



Federal Ministry of Water Resources

NATIONAL WATER RESOURCES POLICY

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Abbreviations and Acronyms

DFID	Department for International Development
ESA	External Support Agency
FGN	Federal Government of Nigeria
FMWR	Federal Ministry of Water Resources.
IWRM	Integrated Water Resources Management
JICA	Japanese International Cooperation Agency
LGA	Local Government Authority or Local Government Area
M&E	Monitoring and Evaluation
MOU	Memorandum of Understanding
NEEDS	National Economic Empowerment Development Strategy
NGO	Non-Governmental Organization
NWP	National Water Policy
O&M	Operation and Maintenance
PPP	Public Private Partnership
QWSP	Qualified Water Services Provider
RUWASSA	Rural Water Supply and Sanitation Agency
SEEDS	State Economic Empowerment Development Strategy
SWA	State Water Agency (which can refer to either the State Water Corporations, State Water Boards or State Water Authorities)
SWRC	State Water Regulatory Commission
TA	Technical Assistance
UWOC	Urban Water Operating Corporation
WASCOM	Water and Sanitation Committee
WB	The World Bank
WCA	Water Consumer Association
WHO	World Health Organisation
WMO	World Metrological Organisation
WIMAG	Water Investment Mobilisation and Application Guidelines
WRC	Water Regulatory Commission
WSP	Water Service Provider
WSA	Water Supply Agency
WSS	Water Supply Services
WSSRL	Water Supply Services Regulatory Law (Model)
WSSSRP	Water Supply and Sanitation Sector Reform Project
VBWSHE	Value Based Water, Sanitation and Hygiene Education
WHYCOS	World Hydrological Cycle Observing System (WHYCOS)

1. Introduction

1.1. Background

The Water Resources Policy of Nigeria is a statement of the Government's philosophy and objectives for the nation's freshwater and possibly marine water resources including its strategies for achieving its set goals. In Nigeria, water is undoubtedly the most important natural resource the Country has and is unfortunately the most undervalued and neglected natural resource. In no part of Nigeria is freshwater of sufficient quantity and quality that it can continually be misused, abused and mismanaged in the way it has been in past decades without future dire consequences arising. Water scarcity combined with over-exploitation of the available resources threatens Nigeria's sustainable development. Rapid economic and population growths have led to over-commitment of available surface water resources, over-exploitation of groundwater resources in many areas and unreliable access to water – all combining to affect the livelihood of many, particularly rural and poor people especially in "Sahelian" Northern Nigeria.

Nigeria's first draft Water Resources Policy was formulated in the year 2004 following the National Water Resources Master Plan studies in 1984 and 1993, the enactment of the Water Resources Decree 101 (Water Act 100 of the Federal Republic of Nigeria) of 1993 and the current Water Resources Management Sector Reform Programme which commenced in 1999. The 2004 draft policy was based on the philosophy and principles of Integrated Water Resource Management (IWRM). This revised draft policy document takes into account the new developments in the sector since including the review of the 1993 Water Resources Master Plan and the current Water Resources Master Plan prepared in 2013.

For years, water services in Nigeria adopted a "top-down and supply-side approach, which has failed for many reasons including poor community and other stakeholders' participation; poor management of the infrastructure and inadequate financial resources. The availability of water in both quantity and quality is severely affected by anthropogenic activities, climate variability and climate change, with more extreme weather events. Demand is increasing as a result of population growth and other demographic changes (in particular urbanization) and agricultural and industrial expansion following changes in consumption and production patterns. Thus demand outstrips supply at critical times of the year or in years of low water availability.

Similarly, in many areas of Nigeria, groundwater is a viable and critical source of water including being utilized for domestic use, livestock, irrigation farming and industrial use. The on-going groundwater resources development in the Country is being carried out without sufficient data on the resource potential, in terms of quantity and quality, and lack of adequate regulations to monitor the activity. This has led to both underutilization, and in some places overexploitation with interference in the existing groundwater sources, notably in coastal areas, which may result in saltwater intrusion.

The underlying philosophy of this policy is the recognition that water is a key to sustainable socio-economic development as it has a direct effect on the population's health conditions, environmental preservation, including achievement of international development targets.

Water should also be seen as a scarce commodity having real value which must as a matter of urgency be managed holistically. There are thus two major principal goals of this policy which are (1) protecting and enhancing the quality of the nation's water resources; (2) promoting the wise and efficient management and use of water.

Water is a key driver of economic and social development. It also has a basic function in contributing to maintaining the integrity of the natural environment. Water is one of a number of vital natural resources and it is imperative that water issues are not considered in isolation. Managers often have to make difficult

decisions on water allocation to competing uses as increasingly they have to apportion diminishing supplies between ever-increasing demands. Demand drivers such as demographic and climatic changes further increase the stress on water resources.

1.2. Overview of Nigeria Water Resources

The Federal Republic Nigeria has a total surface area of 923,768 km² and comprises 36 states and its Federal Capital Territory, Abuja. It shares land borders with Niger Republic to the north, the Republic of Benin to the west, Chad and Cameroon to the east, while its coast to the south lies on the Gulf of Guinea in the Atlantic Ocean. By the reckoning of the United Nations, Nigeria currently has a (2015) population of: 183,523,432 people and it is estimated that by the year 2045, thirty years on from now, the population would have risen to 394,380,709 which is more than twice the present population. As at 2014 the economy was worth more than \$500 billion which made it one of the largest economies in Africa.

Water is one of the most important natural resource and Nigeria is considered to be abundantly blessed with water resources. Water is a basic natural resource for socio – economic development. It is fundamental for various social and economic development activities such as industrial production, irrigated agriculture, livestock farming, mineral processing, hydropower production, navigation, recreation and tourism amongst others. According to the Constitution of the Country, every Nigerian has the right to adequate water supply and sanitation, nutrition, clothing, shelter, basic education, and health care, as well as physical security and the means of making a living.

However, there is a temporal and spatial variation in water availability as rainfall in Nigeria is diurnal. The northern parts have lower precipitation with only about 500mm in the north-east while the south experiences higher precipitation levels with over 4,000mm in the southeast. This high variability of rainfall in time and space is a significant characteristic of the tropical climatic belt, especially in the Sahelian part of the Country. The challenges of high variability in precipitation has manifested in the form of persistent drought in the northern parts of the Country in the past four decades with its attendant impact on the reduction in the extent of wetlands and the almost complete loss of the Lake Chad. In recent years, extreme weather conditions have led to serious flooding in many parts of the Country. The south on the other hand has problems of salt water intrusion and flooding.

Nigeria has two major river systems: The Niger entering the Country from the northwest, and the Benue entering from the Northeast which together with their many tributaries drain half the land area of the Country. The north east of the Country is mainly drained by rivers discharging into Lake Chad. It is worthy of note that many other rivers in the north are seasonal, having water in them only in the rainy season.

1.2.1. Geology, Hydrology and Hydrogeology

Geographically, in the far south, there are low-lying swamp forests, followed in a northerly direction by generally flat dense rain forests, followed by hilly shrub lands in the middle belt, then by relatively flat savannah grasslands, and finally by semi-arid areas in the far north. The central part of the Country is marked by crystalline rock outcroppings and gently rolling hills. About 60% of the Country is underlain by crystalline rocks, 20% by consolidated sedimentary materials, and 20% by unconsolidated sedimentary materials. Static water levels, “Above Mean Sea Level” (a.m.s.l) in water wells range between zero in parts of the coastal alluvium to 200 metres in some sedimentary areas. In the crystalline rock areas found in many parts of the north, well yields are unpredictable; where sufficient depth of weathering exists the area may be suitable for hand pump borehole water supply schemes (minimum yield of 10 litres per minute), but only at specific localities where deep weathering and underlying fractures coincide are yields likely to be sufficient for motorized borehole schemes.

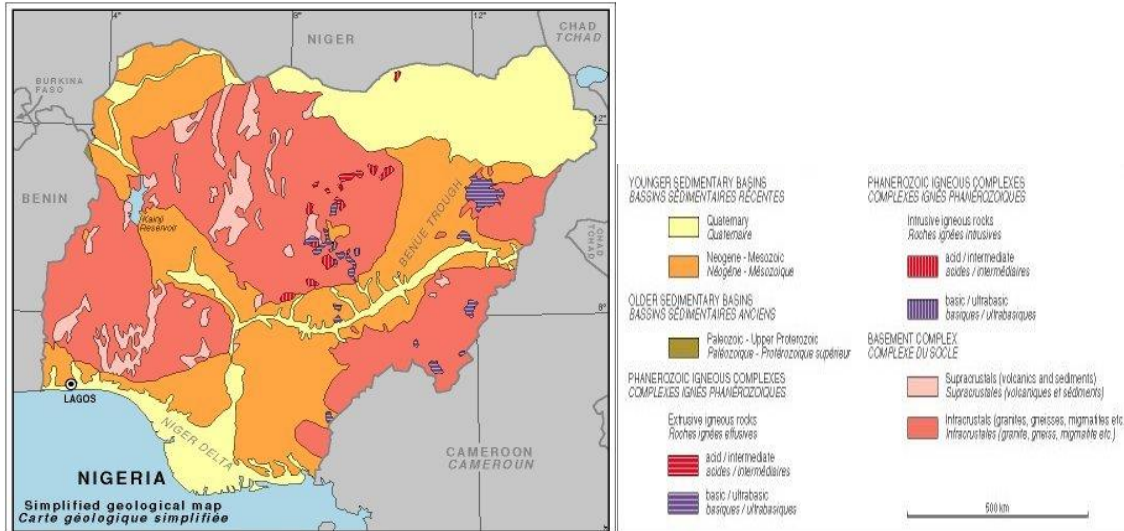


Figure 1: A Simplified Geological Map of Nigeria

For the purpose of scientific assessment and management of water resources and also as the building blocks of hydrological evaluations, Nigeria is divided into 8 contiguous catchments designated as Hydrological Areas as follows:

- i. Niger North Hydrological Area (HA-1) encompassing Katsina, Zamfara, Sokoto, Kebbi, Niger and Kano states
- ii. Niger Central (HA-2) directly encompassing Niger, Kaduna, Plateau Kogi states and FCT
- iii. Upper Benue (HA-3) directly encompassing Adamawa, Bauchi, Gombe, Plateau, Taraba, and Yobe states
- iv. Lower Benue (HA-4) encompassing include Nasarawa, Benue, Plateau, Kogi, Rivers states
- v. Niger South (HA-5) directly encompassing Anambra, Bayelsa, Delta, Imo, Kogi, Rivers
- vi. Western Littoral (HA-6) Edo, Ekiti, Lagos, Ogun, Ondo, Oyo and Osun States
- vii. Eastern Littoral (HA-7) directly encompassing Abia, Akwa-Ibom, Cross River, Ebonyi, Enugu, Imo.
- viii. Chad Hydrological Area (HA-8) directly encompassing Bauchi, Gombe, Jigawa, Kano, Yobe and Borno



Figure 2: Map of Nigeria Showing the 8 Contiguous Catchments Designated into Hydrological Areas

1.2.2. Water Resources Potential of the Country:

Based on the Water Resources Master-plan of 2013, average precipitation in Nigeria is 1,150mm¹. with total internal generation of the runoff of 244 billion cubic meters (BCM)/year and surface water resources potential of about 333BCM/year. The internal generation of total water resources potential is estimated at 287BCM/year while the total water resources potential with inflow from neighbouring countries is estimated at 375BCM/year. 88BCM/year of water comes from neighbouring countries, which roughly indicates that almost 24% of surface water resources in Nigeria relies on inputs from neighbouring countries. The total groundwater resources potential is estimated at 156BCM/year as a renewable source on the basis of the estimated groundwater recharge.

