will affect the productivity of these ecosystems and their ability to sustain livelihoods.

The impacts of the climatic change and variability include the difficulty of tree replanting, retardation of the regeneration process, death of trees, and loss of habitat as well as biodiversity loss. The phenomenon is also exacerbating environmental challenges such as desertification, erosion, loss of biodiversity and water scarcity. This has substantially increased the vulnerability of rural livelihood and various key economic sectors to climate risk. Government recognizes that a changing climate represents one of the greatest challenges it faces in the management of the forestry sector.

The main direction of government policy is to make the forest sector climate resilient to increase and sustain production and to create value addition across the most valuable segments of its value chain. Successfully addressing the negative impacts of climate change on forests and forest-dependent people will be crucial to making progress towards sustainable development goals. To reduce the risk posed to its development prospects by climate variability and change, Nigeria is keen at strengthening the resilience of its forest's natural capital.

Policy Measures

- i. Treat forests as resources that must be properly accounted for.
- ii. Strengthen the management of forests and expand tree cover through gender-responsive, socially and environmentally-responsible reforestation and restoration initiatives
- iii. Facilitate sustainable regulatory frameworks and incentives, as well as financial mechanisms for the implementation of the REDD+ Strategy and the Great Green Wall Initiative
- iv. Mainstream climate change adaptation into forest management
- v. Enhance forest capacity for adaptation by reducing ecosystem vulnerability and also reducing exposure of the ecosystems to extreme events

5.3 Energy

Climate change is expected to bring warmer temperatures, a rise in sea levels, more frequent and severe extreme weather events, and decreased availability of natural resources such as fresh water. Warmer temperatures will also require the generation of more energy for cooling in Nigeria. In spite of the huge energy resources endowment of the country, it is far from meeting her present energy demand; talk less of that of future generations. Nigeria currently has an installed capacity to generate about 12,522 MW of electricity per day, but manages to produce approximately 4,000MW. This is far below the minimum demand for electricity estimated to be about 10,000MW per day even as at 2014². Furthermore, the limited electricity supply is beset by incessant power outages.

The precarious situation of energy development in Nigeria is increasingly being further compounded by its high rate of population increase and the challenges of climate change. Nigeria's energy mix is disproportionately fossil-dominated and the sector is vulnerable to the impacts of climate change, especially as a large proportion of current generation is from hydropower that is climate sensitive.

The energy sector does not only drive climate change due to greenhouse gas emissions, but is also being severely affected by its impacts. The whole value chain of the energy system – generation, transmission, distribution, as well as consumption – is being increasingly impacted by climate events. Droughts and floods will significantly affect hydropower generation output. Transmission and distribution lines are at risk of storm -induced catastrophic damage, which could cause expensive power outages. Energy demand is also set to increase as the warmer climate will call for additional cooling needs.

Adaptation measures imply reducing both exposure and vulnerability of the energy system to climate change hazards. Adaptation solutions, whether structural or policy-driven, exist for each energy stakeholder and market segment. Fortifying power plants close to coastlines prone to flooding and erosion can safeguard resilience. Diversifying energy generation sources can increase energy security and therefore the resilience of the whole energy system.

There are many types of adaptation measures for the energy sector. First, adaptation measures can be proactive, and reduce exposure to future risks, such as by planning the location of future power systems in less exposed areas. Second, adaptation measures can be reactive, and reduce the impacts on already installed systems, such as by fortifying a dam on an installed hydropower plant. The overall policy direction is to make the country's energy, particularly the electricity production, climate-resilient.

² PwC (2015): Powering Nigeria for the Future

Policy Measures

- i. Climate proof the energy sector for resilience
- ii. Invest in protective energy infrastructure to reduce loss and damage caused by climate-related extreme events
- iii. Promote de-centralised energy systems to increase resilience, with emphasis on mini-grids and stand-alone systems
- iv. Improve access to energy, particularly in rural areas
- v. Improve energy efficiency, water efficiency and demand—side management to alleviate supply constraints
- vi. Invest in early warning systems, including reliable and timely weather and hydro-meteorological observations combined with forecast models

5.4 Water

With an estimated 333 billion cubic meters/annum (bcm/a) of surface and 88bcm/a of groundwater resources (2013 Water Resources Master Plan), Nigeria is endowed with abundant water resources to support, agriculture irrigation, transportation energy and sustainable provision of water supply and adequate sanitation. In this regard, Nigeria is not, on the average, a water stressed country.

Despite its enormous water potential, water use for agriculture, industry, and domestic consumption in the country has been largely underdeveloped, due to the huge investments required to develop and manage the water infrastructure. According to the National Outcome Routine Mapping of Water, Sanitation and Hygiene Services (2019), the national average coverage for sanitation and water supply is 44% and 70% respectively. Although, access to safe water and sanitation remain a major challenge in the country. Only 26.5 percent of Nigeria use improved drinking water sources and sanitation facilities.

Access is a real challenge as population pressure depletes the underground source on which most private providers of fresh water depend. This implies that the future use has to depend more surface water source in dams and rivers, making organized water provision critical.

