Chapter 4:
Bridging the gap between climate change and energy policy options: what next for Nigeria?

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1 Introduction

The disruption of the global climatic system as a result of human developmental activities is responsible for climate change concerns constituting a definitive issue for the 21st century. Stakeholders as varied as international organisations, governments, business, non-governmental organisations (NGOs) and the world's population, are interested in this complex issue. Discussions on climate change are difficult due to the different interests of powerful stakeholders. This is particularly the case, where there is a direct clash in policy interests such as that between climate change and the energy sector. Policy makers are important in this context as the need to balance the interests of competing parties at the international and domestic arena, means there is a need to achieve a modicum of consensus say between developed country consumers and poor developing countries.

While climate change policy is primarily driven at international level due to the integrated nature of the global ecosystem, the centrality of nation states means that any meaningful analysis of the topic requires national perspectives. Climate change refers to the altered response of the climatic system to increased concentrations of greenhouse gases (GHGs) in the atmosphere.[1] Scientific convergence, despite some skeptics, indicates that a notable increase in the average temperature of the Earth's atmosphere, oceans and land mass will result in devastating weather pattern shifts causing loss of biodiversity, heat waves, drought, rising sea level, human migration, decreased agricultural yields, etc.[2]

Climate change policy concerns specific guidelines or strategies formulated at the international, national, or even local level to address climate change. This can be climate mitigation focused on minimising the extent of climate change; or climate adaptation that tries to minimise risks posed by the consequences of climate change. Energy policy, on the other hand, is concerned with the way and manner energy development

1 Hunter et al. (1998: 609).
2 Zaelke & Cameron (1990: 253-260).

issues such as production, distribution and consumption are treated. It encompasses oil and gas exploration and development, refining, renewable energy, coal and electricity.

Climate change and energy are intrinsically linked, as energy is central to the development of modern society. Today, prosperity is based on the production and consumption of large amounts of energy, which is problematic as energy accounts for about 75% of total GHG emissions and 80% of carbon dioxide (CO_2).[3] The threat of climate change is addressed by an evolving and increasingly sophisticated legal architecture that is based on the UN Framework Convention on Climate Change (UNFCCC) 1992, the Kyoto Protocol 1997 and the Paris Agreement 2016. Also potentially relevant are regional and sub-regional pronouncements on climate change. Interestingly, anxiety about climate change and advocacy for action started as far back as the 1970s and continued into the 1980s until the UNFCCC came into play.[4] Parallel to this are some key energy documents such as the United Nations Sustainable Energy for All Initiative 2012 and International Energy Charter 2015.[5]

Climate change imperatives directly confront the interests of developing producer nations, particularly, those like Nigeria which is a mono-product economy that is dependent on foreign sales of crude oil and gas for economic growth. A member of the Organisation of Petroleum Exporting Countries (OPEC) since 1971, Nigeria is the largest oil and gas producer in Africa that also controls its largest natural gas reserves. Unfortunately, the country is experiencing problems with crude oil refining, as well as a huge deficit in electricity production that is urgently needed for its ever-expanding population. This is despite being richly endowed with coal and bitumen as well as renewable energy sources like solar, wind, biomass and hydro resources.

On the face of it, there is a direct conflict between Nigeria's economic and development interests and the demands for climate change action mostly emanating from the international sphere and mostly caused by industrialisation activities in developed countries. There is thus a tension between the short-term national interest and the need to transition to sustainable energy systems. That said, Nigeria has put in place an extensive network of energy policies potentially impacting climate change. This majorly includes the National Energy Policy 2003, Renewable Energy Action Program (REAP) 2006, Bio-Fuels Policy 2007 and the National Renewable Energy and Energy Efficiency Policy (NREEEP) 2015.

The chapter adopts an analytical methodology to critically evaluate Nigeria's response to its international climate change obligations in the context of energy policy.[6] Therefore, the chapter is arranged as follows: Part 2 provides the contextual

3 International Energy Agency (2018).
4 Ong (2010: 450-451).
5 Please note that the chapter will be limited to these documents and will not include all international energy documentation.
6 Note that the focus of the chapter is on climate change and energy and no attempt will be made to engage environmental policy or related issues.

background linking climate change and energy; Part 3 assesses international climate change and energy-related obligations accepted by Nigeria; while Part 4 deals with the relationship between Nigerian energy policy and climate change. Part 5 integrates climate change and national energy policy. It is argued that there is a need to integrate radically climate change and energy policy. It further observes that difficult decisions have to be taken if Nigeria is to eventually transit to a low carbon economy based on its policy choices.

