

Evaluation of Existing Environmental Laws Amenable for Adaptation to Mitigate the Impact of Climate Change in Nigeria

Oluwatoyin O. Ajayi^{*1}

Abstract

It is without gainsaying that climate change is a global challenge, howbeit with multifarious local impacts. Mitigation and adaptation are two pronged strategies for combating climate change identified by the Intergovernmental Panel on Climate Change (IPCC). However, since impacts of climate change are localised, adaptation is the key strategy proven by scientists at addressing them. This paper adopts the doctrinal research method. The paper uses majorly primary sources and some secondary sources for information. The study found that there are no laws on climate change adaptation in the country. To bridge this gap, some existing environmental laws which can aid mitigation of climate change impacts especially in the water, agriculture and coastal sectors were identified and evaluated. It was discovered that unless the laws are publicised and enforced, they will not be able to protect the environment, mitigate the impacts of climate change by reducing vulnerabilities and aid adaptation.

Key words: Environmental Laws, Adaptation, climate change, regulations

1.0 Introduction

Adaptation is the ability to build resilience to impacts of climate change or strategies to cope with the impacts and reducing vulnerabilities.² It is defined by the IPCC as ‘the adjustment in natural or human systems to a new or changing environment in response to actual or expected climatic

¹ Faculty of Law, Obafemi Awolowo University, Ile –Ife. oluwatoyinajayi@oauife.edu.ng

² United Nations Framework Convention on Climate Change: Handbook. Bonn, Germany: Climate Change Secretariat, p. 94

stimuli or their effects, which moderates harm or exploits beneficial opportunities.³

Adaptation and mitigation were at the front burner at the Seventh Conference of the Parties (COP) Marrakech, Morocco in 2001. Delegates deliberated on adaptation to climate change and mitigation measures, and they came to terms with the challenges developing nations are encumbered with on adaptation. According to Adger et.al,⁴ adaptation is the adjustment of a system to moderate the impacts of climate change, to take advantage of new opportunities or to cope with the consequences.⁵ The Stern Review relates adaptation to building resilience, and recognises that it will be a key response to reduce vulnerability to climate change.⁶ However, the impacts of climate change are uneven and the worst impacts resides with the populations that are least able to cope with them.⁷

According to Leary⁸ adaptation cannot be restricted to engineering projects like dams and sea walls, but must recognise the need for making adjustments across board, from individuals, households, communities, organisations and governments in response to the effects of climate change and variability. Effective and efficient utilisation of natural resources, input mixes in production, review of laws, programmes, policies and investments are ways to optimise and adapt.⁹

According to the IPCC, adaptation should be seen as a process and not a one-time action, particularly as climate is continuously changing and climate variability is expected to increase in frequency and intensity. Due to

³ Global Green House Warming. Com, Climate Mitigation and Adaptation <<http://www.global-greenhouse-warming.com/climate-mitigation-and-adaptation.html>> 21June 2017

⁴ N. Adger, S. Huq, K. Brown, D. Conway and M. Hulme, Adaptation to Climate Change in the Developing World, 2003, Progress in Development Studies 3(3): 179–195

⁵ Ibid

⁶ N. Stern, The Economics of Climate Change: The Stern Review, Cambridge University Press, Cambridge, UK. In M. Chambwera and J. Stage, Climate Change and Adaptation in Developing Countries: Issues and Perspectives for Economic Analysis, IIED, 2010

⁷ B. Smit, et al., Adaptation to climate change in the context of sustainable development and equity. In McCarthy, J.J., Canziani, O., Leary, N.A., Dokken, D.J. and White, K.S., editors, Climate change 2001: impacts, adaptation and vulnerability. IPCC Working Group II. Cambridge University Press, 877–912.

⁸ N. Leary, A framework for benefit-cost analysis of adaptation to climate change and climate variability, Mitigation and Adaptation Strategies for Global Change (1999) 4: 307–318, doi:10.1023/A:1009667706027

⁹ Ibid

this fact, there is a need for continuing research into adaptive measures suitable for each ecological zone of the country. Some of the factors that have unfavourably increased the country's vulnerability to climate change include dependence on resource based and climate sensitive resources like rain fed agriculture, tourism and fishing.¹⁰ Effective and result-based measures should be supported for the development of approaches at all levels on vulnerability and adaptation, as well as capacity-building for the integration of adaptation concerns into sustainable development strategies".¹¹ When it comes to adaptation to climate change, researchers are of the view that adaptation is local, yet dynamic; as response must continue as long as climate change continues with increasing vulnerabilities for local populations and need to upgrade to meet emerging vulnerabilities¹²

Under article 4 (e) United Nations framework convention on climate change (UNFCCC), country parties are committed to making sure adaptation is a top priority in their response to ameliorate the effects of climate change. "Cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods."¹³ Although adaptation was not on the front burner at the initial stage, it is increasingly being recognized that adaptation is germane to reducing vulnerabilities on individual, household, local and global scale. Adaptation may be in form of reduction in water usage for irrigation; using drip methods rather than flooding method. Developing and planting drought resistant crops, crop diversification, protect coast lands, reduce waste in domestic water usage, learning to swim in case of flooding and training for evacuation and relief in emergency situation.

Adaptation is important for Nigeria because the sectors that are highly vulnerable to the impacts of climate change are critical to the growth and development of the country and the citizens. Flooding, decrease in rainfall, droughts and the consequences of these include loss of lives and properties,

¹⁰ Ibid.

¹¹ Ibid

¹² E. Wilson and C. Termeer, Governance of Climate Change Adaptation: Introduction to the Special Issue [2011] 2 Climate L. 151

¹³ Article 4(e) UNFCCC

reduction in farm yields, pests and diseases, loss of sources of livelihood and revenue. Critical sectors in need of adaptation that will be discussed include: energy, water, coastal areas, and agriculture.

Although the federal government has not been able to enact laws to respond to climate change issues in the country, there are however some sector specific policies, laws and regulations on environmental protection and management that can be utilised to fast-track response to reduce vulnerabilities of the country's population. Some of the laws in place that can aid adaptation strategies are discussed.

The paper is divided into four segments. Section one is the introduction, it sets out the concept of adaptation and its relevance to Nigeria. Section two discusses and evaluates the laws and regulations amenable for climate change adaptation in the absence of a legal framework on climate change in the country, while section three deals with the policies on agriculture. Section four is on conclusion and recommendations, one of which is to mainstream adaptation into laws in the different sectors that will be negatively affected, in order to reduce the impacts of climate change.

