Chapter 29:
Integrating climate change in the environmental impact assessment process: challenges and prospects in Nigeria

Bibobra Bello Orubebe

1 Introduction

Nigeria comprises an area of approximately 923,853[1] square kilometres with a coastline along the Atlantic Ocean.[2] The country has diverse ecosystems. These include arid and semi-arid lands, savannahs in the north and tropical lowland forest, floodplains, saltwater, freshwater marches, brackish mangrove swamps/forests, sandy beaches, endemic micro-organisms, plants, invertebrates, mammals in the southern part which also has oil and gas deposits. The country is home to a number of threatened and/or endangered species.[3]

Geo-politically, Nigeria shares boundaries with Niger and Chad to the north; the Benin Republic to the west; Cameroon to the east; and Sao Tome/Principe and Equatorial Guinea to the south. In 2017, Nigeria had an estimated population of 180 million people[4] with about 300 ethnic groups,[5] structured into 36 states[6] with Abuja as its capital. The country is further subdivided into 774 local government areas.[7] In theory, Nigeria operates an American style presidential system of government with a bicameral legislature (National Assembly comprised of the Senate and House of Representatives).

Nigeria, although a resource-rich country, is unfortunately still saddled with poverty, misery and unsustainable development. These coupled with several other impediments to development such as corruption, ethnic, religious, cultural, social unrest, and economic mismanagement have pushed Nigeria's population, in the past, to a tipping

1 See <http://www.nationencyclopeadia.com/economies/africa/nigeria.html> (accessed 27-2-2018).
2 Udo (1970: 1-2).
3 Ibid.
4 Nigeria's National Population Commission (1998). Note, however, that in 2018 the Nigeria National Population Commission reviewed this estimate to 198 million people (Nigeria's National Population Commission (2018)).
5 Nigeria's National Population Commission (1998: 23).
6 Constitution of Nigeria (1999) as amended, Section 3(1).
7 Constitution of Nigeria (1999) as amended, Section 4(1).

point with threats of social upheaval and disintegration. Despite these and other deep-seated contradictions, Nigeria is the largest economy in Africa.[8]

It is against this background that some academics argue that one veritable tool Nigeria could use to address these challenges is to explore a science-cum-knowledge driven inter-disciplinary assessment of risks flowing from climate change governed by the correct social and legal framework.[9] Nevertheless, considerable disagreement exists when discussions proceed to question the meaning and effects of climate change,[10] forum and methodology.[11] Axiomatically, this debate includes some vexed issues. What is the right regulatory framework? What is the right objective in terms of scope vis-a-vis analytical methodology in the EIA policy trajectory that deals with climate change best? Will mainstreaming or separate treatment suffice under the current EIA process? Are there identifiable barriers or challenges? Comparatively, is there any best practice evolved elsewhere on the subject that Nigeria and other African countries could imbibe to address the challenges of climate change?

2 The conceptual scope and the problem of defining key terms

The cross-cutting nature and focus of this chapter require that the meaning and context of some key terms such as environmental impact assessment (EIA), greenhouse gasses (GHGs) and climate change (CC) be ascertained from the beginning. In this chapter, EIA means the critical appraisal of the likely effects of a policy, plan, program, project, or activity on the environment.[12] This is a study conducted before the commencement of the actual project. By studying the possible impacts, it is possible to avoid the adverse impacts by either re-designing the project or by taking other mitigating measures with inputs from public participation.[13] The decision-making authority might be a level of government (local, state or federal government) or its agencies. Impacts usually relate to the ecosystem, aesthetic, recreational, archaeological, social, economic and cultural values just as it relates to waste, endangered species and other scientific implications. Climate change is used within the meaning and definition proffered by the United Nations Framework Convention on Climate Change (UNFCCC), namely:[14]

8 *Vanguard* (2016). See also https://www.thecable.ng/world-bank-nigeriasouth-africa-angola-still-largest-economies-continent (accessed 27-2-2018).
9 Orubebe (2009: 161).
10 See <https://www.cigionline.org/multimedia/what-trumps-win-means-climate-change-policy?gclid=EAIaIQobChMI47fiiJa2AIVxBbTCh1iqwa7EAAYAiAAEgLqkvD_BwE> (accessed 19-12-2017).
11 Ibid.
12 Gilpin (2012: 170).
13 Ugandan National Environment Management Authority (2003: 37).
14 Article 1(2) UNFCCC.

> a change of climate that is attributed directly or indirectly to human activity, altering the composition of the global atmosphere. Human activity includes the pollution that arises from industrial activity and other sources that produce greenhouse gases. These gases, such as carbon dioxide, have the ability to absorb the spectrum of infrared light and contribute to the warming of our atmosphere.