2 Contextual background: linkages between climate change and energy

The issue of climate change is quite complex and controversial as there is some scientific disagreement on the criteria for climate change.[7] According to the Intergovernmental Panel on Climate Change (IPCC), climate change constitutes:[8]

> a change in the state of the climate that can be identified [e.g., by using statistical tests] by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer.

Thus, climate change includes sporadic weather events as well as the slow rise in global mean surface temperature.[9] Essentially, the IPCC's definition refers to any change in climate over time, whether due to natural variability or human activity. Meanwhile, the UNFCCC defines climate change as attributes directly or indirectly linked to human activity that alters the composition of the global atmosphere – in addition to natural climate variability – observed over comparable periods of time.[10] According to Kerr[11], the main cause of climate change is attributable to "higher concentrations of greenhouse gases in the earth's atmosphere leading to increased trapping of infrared radiation". Climate change thus poses a threat to sustainable development, socio-economic development, human rights and efforts to protect the environment.[12] Major GHGs such as carbon dioxide, methane, nitrous dioxide and chlorofluorocarbons (CFCs) are emitted from energy generating fossil fuels. For this reason, industrialised countries are alarmed at the projected upward trend in fossil energy use in developing countries,[13] despite their free use of fossil fuels to climb up the development ladder.

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7 Todorov (1986: 258-259); United Nations Framework Convention on Climate Change (1992); Smith (2017: 22).
8 IPCC (2007).
9 Ifeanyi-Obi (2012); Smith et al. (2017: 22).
10 IPCC (2007).
11 Kerr (2002).
12 Segger (2016: 202-203).
13 Sagar (2006: 71).

Climate change particularly engages the energy sector due to the centrality of energy as the source of problems as well as a solution.[14] Today, energy security and climate change concerns are challenging due to existing energy systems based on fossil fuels.[15] Energy security refers to the availability of adequate, reliable and affordable energy, which is a necessity for modern economies. Hence, the need for well-designed energy policies capable of addressing complex issues, as national energy policies stretch to include international treaties, legislation, regulation, guidelines etc. Furthermore, energy policies address climate change and seek to reconcile global policy objectives with domestic law and interests.[16]

Fossil fuels such as oil, natural gas and coal currently dominate the global energy mix and are responsible for about 80% of commercial energy supply.[17] This is driven by economics as fossil fuels are relatively low cost, energy dense, flexible and highly convenient when compared with nuclear power and renewable energy resources.[18] Energy services underpin human activity and civilisation by fueling needs as diverse as cooking, heating, lighting, industry, health, education, communication and transport.[19] Put simply, energy equals development as there is a correlation between GDP growth and per-capita energy consumption.

Nigeria is influential on the global energy sector due to its status as the world's sixth largest crude oil exporter. Its crude oil reserves are put at 37.2 billion barrels, and natural gas reserves are estimated at 187 trillion cubic feet.[20] Notwithstanding these energy advantages, the country contributes to climate change by flaring an estimated 2.5 million cubic feet of gas per day which is equivalent to the daily consumption of all African countries.[21] This means that over 400 million tons of carbon are vented into the atmosphere.[22] Also, its overdependence on crude oil exports has negatively impacted on industrial activities and agriculture; worsening its development trajectory. But importantly, climate change is already manifesting in the nation with intensifying soil erosion, landslides, seasonal droughts, and excessive flooding threatening its extensive coastline.[23] In parts of northern Nigeria, villages have been abandoned due to

14 Beecher & Kalmbach (2012: 4).
15 Hansen (2008).
16 Farah & Rossi (2011: 232). Elements of an energy policy include the level of energy sufficiency of the nation, the location of future energy sources, and how it will be consumed, as well as national security and foreign policy considerations. See Hamilton (2013).
17 MacGill (2008: 86).
18 Ibid.
19 World Energy Council (2007).
20 Nwaogaidu (2013: 163).
21 Ismail & Umukoro (2012: 292).
22 Ogbodo & Stewart (2014: 17-18).
23 Akinyemi (2014: 48); National Adaptation Strategy and Plan of Action on Climate Change for Nigeria (NASPA-CCN) (November 2011), iii-iv, at <http://csdevnet.org/wp-content/uploads/NATIONAL-ADAPTATION-STRATEGY-AND-PLAN-OF-ACTION.pdf> (accessed 27-12-2017).

encroaching desertification and migration of animal herders has caused violent clashes with farming communities throughout the country.