1.2.3. National Water Demand Projection

Water Supply and Sanitation, Irrigation Water, Freshwater Aquaculture, Livestock Water Demand and Mining are generally the major consumptive aspects of water resources. The other relatively non-consumptive socio-economic activities are Hydropower Generation, Flood Management and Inland Navigation. The total water demand for the year 2010 was put at 5,933 Million Cubic Meters per year (MCM/year) while by the year 2030, it is estimated to rise to 16,585 MCM/year as detailed in the table below:²

Table 1: Comparative Water Demand Estimates for Year 2010 and Year 2030 by Sector

Estimated National Consumption	Year 2010 (MCM/Day)	Year 2030 (MCM/Day)
Water supply	3,047	8,852
Irrigation	1,926	6,245
Aqua Culture	728	1,166
Livestock	233	312
Total	5,933	16,585

The water use rate (the ratio between the total water demand and the surface water resources potential) in 2010 was just 1.6% and is expected to grow to 4.4% by the year 2030. Thus the total water demand is much less than the total water resources potential. However, because the water demand and water resources are unevenly distributed, the necessity of surface water and groundwater resources development should be examined through the water balance between supply and demand at local levels.

1.2.4. Surface and Groundwater Quality

Good quality water is central to the existence of human life. The amount of available fresh clean water in Nigeria is changing because of growing populations, industrialization, changes in farming behaviour and waste disposal. Water pollution has the potential to become a limiting factor for growth if not well managed. It can have adverse effects on drinking water supply, on the use of water for the production of food, on other water dependent industries, on the environment and on activities such as fishing, recreation and tourism.

Surface Water Quality

Surface water bodies in and around large urban areas in Nigeria are frequently of poor quality due to pollution. The surface waters in and around many cities are near toxic and cannot support an aquatic ecosystem. In fact, in areas with high population density, significant levels of faecal bacterial pollution that have migrated from septic tank clusters into the groundwater. The high level of water pollution in Nigeria is mostly caused by:

- i. indiscriminate disposal of both solid and liquid household waste in storm drains that eventually discharge into these streams;
- ii. central sewerage systems with associated sewage treatment sites are rare in Nigeria resulting in the general use of septic tanks;
- iii. lack of proper sewerage dumping sites resulting in emptying septic tanks into water bodies (lagoons in Lagos) and other sites in waterways around other cities;
- iv. unregulated cottage industries and automotive repair shops resulting in industries sited around and close to urban centres discharging oils and chemicals into water bodies;
- v. poor mining control resulting in oil spillage and heavy ion poisoning like lead etc.
- vi. open air defecation is common in many places especially in rural areas

Groundwater Quality

On the average, groundwater quality in most parts of the Country is good. Only in some areas are iron, nitrate or fluoride concentrations above the recommended Nigerian Standard of Drinking Water Quality. There are areas where the water quality is seen to be moderately to highly corrosive. Groundwater in urban areas especially downstream of industrial areas is also severely polluted to varying degrees mostly due to some of the problems mentioned above. Most common sources of water to the urban poor - who live in shanties and peri-urban areas is the unprotected open well dug by individual household owners. The groundwater table in some areas where hand-dug wells are sited is most times as high as the bottom of the septic tank system. In addition, some of these wells are down gradient of large clusters of septic tanks in high-density residential areas.

In rural areas the ground water is partly polluted due to open air defecation too, but this affects surface water more seriously

1.2.5. Operation and Maintenance

The operation and maintenance of water resources infrastructure has been very poor. The government has become increasingly concerned by this poor level of operation and maintenance. The National Council on Water Resources during its 16th Meeting in Asaba in 2002 set up a National Committee to recommend ways and policy initiatives to address the problem in order to make our water resources infrastructure sustainable. It is expedient to insure strategic projects embarked upon in the Water Sector. For instance, huge sums expended on the construction of Dams and Reservoirs could easily be lost, if there is a natural disaster that causes severe damage to the Dams. Also, the collateral damage that may result from this such as loss of lives from flooding caused by breakdown of the spillway, etc., could result in serious legal suits against the Ministry. Insurance can go a long way to take care of these unforeseen contingencies.

1.2.6. Monitoring and Evaluation

The system of Monitoring and Evaluation of water Projects and Infrastructure which hitherto had been a challenge is being enhanced for effective Project delivery and sustainability.

1.2.7. Legal Framework

Presently, only the following statutes are relevant in the development and management of the nation's water resources. Water Resources Act. CAP W2. LFN. 2004. Nigerian Minerals and Mining Act Cap N162, LFN, 2004, National Inland Waterways Act No. 47 LFN 2004. River Basins Development Authority Act. R9, LFN 2004. Nigeria Hydrological Services Agency (Establishment) Act, Cap N110A, LFN 2004, The National Water Resources Institute Act, Cap N83 LFN 2004, the Land Use Act, Cap L5 LFN 2004, Nigeria Environmental Standards and Regulations Enforcement Agency Act, Cap N164, LFN 2004. The National Water Resources Act will be enacted pursuant to this Policy.

1.2.8. Funding and Financing

The Sector has been under-funded with almost all financial resources coming from the Government and to some extent International Institutions and Donors. Private Sector Financing has been limited.

1.3. Water Resource Challenges in Nigeria

1.3.1. Current Challenges in Water Resource Management in Nigeria

There are great differences in water availability from region to region in Nigeria - from the extremes of deserts in the far north to tropical forests and mangroves swamps in the extreme south. In addition, there is variability of supply through time as a result of both seasonal variation and inter-annual variation. All too often, the magnitude of variability in addition to the timing and duration of periods of high and low supply are not predictable; this equates to unreliability of the resource which poses great challenges to water managers in particular and to the society as a whole.

In addition to problems of water quantity there are also problems of water quality. Pollution of water sources is posing major problems for water users as well as impeding the maintenance of natural ecosystems. Nigeria has to some extent artificially overcome natural variability by supply-side infrastructure to assure reliable supply and reduce risks, albeit at very high cost and often with negative impacts on the environment and sometimes on human health and livelihoods. The Country is now finding that "supply-side" solutions alone are inadequate to address the ever increasing demands from demographic, economic and climatic pressures as a result, waste-water treatment, water recycling and demand management measures are being introduced to counter the challenges of inadequate supply. The traditional fragmented and top-down approach to water resources management in Nigeria is no longer viable and a more holistic approach is essential.

During the last few decades, the desire to improve access to water resources in Nigeria has become more and more elusive due to various challenges. The challenges facing the water resources sector in Nigeria include the following:

- i. Unevenly distributed water resources and demand necessitating the creation of dams and transportation of water to the areas of need.
- ii. Inadequate access to usable water resources to meet the rapidly increasing domestic and industrial (economic growth) water demand. These are manifested by poor access to clean and potable water in urban, small towns and rural areas; low levels of irrigation agriculture, poor utilisation of hydropower potentials and limited inland fishery.
- iii. Degrading watershed and water courses as a result of widespread pollution, including the indiscriminate disposal of hazardous wastes due to poor pollution and mining control leading to deteriorating water quality
- iv. Fragmented and uncoordinated water resources development as a result of inadequate catchment management.
- v. Unclear roles and responsibilities among the various levels of government, different ministries, departments and agencies at the Federal and State levels.
- vi. Poor coordination (Including International Donor Coordination), mobilisation and application of funds for water supply development. This often leads to duplication of efforts, wastages, and inefficiency in the development and management of water infrastructure throughout the Country
- vii. Inadequate water resources data collection and management. This leads to poor planning and project designs

- viii. Limited groundwater availability in the areas underlain by crystalline rocks which covers substantial parts of the Country, while for the more productive sedimentary areas of the Country, detailed study and documentation is still premature;
- ix. Poor or lack of monitoring and control of groundwater resources;
- x. Escalating costs of water production and distribution for domestic and industrial water supply, irrigation, husbandry, horticulture and other uses against dwindling financial resources.
- xi. Inefficient government subsidies on the provision water services;
- xii. Extreme weather conditions due to climate change resulting in prolonged droughts, increased flooding, widespread erosion and communal conflicts;
- xiii. Vicious cycle of unreliable projects that provide services that do not meet consumer needs and for which the consumers are unwilling to pay.
- xiv. Poor or inefficient management of water resources infrastructures like dams, reservoirs, waterworks with their related distribution networks, irrigation structures and navigable waterways leading to financial losses and unreliable service delivery.

1.4. WATER AND ECONOMIC DEVELOPMENT IN NIGERIA

Water has significant impact on the growth and development of the Nigerian Economy. Apart from the commonly known importance of water for domestic use, human and health, there is a direct relationship between the availability of water and economic activities. The following is a summary of the impact of water on different sectors of the Nigerian economy:

1.4.1. Agriculture

Agriculture provides employment for about 70% of the Nigerian population, and therefore a critical nerve in the socio-economic dynamics of the country. The production of food crops, cash crops, and livestock depends on the availability of water as about 70% of total drawn water is for Agricultural purpose.

1.4.2. Health

Water is for human consumption and necessary basic survival to improve quality of life and human dignity as well as reduce or eradicate water-related diseases. Improved access to Water and Sanitation facilities contribute significantly to the public health through reduction of infant and child morbidity and mortality. The United Nations Children's Emergency Fund (Unicef) estimate that 190,000 children under the age of five die of diarrhoea annually in Nigeria, and 88% of these are caused by inadequate Water, Sanitation and Hygiene (WASH).

1.4.3. Power

Poor access to electricity is responsible for declining productivity and competitiveness in Nigeria, with significant impact on economic growth and development. Increasing demand for electricity for domestic and industrial consumption will continue to be on the increase. The water sector has potential to contribute about 15,000 Megawatts of hydro power to the country.

1.4.4. Mining

Nigeria is endowed with vast reserves of solid minerals, and the Government of Nigeria is developing strategies on how best to harness the potential in mining for economic growth. The Mining and quarrying sector accounted for 6.5% of Nigeria's GDP in 2015, and this is bound to increase in the following years. Water is a critical input in mining and therefore a determinant of the success or failure of the mining sector.