Detail analysis for the 2010 vision 20:2020 report indicate that the state of water supply, which is hardly able to meet the demand level, will remain more precarious by 2020. The situation could be further worsened by the effect of climate change on the country's water source. Strengthening resilience to climate change in the water sector is therefore central to sustainable development and poverty reduction in the country.

Climate extreme event such as flood and drought will have a dire consequence for the availability and use of water. The total value of destroyed physical and durable assets caused by the 2012 floods in Nigeria was estimated to be about US\$9.5 billion, while the total value of losses across all sector of economic activities was estimated at US\$7.3 billion, giving a combined value of these damages to be US\$16.9. The overall impact of the flood on real GDP

growth in 2012 was estimated at 1.4 percent, with 363 people killed, 5,851 injured, 3,891,314 affected, and 3,871,530 displaced (FGoN 2013). A worrisome aspect of the disaster is the disproportionate impact on women, girls and youth.

While flood may further ravage the humid areas to the south, decrease in precipitation is expected in the savanna north. This may result in increased drought frequency and decrease in surface water resources, particularly in the north. Thus, the northern part of the country may increase its depend on groundwater resources. Availability of water is further threatened nationally, and more so in the oil field region, from industrial pollution. Climate change threatens the country water resources, as water stress is already high in many parts of Nigeria. To sustain jobs, employment, economic growth and social stability, the government recognize the need for investment decisions to promote water security and climate change resilient growth and development.

Adaptation measures that deal with climate variability and build upon existing land and water management practice have the potential to create resilience to climate change and to enhance water security and thus directly contribute to the country sustainable development. The overall policy direction in the sector is climate resilient water resources management strategy that is cost – effective and contributes to the economic prosperity and poverty reduction through several pathways, while strengthening systems and capacity for long – term climate risk management. It will also integrate gender perspectives in the management of the sector.

Policy Measures

- i. Strengthen integrated water resources management (IWRM) for multilayered development of the nation's water resources infrastructure
- ii. Develop gender-responsive, social inclusive and resilient water and sanitation infrastructure
- iii. Invest in small-scale earth dams for multi-purpose use.
- iv. Promotes alternative water supplies, including inter and intra – basin water transfer
- v. Strengthen River Basin governance and scale-up regional cooperation, particularly along the major river basins and catchment areas
- vi. Increase network density of hydrometric network for early warning forecasting
- vii. Strengthen appropriate policy, regulatory and institutional reforms and provide economic instruments for water supply and demand management
- viii. Strengthen capacity for smart water management
- ix. Promote investment in the sector including through enhanced public and private sector participation.
- x. Deployment of renewable energy sources for water infrastructure

5.5 Transport

Climate change-induced extreme weather events are threats, which could be more severe in the future to Nigeria's transportation assets and infrastructure. In particular, the road transport, which constitutes about 95% of all the modes of transportation, is highly vulnerable to the impact of changing climate and variability.

Climate change will impact directly and indirectly on the siting, design, construction, operation or maintenance of transport infrastructure and services, cutting across the entire value chain. Global warming-induced stronger than normal winds and storms can lead to transport infrastructure failure; disruptions of transport operations for all modes of traffic and auxiliary infrastructure such as road signs, traffic signals, overpasses, train stations, and toll collection stations; and increased tree fall leading to the closure of railway tracks and roads.

More frequent disruption of air travel, flooding of airports and runways, damages of air transporting infrastructure, and serious air catastrophes by windstorms, wind shear, rainstorms, intense precipitation, lightning and convective systems are also possible impacts of climate change on the transport sector. There is also the possibility of adverse impacts on the air flying machine execution, leading to flight postponement or outright cancellation as a result of high temperature. Disruption and damage of the necessary connections to economic opportunities, education, healthcare, and important social interactions, leading to huge economic losses and in some cases, loss of lives. In addition, rising sea levels and changes to weather patterns pose severe and immediate threats to transportation system supply chains, which will result in business disruptions.

Resilient transport is necessary for Nigeria's sustainable development and society. Adapting the transport system to climate change would require substantial infrastructure investments. The government recognizes that the mainstreaming of adaptation in infrastructure planning is imperative. The main policy direction is towards a sustainable climate-resilient transport system.

Policy Measures

- i. Ensure a functional, socially-inclusive, gender-responsive, cultural appropriate and adaptable transport system
- ii. Revise and adapt standards and guidelines for transport infrastructure construction, maintenance and exploitation under different climatic scenarios
- iii. Promote and support research on the impacts of climate change on transport demand and supply
- iv. Undertake comprehensive evaluation of the vulnerability of transport networks and identification of response strategies
- v. Mainstream adaptation into transport planning, decision making and implementation
- vi. Promote public and private sector Investment in climate-proofed and climate-resilient transport infrastructure
- vii. Ensure diversification of transport modes with appropriate adaptive capacities

- viii. Make provision for diverse transportation options such as pedestrian, bicycle, and transit routes

5.6 Industry

Climate resilient industrial development involves continued efforts to mitigate changes in the climate while at the same time prepare industry to adapt to its impacts. Extreme weather events, in particular, will impact seriously on industry. In particular, due to the heavy dependence of the industry sector on various natural resources and raw materials, the productive capacity of manufacturing industry could be severely affected by climate change if not addressed appropriately in a timely manner. These relationships are not always obvious. There is even the concern that certain mitigation measures could aggravate vulnerability in some circumstances, while many adaptation measures would result in additional GHG emissions from industry, for example, from increased extraction of global resources for construction materials and energy, among others³. Effective solutions to climate change require a holistic approach that recognizes the interlinkages and potential trade-offs of different approaches, and leverages the synergies between mitigation and adaptation measures. This can also bring additional benefits such as climate financing that could not have been leveraged if addressed separately. The general policy direction of climate change adaptation in the sector is the promotion of climate-resilient industrial development.