The change in terminology from global warming to climate change was introduced to emphasise the fast emerging reality that atmospheric pollution on a global scale could precipitate a variety of extreme weather events, not just warming[15] and the greenhouse effect. The greenhouse effect is the cycle by which these gases become trapped in the atmosphere and heat the planet. The term was coined in 1827 by Joseph Fourier,[16] a French mathematician and physicist, who envisioned that "the warming process of the Earth acted in the same way as a greenhouse traps heat – a process of visible light and invisible radiation, with Earth's atmosphere acting as the glass barrier".[17]

Climate change is used in this context because it is one of the most contentious environmental issues facing Nigeria. In this regard, under the Association of Environmental Law Lecturers in African Universities (ASSELLAU), lawyers from Africa, like their counterparts from elsewhere in the world, are playing an increasing role to help build awareness about this environmental challenge. In terms of causative effects, GHGs are "a group of compounds that are able to trap heat (longwave radiation) in the atmosphere, that keeps the earth surface warmer"[18] than normal. In Nigeria, the major sources of GHGs are carbon emissions from energy, land use change, industry, solvents use, agriculture and waste management, gas flaring, transportation, and electricity generation among others.[19] A critical analysis of Nigeria's initial national communication to the UNFCCC in 1994 reveals that the predominant GHGs in Nigeria

15 Article 1(2) UNFCCC.
16 See <http://mpe.dimacs.rutgers.ed/2013/01/19/the-discovery-of-global-warming> (accessed 5-5-2018).
17 Gilpin (2012: 172).
18 Allison (2010).
19 Federal Republic of Nigeria (2003).

include carbon dioxide,[20] nitrous oxide[21] and methane[22] – gases which occur both naturally and as by-products of human activities. Others such as hydrofluorocarbons, sulphur hexafluorides and perfluoro chlorides[23] are to a large extent man-made.[24] Although these last three substances comprise a comparatively small part of the atmosphere, they have a large impact on the climate due to their potent heat-trapping properties and long residency periods in the atmosphere,[25] spanning in some cases several thousand years.[26]

In Nigeria, the fact that climatic conditions have been changing beyond natural variability is now well established.[27] In fact, evidence accumulated over the past few decades by research centres, particularly geospatial satellite data by foreign-based organisations, indicate that this has intimate links with anthropogenic (human-induced) activities, which are essentially responsible for substantially enhanced levels of emissions of GHGs into the atmosphere. The Intergovernmental Panel on Climate Change (IPCC), established in 1988, has conducted several assessments that show that unless deliberate steps are taken to reduce GHG emissions in the coming decades, irreversible changes will occur in the global climate system. Accordingly –[28]

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20 Carbon dioxide is produced primarily through the burning of fossil fuels (oil, natural gas, and coal), solid waste, and trees and wood products. Deforestation and soil degradation add carbon dioxide to the atmosphere, while forest regrowth takes it out of the atmosphere. Carbon dioxide's lifetime in the atmosphere cannot be represented with a single value because the gas is not destroyed over time, but instead moves among different parts of the ocean-atmosphere-land system. Natural processes absorb some of the excess carbon dioxide, but some remains in the atmosphere for thousands of years, due to the slow process by which carbon is transferred to ocean sediments. See <http://www.wired.co.uk/article/what-is-climate-change-_Definition-causes-effects>(accessed 19-12-2017).

21 Nitrous oxide is usually emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste. Its lifetime in the atmosphere stands at 121 years. See <http://www.wired.co.uk/article/what-is-climate-change-Definition-causes-effects> (accessed 19-12-2017).

22 Methane is a gas emitted during the production and transport of oil, coal and natural gas. Methane emissions also result from livestock and agricultural practices and from the anaerobic decay of organic waste in municipal solid waste landfills. Its average lifetime in the atmosphere is 12.4 years. See <http://www.wired.co.uk/article/what-is-climate-change-Definition-causes-effects> (accessed 19-12-2017).

23 Hydrofluorocarbons, Perfluorocarbons, and Sulfur hexafluoride are fluorinated gases, among other chemicals. These gases are emitted from a variety of industrial processes and commercial and household uses and do not occur naturally. They are sometimes used as substitutes for ozone-depleting substances such as chlorofluorocarbons (CFCs). See <http://www.wired.co.uk/article/what-is-climate-change-Definition-causes-effects> (accessed 19-12-2017).

24 See <http://www.wired.co.uk/article/what-is-climate-change-Definition-causes-effects> (accessed 19-12-2017).

25 Ugandan National Environment Management Authority (2003: 37).

26 Schwartz & Randall (2003).

27 Federal Republic of Nigeria (2003).

28 IPCC (2014). According to the report, each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850. The period from 1983 to 2012 was likely the warmest 30-year period of the last 1400 years in the Northern Hemisphere,

> [h]uman influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems.
>
> Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen.

It is important to note that there is substantial evidence that climate change or global warming is likely to accelerate during the 21st century.[29] For Nigeria, its effects will include a rise in sea level, increased desertification, abrupt changes in agricultural production, severe weather conditions, the spread of diseases such as malaria, and the irreversible alteration of critical ecosystems. [30] In recognition of the enormity of the challenge climate change poses, Nigeria signed the Paris Agreement but has not taken coordinated steps to solidify the goals of the agreement as it relates to specific project conceptualisation, planning and implementation. In the meantime, the glaring effects of climate change have already begun to manifest in Nigeria's critical sectors – agriculture and the environment's carrying capacity.[31] Yet, the steps required to promote effective mitigation policies are yet to happen. These include a shift in the development paradigm to focus on the coordinated use of the required technologies in all critical sectors and the commensurate altering of policies to adapt to climate change as a national environmental emergency. The proven antidote to climate change including a strategic national investment in renewable energies, desalination plants, new agricultural practices and improved intergovernmental, inter-agency cooperation aimed at meeting local, regional and national climate resilience goals is absent. Other than white paper agreements, it is difficult to ascertain visible or measurable functional sub-regional, regional or indeed global cooperation between Nigeria and other countries to work toward achieving regulated climate goals. Quite naturally, inadequate or inaccurate impact assessment of climate change conditions would likely lead to aggravated initial effects, as well as ineffective or inadequate mitigation and adaptation with catastrophic consequences.[32]