1.4.5. Tourism

Nigeria is a vast and fascinating country with varying geographical regions and ecological zones. With diverse and amiable climatic variables rich in biological diversity, cascading water systems, pleasant and distinctive sceneries, Nigeria has the potential to be a tourism haven in Africa. The tourism sector in Nigeria contributed about 1.7% to the GDP in 2014, which is an indicator of what is possible. Nigeria's water systems and aquatic resources can be central attraction for leisure and tourism.

1.4.6. Trade

Marine transport is essential to the Nation's transport infrastructure and a vital link to the development of the economy. Proper management of the available water resources will ultimately improve the navigable water ways for easy movement of agricultural goods, machinery, equipment, raw materials for industries and finished goods for the teeming populace.

1.4.7.Industry

Most industrial production activities need water as a critical input for production, and factories have been known to shutdown in some parts of Nigeria due to the lack of water. This has led to job losses, and increase in unemployment, with negative impact on the economy of the country. Industrial and consumer sectors therefore need water for sustainable production operations, to support the long-term economic growth in the country.

1.4.8.Education

Education is critical for breaking the cycle of poverty and yet so many schools in Nigeria lack access to safe water and sanitation facilities. Lack of clean water has serious effects on student's academic performance and attendance rates. The lack of safe water can cause even the best students to lose momentum as they deal with stomach pains and diarrhoea from disease and hunger. Students miss class to go fetch water, or to care for sick parents or siblings. If teachers are sick, classes get cancelled for all students. Schools cannot run programs if they cannot provide water to students, faculty and their families. For girls, the situation is especially troublesome. If schools do not have proper toilets, girls drop out once they reach puberty.

2. Policy Rationale

2.1. Need for the Policy

Water is the most important natural resource in Nigeria. The relevance of water to national development has progressively increased over the years with rapid population growth, urbanisation, modernization of agriculture and industrial development. Because of its usefulness in different capacities - for direct human consumption, agricultural irrigation, fisheries, hydropower, industrial production, recreation, environmental protection and industrial effluents absorption, it is considered as Nigeria's most unique and indispensable natural resource to manage. However, the management and development of the water sector faces many challenges, including pressures on water resources **see Box 1**; and from the increasing uncertainty being experienced with climate change, **see Box 2**.

The National Water Resources Policy would provide a framework for addressing these challenges by achieving the following:

- Integrated Water Resources Management (IWRM).
- Clear and coherent regulation.
- Clear definitions of the functions and inter relationship of sector institutions.
- Better coordination of the sector.
- Reliable and adequate data for planning and projections.
- Decentralization in order to boost efficiency, performance and sustainability.
- Autonomy of water service providers.
- Promote the concept of water as an economic good.
- Create public awareness about water conservation and management.
- Improve capacity for improved hydropower supply.
- Accountability in the management of the sector
- Technical and financial capacity building to efficiently manage water delivery system.
- Human resource development.
- Review and establishment of standards

Box 1 Nigeria's Key Challenges to be addressed by the Water Policy

- Unevenly distributed water resources and demand
- Inadequate access to usable water resources to meet the rapidly increasing domestic and industrial (economic) water demand.
- Degrading watershed and water courses leading to deteriorating water quality
- Fragmented and uncoordinated water resources development
- Unclear roles and responsibilities at Federal and State levels.
- Poor coordination (Including International Donor Coordination), mobilisation and application of funds for water supply development.
- Inadequate water resources data collection and management.
- Varied groundwater data availability as detailed study and documentation is still premature; in addition to poor monitoring and control of groundwater resources;
- Escalating costs of water production and distribution
- Inefficient government subsidies on the provision water services;
- Unreliable projects that provide services that do not meet consumer needs and for which the consumers are unwilling to pay.
- Poor or inefficient management of water resources infrastructures leading to financial losses and unreliable service delivery.
- Climate change uncertainty resulting in prolonged droughts, increased flooding, widespread erosion and communal conflicts; see also Box 2.

Box 2 Climate Change and Nigeria

Climate change in Nigeria is manifested by the following:

- Lake Chad has shrunk by over 92% (from 27,000 km² to 1,800 km²) from 1963 to 2011. The shrinking of Lake Chad has deprived thousands of a means of livelihood in the North Eastern part of Nigeria and has created ghost-towns from former fishing villages.
- Sahara Desert is increasing its land mass at a pace of 0.6 km² per year or 350,000 hectares of farmland is being desertified annually thereby forcing farmers to migrate to other places resulting in tension between communities on the use of the limited resources in the area
- Communities in the coastal and riverine areas suffer from the menace of recurrent coastal inundation and salt water intrusion
- In the past, some rivers experienced reduced flow or would dry up entirely during the dry season. However, in recent years some rivers dry up as early as December, well before the onset of the dry season
- Groundwater sources are also reported to dry up more than before in the dry season¹
- Frequency of extreme weather events such as longer dry seasons and more rain during the wet season leading to flooding.
- In 2012, Nigeria experienced an unprecedented flood that affected 27 states of the Country, killed over 3,000 persons, and displaced about 2 million people.

2.2. Guiding Principles

The guiding principles of the Water Resources policy pertain to socio-economic and water allocation aspects; protection and conservation of water resources, water and environment; water resources planning and development; water resources information, education and communication; trans-boundary waters and water resources institutional framework as detailed below

- i. The water policy shall be subject to and consistent with the Constitution in all matters including the determination of the public interest and the rights and obligations of all parties (public or private) with regards to water.
- ii. All water, wherever it occurs in the water cycle, is a national asset and resource common to all, the use of which shall be subject to national control.
- iii. There shall be no ownership of water but only a right (for environmental and basic human needs) or an authorisation for its use. Any authorisation to use water in terms of the policy shall not be to perpetuity.
- iv. Water will be managed in accordance with the principles of Integrated Water Resources Management (IWRM), which stipulates the following:
 - a. The resource base shall be protected against any kind of pollution. The protection measures shall be based on both regulatory and market-based approaches to waste management, applying the “polluter pays” principle. Water quality management options shall include the use of economic incentives and penalties to reduce pollution.

- b. Managing the quantity, quality and reliability of the nation's water resources should aim to achieve optimum, long term, environmentally sustainable social and economic benefit to the society.
- c. Water quality and quantity are interdependent and shall be managed in an integrated manner which is consistent with broader environmental management approaches.
- d. Surface and groundwater resources are part of the hydrological cycle and shall be managed in an integrated manner.
- e. The planning and management of Nigeria's water resources shall take place within a framework which facilitates awareness and participation among all user stakeholders at all levels.
- f. Water quality management options shall include the use of economic incentives and penalties to reduce pollution; and the possibility of irretrievable environmental degradation as a result of pollution shall be prevented.
- g. The management of water resources shall seek to harmonize human and environmental requirements, so that the human use of water does not individually or cumulatively compromise the long term sustainability of aquatic and associated ecosystems recognizing the role of water in supporting the ecosystems.
- h. The operational management of water resources and services shall be decentralized to the lowest practicable level and in accordance with the use of the established 8 hydrological areas (HA) as the basic units of water resources management in Nigeria.
- i. Both the social and economic value of water shall be recognised and its development should be demand driven such that the beneficiaries of the services shall contribute to the cost of its establishment and maintenance on an equitable basis.
- j. For the purpose of improving water related environmental conditions, extraction fees for raw water shall be charged for the commercial use of it.
- k. Water resources shall be assessed, developed, apportioned and managed in such a manner as to enable all users to have equitable access taking into account the sustainability of the resource
- l. International water resources, specifically shared river systems, shall be managed in a manner that optimises the benefits for all parties in a spirit of mutual co-operation and allocations agreed for downstream countries shall be respected.

2.3. Overall Policy Goal

The policy is encapsulated as “**People, Environment, Water and Sustainable Development**”. The inadequacy and imbalance in the water infrastructure development, population increase, urbanisation rates amongst others have created a serious deficiency in the quality of life of an average Nigerian with its attendant consequence on sanitation, food, security, health, employment and standard of living. It is the recognition of these critical issues that has driven the development of the PEWS to facilitate the Nigerian water sector reform.

The policy direction commits to eradicating water-borne diseases, poverty reduction and institutionalising integrated and sustainable water resources management to meet the nation's present and future water resources needs in all demand sectors — including human consumption, animal husbandry, agriculture, hydropower, inland waterways and industry while protecting the environment. The policy thrust therefore

will build on the existing National Water Resources and Environmental Management Strategy (WREMS), which urges all stakeholders to ensure integrated management and development of water resources in the Country.

The Mission Statement

“To facilitate and enhance sustainable access to safe and sufficient water to meet the cultural and socio-economic needs of all Nigerians in a way that will enhance public health, food security and poverty reduction, while maintaining the integrity of fresh water ecosystems of the nation”

The Vision Statement

“A sector where the use of the nation’s water resources is optimized for present and future generations”.

2.4. The Policy Objectives

The main policy objective is to foster the integrated management of water resources for optimum, sustainable, efficient, and equitable water resources development and management in order to meet the current and future user water demand, conserve the water quality and protect the environment.

The specific objectives of the Water Resources Policy are to:

- i. Optimise the use of Nation’s water resources at all times, for the present generation without compromising the existence of the future generations.
- ii. Foster Integrated Water Resources Management which will lead to:
 - Managing the water resources for equitable and sustainable water related sub-sector development and environmental protection.
 - Promoting stakeholder participation (governments, communities, Civil Societies and Private Sector) in the water sector development to meet rapidly growing demand for domestic and industrial water supply, sanitation, irrigation and drainage, food and erosion control, hydropower generation, inland transportation, inland fishery, livestock farming and other uses)
 - Improving River Hydrological Area Management by adopting hydrological boundaries as the basic units of water resource management and regulating activities within the Hydrological Areas units
- iii. Managing the water resources for the purpose of eradicating poverty while enhancing and improving public health
- iv. Improve and expand the delivery of water services in an equitable manner
- v. Foster the conservation of water and increase systems efficiencies
- vi. Promote rain water management with sustainable drainage as a method of household water supply, drainage and flood control
- vii. Prevent the over-exploitation of groundwater and protect its quality
- viii. Promote national and international cooperation and increase the mutually beneficial use of shared water resources within Nigeria and with its neighbouring countries
- ix. Facilitate the exchange of water sector information and experience
- x. Improve governance, institutional development, capacity development and the advancement of gender mainstreaming in the water sector

- xi. Conserving the quality of both surface and ground water resources while promoting the protection of the environment and associated aquatic ecosystems to ensure long term sustainability
- xii. Development of dams and institutionalizing properdam’s management as a means of mitigating flood and erosion.
- xiii. Position Nigeria on a road map to achieving international and national goals and targets in water resources development.
- xiv. Harness the power generation potentials of dams across the Country
- xv. Mitigate the impacts of climate change especially on desertification, flooding, coastal inundation and rapid drying up of lakes and rivers

2.5. The Policy Targets

2.5.1. IWRM Targets

To meet the objectives of the policy, IWRM will be fully entrenched in all the eight Hydrological Areas in the Country and should be operating successfully by the year 2030. Since each Hydrological Area has its own peculiarities with regard to water allocation priority, socio-culture of the communities, etc., an initial implementation strategy should be developed for each Hydrological Area as soon as possible which can then be refined for the various catchment levels.