Policy Measures

- i. Promote value chain-based approach for climate resilient industry
- ii. Harness the potential of clean technologies for climate resilient industrial development
- iii. Fostering innovation and strengthen entrepreneurship to develop new capacity for wealth creation whilst safeguarding the environment and promoting sustainable climate-resilient industrial development
- iv. Facilitate international partnerships to reinforce cooperation for climate resilience in the sector

5.7 Health

Nigeria's Health Outcome Indicators are inadmissibly high (WHO, 2017⁴). Although there are significant disparities across the Geopolitical Zones, the overall as well as disaggregated figures are worrying. For instance, the mortality rates of maternal and children under five years are 814 per 100 000 and 104 per 1000 live births, respectively. The Life expectancy at birth is 49 years, disability adjusted life expectancy at birth is 38.3 years; vaccine-preventable diseases are on the increase; the number of HIV infected persons is high (highest in Africa); and the Tuberculosis burden is very high (fourth in the world). Malnutrition is rife particularly

³ UNIDO (undated): Promoting climate resilient industry – <https://www.unido.org>

⁴ WHO (2017) Country Cooperation Strategy at a Glance.

https://apps.who.int/iris/bitstream/handle/10665/136785/ccsbrief_nga_en.pdf;jsessionid=0A85B039207137411DA8929697557548?sequence=1

among children with stunting rate of about 43.6%. Climate change is aggravating these precarious health situations. Concerted efforts are required to reduce the country's health sector exposure and sensitivity as well as enhance her adaptive capacity to climate change impacts. Under current and anticipated significant increases in the minimum and maximum temperatures as well as accentuated frequency and magnitude of intense rainfall, pathogenic complexes are expected to multiply exceedingly, escalating the incidences of many diseases including diarrhoeal, cholera, malaria and meningitis. Also, there will be more incidences of non-communicable diseases such as hypertension and neurological disorders. Nigeria is currently implementing its National Health Adaptation Strategy focused on climate change. This is an advantage which should strengthen the overall national response in the area of adaptation.

The vision of the health sector is to promote sustainable quality health systems and services for all the inhabitants of Nigeria in changing climatic conditions. The main direction of government policy in the health sector is to make it climate-resilient and be able to pursue the attainment of SDG 3, which is to *ensure healthy lives and promote wellbeing for all at all ages*. These will include: training and retaining health officials of all categories, providing adequate critical health infrastructure and ensuring sustainable funding of the sector.

Policy Measures

- i. Strengthen the extant adaptation strategy for the health sector including aligning it with the National Adaptation Plan (NAP) Framework.
- ii. Strengthen surveillance programmes for monitoring human health under a changing climate
- iii. Promote climate-resilient infrastructural development and maintenance in the health sector.
- iv. Promote policies that will retain qualified health personnel that will enhance health sector resilience
- v. Create a functional, effective and transparent programme for their retention.
- vi. Promote community hygiene and general cleanliness in all sectors.
- vii. Promote preparedness in all areas of primary healthcare delivery and response to climate-induced diseases and pandemics.

5.8 Information and Communication Technology (ICT)

Nigeria's Information and Communication Technology (ICT) has been diffusing widely, and redefining the way in which information and knowledge are generated, captured and stored, processed and disseminated among an increasingly inter-connected society. The National Bureau of Statistics indicated that Nigeria's ICT sector is dominated by GSM with about 99.1% of the total subscribers and 99.7% (c.99m internet subscriptions) of all active data/internet subscriptions. With a total of 147m GSM and 1.2m CDMA subscribers, as well as 125,196 fixed wired line and 51,383 wireless subscriptions, the sector contributed about 9% to the real GDP in the first quarter of 2016.

The linkages between ICT and climate change adaptation can be found at various levels that are closely interconnected by dynamic feedbacks and interactions. The impacts of climate change manifestations such as more frequent and intense extreme events, heat-waves, flooding, and sea level rise can have the following disruptive effects on the sector's operations⁵:

- i. accelerate the degradation of physical assets and ICT infrastructure,
- ii. affect the supply of materials, interrupt transport and logistics,
- iii. disrupt the availability and reliability of ICT services,
- iv. increase operational business costs across the sector,
- v. reduce revenue, and
- vi. challenge the sector's ability to conduct repairs and recover from the effects of climatic events, among other direct and indirect impacts

Given the rapid population growth of the country and concomitant increasing use of ICT for various socio-economic activities, the expected challenges posed by climate change to the sector could be serious if the sector's adaptive capacity is weak. Some of the factors that may negatively affect the country's ICT sector are increasing magnitude and frequencies of intense precipitation, increasing temperature and frequencies of high extremes as well as persistency of hot spells, increasing frequencies and speeds of windstorms and gusts, sea level rise, storm surge and wildfire. These, among others, will increase the risk to ICT manufacturing facilities and infrastructure as well as the need for ICT solutions.