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where such assessment is possible (medium confidence). The globally averaged combined land and ocean surface temperature data as calculated by a linear trend show a warming of 0.85°C [0.65 to 1.06] over the period 1880 to 2012, when multiple independently produced datasets exist. In addition to robust multi-decadal warming, the globally averaged surface temperature exhibits substantial decadal and inter-annual variability. During its 45th Session held at Guadalajara, Mexico, 28-31 March 2017, the Panel approved the outline of the *Special Report on the Ocean and Cryosphere in a Changing Climate* (SROCC) to be finalised in September 2019. See <http://www.ipcc.ch/report/srocc/> (accessed 19-12-2017).

29 Schwartz & Randall (2003).

30 Nigeria's initial national communication to the unfccc data bases 1994. https://unfccc.int/resource/docs/natc/nignc1.pdf (accessed 5-5-2018).

31 Federal Republic of Nigeria (2003).

32 Orubebe (2009: 162).

3 The current legal framework for environmental impact assessment (EIA)

The initial legal and policy framework for EIA in Nigeria[33] consisted of the Urban and Regional Planning Decree,[34] the Environmental Impact Assessment Act,[35] the Environmental Impact Assessment Procedure and Environmental Guidelines, and the Standards for the Petroleum Industry.[36] Nigeria's international obligations stem from the United Nations Framework on Climate Change Convention (UNFCCC) which provides in Article 4(f) that:

> All Contracting Parties have responsibilities to take climate change into account..., to minimize adverse effects on the economy, public health, and quality of environment, in projects or measures undertaken to mitigate or adapt to climate change.

This international obligation can only be enforceable in Nigeria after compliance with the provisions of Section 12 of the Nigerian Constitution, which predicates enforceability of all international treaties or conventions upon ratification by the Nigerian National Assembly. Other obligations include the procedural requirements for EIA in the EIA Act and Procedures[37] requiring governmental approval on proposed activities likely to have a significant impact on the environment before or after the incident. This process, although copious and saddled with avoidable bureaucratic bottle-necks, provided guidance on the form and scope of the EIA process; notifications; public participation; consultation; decision-making process; review; and an appeal and monitoring process. The initial administrative authority was vested in the Federal Environment Protection Agency (FEPA) and the Council thereof. Following the repeal of the FEPA Act, the Federal Ministry of Environment is now vested with the administrative authority over EIA.

The current EIA process is saddled with inadequacies and shortcomings.[38] Notwithstanding these critical reservations expressed by critics and environmental scholars,[39] the federal authorities only acknowledged the inadequacies in July 2017 during a workshop of stakeholders in Abuja. At this workshop, the Federal Minister of Environment, for the first time, admitted the shortcomings of the Nigerian EIA process. According to Shehu Mahmud Usman (a Federal Permanent Secretary) who read the Minister's address:[40]

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33 Oludayo (2004: 544).
34 Nigerian Urban and Regional Planning Act, formerly Decree No. 82 of 1992.
35 Nigerian Environmental Impact Assessment Act, Cap. E 12 (2004).
36 Environmental Guidelines and Standards for the Petroleum Industry (2000).
37 Nigerian Environmental Impact Assessment Act, Cap. E 12 [2004].
38 These include a lack of public participation, the poor quality in the commenting process, inadequate funding, corruption by officials involved in the EIA process, and the poor state of equipment.
39 Orubebe (2009: 175-181).
40 See <https://fmic.gov.ng/ministry-environment-holds-stakeholders-forum-review-eia-guidelines/> (accessed:19-12-2017).

> The Federal Ministry of Environment is hosting this stakeholders' workshop to enable it to develop new robust guidelines on EIA issues in line with global best practices. The review exercise underscores the Federal Government's commitment to the Principles of Sustainable Development and good governance as well as the creation of an enabling environment that will ensure that her citizens live within environmental limits and standard that will promote healthy living. 25 years ago, Decree No. 86 (now known as EIA Act CAP E 12 LFN) was promulgated by the Federal Government in order to achieve sustainable development in Environmental Impact Assessment. This law keeps evolving and unfortunately our existing guidelines do not have the capacity to incorporate climate smart decisions that will adequately address this phenomenon. That with these new trends and emerging global environmental issues, it has become imperative for Nigeria to review the existing EIA Act which has been in operation for the past two decades and address the shortcomings in order to bridge the gaps and ensure conformity with international standards especially against the backdrop of the dynamics of Nigeria's environment.

On 6 July 2017, the Federal Government of Nigeria issued 15 new EIA guidelines which include the EIA procedural guidelines, guidelines for strategic environmental assessment, EIA guidelines and standards on social impact assessment, EIA guidelines for health impact assessment, and EIA guidelines for oil and gas upstream (large volumes, base deports, tank farms, terminals and flow stations).[41] A careful perusal of the Nigerian Federal Government's new EIA guidelines shows no meaningful progress because it is difficult to identify any significant provision in the details aimed at addressing the fundamental environmental challenge of climate change within the EIA process.