2.5.2. Targets for Consumptive Water Resources

Water Supply and Sanitation, Irrigation Water, Freshwater Aquaculture, Livestock water demand and mining are generally the major consumptive aspects of water resources. The other relatively non-consumptive socio-economic activities are Hydropower Generation, Flood Management and Inland Navigation. The National Water Resources Master Plan sets the total consumptive water demand for the year 2010 as 5,933 million cubic meters per year (MCM/year) while that of 2030 is expected to rise to 16,585 MCM/year as detailed in the table below:

Table 2: Consumptive Water Demand Rates for Year 2010 and Year 2030 by Sub-Sectors

Estimated National Consumption	Year 2010 (MCM/Day)	Year 2030 (MCM/Day)	Projected factor of increase in demand by 2030 against 2010
Water supply	3,047	8,852	2.9times
Irrigation	1,926	6,245	3.3 “
Aquaculture	728	1,166	1.6 “
Livestock	233	312	1.3 “
Total	5,933	16,585	2.8 “

The target is to meet 100% coverage by the year 2030 and continue to sustain this level of coverage in the subsequent years.

3. POLICY DETAILS ON THE MANAGEMENT OF WATER RESOURCES

3.1. Formulating National Water Resources Strategy for Water Resources Assessment and Planning

Water is a basic natural resource for sustenance of life - It is fundamental for food security, sustenance of ecosystems and for socio-economic development. Nigeria will formulate a national water resources strategy as well as a National Water Resources Master-plan in accordance with which the water resources of Nigeria will be protected, used, conserved, managed, developed, and controlled. The strategy shall prescribe the principles, objectives, procedures and institutional arrangements necessary for the continuous assessment, use, protection, development, conservation, management and control of the nation's water resources and provide the framework within which hydrological areas resources strategies and plans will be formulated.

Key Policy Statement 1 – Water Resources Assessment and Planning

The National Water Resources Strategy and Master Plan will continue to be formulated in accordance with which the water resources of Nigeria will be protected, used, conserved, managed, developed, and controlled. Both will be regularly updated through adequate water resources assessment.

Objective:

The specific objective is to assess and determine all available water resources, quantitatively and qualitatively, including boundary conditions of both surface and underground waters and produce plans and strategies for equitable distribution, abstraction, return/recharge, and apportionment, and for effective flood damage reduction and drought prevention towards sustainable development of all water sources and water infrastructure for the socio-economic welfare of Nigerians.

Strategies

In order to ensure that the above mentioned objectives can be achieved the following strategies shall be followed:

- i. IWRM processes will be promoted for the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.
- ii. Water resources management will include securing water for the people, food production, job creating activities, protection of vital ecosystem, and containment of its variability in time and space and management of risk.
- iii. Assessment, research, monitoring and controlling groundwater exploration and drilling activities will be strengthened.
- iv. Procedures and guidelines governing groundwater development and management, including exploration and drilling activities as well as operation of projects, which use groundwater resources will be reviewed and disseminated.
- v. A system for classifying all significant water course and aquifers shall be established for the purpose of determining raw water quality to guide decisions on water allocation and use.
- vi. Water Resources Master Plan will be reviewed every five years to ensure capturing water resources potentials and its variability.
- vii. Ensure that all water resources development activities are in accordance with the Master Plan.

- viii. Water Resources Strategies will be developed at both hydrological/catchment levels and at National Levels and will be reviewed and updated annually to measure the progress towards achieving the Targets in the National water resources Master Plan.

3.2. Water Resources Conservation, Protection and Use

Nigeria's Water Resources management will adopt Integrated Water Resources Management (IWRM) approach and processes in order to maximize resultant socio-economic welfare and environmental stability in an equitable manner without compromising the sustainability of vital ecosystems. This approach will promote sustainable land and water development, containment of the variability of water resources in time and space, management of risk and interest of upstream and downstream users.

Key Policy Statement 2 – Water Resources Conservation, Protection and Use

The water resources of Nigeria will be protected, conserved and its use allocated efficiently and equitably in accordance with IWRM Principles for present and future generations.

Objectives: -

- To recognize public trusteeship as well as citizens' entitlement to access water resources.
- To prescribe the principles, objectives, procedures and institutional arrangements for the protection, development, conservation and management of the water resources
- To control the nation's water resources and provide the framework and guidelines within which hydrological areas resources strategies will be formulated towards effective and efficient protection, conservation and allocation for all uses.

Strategy: -

- i. Water shall be treated as a common use resource and every citizen shall have a right to access water for sustenance while guaranteeing access for controlled socio-economic use.
- ii. Water will be considered as both social and economic good in the light of its substantive and significant contribution to the country's economy.
- iii. Water occurring on, under or abutting any land to which a person has any right of occupancy, including rain runoff, may be accessed by such person for domestic use or sustenance of his family.
- iv. The following priority order of consumptive water use will be applied when surface water resources development and allocation is planned:
 - 1st priority: Minimum stream flow requirement
 - 2nd priority: Municipal water supply
 - 3rd priority: Irrigation water supply
 - 4th priority: Other water supply, if any
- v. When hydropower generation, a non-consumptive water use, is included in the water resources development plan, the optimum use will be considered in relation to the use of the water resources for Irrigation water supply.

- vi. Appropriate principles and procedures will be developed for managing the quality and conservation of both groundwater and surface water resources towards protecting and improving ecological systems and wetlands.
- vii. During extreme events such as drought and flood conditions, priority allocation will be discussed among stakeholders on a case by case basis.

3.3. Data Reporting and Information Systems

Decisions in water resources management as with other planning and governance systems depend on timely, accurate and reliable data. National monitoring systems on water resources that provides for the collection of appropriate data and information necessary to assess the quality and quantity of water in the various water sources, the use of water resources as well as the state of the aquatic environment is an essential part of water resources planning, water infrastructure development as well as for socio-economic decision-making.

Policy Statement 3 – Data and Information Systems

Accurate and timely data collection, collation and dissemination will be the tool for better assessment, planning, design, construction and operation of water infrastructure, water allocation and trans-catchment transfers, and for real time forecasting of hydrological phenomena in an integrated manner.

Objective:-

To have better assessment tools at the disposal of decision makers for effective scientific, economic and social decision making, while the specific objectives are

- An effective integrated water resource information system capable of providing timely and accurate information on the quantity, quality and use of water resources, as well as equitable distribution, abstraction, return/recharge, and apportionment, effective flood damage reduction and drought prevention that will aid contingency plans for the reduction of the adverse effects of events such as drought and flood.
- To have correct and timely data and information for assessment, planning, design, construction and operation of different projects with regard to their environmental impacts;

Strategies: -

- i. Establishment of adequate number of primary hydrological and hydro-geological monitoring networks and ensuring their proper operation and maintenance.
- ii. Application of proven Information Technology for the generation, collection, collation, storage, analysis, retrieval and dissemination of water resources data.
- iii. An effective water resources assessment program for the management of hydrological risks and vulnerabilities shall be established
- iv. Acquisition, collation, management and dissemination of all hydrological, hydro-geological, hydro-meteorological and isotopic information with respect to National waters within Nigeria and in International waters between Nigeria and her neighbors by installation of adequate number of monitoring networks and annual publication of data generated:
- v. Define regularly the status of surface and groundwater resources in terms of quantity and quality; its use on the basis of river Hydrological Area and in conjunction with aquifer boundaries; with the

information made easily accessible to users, stakeholders and decision makers.

- vi. Produce hydrological/hydro-geological information on maps of various scales in accordance with UNESCO standards for the production of such maps, continuous review and update of the maps from time to time.
- vii. Co-ordinate and encourage inter-agency and inter-governmental cooperation and exchange of hydrological, hydro-geological, and meteorological information as well as rendering technical support to other agencies involved in the nation's water resources assessment and development.
- viii. To provide real-time forecasting of hydrological phenomena that will aid contingency plans for the reduction of the adverse effects of events such as drought and flood.
- ix. Promote and strengthen the Nigeria Hydrological Services Agency to continue to perform its roles on the above.

3.4. Human Resources and Knowledge Management

Water resource management will only be successful if personnel responsible for its management are adequately equipped to carry out the tasks necessary towards effective and efficient water resources management in all its ramifications, at all levels of government, in the communities and in the private sector. Thus, for integrated water resources management to be successful and to ensure implementation of sustainable and participatory water management strategies, capacity will have to be built in managers and user groups at both technical and administrative levels.

Key Policy Statement 4 – Human Resources and Knowledge Management

Government recognises that adequately equipped, trained and motivated personnel are essential towards achieving the objectives of IWRM in the water resources sector. To this end, government shall ensure that water resources sector institutions shall be appropriately and properly staffed and that the staff will be trained, retrained and motivated to achieve competent and skilled manpower for the sector.

Objectives:

- To develop a corps of skilled and competent workforce for the achievement of the policy objectives of government for the Water Resources Sector.
- To institutionalize a system of knowledge sharing towards ensuring retention of Institutional memory and succession planning.

Strategies

The following strategies shall be followed in order to achieve these objectives:

- i. Build up comprehensive personnel information systems at the level of institutions to assess the available technical and managerial capacities to aid planning and implementing training programs on a periodic basis.
- ii. Establish a framework for succession planning for the staff in the water sector in accordance with the manpower requirements.
- iii. Establish a system for skills acquisition and knowledge transfer for communities in the management of water resources systems.
- iv. Develop infrastructural training facilities for on the job training
- v. Promote and strengthen the water resources institutions established by all tiers of Government and the relevant water departments in the universities and polytechnics to provide coordination for manpower development.

- vi. Establish training network centers under the coordination of National Water Resources Institute.
- vii. Establish linkages and collaboration with International Global Centers in water Resources for training and other beneficial cooperation.
- viii. Conduct periodic training needs analysis, planning and implement training programmes
- ix. Set up appropriate knowledge management & sharing platform for the Sector.

3.5. Transboundary Issues

Nigeria is riparian to trans-boundary water bodies with neighboring countries. Large abstractions and use of trans-boundary water resources requires understanding and agreement among the riparian states. Each of the trans-boundary water bodies exhibits unique characteristics, and a complex range of water management challenges. The most important consideration in Nigeria's relations with those of its neighbors with which it shares rivers is that there must be respect for each country's equitable right to water from the shared resource as stated in the general principles. Because water does not recognize political boundaries, whether national or international, its management will be carried out in catchment areas although care must be taken that the policy of subsidiarity does not interfere with the need for a national and international perspective on water use.