In response to these impacts, Nigeria will adopt anticipatory adaptation measures that will be closely linked to the generation of short- and long-term cost savings for the implementation of novel management strategies to deal with change and take advantage of emerging market opportunities. It will also strengthen the operational and resource efficiency of ICT infrastructure and service providers and customers reliant on ICT services at multiple levels. The main entry point for the national response is to broaden awareness of the risks that climate change poses to a company's physical assets, supply chain, business continuity, and employees, as well as an understanding of how the ICT sector can play a role in helping customers adapt to increasing disruption, resource constraints, and information needs⁶. The national policy direction is to make the ICT sector in the country climate resilient.

Policy Measures

- i. Adopt adaptation measures linked to the generation of short- and long-term cost savings
- ii. Promote novel management approaches to deal with change and take advantage of emerging market opportunities
- iii. Strengthen operational and resource efficiency of ICT at multiple levels
- iv. Mainstream Information and Communication Sector planning in the adaptation planning processes
- v. Promote and support research and innovation in ICT

⁵ ITU (2014): Resilient Pathways: the adaptation of the ICT sector to climate change.

⁶https://www.bsr.org/reports/BSR_Climate_Change_Adaptation_ICT.pdf

- vi. Promote the development of an ICT platform for climate system and an open access system for the data for all climate change adaptation stakeholders
- vii. Strengthen the use of information and communication networks for decision making and planning on climate change impacts, vulnerability and adaptation
- viii. Strengthen access to, ease affordability of and support growth in mobile, broadband, and internet goods and services

5.9 Human Settlements

Urban and rural settlements in Nigeria are already experiencing the effects of climate change. Understanding and anticipating these changes are imperative for helping our cities towards a more sustainable future. Settlements would have to be made more resilient to climate-related disasters and long-term climate risks managed in ways that protect people and encourage prosperity. It also means improving their abilities to reduce greenhouse gas emissions and enhance their adaptive capacities.

Policy Measures

- i. Support main settlements to develop and undertake ambitious climate change adaptation actions.
- ii. Strengthen institutional capacity for urban development and promotion of climate-resilient cities
- iii. Strengthen socially inclusive and gender-responsive land use planning and promote urban renewal.
- iv. Strengthen regulatory and institutional frameworks to ensure resilient settlements.

5.10 Security

Recent years have witnessed increasing concerns about the linkage between climate change and insecurity. A number of complex interwoven causal mechanisms ranging from conflict over resources, economic damage and risk to coastal cities and critical infrastructure and loss of territory and border disputes to environmentally induced migration, radicalization, tension over energy supply and threat to international governance have been identified as contributing to the concerns.

Extreme events such as droughts and floods are leading to an immediate loss of livelihoods and/or food insecurity and decrease the population's adaptive capacity. The effects can be particularly severe and long lasting. The northern part of the Nigeria, particularly the north-eastern part, is one of the hardest hit regions to face the adverse impacts of warmer global temperatures. A major consequence of changes in the climatic conditions in the region is the shrinking of Lake Chad from about 45,000 km² in 1960 to less than 3,000 km² in 2013. Increasing aridity of the region has left millions of people struggling to survive in the face of increased pressure on dwindling natural resources, the huge decline in fish production, and the reduction in livestock.

The impacts of the changing climate are eroding the assets, investments and futures of families, communities and the State at large. As a result, the number of internally displaced

persons is increasing and this jeopardises social and political stability. Social effects related to the consequences of climate change, scarcity of resources and natural disasters could play an important role in giving rise to various conflicts.

This is leading to the breakdown of social harmony and cohesion, increasing competition over scarce resources, a collapse of traditional leadership structures and increasing stress on the political leadership structures of the state. In addition, insecurity exacerbates women's vulnerability to sexual violence and loss of livelihoods. In this way, climate change acts as a threat multiplier, causing widespread instability in socio-political settings that may deepen existing social and political tensions and at times leads to new ones. It also opens up the opportunity for non-state actors to intervene and exploit the situation, further undermining the security and stability of the state. Loss of livelihoods and the resultant deepening of poverty, particularly among women and girls may also be serving as a recruiting ground for extremist groups in northeast Nigeria, resulting in a higher conflict risk.

The consequences of climate change are likely to continue to generate gender-based violence and large-scale migration, which can potentially lead to various sorts of conflicts including group vs. group conflict, as frequently witnessed among herders and farmers. Forced migration often leaves women and girls to manage the ecosystem, without being actively involved in the discourse around home-grown solutions. Thus, global warming and climate change have the potential to challenge the development efforts, human security and the future of the country. The long-term policy direction of the government of Nigeria with respect to climate change impact on national security is the sustainable mainstreaming of climate change into national development and human security.