2.0 Laws and Regulations Amenable for Climate Change Adaptation

2.1 Water Resources Act 101 of 1993

Water Resources Act, is the primary water law in Nigeria. The Act was enacted in 1993 to vest the right to use and control all surface and groundwater and all waters in any water course affecting more than one state together with the banks and beds in the federal government.¹⁴ While the Water Act may not address the issue of adaptation of water resources to climate change directly, it provides a broad framework for actions that the government of Nigeria may take in times of anticipated shortage of or surplus water, which may be climate change induced. The Act made provision for adequate supply of suitable water for animals, irrigation, agriculture, domestic and non- domestic use, generation of hydro electric energy, navigation and recreation, drainage, safe disposal of sewage,

¹⁴ Section 1, Water Resources Act 1993

prevention from pollution, prevention from flooding, soil erosion, reclamation of land, and protection of the environment.¹⁵

It enables the Federal Government to regulate, develop, and license all water operators in Nigeria. This includes planning, development, and usage of Nigeria's water resources, ensuring quality, quantity, distribution, use and management of water, ensuring application of appropriate standards and techniques for investigation, use control, protection, management and administration of water resources, facilitating technical assistance and rehabilitation for water supplies etc.¹⁶

Section 4 made provision for the control of groundwater which empowers the minister to do the following, amongst others: designate places from which water may be taken or used, fix in times of actual or anticipated shortage of water, the amount that can be taken, prohibit either temporarily or permanently taking or use of water from any source that may be hazardous to health in his or her opinion. He may revoke the right to take water if such use will override public interest. Also, the minister regulates the place, depth, manner of construction or mode of operation of any borehole or well and defines the time in which water may be taken from any such borehole.¹⁷ In order to ensure sustainable use of water resources in the face of climate change, the minister is charged with power to restrict the unlawful diversion of water. Storage, pumping or use in commercial scale must be in accordance with terms in the issued licence.¹⁸

The minister is under obligation to consider the allocation of usable water in the water course or groundwater in the particular area in case there will be water shortage in the future; he or she may refrain from granting a licence in such area, cancel or modify an existing licence.¹⁹ If the term of a licence is contravened; such licence may be suspended or cancelled. Section 18 made provisions for penalties for the contravention of the Act to a fine not exceeding ₦2000 or 6months imprisonment or to both such fine and

¹⁵ E. Oladipo, *Towards Enhancing the Adaptive Capacity of Nigeria to Climate Change: A Review of the Country's State of Preparedness to Towards Climate Change Adaptation*, 2011.

¹⁶ *Ibid.*

¹⁷ Section 4 (a)-(g) Water Resources Act, 1993

¹⁸ Section 9

¹⁹ Section 11

imprisonment, and a ₦100 for continuing offence for each day offence continues.²⁰

The law has not been able to protect the country's water resources, as it is constantly flouted due to lack of enforcement, non-compliance with terms of license and inadequate penalties. The pecuniary penalties are not stringent enough to deter polluters. It is imperative to review the law by increasing the amount chargeable on any one that contravenes the law or the conditions of their license. If an offence is committed by a corporate body, any person who was an officer or purporting to act in such capacity is severally guilty of the offence and liable to be prosecuted against and punished in like manner as if he had himself committed the offence unless he proves that the act or omission constituting the offence took place without his knowledge, consent or connivance. This principle of lifting the veil of incorporation in environmental matters will make the managers of corporate entities rise up to their duties of compliance with environmental and natural resource laws.

The ministry of water resources in order to satisfactorily discharge the responsibilities of licensing commercial water users should partner with National Food and Drugs Agency Control (NAFDAC) as there are so many water packaging companies in the country that will not ordinarily seek to be licensed to commence business by the ministry of water resources, but are aware of compulsory registration with NAFDAC. This collaboration will ensure that commercial water use is adequately regulated, ensuring proper data and records are kept. The penalty prescribed for flouting the water resource act is a pittance that cannot deter the least of offenders. Two thousand naira fine will better be paid in an event a breach is ever discovered, rather than doing what is right by going through the rigours of licensing. Moreover, the sachet water producing factories are so numerous that there is need for the regulation of their activities by water resources ministry and NAFDAC. This also will help to safeguard wanton depletion of underground aquifers which is critical for adaptation in the face of dwindling fresh water sources.

²⁰ A fine of ₦2000 at the prevailing exchange rate of ₦500 to \$1 = \$4. What company does \$4 fine deter in the present scheme of things?

This law will go a long way to preserve the quality and quantities of water available to the population and to reduce the vulnerabilities of the fishery and agriculture sector to vagaries of climate change which is inimical to development

2.2 River Basin Development Authority Act R9, 1986²¹

The Sahel drought of 1972-1974 in the country gingered the Supreme Military Council to promulgate Decree 25 of 1976, as a swift move towards the development of Nigeria's water resources.²² In order to harness the country's water resources and optimise Nigeria's agricultural resources for food self-sufficiency, the Federal Government created the River Basin Development Authorities (RBDAs) in 1976.²³ Section 1(1) of the River basins Development Authority (RBDA) Act established eleven River Basin Development Authorities in the country. River basin can be defined as a system of interconnected system of water tributaries that flow towards a single outlet. It combines the natural processes of precipitation, evapotranspiration, surface and ground water runoff with man-made features such as dams and reservoirs and hydro-power projects, diversions and irrigation schemes, industrial and residential water and environmental and cultural protection services.²⁴

These were established with a mandate to provide water for irrigation and domestic water supply, improvement of navigation, hydroelectric power generation, recreation facilities and fishery projects. The basins were also expected to engender big plantation farming and encourage the establishment of industrial complexes that could bring the private and public sectors in joint business partnership.²⁵ It was also created to bridge the gap

²¹ An Act to repeal the River Basins Development Authorities Act 1979 and establish the River Basins Development Authorities listed under the First Schedule to the Act 1987 No. 35

²² C. Kumolu, River Basins: How unending policy reversals abet inefficiency - Vanguard News, <http://www.vanguardngr.com/2013/04/river-basins-how-unending-policy-reversals-abet-inefficiency/accessed> 19/06/2016

²³ The RBDAs include: the Sokoto-Rima Basin, Sokoto; Hadejia-Jema'are Basin, Kano; the Lake Chad Basin, Maiduguri; the Upper Benue Basin, Yola; the Lower Benue Basin, Makurdi and the Cross River Basin, Calabar. Others are the Anambra-Imo Basin, Owerri; the Niger Basin, Ilorin; the Niger Delta Basin, Port Harcourt; the Benin-Owena Basin, Benin City and the Oshun-Ogun Basin, Abeokuta.

²⁴ O. Adeoti, Development of River Basin Organisations, 2 <http://www.medwelljournals.com/fulltext/?doi=rjswm.2010.91.100> accessed 05/06/2016

²⁵ Nigeria News, Nigeria's river basins and agricultural development e WASH, <<http://assemblyonline.info/nigerias-river-basins-and-agricultural-development> > accessed 05/06/2016

between the rural and urban centres by taking development to the grass roots and discourage migration from the rural areas to the urban centres. These objectives were to be achieved through surface impoundment of water by constructing small, medium and large dams, which would enable all-year round farming activities in the country.