4 Theoretical difficulties, analytical gaps and barriers in the Nigerian EIA process

EIA is a multidisciplinary land-use, planning, decision-making and sustainable soil management tool for environmental governance, through which climate change could potentially be addressed. For EIA efficacy, there is a need to harmonise theory and practice. In other words, the challenge is to find the best way to address climate change through EIA effectively and address the analytical gaps and barriers in the current Nigerian EIA process. There is evidence that suggests that specific climate change related regulation and guidelines are required in each step of the EIA process.[42] In addition, the current procedural and substantive legal regime that governs EIA in Nigeria needs to be synchronised with other instruments such as strategic and sustainability assessments, broader economic instruments[43] and other land use and planning policies before it can adequately address climate change. In this regard, the steps taken so far by Nigeria are at best an attempt aimed at putting in place new EIA regulations, but these fall short of putting in place climate specific guidance capable of integrating, or better

41 See <http://punchng.com/fg-produces-15-new-environmental-guidelines-reviews-others/> (accessed 19-12-2017).
42 Sok et al.(2011: 1).
43 Ibid.

still incorporating, climate change issues within the EIA process. This appears to be an important first step in tackling this global environmental issue.[44] In addition to this shortcoming, there exist classical theoretical difficulties in the Nigerian governments' effort aimed at integrating EIA and climate change. These include scientific uncertainty and confusion about the analytical nexus between climate change and climate variability.

4.1 Scientific uncertainty and stationarity

The concept of stationarity in natural environmental management means that "natural systems fluctuate within an unchanging envelope of variability".[45] This, according to Milly:[46]

> is the best basis for managing the environment and natural resources and can be captured through the historical record of system behaviour. It implies that any variability (for example, annual stream flow or annual Flood peak) has a time-invariant (or one-year-periodic) probability density function, whose properties can be estimated from scientific records….

Regardless of one's ideological bent, the scientific controversies associated with scholarly views of this nature cannot be ignored. However, the concept of stationarity appears to underpin the efficacy of legal frameworks and management approaches, including the EIA[47] process in Nigeria and most African countries. It assumes that the surrounding environment of plans and projects is stable, stationary or constant and thus their environmental impacts are predictable and can be tracked through historical records.[48]

4.2 Analytical nexus between climate change and climate variability

Currently, regardless of an environmental law lecturer's ideological bent, the search for science-based solutions that integrate climate change into the EIA process is fraught with overwhelming analytical difficulty associated with a science-based solution. *A fortiori*, the Nigerian EIA law and the ensuing regulations and related policies tend to highlight the impacts of plans/projects on the environment without

44 Ibid.
45 Milly et al. (2008: 573). Note that this view was also espoused within the context of environmental management process by He (2013).
46 Milly et al. (2008: 573).
47 Ibid.
48 He (2013).

investigating the impacts of the environment on proposed plans/projects.[49] For example, according to Xiangbai:[50]

> during the environmental baseline investigation stage – an indispensable step of EIA, climate change impacts, such as rising temperature, sea level rise, or the intensity and frequency of extreme weather events, are not assessed.

There is a real difficulty for the environmental law lecturer in this respect because climate change related facts are uncertain, unpredictable and complex.[51] Besides, the growing uncertainty cannot be tracked through existing databases or records. Thus the uncertainty and complexity associated with –[52]

> climate change may exceed the boundaries of environmental stationarity and have a significant impact on the performance of EIAs, predetermined development objectives. Scientific uncertainty concerning climate change means that human systems cannot predict and be thoroughly prepared for climate change due to imperfect knowledge about the probability, magnitude, timing and location of climate change impacts. This could lead to difficulties in assessing climate change impacts in EIA due to lack of specifics on individual projects.

In Nigeria, practical reality of this difficulty occured in 2012 when the Niger Delta region was flooded by the Forcados, Ramos, Niger rivers and their tributaries. Almost all major communities living in the Niger Delata region were flooded. A large portion of the major East-West Road under construction by the federal government of Nigeria was destroyed. The ethnic minority populations were temporarily resettled and all schools in the affected areas were closed. Some oil and gas facilities in the region were also shut down due to the hazards posed by the flood. During the flood, economic, political, social and cultural activities were paralysed. A critical review revealed that several EIAs were purportedly carried out in the region from 1956 to 2011 on Nigeria's unsustainable exploitation of oil and gas resources. One curious finding in ongoing research[53] is the observation that in most of the EIAs, GHGs have been considered in the proposed oil and gas drilling, pipelines and infrastructure proposals. However, under the current Nigerian EIA process, these projects are usually regarded as separate. The Federal Ministry of the Environment and the current EIA legal framework view them simply from the environmental decision-making tool perspective, namely plan/project design approval and implementation. It is imperative to note that although almost all the EIAs purported to address GHG emissions pursuant to the current Nigerian legal framework, with the goal of reducing potential adverse environmental effects, the said oil and gas facilities, the minority ethnic populations and the environment were all negatively impacted by the 2012 floods. This is against the background that climate change has already gone beyond scientific debate both at the international