Policy Statement 5 – Transboundary Issues

Transboundary or shared water resources shall be protected, developed, conserved, used and managed in accordance with the existing National or International Riparian Laws/conventions/Guidelines and shared equitably, while maintaining the ecosystem.

Objectives:

To enhance the shared use of water from trans-boundary water resources for the benefit of all Countries or States concerned, while the specific objectives are:

- To promote rational and optimal use of the shared water resources for the development of Nigeria in order to improve the living conditions among the people of a shared Hydrological Area;
- To strengthen co-operation among riparian states in their efforts to find solutions to developmental problems, thereby promoting cordial relationship among the people of the border regions to live together as good neighbors;
- To minimize water resources related cross border migration.

Strategies

In order to ensure an effective framework for the management, development and utilization of transboundary water resources, the following measures will be undertaken:

- i. Nigeria will seek to cooperate with other riparian countries for the development, optimum use and protection of transboundary waters wherever possible and in her national interest without compromising her sovereignty;
- ii. Establish an effective dispute resolution mechanism in consultation with co-riparian states within the regional commission and authority;
- iii. Review all international treaties and agreement on shared basis to reflect the key issues raised in the United Nations (UN) Convention;

- iv. Establish comprehensive monitoring systems for water resources in collaboration with co-riparians' in all its boundary Hydrological Areas for essential data collection with a uniform format to be collated, analyzed and shared;
- v. Support the regional agencies, meet its own commitment and exert necessary and appropriate influence to ensure protection of her interest as a vulnerable downstream state.
- vi. Establish a coordination Committee to address trans-basin issues arising amongst riparian States within Nigeria.

3.6. Dams and Reservoirs

Dams are important structures for storing water by regulating flows and curtailing floods. They are thus important economic infrastructure for the provision of water for economic activities and for avoiding the destruction of economic means, lives and properties through floods. However, establishment of dams and reservoirs in a watercourse automatically introduces the element of risk making it imperative to enshrine a system for appropriate planning, construction, operation and management and safety of dams and reservoirs.

Policy Statement 6 – Dams and Reservoirs

Dams and Reservoirs shall be constructed with the best and appropriate technology, operated and maintained in accordance with prescribed safety standards to meet the multi-sectoral needs for socio-economic development, while maintaining the ecosystem.

Objective:

The main policy objective is to ensure the availability and conservation of surface water for different socio-economic uses through the design, construction, operation and maintenance of financially viable storage devices without compromising environmental requirements.

Strategies:

In order to optimize the benefits of dams, the following strategies will be followed:

- i. Ensure proper operation and management of Dams and Reservoirs in accordance with their operational manual and engineering standards;
- ii. Ensure the construction of all sizes of Dams in accordance with the guidelines provided in the National Water Resources Master Plan;
- iii. Investigate the possibility of inter-basin water transfer schemes from areas of surplus to areas of deficit;
- iv. Ensure the formulation of reservoir operation policy for the existing dams in line with the National Water Resources Master Plan;
- v. To ensure preparation of dam safety monitoring plans and implement them in accordance with the established procedures;
- vi. Emphasize the construction of dams in appropriate locations with low capital cost and cheap maintenance;
- vii. Continuously monitor and inspect the dams in accordance with the laid down rules and regulations;
- viii. Ensure production of dam operation schedule to meet the intended use taking into consideration environmental issues;

- ix. To ensure compliance with the Regulations on Dam Safety.

3.7. Drainage and Irrigation

Water can be made to contribute to the national economy through the development of the country's water resources by expanding on current irrigation schemes so that agricultural production yields is improved through mitigating the problems caused by the unpredictability of rainfall. Reducing poverty through the delivery of efficiently operating irrigation schemes is a main target of the Nigerian government.

Policy Statement 7– IRRIGATION AND DRAINAGE

Government shall promote the development of all- inclusive irrigation Schemes and enhance performance of irrigation farming towards ensuring the nation's food security and diversification of the economy.

Objectives:

The objectives are:

- i. To reduce poverty through effective operations of irrigation schemes allowing appropriate operation and management by the beneficiaries;
- ii. To optimize the use of water and the land resources to enhance food production;
- iii. To slow, stop or reverse the rates of environmental degradation in the existing schemes;
- iv. To ensure the sustainability of irrigation and drainage schemes.

Strategies:

- i. **Performance, Viability and Competitiveness**
 - o Raise productivity of water for crops, livestock and aquaculture.
 - o Raise land productivity for crops, livestock and aquaculture.
 - o Enhance production potential of on-going irrigation activities.
 - o Develop new irrigation areas according to demand and feasibility.
 - o Increase level of mechanization of irrigation activities.
 - o Enhance competitiveness of irrigated agriculture.
- ii. **Governance and Enhanced Services**
 - o Review legal mandate to accommodate decentralization of authority
 - o Develop service-oriented public institutions
 - o Streamline institutions for irrigation development and practices
 - o Provide cost-effective, demand-driven irrigation support services
 - o Develop the required human resource capacities
- iii. **Responsive Funding Mechanism and Effective Private Sector Participation**
 - o Establish appropriate funding mechanism for public irrigation schemes.
 - o Set investment targets focusing on priorities.
 - o Increase private sector participation and investment in irrigation.

- Promote sustainable user participation in irrigation management.
- iv. Development and uptake of innovation**
- Develop and maintain human resource and institutional capacity for responsive research and development in the irrigation subsector.
 - Upgrade and expand the R&D facilities to lead in the generation of responsive innovations to support the dynamics of the irrigation value chain
 - Support research agenda on environment, bio-diversity, resource conservation to promote sustainable irrigation development and practice in Nigeria
- v. Efficient Resource Utilization and Rapid Growth**
- Provide access to and right of use of irrigation facilities to communities
 - Develop national capacity for land and water resource management
 - Diversify irrigation options and composite irrigation systems adaptable to different environmental settings
- vi. Improved Capacity for Sustainable Data Generation, Management and Use**
- Establishment of a dynamic real time and accessible database
 - Upgrade and update the instrumentation of field data collection
 - Upgrade and improve the capacity for effective planning, monitoring and evaluation system

3.8. Water Supply and Sanitation

According to the ³WHO/UNICEF Joint Monitoring Programme report 2015, 69% of Nigerians have access to safe water and only 29% have access to improved sanitation services. These percentages mean that over 50million of Nigerians lack access to clean water and over 100million are without access to basic sanitation. Given that access to water and sanitation are the first steps to overcoming poverty, it is a challenge that must be systematically tackled.

Policy Statement 8 - Water Supply and Sanitation

Government will promote access to sufficient and affordable water supply and adequate sanitation as part of the overall objective to enhance health, dignity, economic well-being and improved livelihood for all Nigerians.

Objective:

To increase the quantity and quality of water supply and sanitation services to meet the level of socio-economic demand nation-wide in an effective, equitable and efficient manner through a clear participatory roles for all tiers of government, communities, the private sector, civil society organizations and external support agencies.

Strategies:

- i. Facilitate Increase in service coverage for water supply and sanitation to meet the desired level of socio-economic demand, national and international targets;
- ii. promote the right of access to clean water and basic sanitation for all citizens;
- iii. support initiatives towards affordable water supply and sanitation services for all citizens;
- iv. Promote separation of organizational responsibility for regulation from service provision and the establishment of accountable, independent, effective and financially viable water service providers operating under a regulated policy framework;
- v. Ensure national water quality standards are maintained and monitoring systems established;
- vi. Promote the involvement of water users through a consultative forum;
- vii. Encourage private sector participation in the provision of water services and sanitation;
- viii. Mobilize funds for water supply and sanitation facilities improvement and development through participatory investment among three tiers of government and other alternative sources.
- ix. Promote appropriate technology and innovation for efficient water supply and sanitation service delivery.

³www.unicef.org/media/files/JMP_2014_Update.pdf

3.9. Water Resources Regulation and Pricing

Water being a finite resource must be conserved and its use controlled for the benefit of present and future generations. This control must be exercised within the boundaries of a regulatory Framework that seeks to ensure equitable distribution through a system of permits and licensing, bearing in mind the prioritization of use as indicated in this Policy, transparency in pricing and fairness in allocation.

Key Policy Statement 9 –Water Resources Regulation and Pricing

Regulation of the water resources Sector will be a principal consideration in the enthronement of IWRM and the Regulatory framework will provide for a Regulatory body with oversight for the development, use, protection, conservation and allocation of the nation's water resources in an efficient and equitable manner.

Objectives:

To establish and enthrone a regulatory framework that comprises an independent Regulatory institution, processes and procedures that will guarantee water resources utilisation through justifiable allocation, transparent pricing regime, accountability on the part of all sector institutions and stakeholders, resource protection, conservation and development.

Strategy:

- i. A Sector Regulator will be established with Nation-wide oversight for water resources.
- ii. Regulation will be enthroned at basin level with the involvement of all stakeholders in the basin.
- iii. The Regulator will ensure that licensees or authorized developers, water services providers and users as well as their infrastructure meet the technical, social and commercial obligations in a manner which promotes fairness as well as the wellbeing of all citizens.
- iv. Regulation will protect licensees and the public from unfair conduct of providers of water resources services, with regard to the quality of service and the payment of tariffs and ensure that licensees achieve the highest possible level of accountability and responsiveness to customer and community needs;
- v. ensure that public water services are supplied as efficiently and economically as possible and at such performance standards which reasonably meet the social, industrial, and commercial needs of the community and the Country;

3.10. Flood, Drought, and Climate Change

Key Policy Statement 10 – Flood, Drought and Climate change

The management of water resources shall be responsive to climate change resilience measures by adopting environmentally friendly practices and innovative solutions towards maintaining the balance between the environment, water resources and ecosystems.

Policy Objectives;

To manage the nation's water resources with a view to ensuring disaster reduction - floods and drought management - environmental conservation and incorporating future climate swings into development planning.

Strategies:

- i. To enhance continuous climate change information gathering and sensitization of planners, stakeholders and the public towards information dissemination at various levels.
- ii. Incorporate climate screening and proofing into all water resources infrastructural development.
- iii. Develop more small-scale earth dams for expanded storage of raw water as adaptation strategy for water conservation, flood management and integrated water management
- iv. Invest in programmes to upgrade canals and storage infrastructures to improve water conveyance, river training, and to reduce water losses.
- v. Improve structural and non-structural flood and drought management
- vi. Promote integrated catchment management approach for water resources conservation, planning, including rainwater harvesting, towards strategic adaptation at community levels.
- vii. Carry out research towards sustainable water use and deployment of renewable options as alternative energy source in the water sector, towards creation of green jobs and green energy use.
- viii. Improve drainage facilities in the southern parts of the country and water retention mechanisms in the north to check flooding, erosion and droughts.
- ix. Ensure incorporation of appropriate mechanisms for settlement and compensation programs into project implementation.
- x. To improve national, regional and bilateral co-operation to strengthen water resources management for environmental sustainability.