Section 4 of the Act lists out the functions of the Authorities: to undertake comprehensive development of both surface and groundwater resources for multipurpose use with particular emphasis on the provision of irrigation infrastructure and the control of floods and erosions and for watershed management.²⁶ . In addition, it is expected to construct, operate and maintain dams, dykes, polder, wells, boreholes, irrigation and drainage systems and other works necessary for the achievement of the Authority's functions and handover all lands cultivated under the irrigation scheme to the farmers.²⁷ Moreover, it is to supply water from the Authority's completed storage schemes to all users for a fee to be determined by the authority concerned with Minister's approval.

The Act also mandates the Authority to construct, operate and maintain infrastructure services such as roads, bridges linking project sites provided that such infrastructural services are included and form part of listed projects. It is also to develop and keep up to date a comprehensive water resources master plan identifying all water resources requirements in the Authority area of operation through adequate collection and collation of water resources, water use, socio-economic and environmental data of the river basin.²⁸ With increasing pressure on water resources, the limits of river basins were extended to include surface and sub-surface. In addition, concerns about the potential adverse impact of global warming and the need to restore and protect the ecosystem introduced a new element into defining the river basin concept as integrated water resources management as articulated by the Dublin Principles of 1992.²⁹

At the United Nations Conference on Environment and Development at Rio de Janeiro, the need for integrated management of water resources was endorsed in Agenda 21. Also, from the Dublin statement of 1992, the river

²⁶ Section 4(1)(a)

²⁷ Section 4(1)(b)

²⁸ Section 4(c)- (e)

²⁹ Ibid.

basin was affirmed to be the most appropriate geographical unit for planning and management of water resources.³⁰ There were also some other agreements, treaties and policy declarations that gave legal recognition to the concept of river basin as a unit for planning and management of water and environmental resource. Under the new approach to river basin management, integrated river basin management thus entails dealing with water management in a more integrated way, moving away from the sector-by-sector approach; looking for sustainable use of water, satisfying the needs of both man and environment and moving progressively away from the centralized management models in order to adopt increased stakeholder participation.³¹

Considering the impacts of climate change especially on agriculture and increasing cost of food items seen in the level of importation of rice, wheat and fish in the country, are the RBDAs living up to their mandate?³² Some of the factors negatively affecting the goals of the RBDAs include the ‘development from above’ syndrome; as developmental plans were imposed on the people by governments. When developmental projects are conceived and actualised, the populations at the project sites are always at the receiving end because they have no inputs. The requirements for environmental and people assessments are often jettisoned or shabbily done. In executing developmental projects that are meant to be sustainable, the subsidiarity principle and public participation which emphasise a bottom-up approach should be encouraged. It gives the local people that will bear the direct impacts of such projects the opportunity to air their views and fears which gives the project executors the opportunity to decipher genuine fears that need to be addressed and those which can be allayed by reassurance from project developers. These give the communities sense of ownership, support and protection of such project.

Another foundational challenge for the RBDAs is the unnecessarily bloated mandate expected to be achieved by the RBDAs which covered a number of activities to be shared with state agencies, such as the provision of

³⁰ Ibid.

³¹ Ibid.

³² As at 2009, 33 years after the creation of river basins; Nigeria spends more than \$2 billion annually for the importation of 1.6 million tons of fish yearly, Nigeria News, Nigeria’s River Basins and Agricultural Development | eWASH, < <http://assemblyonline.info/nigerias-river-basins-and-agricultural-development> > accessed 05/06/2014 which rose to 3.32 million metric tonnes as at 2016.

agricultural services and rural electrification which were actually not realized.³³ Also, the roles, functions and co-ordinating mechanisms of the RBDA and the various state authorities were not properly delineated, which engendered unhealthy competition amongst institutions, and quite obviously, far too much was attempted. In other words, the interface was not managed properly and eventually defeated most of the goals for which they were set up.³⁴

In the face of changing climate and its impacts on Nigeria, which is delineated along geo-political zones, droughts in the North, the RBDAs are worthy adaptation tools for building resilience to the impacts of climate change through irrigation for ensuring food security in the country. The RBDAs will therefore need to refocus on their primary mandate of irrigation. The government should make funding and its appropriation available on timely basis for projects execution. The problem of diversion of funds and corruption should be discouraged and penalised, as this remains an albatross of national development. There is a need to review and restructure the basins to make them perform strategic functions within the economy. Also, proper monitoring and coordination of activities among the RBDAs will go a long way to ensure efficiency and promote transparency of operations.

The river basin authorities had quite a number of issues that hindered their effectiveness over the years. However, there seems to be a new vista in the operation of river basins in the country as state governments design new ways of utilising the basins for actualising their agriculture agenda.³⁵ In order to drive their agricultural agenda for food security, poverty alleviation in the face of climate change; but with renewed efforts of state governments to partner with RBDAs on irrigation for bumper food production is sacrosanct. It is also of utmost importance that the government allow private participation in the RBDAs to introduce business concept into their management, eliminate waste and undue rivalry between the RBDAs and

³³ J.O Akanmu, O. Eluwa and I. Ekpo, 'Chronicles of River Basins Management in Nigeria: Basins Resources Protection, International Congress on Basin Management, 107; Q. B. O. Anthonio and V.O. Akinyosoye, *The Changing Structure of Nigeria's Agriculture and Prospects for the River Basin Development Reorganisation Programme*, 152

³⁴ Ibid.

³⁵ Ibid.

state authorities,³⁶ and focus on the primary mandate. Moreover, the partnership models should be legislated upon in order to achieve stable implementation of policies that will outlive the initiating administration and ensure continuity.

2.3 Environmental Impact Assessment (EIA) Act³⁷

Environmental impact assessment (EIA) is the examination of a development project before it is executed in order to determine the negative impact such project may have on the environment. It is a management and planning tool to ensure that development projects are executed in such a way as to mitigate the adverse impacts of such projects and not to prevent development activities from being carried out.³⁸ It is a means for integrating harmful environmental impacts caused by human activities. EIA requires that before a development activity is carried on, the impacts such development project will have on the environment must be assessed in accordance with prescribed standard. It is a tool for achieving sustainable development.³⁹ The EIA makes it mandatory for development projects likely to have adverse impacts on the environment prior to implementation. Most relevant in the climate change era is the need to adhere to EIA mandates in any development activity. The application of EIA is a double-edged sword in addressing climate change as it can act as a mitigation law and at the same time for adaptation.