Policy Measures

- i. Integrate climate change in national and regional security strategy
- ii. Strengthen the capacities of security agencies and institutions to mainstream gender perspectives and climate-risk considerations in security planning and operations
- iii. Strengthen capacity to anticipate and respond to disasters and impacts on internal migration and security
- iv. Develop robust projections in terms of climate change impacts for the formulation of appropriate policies towards reducing vulnerability
- v. Promote open and constructive dialogue for coordinated multilateral mechanisms to address climate risks and development of effective policy responses and strategies on climate change-security issues
- vi. Institutionalise inclusive, participatory decision-making process to reflect the voices of women, girls and youth as ecosystem managers under increasing insecurity
- vii. Develop and implement strategies that allow for better management of and lessen the impact of climate variability on livelihoods and agricultural production to enhance security.
- viii. Strengthen rural infrastructure and promote sustainable rural livelihoods
- ix. Minimize the existence of ungoverned spaces
- x. Integrate migration and human displacement issues in national climate change planning

6. ENABLING CONDITIONS

Climate change will continue to be a threat and opportunity to the sustainable development of Nigeria. The government recognizes that the effective management of climate risks in the country depends on enabling political, institutional and legal environment as well as the participation of all stakeholders. There are a number of policies, strategies and plans which have some relevance to national response to the challenge of climate change in sectors of national development. They constitute potential instruments that are imperative for the facilitation of an enabling environment for the strengthening of national resilience. There are many relevant policies, strategies and plans that can address general adaptation and mitigation measures in country's pursuit of climate-resilient development. Other aspects of national response to climate change impacts are contextualized within the following elements, which will be properly harmonised to promote climate-resilient development:

- i. Legal framework
- ii. Institutional/Governance framework
- iii. Education, public awareness, participation and access to information
- iv. Finance, finance mobilization and investment
- v. Technology development and transfer
- vi. Research, innovation and development
- vii. Capacity building, training and institutional strengthening
- viii. International cooperation
- ix. Monitoring and Evaluation
- x. Gender considerations

These enablers will be provided in an integrated manner to avoid duplication among relevant agencies under an overarching low-carbon emission development (LED) strategy within the context of a multi-sectoral and multi-disciplinary approach.

6.1 Legal framework

A legal framework, amongst other things is aimed at providing a mechanism to achieve any set policy objective and provide legal backing for compliance with such policies. Within the context of climate change governance in Nigeria, government recognises that a functional legal framework to guide national response to climate change will among other things:

- i. clarify roles and responsibilities of different layers of governance (Federal, state and local government/communities);
- ii. enhance cooperation for problem solving among different sectors – government, private sector, research institutions, CSOs;
- iii. promote the existence of rules, regulations and laws on climate change that are needed for compliance and enforcement of measures adopted in the national climate policies, plans and strategies;
- iv. clarify intersection of climate change and other legal and governance areas such as taxation, energy, transport and forestry and other climate related issues;
- v. discourage policy reversal and inconsistency in approach to addressing climate mitigation and adaptation;
- vi. facilitate the establishment of an authority instrument on the National Assembly to appropriate sufficient resources for climate actions;

- vii. promote coordination of climate change response goals with other relevant development agenda such as the Sustainable Development Goals (SDGs), Agenda 2063 and the Sendai Framework on Disaster Risks Reduction; and
- viii. continue to mainstream climate change into national development and budget plans and strategies.

The legal framework to effectively deal with climate change and its associated threats to human and ecological existence will encapsulate the 1999 Constitution (as amended), International Human Rights Laws including the African Charter on Human and Peoples' Rights, environmental statutes and the international Conventions to which Nigeria is a signatory. In addition, there are national laws such as the Child Rights Act, The Violence Against Persons Prohibition Act and Discrimination Against Persons with Disabilities (Prohibition) Act, among others that are relevant. This legal framework, as an integral part of the National Policy on Climate Change, will consolidate, strengthen, provide and extend legislation for climate-compatible and climate-resilient development and enhance adaptation capacity whilst also providing for effective implementation and enforcement procedures.

Policy Measures

- i. Facilitate the passage of an Act (*Nigeria Climate Change Framework Act*) that will serve an overarching legal instrument for integrated climate change governance in the country.
- ii. Ensure harmonization of sectoral regulations to align with the proposed *Climate Change Act* and their implementation
- iii. Promote sector specific legislative and regulatory amendments to establish and/or strengthen the enabling frameworks for mitigation and adaptation actions
- iv. Accelerate the domestication of relevant international instruments, treaties, agreements that deliver climate co-benefits and/or enhance the attainment of the nation's obligations under the UNFCCC.

6.2 Institutional framework

Strong country ownership, shared vision and participatory decision-making are critical factors for successful implementation of the national response to climate change. Nigeria has 36 states plus the Federal Capital Territory (FCT), with each layer of governance assigned constitutional responsibilities of managing the environment, and by extension climate change. It also has a well-defined management and coordination arrangement for the management of climate change in the country which reflects the three-tier government structure comprising the Federal, State and Local Governments

In the process of implementing this Policy, the Department of Climate Change (DCC), which was established in December 2011 in the Federal Ministry of Environment, drives the national response to climate change at the national and international levels as the country's focal point to the UNFCCC and works with Ministries, Departments and Agencies through the *Inter-Ministerial Committee on Climate Change*. Its capacity will be strengthened to enable it deliver the elements of this National Policy.