3.11. Monitoring and Evaluation

Improvement of water service delivery requires that activities are continuously monitored and evaluated to guarantee a timely execution of projects and to ensure their sustainability. This is to improve on the envisaged impact of any project. Where feasible participatory monitoring and evaluation will be carried out, starting from monitoring community level Projects with support from the three tiers of government levels, ESAs, NGOs, and the Private Sector.

Key Policy Statement 11 – Monitoring and Evaluation

A robust Monitoring and Evaluation System will be applied to measure both output and impact of water resources investments and programmes on the lives of the beneficiaries and the environment, improve accountability, ensure successful project delivery and judicious use of the nation's resources.

Objectives:

- Ensure that M&E and feedback systems are accountable, participatory, transparent and results-oriented;
- Ensure coordinated synergy among the various levels of government in the monitoring and evaluation of programmes in the water sector;
- To measure the output and impact of the water resources programmes and project on the lives of people and environment; and
- Improve the communication flow and use of information among stakeholders in the water sector

Strategies

- i. Design template for monitoring and data collection to guide and promote relevant monitoring of data generation activities;
- ii. Establish transparent systems for adequate data management throughout the lifetime of all infrastructures;
- iii. Ensure the clear assignment and implementation of roles and responsibilities in the monitoring, evaluation and feedback system;
- iv. Create a clear and precise monitoring and evaluation framework at the programme sector levels, for example, the use of logical framework, water sector monitoring and evaluation framework, etc
- v. Involve programme and project beneficiaries and independent stakeholders (community-based organizations, civil society and private sector organizations) in the monitoring, evaluation and feedback processes of the water sector programmes and projects, in order to improve external accountability;
- vi. Create mechanisms for regular reporting and publication as well as sharing of information among various stakeholders in the sector;
- vii. Develop sector-wide indicators and scorecard for measuring performance of programmes and projects in the sector.

3.12. Sector Institutional Framework

The institutional arrangement will be adopted to respond to Nigeria's vision of clear separation of functions amongst Sector Players to eliminate overlap and duplication of roles while devolving management to the lowest levels for sustainability. Specialisation will be fostered amongst the Institutions allowing the best positioned to undertake activities that they are equipped to deliver. This arrangement will be represented at all levels of water resources governance from the National Government to the communities.

Key Policy Statement 12– Institutional Framework

The water resources sector will be managed with a clear distinction between Policy formulation and implementation, service provision, and Regulation. Institutions will be established to undertake the activities necessary for the attainment of the objectives of the National Water Resources Masterplan as it relates to the mandate of such institution.

Objectives: -

- To have in place an effective institutional framework with clearly defined roles on different administrative levels for integrated, sustainable, participatory management and regulation of water resources
- To ensure clear separation of the roles of Policy formulation, Service provision, Regulation and implementation monitoring.
- To ensure proper co-ordination and collaboration among stakeholders and harmonization of activities in water resources development and management.
- To ensure a multi-disciplinary and inter-sectoral approach to water resources development and management.
- To define clearly the functions and responsibilities of each tier of Government and for Institutions set up to implement various activities in the water resources sector to eliminate overlap and conflicts.

Strategies:

- i. Identify the relevant Institutions for the attainment of each of the Policy initiatives and where no such exists, to establish one.
- ii. Propose a conducive administrative set-up for the different levels of government, as well as between the three tiers of government and identify linkages for effective and seamless collaboration.
- iii. Establish Hydrological Area catchment management framework comprising River Basin development institutions, Regulatory institution, Water users and developers as well as other water stakeholders with the goal of coordinating competing interests over water use among stakeholders.
- iv. Establishment of a forum for interaction amongst all Sector Agencies in water resources matters in order to harmonize their activities and remove areas of conflict and duplication.
- v. Consultation of relevant stakeholders at all levels in Project Planning and execution.

3.13. Private Sector Participation

Private sector participation in water services will lead to more efficient service delivery, increased coverage, release government funds for other sectoral demands, boost managerial and technical know-how in public service through skills transfer, minimize public sector bureaucracy in operation and investment, and aid revitalization and restructuring of ailing public utilities.

Key Policy Statement 13 – Private Sector Participation

Government will proactively involve the private sector in the delivery of efficient and sustainable water services to the citizens through appropriate Public-Private Partnerships.

Objectives:

- Achieve a better and more efficient service delivery to all users.
- Expansion and increased water resources facilities
- Leverage on the private sector finances for the infrastructure development.
- Increased efficiency in the sector through cooperation.
- Boost managerial and technical know-how in the sector through private sector expertise.

Strategies

In order to promote Private Sector Participation in all areas of water services the following will be undertaken:

- i. Federal Government will develop public private partnerships framework that can be adapted by all tiers of government for private sector involvement in the water sector;
- ii. Regulatory framework for the activities of water services providers will be established;
- iii. Incentives and legal recognition for both local and foreign private firms will be encouraged;
- iv. Various models of PPP (BOT, Concession, Lease, Management contracts, etc) will be developed in accordance to the requirements;
- v. Technical assistance will be given to all levels of government to cope with the requirements of managing PPP contracts with the private sector;
- vi. Necessary institutional reforms that will attract private sector participation will be embarked upon.

3.14. Sector Funding

Financing water services is capital intensive. Thus, Governments annual budgetary provisions alone will not be adequate to meet the current investment gap in the sector. Alternative sources that will pool funds from government at all levels, private sector, development partners and the general public will be developed and explored.

Key Policy Statement 14 – Sector Funding

Government will continue to make adequate budgetary provision and harness alternative sources of funds to meet the infrastructure investment gap for the sector while Water Providers will be encouraged and supported to generate sufficient revenue to cover their cost in the long term.

The objectives are

- To raise necessary funds for water resources development in a timely manner and ensure a well-coordinated efficient management of water resources infrastructure.
- To ensure water service are paid for by the users to enhance sustainability.

Strategies

- i. For development of water resources infrastructure the government will promote predetermined participatory investment by all tiers of government and the community.
- ii. For economic efficiency, water charges should be set at opportunity cost while guaranteeing affordable access to the very poor through cross-subsidy measures.
- iii. Government shall regulate the pricing of water services in consultation with other stakeholders.
- iv. Improve access and coordinate funds from donor agency for the development of the Water sector.
- v. Grant some level of autonomy to government owned water agencies to ensure high levels of efficiency and cost recovery.
- vi. Encourage financial institutions to provide loans to the water sector.
- vii. Ensure prompt and adequate releases of budgetary allocations to water resources institutions
- viii. Encourage private sector participation in financing water resources activities.
- ix. Explore alternative sources of funding e.g Taxes, Royalties, Pension funds, etc.

3.15. Sub-Sector Policies

Each of the Water development, management, and use sub-sectors have issues that are peculiar to them. It is essential to develop policies and strategies for a focused and all-encompassing understanding of such issues towards adequate planning and implementation for sustainable development

Key Policy Statement 15– Sub-Sector Policies

Policies shall be developed for each sub-sector in the water resources sector to address the peculiar issue that affect such sector towards efficient and effective planning, development and management.

Objectives:

- To ensure that each sub-sector receives adequate and appropriate attention in planning, and sustainable development
- To ensure that all water resources infrastructure in each sub-sector are properly operated, adequately maintained and rehabilitated as at when due in order to ensure their sustainability.
- To ensure adequate platform for continuous attention to sub-sector issues through continuous monitoring of targets, benchmarking, and update of plans and strategies.

Strategies

Sub-Sector Policies will be developed by the concerned Ministry, Department or Agency for:

- i. Water Supply;
- ii. Water Sanitation;
- iii. Irrigation and Drainage;
- iv. Dams and Reservoirs;
- v. Hydroelectric power Generation;
- vi. Inland Navigation;
- vii. Fisheries and Livestock; and
- viii. Recreation & Tourism.

4. WATER RESOURCES INSTITUTIONAL ARRANGEMENT

4.1.Key Institutions

A number of new and existing institutions and agencies need to work together to support an Integrated Water Resources management. These institutions include: -

- i. **Federal Ministry:** which is responsible for Water Resources
- ii. **Water Resources Regulatory Commission:** (A new agency proposed in this policy)
- iii. **Catchment Management Offices and Committees/River Hydrological Area Organization:**(which is a new agency proposed in this policy)
- iv. **National Council of Water Resources:** which is already established
- v. **Nigeria Hydrological Services Agency (NIHSA):** which is already established
- vi. **River Basin Development Authorities (RBDA):** which are already existing but their roles, operational boundaries and responsibilities needs to be reviewed to take into account the Catchment Management Offices and Committees
- vii. **National Water Resources Institute:** which is already established
- viii. **National Environmental Standards and Regulations Enforcement Agency (NESREA):** which is already in existence
- ix. **The Nigerian Meteorological Agency (NIMET):** which is already in existence.
- x. **The National Inland Waterways Authority:** which is already in existence

The roles and responsibilities of these institutions are discussed below.

4.2.Federal Ministry Responsible for Water Resources

The Federal Minister responsible for Water Resources is the head of the country's water sector and has the duty to promote the protection, use, development, conservation, and management of water resources throughout Nigeria in addition to ensuring the effective performance by institutions and persons active in the water sector. This also includes the exercise of their powers in carrying out their duties in relation to water under the constitution.

The functions of the Minister include:

- (a) formulating national policy and strategy to guide the integrated planning, management, development, use and conservation of the nation's water resources. The provision of guidance for formulation of hydrological area resources strategies, definition of procedures for river classification, reserve determination and development of Hydrological Area strategies including that for water conservation, watershed management, water quality improvement, flood and drought management, anti-desertification and other related matters based on the recommendations of the National Council on Water Resources and all other institutions in the water resources sector, in consultation with other stakeholders;
- (b) formulating guidelines for policy and standards for water supply and sanitation based on recommendations of the National Council on Water Resources and monitoring the level of service delivery and ensuring regular dissemination of reports;
- (c) periodically reviewing and updating National Water Legislation to ensure consistency with National Policy;
- (d) implementing development projects with multi-purpose natures including for flood and drought management that are outside the mandate of individual service delivery agencies;

- (e) to provide technical guidance to the National Council on Water Resources and its committees;
- (f) to liaise with donors and supervise donor and government funded water projects;
- (g) to promote all aspects of public-private partnerships in the delivery of water services and in the development of water resources infrastructure.