2.5 Great Green Wall Act⁴⁰

The Great Green Wall was initiated as a move to address the challenges of desert encroachment in some affected parts of Africa. Eleven states in Nigeria are grossly affected by desertification. Hence the establishment of the National Council on the Great Green Wall⁴¹ by Nigeria to give a legal vent to the regional initiative. The functions of the Agency include: to implement the great green wall programme⁴² provide baseline information

³⁶ Q. B. O. Anthonio and V. O. Akinyosoye, *The Changing Structure of Nigeria's Agriculture and Prospects for the River Basin Development Re-organisation Programme*, 151

³⁷ Environmental Impact Assessment Act No. 86 of 1992

³⁸ Making it happen Tanzania: Environmental Impact Assessment (EIA) In Different Legislation, <<http://Makingithappentz.blogspot.com/2010/03/environmental-impact-assessment-eia-in.html>> accessed 11/07/2017

³⁹ C. O. Nwoko, 'Evaluation of Environmental Impact Assessment System in Nigeria', *Greener Journal of Environmental Management and Public Safety*, [2013] (2) (1) 022-031

⁴⁰ Great Green Wall (Establishment) Act, 2015

⁴¹ Section 3

⁴² Section 6 (a)

to stakeholders for the implementation of the programme, formulate strategies and action plans for the implementation of the programme and co-ordinate efforts of agencies, organizations and institutions responsible for desertification towards the attainment of the objectives of the programme.⁴³

The Agency is also required to build capacity, knowledge and skills at Federal, States and local community levels for the effective implementation of the programme and serve as the focal point for the co-ordination of interventions by regional, sub-regional and international organizations and agencies involved in natural resources management in the dry lands of Nigeria.⁴⁴ Create public awareness and provide environmental education on the goals and objectives of the programme in addition to promoting private sector and stakeholders compliance with guidelines, rules and regulations, including new orientation on sustainable land management system.⁴⁵ Promote early warning systems and remedial measures on drought and desertification and promote activities in the dry land for improved livelihood; ensure uniformity of laws, rules and regulations that impact on the ecosystem.⁴⁶ Implement programmes geared towards the rehabilitation of degraded land and ecosystem restoration.⁴⁷

The Agency should create awareness and provide environmental education on the goals and objectives of the programme in addition to promoting private sector and stakeholders' compliance with guidelines, rules and regulations, including new orientation on sustainable land management system as well as promote early warning systems and remedial measures on drought and desertification, and promote activities in the dry land for improved livelihood.⁴⁸

2.6 National Environmental (Wetlands, Riverbanks and Lake Shores) Regulations

Wetlands are described as transitional zones between aquatic and terrestrial environments; they are environmental resources which have been described as the kidneys of the landscape as a result of its hydrological and chemical

⁴³ Section 6 (a-d)

⁴⁴ Section 6 (e-f)

⁴⁵ Section 6 (g)

⁴⁶ Section 6 (r)

⁴⁷ Section 6 (m)

⁴⁸ Section 6 (s)

functions, and as atmospheric carbon sinks which stabilizes the climate.⁴⁹ Wetlands are seen as important for supporting sustainable development and fighting climate change.⁵⁰ Wetlands are reputed to have the ability to solve some of our climate problems by sequestering carbon, enhancing water security.⁵¹ The environmental, social and economic importance of wetlands are numerous. Wetlands also produce goods that have a significant economic value such as clean water, fisheries, timber, peat, wildlife resources and tourism opportunities.⁵² There are eleven designated and Ramsar recognized wetlands in Nigeria.⁵³ The vast majority of the wetlands are located in the Chad, Niger and Benue Basins, the Niger Delta wetlands are known as one of the largest wetland in the world.⁵⁴ The importance enunciated above has however not stopped the draining and degradation of wetlands.

Pressure stemming from developments and industrialization, including oil exploration and spillage, dredging, sand mining, land reclamation⁵⁵ and a host of other development activities continues to rob the nation of immense wetland benefits. Nigerian wetlands must be protected in the continued challenge posed by climate change as both mitigation and adaptation tool. It will help boost agricultural productivity, maintain quality and quantity of

⁴⁹ T.Y Hassan, M.R Majid, S.A Alaci Davidson and N.I Medugu, Role of Wetlands in Mitigating the Effect of Climate Change in Nigeria, Handbook of Climate Change Adaptation, [2014] DOI10.1007/978-3-642-40455-9-109-2, Springer-Verlag-Berlin, Heidelberg

⁵⁰ Wetlands: The Hidden Resource for Climate Mitigation and Adaptation <<https://www.ramsar.org/news/wetlands-the-hidden-resource-for-climate-mitigation-and-adaptation>> accessed 1 December 2017

⁵¹ G. Bergkamp and B. Orlando, 'Wetlands and Climate Change: Exploring collaboration between the Convention on Wetlands (Ramsar, Iran 1971) and the UN Framework Convention on Climate Change', [1999]; H.O. Nwakowala, Case Studies on Coastal Wetlands and Water Resources in Nigeria, *European Journal of Sustainable Development* [2012] (1)(2) 113-126

⁵² A.B Dauda, 'Salvaging Wetland Ecosystem in Nigeria: Towards Ensuring Sustainable Fish Production', *Nat Sci* [2014] (12)(9) 61-67, ISSN: 1545-07400. <<http://www.sciencepub.net/nature>> 10> Olalekan E.I., Abimbola LM, Saheed, M. and Damilola O.A. 'Wetland Resources of Nigeria: Case Study of the Hadejia-Nguru Wetlands' *Poultry, Fish Wildlife Science* 2:123. doi: 10.4172/2375-446X.1000123

⁵³ Nguru lake, Apoi Creek Forests, Baturiya Wetlands, Dangona Sanctuary Lake, Foge Islands, Lake Chad Wetland, Lower Kaduna- Middle Niger Floodplain, Kwara & Niger, Maladumba Lake Bauchi, Oguta Lake, Imo, Pandam & Wase Lake, Nasarawa, Upper Orashi Forests Rivers

⁵⁴ Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat, United Nations Educational, Scientific and Cultural Organization (UNESCO): Paris, France. In Olalekan E.I. and others supra3

⁵⁵ C.N.P Okonkwo, L. Kumar and S. Taylor, 'The Niger Delta Wetland Ecosystem: What threatens it and why should we protect it?' [2015] (9)(5) 451-463, DOI: 10.5897/AJEST2014.1841 Article Number: 2B3416852458 ISSN 1996- 0786

water due to its water purification properties, sustain livestock and fish production which will directly improve living and livelihoods of fisher folks and improve dwindling protein diets of Nigerians.

Due to the growing threats to wetlands degradation and lost value the National Environmental (Wetlands, Riverbanks and Lakeshores) Regulations was made to save this invaluable natural resource from total devastation. The Regulation was divided into three parts and five schedules. Part one made provisions for the regulation of wetlands and wetland resources in Nigeria. The fourteen regulations⁵⁶ in this part address: matters relating to the application,⁵⁷ objectives and principles of the Regulations,⁵⁸ an inventory of wetlands,⁵⁹ the furnishing of particulars by state governments⁶⁰, the role of local governments,⁶¹ the declaration of a specifically protected area, control of use of wetlands, the wetland resource use permit system, and implied covenant and duty of land owners and users. The provision of regulation 3(b) is however relevant for all times as it provided for EIA to be conducted in accordance with relevant laws on all activities in wetlands likely to have adverse effects on the wetlands.