49 Ibid. See also the broader dialectical expose by Xia et al. (2011).
50 He (2013); and Xia et al. (2011).
51 Ibid.
52 Ruhl (2011). See also Arvai et al. (2006: 217).
53 Novena University (undated).

and domestic levels and is now regarded as a fact resulting from anthropogenic GHG emissions.[54]

The above scenario concerning Nigeria explains today's environmental reality, which is the continuous pursuit of the narrow objective of the EIA process. This has several implications. Firstly, the current process is limited to only plan/project design approval and implementation based on land use and planning criterion. This is by all standards a far cry from what is required. Secondly, the current Nigerian EIA process allowed all these projects' EIAs to proceed without identifying, assessing and mitigating climate change. Thirdly, it is a deducible fact that the authorities claimed to have addressed GHG emissions under the current EIA regime – to reduce potential adverse environmental effects in the following terms:[55]

> The values of air quality measurements from this study were all within regulatory limits before commencement of the project. Marine transportation is known to produce obnoxious gases that could lead to atmospheric pollution. Some of these air pollutants are carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter (PM), and sulphur dioxide (SO_2). Greenhouse gases including carbon dioxide (CO_2) can also be emitted.

This paragraph, which appears in almost all the EIAs, for the period in question and up till now, is not supported by the facts. There are no data or facts to justify the claim that under the current EIA regime potential adverse environmental effects of GHG emissions have been reduced. These and other mischaracterisations of the facts[56] explain why Nigeria's current EIA process requires reform.

The critical environmental issue here is that the various EIAs conducted in the Niger Delta region in the period referred to above did not envisage or document the fact that the shrinking canals, silting lakes and rivers are warming, precipitation patterns are changing, and extreme events such as flooding are becoming more frequent and severe. If these persist, education, energy supply, health care, disease control, and road infrastructure will be negatively impacted upon. In fact, under the current Nigerian EIA process, impact assessment has been treated as an effective approach to control pollution and prevent environmental degradation. The potential pollution generated by these projects was the major consideration in determining whether an EIA was needed or not. In other words, pollution was also regarded as the most important criterion to assess whether these proposed projects would have significant environmental impacts (mainly pollutant discharge),[57] and the extent of their environmental impacts.

Fourthly, there is a difference between climate change and traditional environmental problems. It is the basis for integrating climate change in the EIA process. At a higher level of jurisprudential analysis, the integration of the two without a flexible, yet clear and precise step-by-step point for integration or consideration of climate

54 IPCC (2007).
55 Shell Petroleum Development Company of Nigeria Limited (2015: 209).
56 Ibid.
57 He (2013).

change, could create additional theoretical and implementation challenges.[58] In spite of the fact that climate change is one of the most complex and perhaps overwhelming environmental challenges for Nigeria in the 21st Century, the Nigerian government, private and public officials (planners and regulators inclusive) have not paid the attention that it requires. This is as a result of some apparent barriers, namely:

- the inadequacy of the Nigerian Government's EIA law, policy and incentive or commitment to climate change;
- the misconception on the part of government officials and the leadership of the country who at best view climate change and other environmental challenges as issues for minorities, particularly the Niger Delta's ethnic minorities;
- the lack of political will and capacity in all tiers of government to address climate change as a life-threatening and impending environmental catastrophe;
- the current Nigerian EIA framework and process, including the scoping process, that does not address climate change impacts in biodiversity, sustainability, cumulative impacts, disaster risk reduction (DRR), climate mitigation and adaptation; and
- the lack of coordinated yet flexible tools or strategies and the requisite expertise to deal with the challenge of climate change.

In addition to the above, there exist other vexed issues such as poor institutional arrangements, the lack of political will, inadequate budgetary provisions and corruption in the EIA process. Commenting on these shortcomings, Zagi, an official of the Nigerian Department of Petroleum Resources, affirmed in a study that:[59]

> EIA has become a standard practice in environmental and project planning on some major exploration and project development activities. However, our experiences in Nigeria suggest that not much is achieved despite the increase in the number of EIA studies being carried out. The reason for this is not farfetched since it is universally accepted that EIA as a planning tool is saddled with so many weak points. Some of the major weak points associated with EIA in Nigeria include the sparsity of baseline information against which the environmental impacts are measured; lack of budgetary allocations from the operators to implement mitigative measures and monitoring plans; lack of human resources and political commitment to enforce the environmental management plan amongst others. Consequently, oil operators carried out EIA in Nigeria to a larger extent, to satisfy regulatory requirements for the obtention of environmental permits.

It is noteworthy that in Nigeria, corruption has been linked to the EIA process in several respects and stages. For example, in the screening stage, the decision on whether an EIA needs to consider climate change can be unduly influenced by either the project proponents or government officials. While it is difficult to link corruption and the EIA process on the surface, investigative studies[60] affirm that corruption is possible in

58 Wang et al. (2003: 543).
59 Zagi (2002).
60 Williams & Dupuy (2017).

Nigeria because most environmental laws on EIA are unclear. Furthermore, they also grant unfettered discretionary power to government authorities. In fact, "some reports suggest that corruption has resulted in the Nigerian environmental ministry openly disregarding the country's EIA regulations".[61] Thus "some project proponents may bribe government officials to determine that a proposed project does not require EIA"[62] or government officials may solicit bribes from project proponents under the guise of transportation, welfare, accommodation and other 'payments'. All these are aided by vague EIA and climate change legislation. Another weakness of Nigeria's EIA regime is the non-transparent process of appointing experts. This is currently the prerogative of the Nigerian Federal Ministry of Environment. Unfortunately, this explains why the authorities have not deemed it fit to appoint ASSELLAU members in Nigeria or leading environmental lawyers as truly independent experts, rather defaulting to experts who appear to uphold the interests of project proponents. These and other unwholesome practices have led to allegations that:[63]