Policy Measures

- i. Align and strengthen the capacity of relevant institutions to manage climate-related challenges
- ii. Encourage the implementation of mitigation and adaptation initiatives at all levels of governance
- iii. Promote the roles of States and Local Governments in climate change governance

6.3 Finance and Finance Mobilization

Mitigating and adapting to the impact of climate change in Nigeria will be very costly and will further compound the country's socio-economic development. The Federal Ministry of Environment estimates that the implementation of the country's NDC will require about \$142bn in the next decade. The Government recognizes that strengthening the frameworks for attracting domestic and international financing for low carbon and climate resilient development is critical. Meeting the targets of the sustainable development goals and increasing growth and poverty reduction is highly dependent on adequate, timely and sustained funding of climate activities.

The government of Nigeria has issued Green Bonds as innovative means and alternative way of raising climate finance, and has released the guidelines for the Green Bonds that target about \$248 million⁷ in climate finance to support national projects over the next decade in key areas that include:

- i. Renewable energy (solar, wind, hydropower)
- ii. Energy efficiency (efficient building energy management)
- iii. Sustainable waste management (pollution prevention and control)
- iv. Sustainable land use (forestry, agriculture and aquaculture)
- v. Conservation (biodiversity and natural systems)
- vi. Clean transportation (rail, mass transit system, bus rapid transit (BRT) schemes)
- vii. Sustainable water (water treatment plants, water distribution infrastructure, water capture and storage infrastructure)

Nigeria recognises the huge opportunity it has to build a more robust climate finance mechanism, taking advantage of its global networks and linkages. Thus, the main policy direction is to mobilize and align national climate financial mechanism with global ones, including the Green Climate Fund and others available through private sector arrangement (national, regional and international financial institutions). Nigeria will embark on an intensive climate finance mobilization and greater investment for sustained climate financing.

⁷ The first set of bonds for \$35m was issued in 2017, while the second set for \$49m was issued in May 2019

Policy Measures

- i. Develop and Implement a National Climate Finance Strategy that is gender-responsive and socially inclusive
- ii. Facilitate the establishment of the National Climate Change Trust Fund
- iii. Facilitate investment to meet climate financing needs
- iv. Mainstream climate finance into national and subnational budgets with appropriate monitoring and tracking systems
- v. Explore private sector participation in the use of Green Bonds and other innovative financial instruments
- vi. Strengthen existing national institutions for climate financing for enhanced capacities to mobilize finance from national and global windows

6.4 Capacity Development

The complex and cross-cutting nature of climate change requires the development of both human and institutional capacities including appropriate gender and social inclusion skills. The Paris Agreement acknowledges capacity-building as a fundamental precondition to foster enhanced and sustained coordination and coherence to enable governments and stakeholders to cut emissions and adapt to climate change. Various climate actors and stakeholders (governments, departments and agencies, the private sector, communities and development partners) need to collaborate to strengthen knowledge and capacity for managing climate risks. The Policy direction on capacity building is to increase human and institutional capacities to address issues pertaining to climate change

Policy Measures

- i. Strengthen national and sub-national government capabilities of mainstreaming climate actions and implementation, including linkages
- ii. Enhance the skills and capabilities of staff in relevant and participating institutions including capacities to mainstream gender concerns into national response to climate change
- iii. Ensure high level political commitment for enhanced capacity development
- iv. Facilitate public and private sector investments in capacity building programmes for sustained response to climate change

6.5 Private Sector

The private sector is a critical partner for a comprehensive climate change response and strategy. Inclusion of the private sector in climate change adaptation and mitigation planning and activities is not only strategic and well-informed but a key part of the country's efforts in meeting her NDC targets.

Engaging the private sector to promote green growth and climate friendly actions and activities has become necessary. This is even more so considering that the financing required

for an orderly transition to a low carbon, resilient economy is enormous. Furthermore, it is accepted that private climate initiatives can reduce GHG emissions significantly.

The possible areas of contribution by the private sector in addressing climate change include:

- i. Mobilising financial resources and technical capabilities,
- ii. Supporting the efforts of governments,
- iii. Broadening participation and building partnerships to create new opportunities to technologies, services and markets,
- iv. Developing and adopt low carbon operations, technologies and services,
- v. Expanding and access new markets,
- vi. Facilitating efficient resource management and savings,
- vii. Playing a complementary role in providing additional information and motivation to achieving emissions reductions,
- viii. Harnessing opportunities through the building of partnerships with other businesses, associations, NGOs, government agencies themselves and development partners while taking advantages of the resources, networks and expertise provided to implement climate actions and projects.
- ix. Catalyzing local technological capabilities and invention to provide climate solutions

The policy direction is to secure the interest of the private sector in promoting investments in and financing of climate response initiatives.