The Regulation is laudable, but enforcement is paramount for it to achieve the objectives set out in Regulation 2. To provide for the conservation and wise use of wetlands and their resources in Nigeria, ensure water catchment conservation and flood control; the sustainable use of wetlands for ecological and tourism purposes for the common good of all citizens; ensure wetlands are protected as habitats for species of flora and fauna; and minimize and control pollution.⁶² The penalties are well articulated but in view of the fact that there could be corporate bodies guilty of contravening the regulation, the limit of ₦500, 000 is grossly

⁵⁶ National Environmental (Wetlands, Riverbanks and Lakeshores) Regulations 2009, No 2011

⁵⁷ Reg. 1

⁵⁸ Reg. 2&3

⁵⁹ Reg. 4

⁶⁰ Reg. 5

⁶¹ Reg. 8 (a)-(d)

⁶² Regulation 2 (a) - (e)

inadequate.⁶³ Moreover, when the value of a thing is not known abuse is inevitable, there must be public awareness on the importance of wetlands and local governments should form alliance with communities living within the radius of the wetlands to watch over it and report any form of abuse to the local authorities for proper action.⁶⁴

However, the provision that imposed a duty on land owners, occupiers or user of property contiguous to a wetland having a duty to prevent degradation or destruction of the wetland and to maintain the values of the wetland is unrealistic due to two factors. One, the land owner, occupier or user of properties contiguous to a wetland may not have the financial strength or otherwise to protect it. Two, unless there is communal ownership borne out of enlightenment and coordination from the government, in this instance the local government where the wetland, riverbank or lakeshore are located, it cannot be protected. Committees may be formed in such areas or communities to monitor and report activities of any person, natural or corporate that may want to pollute the area to appropriate authorities. The whistle blower strategy may also be used by opening a reporting line where residents can lodge complaints anonymously in order to prevent reprisals from penalised entities.

Part two of the regulations dealt with regulation of river banks and lakeshores. Regulation 2 provides that the government will hold in trust for the people and protect river banks and lake shores for the common good of the citizens of Nigeria. The regulation affirmed provision of the constitution which provides that the State shall protect and improve the environment and safeguard the water, air and land, forest and wild life of Nigeria.⁶⁵

⁶³ It is instructive to note and learn that the United States Environmental Protection Agency (USEPA) frowns at any person (natural or corporate) that degrades wetlands. The case of Mr. D' Isernia, wife and company were deemed to have engaged in activities destructive of wetlands in their area of operation and were dealt with accordingly by the court. Mr. D' Isernia and his company, Lagoon Landing, LLC were sentenced in a federal high Court in northern district of Florida for illegal dredging and felony for wetlands violations in Panama city. The two defendants were ordered to pay fine of \$2.25 million. Mr. Isernia paid \$100,000 criminal fine, the company paid \$2.15 million criminal fine and \$1 million community service payment to the National fish and Wildlife Foundation, a charity organisation created by Congress and a term of three- year probation as civil penalties.

⁶⁴ Regulation 3(d)

⁶⁵ Section 20, Constitution of the Federal Republic of Nigeria, 1999

The objectives of the regulation include facilitating sustainable utilisation and conservation of resources on river banks and lakeshores for the benefit of people and communities living in the area. To promote integration of sustainable use of resources in rivers and lakes into the local and research related activities and prevent silting of rivers and lakes, and to control pollution or degrading activities.⁶⁶ It is however fool hardy that private land owners and users are given responsibilities to prevent and repair degraded river banks and lake shores through soil engineering, agroforestry, mulching, grassing, control of livestock grazing and terracing⁶⁷ while the local government in which it is situate have no corresponding duties as provided in the Ugandan management of river banks and lake shore regulation⁶⁸ which has practically the same provisions save for the omission on duties of local government and foisting it on private citizens.

Also, the regulation provided that each local government shall determine watering points and routes for animals to have access to water in each river.⁶⁹ How do we reconcile this regulation 25(4) and 24 (e) with the action of nomads that traverse the whole country with their herds of cattle in search of water and fodder?

2.7 National Environmental (Watershed, Mountains, Hilly and Catchment Areas) Regulation⁷⁰

Watershed is defined as an area of land that feeds all the water running under it and draining off of it into a body of water.⁷¹ Part III of the Regulation defined watershed as the total land area that drains directly or indirectly into a particular stream or river. Watersheds are important because they are sources of drinking water, homes for biodiversity and provides recreational environment, by collecting and storing water of various amounts and for different times water from rainfall; releases water as runoff

⁶⁶ Regulation 16(a-d)

⁶⁷ Regulation 24(1) (a-e)

⁶⁸ FAO/ FAOLEX, Guidelines on the Management of River banks and lake shores <<https://www.ecolex.org/details/legislation/guidelines-on-the-management-of-river-banks-a-nd-lake-shores-lex-faoc040643/>> accessed 2 December 2017

⁶⁹ Regulation 25 (4)

⁷⁰ National Environmental (Watershed, Mountains, Hilly, and Catchment Areas) Regulation, No 27 Regulations, 2009

⁷¹ Connors, T. How Watersheds Work, How stuff Works <http://science.howstuffworks.com/environmental/conservation/issues/watershed1.htm> accessed 05/06/2014

and provides diverse sites for chemical reactions to take place.⁷² In order to preserve the natural functions of watershed, mountainous, hilly and catchment areas, regulation 4 spelt out activities that are restricted within the area include: grazing of livestock, establishment of camping or other recreational facility for tourist purposes, plant or cultivate crops, carry out mining activities or carry out any development activity requiring EIA must submit an application endorsed by the chairman of the local government area to the agency.

The objectives of this regulation are to control activities that conflict with good land management practises especially in areas vulnerable to climate change extreme event like floods, landslides, erosions, siltation, falling rocks, fires and winds which can bring about ecological disasters like landslides.⁷³ The efforts to minimise activities that will aggravate these challenges through this regulation is vital. Much more than having the laws, there needs to be enforcement, in order to prevent disasters and reduce loss of lives, properties and ecological benefits. Landslides can cause high mortality especially if it happens in a highly populated area. There have been spates of landslides and mud slides in Nigeria which is not limited to a region or zone of the country.⁷⁴ This is not a common phenomenon in Nigeria, but with the contribution of extreme weather patterns linked to climate change, the country must brace up to a multifarious emerging environmental threat. The regulation coupled with the development of an early warning system as obtainable for flood control will reduce fatalities that can arise from such events.