On trans-boundary rivers within Nigeria, the Ministry shall establish and chair ad-hoc committees for each of the Hydrological Areas and for any other situation where development or management of the water resources affects more than one hydrological area. For international agreements, negotiations and meetings, the Minister may, in consultation with the Federal Executive Council, by notice in the Gazette, establish a Committee to coordinate implementation of any international agreement entered into by the Federal Republic of Nigeria and a foreign government or any other international body or organisation relating to investigating, managing, monitoring, and protecting water resources; ensuring regional co-operation on water resources; acquiring, constructing, altering, operating or maintaining a waterworks connected to such agreement; or the allocation, use and supply of water according to the principles of equitable and reasonable utilization and avoidance of significant trans-boundary harm.

4.3. Water Resources Regulatory Commission

The Federal Government will establish an independent Water Resources Regulatory Body or Commission which consists of representatives from the Ministries of (i) Agriculture; (ii) Water Resources; (iii) Environment; (iv) Housing and Urban development; (v) Energy (power sector); (vi) Health; and (vii) Transportation to regulate the use of the nation's water resources for the purpose of: -regulating, protecting, conserving and controlling the water resources of the country for equitable and sustainable social and economic development while maintaining environmental integrity. This will include regulating the allocation, supply and distribution of water resources for all uses, and to promote equitable, sustainable and efficient best practices and conduct. To do this, the commission will ensure that licensees or authorized developers and water services providers and users as well as their infrastructure meet the technical, social and commercial obligations in a manner which promotes fairness as well as the wellbeing of all citizens. As a regulator, the commission will protect licensees and the public from unfair conduct by providers of water resources services, with regard to the quality of service and the payment of tariffs and ensure that licensees achieve the highest possible levels of accountability and responsiveness to customer and community needs; ensure that public water services are supplied as efficiently and economically as possible and at such performance standards which reasonably meet the social, industrial, and commercial needs of the community; and generally promote the development of other sectors of the Nigerian economy through the efficient and sustainable supply of water services.

The functions of the commission are to be well articulated in the relevant water law

4.4. National Council of Water Resources

The National Council of Water Resources is made up of the Federal Minister responsible for water resources who shall be Chairperson and the State Commissioners responsible for Water Resources or any other person responsible for water resources in the States. The purpose of the Council shall be to provide guidance to the Government on any proposed water-related legislation, national water resources policy and strategy, and issues of coordination in the water sector.

Functions of the Council is to provide a forum for coordination across the water sub-sector and for discussion on issues of national importance; to provide guidance for and review of the formulation of national water-related legislation; water resources, water supply and sanitation policies, strategies and master plans; provide a forum for mediation of issues on the use or management of water resources arising between sub-sectors or across Hydrological Area boundaries; and review performance of the water resources sector in Nigeria as well as the nation's compliance with obligations of international agreements and commitments on water-related matters.

The Council is expected to establish committees and sub-committees as required to investigate and analyse issues tabled for discussion before the Council and to formulate recommendations. General representation at the Technical Committees of the Council shall include representatives of Federal and State Legislature (water committee members); professional bodies as well as water stakeholders at Federal, State, and Local Government levels, Federal Ministries, Departments and Agencies responsible for Water Resources, Environment, Agriculture, Health, Inland Waterways, Solid Minerals, Forestry, Electricity Generation; Ministry Of Women Affairs, State Water And Environment Agencies; Water Consumers, Water User Associations, Industries, Association Of Local Governments, Community-Based Organizations, Bodies responsible for protected or conservation areas, the Nigeria Meteorological Agency, the National Emergency Management Agency, Civil Society Organisations, The Private Sector and Resource Persons.

The council will prepare annual reports providing details of its discussions and recommendations which shall be made public through publication in the official gazettes and transmitted to its members.

4.5. Nigeria Hydrological Services Agency (NIHSA)

The Nigeria Hydrological Services Agency (NIHSA) is a Government Agency established under the Ministry of Water Resources. The Act for the establishment of NIHSA was signed into law on the 27th day of August, 2010. The aim is to create a dynamic and advanced hydrological service with capabilities of facilitating and supporting the harnessing, controlling, preserving, developing and management of Nigeria's valuable water resources in a sustainable manner. The Mission of the Agency is to provide information on the status and trends of the nation's water resources including its location in time and space, extent, dependability, quality and the possibilities of its utilization and control, through the provision of reliable and high quality hydrological and hydrogeological data on a continuous basis. Currently the Agency has 8 Area offices, one in each of the 8 Hydrological Areas. These area offices are responsible for field investigation and carrying out relevant activities of the Agency in the State and Local government levels⁴

Function of NIHSA is to:⁵

- i. advise the Federal and States Governments on all aspects of hydrology;
- ii. work with the meteorological services to issue forecasts for floods;
- iii. promote hydrological services in agriculture, drought and desertification activities and provide hydrological services in operational hydrology and water resources activities;
- iv. collect, process and disseminate all hydrological data and information within and outside Nigeria and keep in safe custody all hydrological records in the Agency's archive;
- v. ensure that international standards and best practices in hydrological operations are maintained and ensure uniform standards of observation of all hydrological phenomena in Nigeria;
- vi. train, conduct and undertake research particularly in the field of surface and groundwater hydrology and other related areas of hydrology;
- vii. provide consultancy services to the public on hydrology;
- viii. monitor hydrology components of the environment including ground water pollution through industrial, commercial and agricultural activities;
- ix. carry out river training activities to improve conveyance of water in river channels including monitoring of the sediment load and
- x. carry out geo-physical investigations for siting ground water development projects, dam foundation and saline water intrusion.

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⁵ Section 65 of the draft Water Resources Bill.

4.6. Catchment Management Offices and Committees

Each Hydrological Area will have a Catchment Management Office (CMO) to regulate, protect, conserve and control water resources and its use within the Hydrological Area for equitable use. They will ensure sustainable social and economic development, maintain environmental integrity in accordance with the policies and regulations developed by the Regulatory Commission.

The Functions of the Catchment Management Offices are:

- (a) formulate and implement a water resources management strategy for its area of operation or Hydrological Area and regulate, protect, conserve, and control water resources and its use within a Hydrological Area for equitable and sustainable social and economic development while maintaining environmental integrity, including management and protection of river and lake catchments
- (b) prepare an indicative Hydrological Area strategy and plan for the water management area. Advise interested persons on the protection, use, development, conservation, management and control of the water resources in its Hydrological Area;
- (c) With respect to water sources declared to be national water resources, license water allocation, wastewater discharge, construction of hydraulic works and other related activities, implement the charging policy for raw water abstractions and monitor water abstraction;
- (d) regulate and monitor operational rules of dams, barrages, weirs, diversion works and other hydraulic works that affect the flow of water in a river taking into account principles of any national policy or strategy on reservoir operations;
- (e) promote improved river quality and control of pollution through a cooperative working arrangement with Federal and State environment agencies;
- (f) promote community participation in the protection, use, development, conservation, management and control of the water resources in its Hydrological Area and co-ordinate the related activities of water users and that of the other water management institutions within its Hydrological Area; This should include a formalized stakeholder consultative forum in each catchment to actualize the participatory approach in water management
- (g) maintain a database on hydro-meteorological, hydrological, hydro-geological and water quality monitoring networks in its Hydrological Area;
- (h) facilitate resolution of water-related conflicts relating to its Hydrological Area;
- (i) participate in and coordinate with the other CMOs in upstream or downstream Hydrological Areas;
- (j) regulate other activities that may affect water quantity or quality including dredging and programs for weed prevention, clearing and containment activities;
- (k) prepare an annual report for the Commission describing the status of the Hydrological Area's water resources, major issues, activities and propose related future plans and necessary financial report.
- (l) promote co-ordination with the implementation of any applicable development plan established pursuant to any other law or policy in the water resources sector; and
- (m) present all strategies, regulations and studies with respect to the matters in (a) to (m) above to the Catchment Committee.

Catchment Committee is to be established for each Hydrological Area comprising the Catchment Director as Chairman and a representative from each of the Nigeria Hydrological Services Agency; Ministry responsible for water resources in each of the States within the Hydrological Area, the State Emergency Management Agency for each State in the

area; the State Water Regulatory Body in each State in the area, Water Users Association; Agricultural Cooperative Society and Chambers of Commerce and Industry.

Functions of the Catchment Committee are to advise the Catchment Management Office on all matters relating to issuance of Licences for raw water abstraction, setting of tariffs; Hydrological Area Policies, Hydrological Area management strategies, conflict resolution within the catchment and water quality control

4.7. River Basin Development Authorities (RBDAs)

The objectives of the Authorities shall be to harness, develop and conserve available land in Nigeria's surface and underground water resources with a view to improving agriculture and water supply for both human and animal consumption, thereby enhancing the quality of life for all Nigerians. Note this is only where the RBDA has the agreement and approval for water and other resource use from the aligned Catchment Management Committees.

The functions of each Authority shall be to undertake comprehensive development of both surface and underground water resources for multipurpose use with particular emphasis on the provision of irrigation infrastructure, the control of floods and erosion and for water-shed management. Construct, operate and maintain dams, dykes, polders, wells, boreholes, irrigation and drainage systems, and other works necessary for the achievement of the Authority's functions. To hand over all lands to be cultivated under the irrigation schemes to the farmers and to supply water from each Authority's reservoirs for irrigation, water supply, recreation etc under commercially viable arrangements.

Other functions may include to develop and keep up-to-date comprehensive water resources master plan identifying all water resources requirements in the Authority's area of operation, through adequate collection and collation of water resources, water use, socio-economic and environmental data of the River Hydrological Area; to assist farmers as well as Governments and their agencies at Federal, State and Local Levels within their catchment areas with land reclamation, conservation and preparation for agricultural production

Their function also includes attracting private sector investors for the development and use of the water from dams under public/private partnership concession arrangement for the operation, maintenance and utilization of dams, for irrigation farming and water supply under viable and agreeable terms with reputable contractors to ensure sustainability while promoting the general development of the catchment areas of dams and provide the opportunities to undertake auxiliary developments such as agro-allied industries, fisheries and tourism. In cooperation or partnership with power supply companies generate and supply hydroelectric power from dams where feasible.

4.8. National Water Resources Institute (NWRI)

The Institute shall be responsible generally for the promotion and development of training courses in Water Resources; advising the Minister on national water resources training needs and priorities; performing engineering research functions related to such major water resources projects as may be required for flood control, river regulation, reclamation, drainage, irrigation, domestic and industrial water supply, sewage and sewage treatment.