Policy Measures

- i. Encourage information sharing that support the raising of awareness of the private sector to understanding climate-related risks and opportunities, including the business case for climate mitigation and adaptation;
- ii. Provide enhanced technical and institutional capacities for private sector actors to scale up adaptation and mitigation actions that are gender-responsive and socially inclusive
- iii. Assist the private sector incorporate adaptation and climate resilience into their business operations.
- iv. Promote economic incentives to catalyze low-carbon investments
- v. Support Financial services entities with appropriate policies to play an adequate role of providing the financial and de-risking products needed to fund innovations necessary for climate actions.
- vi. Encourage private sector participation in promotion of Insurance to build climate resilience
- vii. Provide clear guidance on the range of business opportunities available (including carbon markets including Article 6) towards contributing to the attainment of national commitments under the UNFCCC

6.6 Technology and Innovation

Nigeria recognises that technology and innovation are central for addressing environmental problems. Modern technologies can help address the climate crisis in many new ways by helping the country to move toward a low carbon climate resilient development pathway. Such technologies include:

- I. solar (photovoltaic, thermal);
- II. wind power generation;
- III. energy-efficient light bulbs such as compact fluorescent lights;
- IV. landfill methane capture;
- V. improved cook stoves; drought tolerant crop varieties;
- VI. conservation agriculture; drip irrigation technology for arid and semi---arid regions; and
- VII. water harvesting technologies, among others.

The main policy direction is to move the country's economic base from natural resources economy to a knowledge-based growth pathway that is low-carbon, gender-responsive and socially inclusive using available and innovative technologies.

Policy Measures

- i. Promote, facilitate and finance access to and the development, transfer and diffusion of environmentally appropriate, gender and youth friendly technologies, for climate-resilient development
- ii. Create an enabling environment (including policy, legislation, regulation and institution) for the development of appropriate technologies
- iii. Develop a framework for the periodic assessment of the progress made in the development of clean technologies which will form part of Nigeria's reporting obligation under the UNFCCC
- iv. Encourage and support active participation of Nigeria in the implementation of the Technology Framework established under the UNFCCC
- v. Strengthen international, regional and national capacities in cooperative actions in research and technology assessment and issues of international property rights

6.7 Research and Development

Research and Development will promote innovative interventions in the areas of climate change adaptation and mitigation, climate finance mobilization and utilization, socio-economic issues, security, gender including the roles of market and non-markets approaches at both national and international levels. Targeted and focused research will, among others, help to:

- I. Improve understanding of the climate system and its drivers;
- II. Improve understanding of climate change impacts and vulnerability;
- III. Increase understanding of adaptation pathways;
- IV. Identify the mitigation options that reduce the risk of longer-term climate change;
- V. Improve decision support and integrated assessment, and

VI. Facilitate international co-operations and partnerships

The main policy direction is to build research capacity that improves the country's ability for deeper understanding, proper anticipation and response to climate change impacts and vulnerabilities. Appropriate technology for research in various aspects of climate change including resource management and products will be developed.

Policy Measures

- i. Strengthen the integration of natural and social sciences, engineering, and other disciplines
- ii. Integrate climate science research into national education system
- iii. Ensure availability of observations, monitoring, and infrastructure for critical data collection and analysis
- iv. Build national capacity for climate assessment through training, education, and workforce development that ensures gender equity and social inclusion
- v. Enhance the development and use of scenarios
- vi. Promote international research and collaboration

6.8 International Cooperation

Climate change, as a global challenge, demands global cooperation. Nigeria is strongly committed to the achievement of an effective and equitable international agreement on climate change, particularly the Paris Agreement, and it recognises the importance of its leadership role in Africa in this regard. The government will fully participate in the negotiations, development and implementation of all national and international agreements, obligations and all forms of cooperation agreements to secure and ensure the compliance with, and enforcement of, all climate change-related conventions, treaties and agreements to which Nigeria is a signatory

Policy Measures

- i. Play lead role to secure broad-based and sustained co-operation for an equitable distribution of climate change efforts across developed and developing countries
- ii. Maintain and sustain membership as party to UNFCCC, Kyoto Protocol and the Paris Agreement and all other related agreements like the UNCCD, UNCBD, Sendai Framework on Disaster Risk Reduction, FAO, WMO among others.
- iii. Promote and sustain South-South cooperation in the areas of climate change development, especially scientific and technological development and transfer
- iv. Institutionalise the Donor-Coordinating Forum in the country to ensure that development assistance to climate change response aligns with national priorities, while duplication and overlaps of interventions are avoided
- v. Institutionalise a yearly consultative forum (coordinated by the Focal Point) with local and international development partners and other critical stakeholders including civil society organisations, non-governmental bodies, communities and other non-state

actors to evaluate performance of policy implementation and strengthen local cooperation.

7. IMPLEMENTATION STRATEGIES AND ACTIONS

7.1 Mainstreaming Climate Change Concerns into National Development

Mainstreaming climate change concerns in all national and relevant sectoral policies, planning and development processes is critical to achieve the goal and objectives of the Policy. The Department of Climate Change in the Federal Ministry of Environment will take the leadership role in ensuring that all national and all sectoral policy planning and development processes mainstream climate change considerations, working closely with relevant MDAs at national and state levels.