⁷² S. Shukla, Water Shed, Functions and Management, EDIS, University of Florida IFAS Extension <http://edis.ifas.ufl.edu/ae265> accessed 2 December 2017

⁷³ Regulation 2 (2) (i-ix)

⁷⁴ In October 2011 about twenty villages in Awgu and Oji- River Local government in Enugu State, South East Nigeria, A. Ogbulafor, Landslide hits Enugu, Daily Times Nigeria <<http://www.dailytimes.com.ng/article/landslide-hits-enugu>> accessed 05/06/2017; There was also a landslide in Adekunle Estate, Okitipupa Ondo state in May 2014 cutting the people away from the rest of the town and with the attendant destruction of properties., Y. Oladoyinbo, Ondo Landslide: Tackling an emerging Ecological Challenge <<http://www.tribune.com.ng/quicklinkss/features/item/6122-ondo-landslide-tackling-an-emerging-ecological-challenge/6122-ondo-landslide-tackling-an-emerging-ecological-challenge>> accessed 05/06/2017. People of Kolokuma-Opokuma in Bayelsa State on 4 March 2014 were taken by surprise as the community faced a second land slide in five years S. Oyadongha, Nigeria: Landslide Hits Bayelsa Community Destroy Houses <<http://allafrica.com/stories/201303041571.html>> accessed 5 June 2017

Despite the regulation, there are several activities going on in the protected areas that are unwholesome to the health of the areas without any restraint from authorities concerned. Climate change can have significant impact on watershed systems. It has the ability to debilitate water supplies, increase exposure to waterborne contaminants, reduction of water quality due to run off and siltation, ecosystem degradation, economic losses, and rapid resource exploitation.⁷⁵ Due to the location of the country, quite a number of the watersheds will be greatly impacted especially those in the northern states as a result of drought and desertification. Therefore, there is need for building resilience by enforcing the laws and seeking ways to increase the resilience of watersheds through multidisciplinary research for adaptability.⁷⁶ Also, as stipulated in the regulation; stakeholder involvement is germane to the success of protecting this resource. The need for greening watershed through afforestation cannot be overemphasized to maintain a healthy ecosystem especially at degraded sites.⁷⁷ Watersheds will also be improved by adopting agricultural and urban best management practices.⁷⁸

Mountainous and hilly areas must be protected in view of the coal mining plan of the federal government.⁷⁹ This plan of the federal government is at best maladaptive, because in seeking to address the country's energy deficiency, the coal option is not only an avenue to increase GHGs but it will also cause a lot of havoc in relation to ecosystem degradation and lower the adaptation abilities of populations.

Offences and penalties for contravening the regulations are stipulated in part II, regulation 10 stipulated a penalty of revocation of permit or liable to imprisonment for not more than one year upon conviction or to a fine not more than two hundred thousand naira or both.⁸⁰ Mountainous, offenders/trespassers in hilly or catchment area shall be liable to

⁷⁵ T. O. Randhir, 'Resilience of Watershed Systems to Climate Change' *Journal of Earth Science and Climate Change* [2014] (5)(6) < <http://dx.doi.org/10.4172/2157-7617.1000e109>> accessed 2 December 2017

⁷⁶ Ibid.

⁷⁷ Regulation 8

⁷⁸ S. Shukla, Water Shed, Functions and Management, EDIS, University of Florida IFAS Extension <<http://edis.ifas.ufl.edu/ae265> accessed 2 December 2017>; E. Marshall and T. Randhir, Effect of Climate Change on Watershed System: A Regional Analysis [2008], *Climatic Change* 89(3):263-280, DOI10.1007/s10584-007-9389-2

⁷⁹ Economic Growth and Recovery plan has as one of its objectives to explore coal resources to booster the economy

⁸⁰ Regulation 10 (1) (a &b)

imprisonment for a term not exceeding 6 months, or fine of not less than fifty thousand naira or both.⁸¹ Where the offence is committed by a body corporate, it shall be liable to a fine not exceeding one million naira and additional fine of fifty thousand naira for every day the offence subsists.

The Lake Chad basin is of great adaptation importance to Nigeria, Niger, Chad and Cameroon. However, the immense impact of climate change on Lake Chad cannot be over emphasised. Climate change is exacerbating the level of evaporative losses and, other things being equal, likely to increase as the climate warms.⁸² This has adversely affected agricultural systems in the region, including farming, livestock rearing and irrigation schemes, therefore the need for greater regional cooperation among affected countries.⁸³ Addressing the Lake Chad problem will go a long way to help the concerned countries to combat desertification within climate change adaptation thinking and planning, deal with issues such as poverty, hunger, diseases, malnutrition as factors that further exacerbate social vulnerability to climate risks.⁸⁴ Recently, a conference on Lake Chad was held in Nigeria, seeking to address some of the concerns surrounding the drying up of the basin and mitigating the challenges of food shortage and conflict this has inflicted on the region with ripple effects in form of conflicts.

2.8 Coastal and Marine Area Protection Regulations⁸⁵

Nigeria has a coastline of about 853km that spans across nine states.⁸⁶ Coastal areas are regarded worldwide as sensitive ecosystems that must be protected because they are extremely crucial for adaptation. Coastal landforms (coral reefs, barrier islands) and wetland ecosystems (mangroves, marshes) provide a natural first line of protection from storm surges and

⁸¹ Regulation 10 (2)

⁸² Marisa Goulden, Declan Conway & Aurelie Persechino, 'Adaptation to Climate Change in International River Basins in Africa: A Review,' *Hydrological Sciences Journal*, [2009] (54)(5) 805-828, DOI: 10.1623/hysj.54.5.805, 810; Federal Ministry for Economic Co-operation and Development, Africa Supra Regional Adaptation to Climate Change in the Lake Chad Basin, Climate Change Study, GIS

⁸³ J. Adegoke, C. Ibe and A. Araba, (eds.), National Agricultural Resiliency Framework, A Report by the Advisory Committee on Agricultural Resilience in Nigeria (ACARN), Federal Ministry of Agriculture and Rural Development, 95

⁸⁴ A. Carius, Lake Chad Basin: One Long Climate Catastrophe < <http://www.aljazeera.com/indepth/opinion/lake-chad-basin-long-climate-catastrophe-170923075220951.html>> posted 23 September 2017 accessed 30 November 2017

⁸⁵ National Environmental (Coastal and Marine Area Protection) Regulations 2011

⁸⁶ A.C Ibe, *Coastline Erosion in Nigeria*, Ibadan University Press Ibadan, 1988

flooding⁸⁷ and therefore should be replanted as these resources have been vastly degraded. Within the national coastal areas, a wide range of human activities are carried out, with such activities ranging from industrial, tourism, ports and shipping, harbour, agriculture, fishing and breeding of sea organisms, communication and roads, boats and ship building to oil and gas exploration amongst others. Also, due to oil exploration, the Niger Delta coastal and marine resources have been negatively impacted.

The main objective of the regulation is to ensure the protection of the coastal and marine environment of Nigeria through the application of preventive, precautionary and anticipatory approaches to avoid degradation of the marine environment, as well as to reduce the risk of long-term or irreversible effects on the coastal and marine environment.⁸⁸ Another objective of the regulation is to ensure protection of the coastal and marine environment for sustainable development.⁸⁹ Recurrent events reduce the resilience of natural and artificial defences, this should inform policy makers on the forms of sea defence to be adopted in order to prevent maladaptation. The coastal and marine regulation also provided that any corporate body which violates any of the provisions under these Regulations shall be guilty of an offence and shall on conviction be liable to a fine not less than Five Million Naira (₦ 5,000,000) and an additional fine of Fifty Thousand Naira (₦50,000) for every day the offence subsists.⁹⁰ In addition to the penalty provided a person/body corporate found guilty shall be required to carry out remediation work.⁹¹ But, the law should stipulate the time frame such remediation should be carried out, leaving it open ended will be at the discretion of the polluting entity which will not augur well for the environment or deter polluters.⁹²

⁸⁷ E. A Ajao and S. Anurigwo, Land-based sources of Pollution in the Niger-Delta, Nigeria <<http://ambioallenpress.com/periserv/request>> accessed on 30 January 2018

⁸⁸ Ibid. Regulation 2(b)

⁸⁹ Ibid. Regulation 2(c)

⁹⁰ National Environmental (Coastal and Marine Area Protection) Regulations, 2011, regulation 20 (2)

⁹¹ Ibid., reg. 20 (3)

⁹² A good illustration is the cleanup and remediation of the oil polluted Ogoni land, where many years after the UNEP recommendation for a cleanup not much been done therefore aggravating ecosystem degradation.