> ...during the scoping process, project proponents' may bribe the individuals responsible for carrying out an EIA to consider or ignore certain issues and impacts (climate change), or appoint arm chair experts who may bribe or extort project proponents for the fraudulent and falsified data collection…or even manipulate data collection and presentation… Perpetuate fraud through bribes, extortion, or kickbacks in order to collect needed data to include particular types of data or interpret it favorably. Sometimes fraud, kickbacks, and embezzlement take the form of procurement, contracting, billing, wages during public hearing where local communities are bribed to give their consent to projects, or to provide false data or permit/approve projects during report submission….

This said, however, the Nigerian government has declared its intention to establish a Climate Change Commission.[64] This idea is laudable, but the government must address the barriers noted above. Looking at the provisions of the Climate Change Bill, some progress has been made in providing a legal framework for mainstreaming climate change responses and actions into government policy formulation and implementation.[65] This includes the establishment of a Council to coordinate climate change governance in the country.[66] A careful perusal of the legislation, however, reveals that Section 6, which deals with functions, is silent on mainstreaming or integrating climate change into the EIA process. The Climate Change Bill also fails to address the need for a robust strategy to deal with barriers and challenges in the current Nigerian EIA

61 Ibid.
62 Ibid.
63 Ibid.
64 Bill for an Act to Establish the National Climate Change Commission and other Matters Connected therewith (2017), at <https//www.vanguardngr.com/2017/11/reps-pass-climate-change-bill/> (accessed 18-5-2018).
65 Sections 1(1) and (2), 2, 3 and 6, Bill for an Act to Establish the National Climate Change Commission and other Matters Connected therewith (2017).
66 Section 3, Bill for an Act to Establish the National Climate Change Commission and other Matters Connected therewith (2017).

process. Even where the right objectives are encapsulated, the Bill falls short of an enforceable broad-based right of citizens to sue and claim damages from corporations whose activities cause climate change. These *lacunae* need to be addressed if the proposed Climate Change Commission is to achieve its expected objectives. It has to be recognised that the "law does not operate in a vacuum. It operates in a social, economic and political context".[67] Consequently, it is not yet time for Nigerians to celebrate and in this regard, it is worth noting that although the National Assembly passed the Bill on 8 November 2017,[68] the President has not yet signed it into law.

5 What Nigeria needs to do to move forward

Moving forward, Nigeria needs to integrate climate change considerations into the EIA process. One of the strategies is mainstreaming and/or incorporating climate change-related concerns within the EIA process at both the strategic and regional policy interface, and specific project level. In addition to this, Nigeria needs to develop a mechanism that will identify climate change concerns early on in the EIA process. The Federal Ministry of Environment and other relevant authorities and stakeholders also need to develop consensus on the scope of GHG assessments. There is also a need to be clear about climate change scenarios used in the EIA process. This requires the highlighting of potential areas of contention and other relatively grey areas for better input. In addition, there is also the urgent need for specialised spatial data facilities with the capability to deal exhaustively with climate change mitigation; climate change adaptation and the identification of ecosystem degradation; loss and degradation of habitats within determined baselines; and the determination of trends in key indicators, particularly, thresholds/limits. Key areas that may be adversely affected by worsening environmental trends, such as protected or designated areas, require special attention.

The Nigerian EIA process needs to be adapted to isolating critical interdependencies, for example, water supply and sewage treatment systems, flood defences, energy/electricity supply and communication networks. Climate change vulnerability assessment needs to be built into the analysis of the baseline environment and the consideration of alternatives. Major infrastructure projects, in particular, are likely to be vulnerable. Accordingly, the Nigerian government must take into account the fact that, when developing the baseline against which projects are to be evaluated, it is important to acknowledge uncertainty as an inevitable consequence of climate change, and that this usually increases for large-scale projects. Such uncertainty can be accommodated or properly factored into the climate risk matrix using terms such as 'strongly

67 Kameri-Mbote & Nzomo (2004: 21).

68 See <https://www.vanguardngr.com/2017/11/reps-pass--climate-change-bill/>(accessed 18-5-2018).

suspected' and 'suspected' as recommended by the IPCC in its recent Assessment Report. The Federal Ministry of Environment needs to encourage environmental law experts and climate scientists to develop more detailed guidance on expressing climate uncertainty or risks.

Another important issue that needs to be addressed relates to benefits and losses that climate change integration will bring to the EIA process. In this regard, the question of which stakeholders accrue benefits and which do not becomes a challenge. At the moment, there is no fast and rigid EIA rule on what constitutes beneficial and adverse impacts. In practice, impacts are often not proportionally distributed within society – changes in ecosystems affect some population groups and economic sectors more seriously than others. This reasoning informs the proposed four functional steps and modalities for the EIA process.