The institute is also responsible for promoting the establishment of a uniform national data collection system relating to surface and subsurface water resources; providing for the training of engineers and technicians on short courses; formulating programmes of work in the field of water resources; establishing and maintaining a water resources library, documentation unit and conference centre; publishing or sponsoring publication of water resources journals; promoting co-operation in water resources development management with similar bodies in other countries and with international bodies connected with water resources management and operation;

4.9. National Environmental Standards and Regulations Enforcement Agency (NESREA)

The Federal Government in line with section 20 of the 1999 Constitution of the Federal Republic of Nigeria, established the **National Environmental Standards and Regulations Enforcement Agency (NESREA)**, a parastatal of the Federal Ministry of Environment. The NESREA Act empowers the Agency to be responsible for enforcing all environmental laws, guidelines, policies, standards and regulations in Nigeria, as well as enforcing compliance with provisions of international agreements, protocols, conventions and treaties on the environment to which Nigeria is a signatory

This agency has the responsibility for the protection and development of the environment, biodiversity conservation and sustainable development of Nigeria's natural resources, environmental technology, including coordination and liaison with relevant stake holders within and outside Nigeria on matters of enforcement of environmental standards, regulations, rules, laws, policies and guidelines. Other regulatory agencies with oversight functions and responsibility over specific industries have also issued guidelines to regulate the impact of such industries on the environment such as the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) 2002, published by the Department of Petroleum Resources (DPR).

The NESREA Act allows each State and Local Government in the country to set up its own agency for the protection and improvement of the environment within the State. Each State is also empowered to make laws to protect the environment within its jurisdiction as all the States have environmental agencies.

Functions of The NESREA Act as it affects water directly are:

- enforce compliance with policies, standards, legislation and guidelines on water quality, environmental health and sanitation, including pollution abatement;
- enforce through compliance monitoring, the environmental regulations and standards on noise, air, land, seas, oceans and other water bodies other than in the oil and gas sector;
- enforce compliance with laws, guidelines, policies and standards on environmental matters;
- submit for the approval of the Minister, proposals for the evolution and review of existing guidelines, regulations and standards on environment other than in the oil and gas sector including water quality and watershed management
- in collaboration with other relevant agencies and with the approval of the Minister, establish programmes for setting standards and regulations for the prevention, reduction and elimination of pollution and other forms of environmental degradation in the nation's air, land, oceans, seas and other water bodies and for restoration and enhancement of the nation's environment and natural resources;
- **Federal water quality standards:** The Agency shall in collaboration with other relevant agencies make regulations for the purpose of protecting public health or welfare and enhancing the quality of water. In drawing up proposals for such regulations and standards, the Agency shall take into consideration the use and value of public water supplies for propagation of marine and wildlife animals, recreational purposes, agricultural, industrial and other legitimate use.
- **Land Resources and Watershed Quality:** The Agency may make regulations, guidelines and standards for the protection and enhancement of the quality of land resources, natural watersheds, coastal zones, dams and reservoirs including introducing measures for mitigation of floods and erosion, to serve the purpose of this Act.

- **Discharge of Hazardous Substances and Related Offences:** The discharge in such harmful quantities of any hazardous substance into the air or upon the land and the waters of Nigeria or at the adjoining shorelines is prohibited, except where such discharge is permitted or authorized under any law in force in Nigeria.

4.10. The Nigerian Meteorological Agency (NIMET)

The Nigerian Meteorological Agency (NIMET) came into existence by an Act of the National Assembly – NIMET (Establishment) ACT 2003, enacted on 21st May 2003, and became effective on 19th June 2003 following Presidential assent.

It is a Federal Government agency charged with the responsibility of advising the Federal Government on all aspects of meteorology; project, prepare and interpret government policy in the field of meteorology; and to issue weather (and climate) forecasts for the safe operations of aircrafts, ocean going vessels and oil rigs. The Act also makes it the responsibility of the Agency to observe, collate, collect, process and disseminate all meteorological data and information within and outside Nigeria; co-ordinate research activities among staff, and publish scientific papers in the various branches of meteorology in support of sustainable socio-economic activities in Nigeria.

Functions of NIMET are:

- a. advise the Federal Government on all aspects of meteorology;
- b. project, prepare and interpret Government policy in the field of meteorology;
- c. issue weather forecasts for the safe operation of aircrafts, ocean going vessels and oil rigs;
- d. promote the services of meteorology in agricultural, drought and desertification activities;
- e. provide meteorological services in operational hydrology and water resources activities;
- f. provide weather services in marine, environmental pollution and biometeorology for climatic and human health activities;
- g. subject to regulation by the Nigerian Communications Commission, provide and operate telecommunications systems for meteorological purposes only;
- h. proffer advice to the Federal and State Government on seismological activities;
- i. collect, process and disseminate all meteorological data and information within and outside Nigeria;
- j. keep in safe custody all meteorological records in the National Meteorological Archive;
- k. ensure uniform standards of observation of all meteorological phenomena in Nigeria;
- l. ensure that international standards and practices in meteorological operations are maintained;
- m. train, conduct and undertake research particularly in the field of tropical agriculture, hydro and marine meteorology and other related areas of meteorology;
- n. provide consultancy services to the public on meteorology;
- o. monitor meteorological components of environmental pollution and ozone concentration;
- p. calibrate, develop and fabricate meteorological conventional equipment for export and internal use;
- q. be the sole authority to approve and establish meteorological stations for meteorological observations;

The Agency shall prescribe the climatic requirements for all sectoral activities including aviation, defense, finance, agriculture, construction works, environment, industries, marine, natural disaster and relief management, water resources, power and steel, transport, science and technology etc.

4.11. The National Inland Waterways Authority (NIWA)

The National Inland Waterways Authority was established by the National Inland Waterways Act No. 13 of

1997. The authority has the following functions:

- a. provide regulations for inland navigation;
- b. ensure the development of infrastructural facilities for a national inland waterways network connecting the creeks and the rivers with the economic centers using the river-ports as nodal points for intermodal exchange; and
- c. ensure the development of indigenous technical and managerial skill to meet the challenges of modern inland waterways transportation.

Other functions and powers of the Authority are:

- a. undertake capital and maintenance dredging;
- b. undertake hydrological and hydrographic surveys;
- c. design ferry routes;
- d. survey, remove, receive derelicts, wrecks and other obstructions from inland waterways;
- e. operate ferry services within the inland waterways system;
- f. undertake installation and maintenance of lights, buoys and all navigational aids along water channels and banks;
- g. issue and control licenses for inland navigation, piers, jetties, dockyards;
- h. examine and survey inland water crafts and shipyard operators;
- i. grant permit and licenses for sand dredging, pipeline construction, dredging of slots and crossing of waterways by utility lines, water intake, rock blasting and removal;
- j. grant licenses to private inland waterway operators;
- k. approve designs and construction of inland river crafts;
- l. approve and control all
 - (i) jetties, dockyards, piers within the inland waterways;
 - (ii) advertising within the right-of-way of the waterways;
- m. reclaim land within the right-of-way;
- n. undertake the construction, administration and maintenance of inland river-ports and jetties;
- o. provide hydraulic structures for rivers and dams, bed and bank stabilization, barrages, groynes;
- p. collect river tolls;
- q. undertake the production, publication and broadcasting of navigational publications, bulletins and notices, hydrological year books, river charts and river maps;
- r. carry out consultancy and contractual services;
- s. represent the Government of Nigeria at national and international commissions that deal with navigation and inland water transportation;
- t. subject to the provisions of the Environmental Impact Assessment Act, carry out environmental impact assessment of navigation and other dredging activities within the inland water and its right-of-ways;
- u. undertake erection and maintenance of gauges, kilometer boards, horizontal and vertical control marks;

- v. advise government on all border mailers that relate to the inland waters;
- w. undertake acquisition, leasing and hiring of properties;
- x. run cruise boats;
- y. carry out boat repairs, boat construction and dockyard services; and
- z. clear water hyacinth and other aquatic weeds.

The following - rivers and their tributaries, distributaries, creeks, lakes, lagoons and intra-coastal waterways are declared Federal navigable waterways.

1. The River Niger from the Nigerian/Niger/Benin border, through the Nun and Forcados distributaries to the Atlantic Ocean.
2. The River Benue from the Nigerian/Cameroun border to its confluence with River Niger at Lokoja.
3. The Cross River from the Nigerian/Cameroun border to the Atlantic. Ocean, and all its distributaries.
4. Rivers Sokoto. Kaduna. Geriny. Gongola. Taraba. Donga. Katsina-Ala. Anambra. Ogun. Oluwa. Osse, Benin, Imo. Kwa Ibo.
5. The Intra-coastal route from Badagry. along the Badagry Creek to Lagos through Lagos Lagoon to Epe, Lekki Lagoon lo Iwopin. alongOmu Creek, TalifaKiveito Atijere, Akata. Aboto. Oluwa River to Okitipupa and onto Gbekebo. Arogbo. Ofunama. Benin Creek to Warri. Also the canal running from Araromi through Aiyetoro. Imelumo to Benin River and from Aiyetoro through Mahin Lagoon to Igbokoda.
6. The waterway from Warri along the Forcados River, through Frukana, Siama. Bomadi. Angalabiri. Patani. Torofani. down River Nun to Agberi, Kiama. Sabagreia. Gbaran Creek, Agudama, Ekpetional into Ekole Creek to Yanaka. Yenegoa, Sangala to Mbiakpaba. ontoOkokokiri, Ofokpota, Olagaga. Nembe, Adema. Agoribiri Creek to Egbema, Degema, Sombreiro River to Hanya Town, Ogbakiri to Port Harcourt.
7. The waterway from Port Harcourt, through AmadiCreekdown to Bonny River, into Opobo Channel Adoni River, through Andoni Flats, Tellifer Creek, Imo River. Shooter Creek. Kwa Ibo Creek, Kwa Ibo River, Stubbs Creeks. Widenham Creek, Effiat-Mbo Creek, Cross River estuary to Oron and Calabar.
8. Rivers Benin. Ethiope, Ossiomo. Onne, Aba. Azumini, Olomum. Siluko, Talifa, Forcados, Penington, Escravos, Warri, Ramos, Dodo, Bonny, Middleton, Fishtown, Sengana, Brass of Nicholas, Santa Barbara. San Batholomew, Sambriero, New Calabar, Mbo, Rio del Rey, Uruan, Akwayafe.
9. Creeks Odiama, Agamama Tora, Nembe, Krakama, Buguma, Bille, Finima, New Calabar, Ekole, Cawthprne Channel, Ikane-Bakassi, Omu, Kwato (Gwato), Adagbrassa, Chananomi, Okpoko, Jones Kulama, Ikebiri, Nikorogba, Sagbama, Egbedi, Kolo, Laylor, Hughes Channel.
10. Lakes Mahin, Oguta, OsiamEhому.
11. The Orashi River from Oguta Lake to Ebocha, Omoku, Kreigani, Moiyama.,Okariki, Egbema, Sombreiro River.
12. Lake Chad, that part within Nigeria.

All navigable waterways, inland waterways, river-ports and internal waters of Nigeria, excluding all direct approaches to the ports listed in the Third Schedule to this Act and all other waters declared to be approaches to ports under or pursuant to the Nigerian Ports Authority Act, up to 250 metres beyond the upstream edge of the quay of such ports, shall be under the exclusive management, direction and control of the Authority.