2.9 Desertification Control and Drought Mitigation Regulations⁹³

Some researchers have identified climate change as one of the precipitating factors identifiable in herder farmer clashes all over the country.⁹⁴ One of the impacts of climate change is increased drought and aridity thereby reducing fertile land for farming and grazing. Drought and desertification remain a critical environmental issue in Nigeria that is ravaging almost all the states in the northern part of the country exacerbated by reduced rainfall and other factors like unsustainable farm practices. The regulation could not have been made at a better time when the drought situation is getting worse.

The regulation is divided into five parts. The objectives include provision of effective and pragmatic regulatory framework for the sustainable use of all areas already affected by desertification and protection of vulnerable lands. Sensitise the public on the causes and dangers associated with desertification and the protection of vulnerable lands, encourage sustainable use of fuel wood, promote use of alternative sources of energy, encourage reforestation, afforestation, and conservation of areas under desertification. A further objective is to attain the 25% national forest cover prescribed by the United Nations Food and Agriculture Organisation, including the enhancement of ecological integrity and abatement of the impacts of climate change. This is the first time any of the regulation has made direct acknowledgement of the impact of climate change and the need to stem its impacts. To ensure sustainable agriculture and range management practices, promote cooperation with relevant international governmental agencies through partnerships, sustain and expand areas under forest and tree cover and control forest exploitation.⁹⁵ Principle on which the regulation was anchored to preserve and improve on the desert prone areas is prevention. Priority shall be paid to desert areas while preventing potentially vulnerable areas from being affected.

This regulation explicitly mentioned climate change in some of its key objectives that include, among others: to provide an effective and pragmatic regulatory framework for the sustainable use of all areas already affected by

⁹³ S.I. No. 13 Gazette No. 40. Vol. 98 of 3rd May, 2011.

⁹⁴ Ibrahim Muhammed and Abdurrahman Belel Ismaila and Umar Muhammed Bibi 'An Assessment of Farmer-Pastoralist Conflict in Nigeria using GIS' *International Journal of Engineering Science Invention* [2015] (4) (7) 24 ISSN (Online): 2319 – 6734, ISSN (Print): 2319 – 6726 www.ijesi.org accessed 27/5/2021

⁹⁵ Ibid. Regulation 2 (a-i)

desertification and the protection of vulnerable lands. Integrating combating desertification with development and sustainable utilisation of natural resources, adopting measures suitable to local conditions, develop appropriate policies, legal and regulatory instruments critical to desertification control. Encourage farmers to plant a minimum of 25 trees per hectare on the farm to hedge against desertification or scattered trees to promote agro-forestry practises and the use of Environmental Impact Assessment is conducted as required by law on lands threatened with desertification.⁹⁶

Part II contains regulation for desertification control, duties of the Agency, role of states and local government to combat and control desertification by establishing yearly afforestation targets of not less than ten kilometres of shelterbelt and five hectares of woodlot.⁹⁷ Affected states should establish yearly rangeland reseeding targets of not less than twenty- five and five hectares for states and local government. EIA shall be conducted as stipulated by laws on lands threatened with desertification. States, local governments, NGOs and Community Based Organisations should create public awareness among the people to ensure rational and sustainable use of degraded land on desert prone areas. Also, states and local governments must enforce relevant laws and regulations for the protection and sustainable management of constituted lands and grazing reserves.⁹⁸

Schedule IV listed regulated activities for which a permit is needed before such an activity can be carried out. The activities include: felling of trees or cutting of branches, land clearing, earth disturbing activities, extraction of specific resources for export or commercial uses, bush burning, grazing, cultivation of marginal lands, agriculture.

Regulation 7 (2) restricts felling of trees in the course of carrying out a permitted activity in desertification prone areas listed in Schedules I and II and if any tree is cut in such area, the licensee will bear responsibility and duty of replanting fourfold the number of trees felled thereby ensuring survival of the planted trees. A person is disallowed from felling trees in a farm or rangeland except done for agricultural production in which case looping will be permitted. All forms of mining are prohibited, except for

⁹⁶ Ibid. Regulation 3(a-f)

⁹⁷ Regulation 4 (1-5)

⁹⁸ Regulation 5

those approved by appropriate authorities. Highly degraded areas showing visible signs of sand dune build-ups shall be priority areas for biological and mechanical protection in order to attain vegetation resuscitation and a balanced ecosystem.⁹⁹ Setting of yearly afforestation targets by states and local government for the establishment of shelter belts, prohibition of uncontrolled fires, and provision of adequate irrigation systems for all plantations is important. Maintenance of existing grazing reserves and establishment of new ones are laudable in view of incessant clash between herdsmen and farmers leading to bloodshed and wanton destructions. However, enforcement of these regulations must be top priority in order to ensure compliance. The exclusion of the traditional or essential uses from the application of the regulation takes cognisance of the right of indigenous people to natural resources for their survival except such resources are exploited for commercial purposes.¹⁰⁰

Regulation 8 provided to the effect that even if a permit had been issued by the local government or state government in respect of a desertification prone area, such a permit will be subject to a further permit being issued by the Agency. Activities under schedule IV can only be carried out on a permit issued by the state.¹⁰¹ The licensee is prohibited from altering the vegetation, hydrology and ecology of the area for which a permit is granted beyond terms stipulated in the permit, must not assign the permit to any other person without the consent of permitting authority. The re-vegetation and restoration of the area for which a permit is granted must be carried out within two years of the expiration or revocation of the permit¹⁰²

Part III of the Regulation gave general provisions on drought mitigation in the event of an occurrence. Objectives of the regulation include ensuring: appropriate measures are taken to alleviate the impact of drought at occurrence, proper criteria for declaring drought emergencies are established, proper definition and duties of agencies for management of drought, identify mitigation actions which can address vulnerabilities, reduce the impacts and identify at risk people, activities and groups.¹⁰³

⁹⁹ Regulation 7

¹⁰⁰ Regulation 7(18)

¹⁰¹ Regulation 8(1, 3)

¹⁰² Regulation 9(a-c)

¹⁰³ Regulation 12(1)

The regulation stipulated the sustainable utilisation of resources in drought prone areas. Part IV stated the regulations on drought mitigation. The Agency is to monitor and enforce compliance with all policies and programmes as stated in the National Drought Preparedness Plan and Drought and Desertification Policy of the Federal Ministry of the Environment. The Agency is also required to collaborate with the Ministries, Departments and Agencies, states, local governments, Non-Governmental Organisations, Community Based Organisations and Faith Based Organisations to conduct awareness campaigns in their jurisdictions. The enforcement of the regulation is the responsibility of federal, state and local government enforcement teams.