Figure 1 and Figure 2 below are guides to assist EIA practitioners in specifically paying attention to possible alternatives and mitigation measures early in the EIA process. In the early stages of the process, alternatives are essentially different ways through which the developer can feasibly meet the project's objectives. This can be done by, for example, carrying out a different type of activity, choosing a different location or adopting a different technology or design for the project. This reality emphasises the need always to consider the no-go option (that is taking no action at all) while addressing climate change risk in an EIA. A practical approach to avoid maladaptation of climate-related variables in the EIA process is considering the no-go option as a specific alternative and developing baseline climate resilience data early in the process. At a more detailed level of analysis, alternatives may also merge into mitigation measures, where specific changes are made to the project design or to methods of construction or operation to prevent, reduce and where possible offset any significant adverse effects on the environment.

Many alternatives and mitigation measures that are important from the point of view of biodiversity and climate change should be addressed at strategic levels, in a strategic environmental assessment (SEA). For example, to avoid problems associated with flooding risk, planners should prevent projects from being developed on floodplains or areas of flood risk, or promote land management to increase water retention capacity. To avoid or minimise effects on areas of high biological value located near motorways or railway projects, it is necessary to assess the sitting corridors within the assessemnt of alternatives. Figures 1 and 2 summarise the four steps required.

Figure 1: Assessing climate change risks within the EIA process

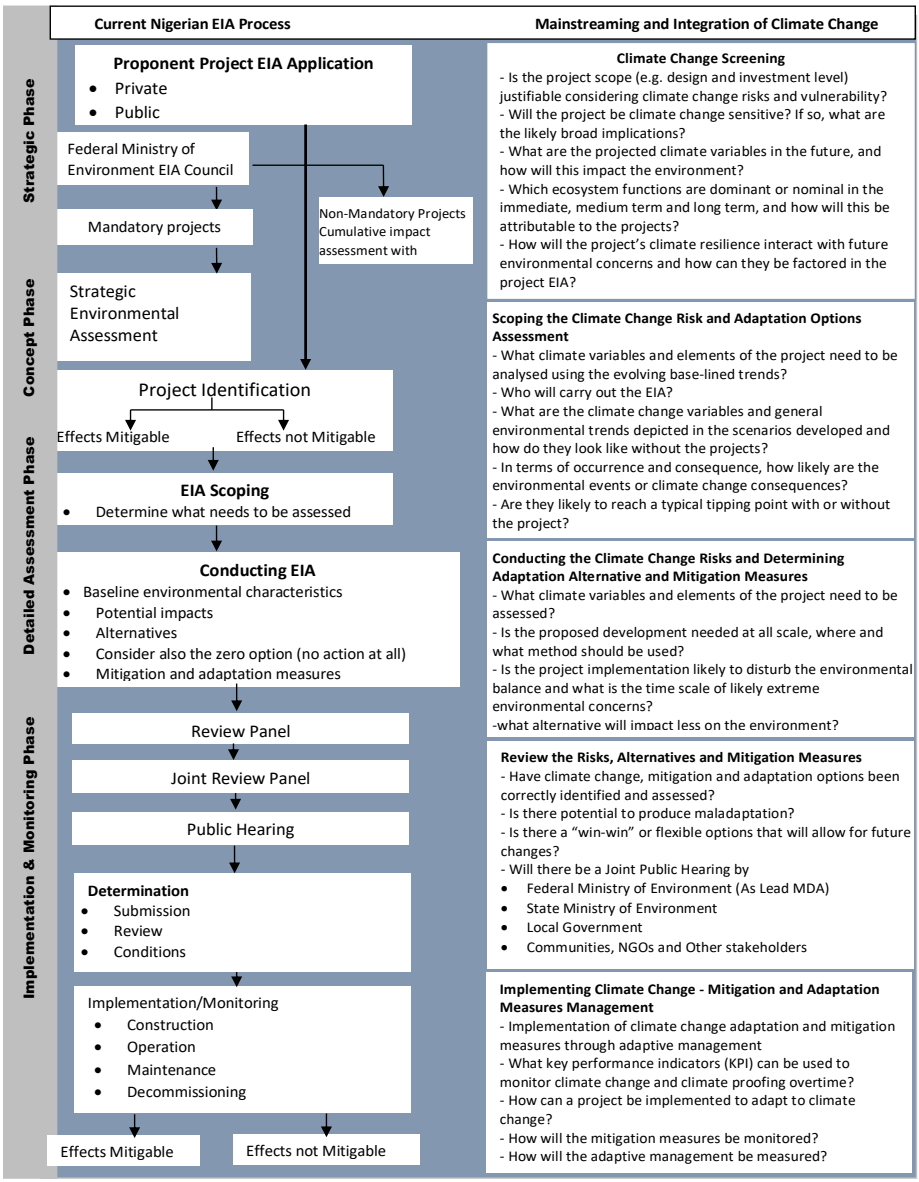

Figure 2: Mainstreaming and integrating climate change into the current Nigerian EIA process