Policy Measures

- i. Institutionalize inclusive governance and integrated approach to climate change management by explicitly identifying and integrating mitigation and adaptation considerations in all sectors
- ii. Institutionalize strategic climate change assessments and management approaches to all policies, programmes and plans
- iii. Ensure synergies between Vision 20:2020 and ERGP and the Policy as well as with other National and State Development Plans
- iv. Ensure that all significant development projects are climate-change proofed

7.2 Mainstreaming Gender and Social Inclusion

The global consensus is that climate change affects men, women, boys and girls differently because of the inequalities between them, caused by gender-based roles in society and varying degrees of vulnerability. The 2007 Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) emphasised that the impacts of climate change will vary depending on gender, age and class, with the poor most likely to suffer. Climate change tends to exacerbate existing gender inequalities. Women, in particular, may thus face larger negative impacts.

Vulnerable groups especially women, children, small-holder farmers, persons with disability, elderly persons and youth commonly face higher risks and greater burdens from the impacts of climate change in situations of poverty. Their low participation in decision-making processes and labour markets compound inequalities and often prevent them from fully contributing to climate-related planning, policy-making, implementation, monitoring and evaluation. Women are also the majority of the world's poor and are more often responsible for household food production, family health and nutrition, and management of natural resources - sectors that are particularly sensitive to climate change.

But women are not simply victims. This Policy recognises them as agents of change with unique knowledge and capabilities. Encouraging and supporting their leadership to address climate change and inform policy is one way to ensure that a gender perspective is included; without this, climate policies could fail to be effective

Nigeria has a National Gender Policy and among other things a Federal Ministry of Women Affairs that seeks to promote issues of gender equality and equity in the country. The country also recognises that certain women and other vulnerable groups have higher susceptibility to climate change impacts owing to their age (children and elderly), gender (particularly pregnant women), social marginalization (associated in some areas with indigenous populations, poverty or migration status), or other health conditions like HIV/AIDS. These vulnerable groups do not have the wherewithal to cope with the costs of health and other problems associated with climate change.

Involving women, girls and other vulnerable groups in the design and implementation of climate change management programmes is essential for effective management of the impacts. This is with respect to ensuring that no group is left behind in the efforts to minimize the impacts. It is also in relation to population growth as a driver of climate change. High population growth rate is putting pressure on the environment and natural resources causing environmental degradation which aggravates the adverse effects of climate change. Therefore, incorporation of demographic dynamics such as population density, urbanization, reproductive health, and family planning in development plans will help in dealing with effects of climate change.

The Government is committed to gender mainstreaming into climate change policies, programmes and actions, and is working with relevant stakeholders to develop innovative strategies ensure an engendered action plan for climate change planning and programming. In particular, it recognizes the need for gender mainstreaming into the implementation of the Paris Agreement and the country's NDC.

Policy Measures

- i. Enhance understanding of the overall gender dimensions of climate change
- ii. Address specific inequalities that contribute towards the disproportionate exposure and vulnerability of women and other vulnerable groups to the effects of climate change, and the role of women as key agents of change in climate responses
- iii. Support responses that are complementary to the goals of gender equality, women's empowerment, and climate change adaptation and mitigation
- iv. Incorporate gender perspectives in climate change responses and climate finance processes
- v. Ensure that women participate equally and actively alongside men and are enabled to take up leadership positions throughout the climate change programme management cycle
- vi. Bridge data gap on gender and climate change
- vii. Invest in women, youth and other vulnerable groups to participate effectively in national climate change response

7.3 Roles and Responsibilities

As a cross-cutting issue, climate change management and governance require that all stakeholders work together. Thus the implementation of the Policy will involve many different

groups, including private sector, civil society ,community and faith-based organizations, local communities , the public and government agencies at local, state , national and regional levels. A key element is defining the roles and responsibilities of the various groups within the climate change governance structure that will be utilized for the implementation of the Policy.

Policy Measures

- i. Strengthen the capacity of the Department of Climate Change in collaboration with other relevant technical Departments in the Federal Ministry of Environment to play the oversight role of monitoring the implementation of the policy
- ii. Develop and implement legal and institutional frameworks for cooperative and collaborative management of climate change between the Federal Ministry of Environment and other MDAs
- iii. Strengthen government capacity to assess, negotiate and monitor investments, contracts, leases and concessions used for managing climate change for sustainable development
- iv. Strengthen the capacity of the educational system to provide pertinent climate education and research

7.4 Public Participation and Partnerships.

The key criterion for achievement of climate-resilient development is broad public participation in decision-making. Promoting climate compatible development is the responsibility of each and every Nigerian. A major responsibility of government and NGOs is to assist local communities to become aware of the impacts of climate change on their survival and support them to enhance their adaptive capacity. Thus, critical to the effective implementation of the objectives of the Policy is commitment and sincere involvement of all institutions and sectors of the society. Government, the civil society organizations (CSOs), Community Based Organisations (CBOs), Faith Based Organisations, (FBOs), organized and informal private sectors and trade unions and other organizations will be partners in the implementation of climate change policy objectives in Nigeria.

Policy Measures

- i. Build public support through mass education and awareness
- ii. Develop and implement strategy on partnership and stakeholder involvement to enhance climate change management.
- iii. Develop and implement strategy for building capacities and capabilities among the various stakeholders to effectively manage climate change
- iv. Promote investments in climate change response and programmes by providing appropriate economic incentives.