Part V dealt with the general provisions relating to offences and penalties. Any one that violates the provision of the regulation is liable to a fine not exceeding one million naira or for two years' imprisonment or to both, such fine and imprisonment. A corporate entity is liable to a fine of five million naira and fifty thousand for each day the offence subsists.¹⁰⁴

3.0 Policies on Agriculture

3.1 Agriculture Promotion Policy (APP)

The current policy on agriculture is the Agriculture Promotion Policy (APP) scheduled to run between 2016 and 2020. The policy has embedded in it, plans to ensure a climate smart agriculture model that will take issues of climate change into cognisance. The concept of climate smart agriculture was conceived by the Food and Agriculture Organisation (FAO) to encourage development of technical, policy and investment conditions to achieve sustainable agricultural development for food security under climate change.¹⁰⁵

This entails (i) sustainably increasing agricultural productivity and incomes; (ii) adapting and building resilience to climate change; and (iii) reducing and/or removing GHGs where possible.

Some of the policy thrusts for climate smart agriculture under the APP 2016-2020 include: boosting public awareness through advertising of importance of climate smart agriculture, management of land, water, soil

¹⁰⁴ Regulation 21 (a)(b)

¹⁰⁵ Federal Ministry of Agriculture and Rural Development, Agriculture Promotion Policy, 2016-2020, 29-30, <http://fscluster.org/sites/default/files/documents/2016-nigeria-agric-sector-policy-roadmap_june-15-2016_final1.pdf> accessed 23 November 2017

and other natural resources will be improved, Institutional linkages and partnerships will be strengthened for ensuring climate smart agricultural governance, policies, legislations and financial mechanisms, environmental impact assessment will be carried out on major agricultural projects.¹⁰⁶ The use of renewable energy will be promoted with the involvement of private sector, broad public and stakeholder awareness on Climate Smart Agriculture will be created, and government will facilitate soil map to improve land use and management practices.¹⁰⁷

Also some of the constraints identified as hampering the development and implementation of climate smart agriculture are: limited awareness of climate issues, and therefore key changes required to protect agriculture, poor management of land, water, soil nutrients and genetic resources;¹⁰⁸ inconsistency of the governance regimes: policies, legislations and financial mechanisms with the requirements for climate friendly agricultural practices, inefficient and unsustainable management of agriculture and natural resources e.g. soil, water, etc.¹⁰⁹ There is also the lack of awareness of soil management practices, limited availability of drought resistant variety of crops, lack of research into climate smart agriculture¹¹⁰, lack of cooperation and synergy among the key MDAs and other stakeholders, absence of comprehensive soil map for Nigeria, lack of awareness on climate change and its effects on agricultural practice, lack of access to alternative energy use, poor infrastructure to support climate smart agriculture policy thrust.¹¹¹ At the COP 21 Summit, Nigeria presented its pre-existing position on climate smart agriculture- the Nigeria Agriculture Resilience Framework (NARF). NARF has not been implemented and that will be a key as regards going forward.

3.2 Nigeria Agriculture Resilience Framework (NARF)

The objectives of NARF include: Strengthening the overall policy/institutional framework for improved resilience and adaptation to climate variability and change in the agricultural sector, including planning

¹⁰⁷ Ibid

¹⁰⁸ Ibid

¹⁰⁹ Ibid. See also A. A. Enete and T. A. Amusa, 'Challenges of Agricultural Adaptation to Climate Change in Nigeria: a Synthesis from the Literature', *Field Actions Science Reports* [2010] 4, <https://journals.openedition.org/factsreports/678> accessed 28/5/2021

¹¹⁰ Ibid

¹¹¹ Ibid

and implementation, systems for resource mobilization, and effective project monitoring and evaluation. Evaluation and introduction of risk transfer and risk management strategies include but not limited to improved seasonal and real time weather forecasts, insurance based risk mitigation options into the agricultural sector and widespread deployment of same through communication technologies, including mobile phones.

Management strategies include irrigation farming, water harvesting, soil fertility enhancement and erosion control, improved farming practices and using policy instruments such as economic incentives, regulations and communication. Reinforcing existing social safety nets through support systems that reduce vulnerability and improve livelihood conditions for the vulnerable, especially women and children. Improving farming systems research capacity within the National Agricultural Research System (NARS) to enable and support the implementation of climate friendly agriculture in Nigeria. Revamping extension services, including building new capacity for evidence-based assessment and management of climate risk for resilience in the agriculture sector is important to reduce hunger and prevent famine.

4.0 Conclusion

It was discovered that climate change impacts undermine the robust existence of humans, endangers species and undermine development. The effects are all too glaring, and playing out with serious consequences that can undermine the political, social, economic and cultural integrity of the country. The farmers and herders' clashes are pointers to climate change impacts and mismanagement of natural resources which must be nipped in the bud while the government, private sector and concerned stakeholders seek ways to build resilience and adapt to climate change.

The paper evaluated the existing laws that are amenable to aid adaptation to impacts of climate change in the water, agriculture and coastal resources sector in the absence of a comprehensive legal framework. The laws are however not optimized because voluntary compliance is lacking due to low awareness and enforcement; inadequate capacity on the part of enforcement agents, poor funding, inter-agency rivalry and overlapping functions. Also, time before reviewing laws to meet up with present realities is a major challenge that needs to be addressed, because laws to aid adaptation must meet up with scientific findings and realities on ground in order to reduce

population exposure to climate risks, build resilience and reduce vulnerabilities.

The Paris Agreement has given a model for countries to upwardly review and report their Nationally Determined Contributions (NDCs) to reduce carbon emissions every five years. The legislature, executive and other stakeholders in the climate change arena must work together to give the country a climate change legislation that will embrace the adaptation strategies in compliance with the country's commitment under the Paris Agreement with necessary provisions for review within stipulated time scale.

Overcoming the challenges to optimum utilisation of environmental and sectoral laws can be addressed by creating robust awareness through public sensitisation; by taking campaign to schools, communities, markets, motor parks, organising workshops and seminars for formal stakeholders like the private sector and NGOs. It is also important to delimit functions of environmental and allied agencies to reduce overlapping functions and inter agency rivalry, build institutional capacity, funding for research and provision of necessary infrastructure and support.

It is expedient that government enact an all-encompassing climate change law, but in the meantime and even as a long term goal, adaptation should be mainstreamed into existing environmental laws in identified sectors. This will reduce population exposure to risks, promote adaptation and aid the country's growth on a sustainable path.