STEP 1 Screen for climate sensitivity	STEP 2 Obtain climate data and projections	STEP 3 Prepare climate change risk and adaptation options assessment	STEP 4 Develop a flexible science based risk matrix for assessment
• Review project brief to identify all project aspects including design elements. • Broad level discussion with key designers and project manager to identify project aspects which are climate sensitive • Develop a template that deals with the essential ingredients such as: ✓ A schedule of activities to be carried out; ✓ Provision for legislative oversight; ✓ Adequate environmental data base; ✓ Assemble high competent team inter disciplinary approach; ✓ Clear allocation of responsibilities; ✓ Avenues for citizens to appeal against decisions; ✓ Opportunity of individuals to request review in a public hearing; ✓ Ready availability to the public of all documents; ✓ Agreeing on how to deal with annual reporting and how to deal with trans boundary regional environmental plans, state & Local issues, etc.	• Source data set from the Bureau of Meteorology& specialised organisations to characterise the average climate change. • Liaise with the various specialised organisations/Ministries, Departments and Agencies (MDAs) to obtain climate projections at the fines possible scale. Providing Geographic Positioning System coordinates of the proposed development usually does this. Specialised organisations/MDAs typically provides climate projections for a high resolution at least 1 metre 1° x 1° grid centred on the appropriate coordinates • Review published state guidelines and policies for the considered area (e.g. Niger Delta) Authenticated Records on – rainfall, Sea Level Rise, etc.	• Using the risk framework and the climate data, determine the likelihood and consequences of the climate risks to the proposed project. • Validate these draft findings in a working session with the key designers and project manager. • Discuss any risk reduction measure, buffer zone, and design flexibility already in place, how they address the identified climate change risks and how they can be expanded or amended to reduce these risks.	• Link climate variability to cumulative impact assessment and disaster risk reduction assessment. • Ensure that the risk matrix input emphasizes occurrence and consequence including likelihood, almost certain, possible, unlikely, rare. • Develop risk-rating charts using the matrix and the climate resilience impact. • Develop risk scenario and link same with climate variables describing in phases the risk flows and rate all into immediate, medium and distant.

6 Importance of using social and strategic impact assessment to integrate climate change

In general, social impact assessment (SIA) is a tool that deals with the assessment of the impact of major policies, plans, programmes, activities and developments on people and society on a large scale. Social impacts or effects are those changes in social relations between members of a community, society or institution, resulting from external change.[69] The changes might be physical or psychological involving social cohesion, general lifestyle, cultural life, attitudes and values, social tranquillity, relocation of residents and severance or separation as is usually the case with huge infrastructural development such as the construction of large hydro-electricity dams or major railway lines in which large populations are relocated into unfamiliar environments.[70] The consequences include social discontent, unhappiness, increased illness

69 Gilpin (2012: 172).
70 Ibid.

and loss of productivity and income.[71] EIA does not only apply to individual projects, but to policies, plans, programmes, activities and regional land-use objectives.[72] There is a growing perception that climate change and related risks are matters that cannot be adequately dealt with in the course of one EIA because some of the risk elements have already been documented and, by necessary implication, factored into the cumulative effects of other projects within the same or related programmes in a particular region. This is the intertwining link between major infrastructural programmes, namely transportation, road infrastructure, rail infrastructure and energy infrastructure. Project decisions are often significantly influenced by preceeding broad policy-based decisions relating to road and infrastructure energy generation, climate change and natural resource conservation and management.[73]

Including climate change considerations in EIA typically results in multiple mitigation and adaptation plans. The adaptation plans need to be developed at regional levels, often beyond the boundaries of an individual project.[74] To have an effective cumulative impact assessment (CIA) at a regional scale requires an adaptation and mitigation plan that incorporates multiple projects in a region. CIA usually starts with regional EIA (REIA) and SEA.[75] In practice, some scholars, in an attempt to coordinate general EIA policy, insist that:[76]

> The mitigation plans on the emergent situations, the EMPs need to be accompanied by the Disaster Management Plan (DMP). Once CC considerations are included, adaptation and mitigation elements get factored and the DMP assumes a form of a Disaster Risks Assessment which is an integral part of the project in question.

Be that as it may, these expanded requirements raise questions of cost sharing, but these can be dealt with in a coordinated fashion with shared responsibilities without distorting the purpose of EIA law and policy in the course of integration of climate change. In the case of Nigeria, the country's current EIA process does not enjoy the benefit and insight that is usually associated with SEA and CIA. These tools are not only necessary, but through their robust public participation elements, they provide legitimacy and act as important milestones in overall project acceptability and risk management in the EIA process.

71 Ibid.
72 Ibid.
73 Ibid.
74 Agrewala et al. (2010: 24-32).
75 Ibid.
76 Ibid.

7 Conclusion

This chapter argues that Nigeria needs a paradigm shift in its EIA process to integrate climate change effectively. The reform required must be holistic and capable of unleashing the advantages of climate change mitigation and adaptation. One approach would be to reform the legal and policy guidelines on EIA. This should enable Nigeria to address the resources and capacity challenges associated with generating the requisite data that captures climate change impacts at regional and project-specific scales. In this process, good science must be the basis for the development of climate change vulnerability or risk models with accurate sector-specific scenarios developed on the basis of long-term environmental data. This must be predicated on functional vulnerability and climate resilient templates with implementable mitigation and adaptation measures. The outcome of such scientific and inter-disciplinary EIAs is the pathway, and requisite tool Nigeria can use to address climate change associated risks. Nigeria and the African continent and, indeed the world, need to collaborate to avail humanity with the advantages of best practices on integrating climate change considerations within the EIA process.

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