Interestingly, Nigeria is blessed with both conventional and non-conventional renewable energy sources scattered across the country. Renewable energy, in the form of energy produced from solar, wind, sustainably managed hydro, geothermal and biomass resources, is available as an alternative to fossil fuels. Hydropower generation is vulnerable to changing weather patterns due to its sensitivity to the amount, timing and geographical spread of rainfall.[24] Such is the complexity of the climate change debate and susceptibility to new scientific evidence that it is worthy to note that there is some dispute on hydro and biomass as legitimate sources of renewable energy.[25]

Table 1: Nigeria's energy reserves/potentials[26]

Resource	**Reserves**	**Reserves Billion toe**	**% Fossil**
Crude oil	33 billion bbl	4.488	31.1
Natural gas	4502.4 billion m^3 (159 trillion scf)	3.859	26.7
Coal & Lignite	2.7 billion tones	1.882	13.0
Tar Sands	31 billion bbl oil equiv.	4.216	29.2
Sub-Total (Fossil Fuels)		**14.445**	**100.0**
Hydropower, large scale	10,000MW		
Hydropower, small scale	734 MW	Provisional	
Fuelwood	13,071,464 has (forest land 1981)	Estimate	
Animal waste	61million tones/yr	" "	
Crop Residue	83million tones/yr	" "	
Solar Radiation	3.5-7.0kWh/m^2-day		
Wind	2-4 m/s (annual average)		

24 Ladan (2009: 7-8).
25 Daigneau (2013); Mckie (2017).
26 Source: Renewable Energy Master Plan.

3 International climate change and energy-related obligations

3.1 International instruments on climate change

The starting point on international action to combat climate change commenced at the Earth Summit in Rio de Janeiro in 1992 when 154 countries joined the United Nations Framework Convention on Climate Change (UNFCCC). This foundation treaty sets the ground rules for inter-state cooperation. To assist easy acceptance, it does not oblige countries to make quantitative reductions to GHG emissions, nor does it have an enforcement mechanism. Entering into force on 21 March 1994, the key provision of the UNFCCC is stated in Article 2 titled objectives:

> The ultimate objective of this Convention and any related legal instrument that the Conference of the Parties may adapt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

The provision evidences the need to stabilise GHGs to avoid dangerous disruption of the climatic system within time frames that would allow for natural adaptation. This is in line with the preamble of the UNFCCC which acknowledged that climate change and its adverse impact are a "common concern of mankind". Also important is the acknowledgement that climate change action can only be effective through an international response that integrates cooperation among all countries.

While cooperation on the part of all countries is required, there is some recognition that a 'one size fits all' approach will not work due to the development gap between developed and developing countries.[27] Noting that developed and developing states have common but differentiated responsibilities and respective capabilities is a realistic posture on past responsibility and actual ability to act. Thus, Annex I parties primarily comprises of developed countries, while non-Annex I parties are made up of developing nations like Nigeria. The only soft commitments in the UNFCCC are on Annex I parties who are obliged to adapt national policies to mitigate climate change in order to return emissions to 1990 levels. At the same time, the extent to which

27 Article 3(1) UNFCCC states that: "The parties should protect the climate system for the benefit of present and future generations of mankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof". The principle is also replicated in the Kyoto Protocol. Perhaps an alternative approach is to consider climate change from the polluter pays principle prism which will demand that developed countries are responsible for climate change and thus should bear the costs of prevention and remediation. See Maguire (2012: 109-110).

developing countries can meet their commitments is dependent on developed countries financial and technical assistance.

International moves against climate change were taken further when the Kyoto Protocol was concluded on 11 December 1997. The Protocol is a global agreement concluded under the terms of the UNFCCC and was the result of over two years of intense negotiations. Unlike the UNFCCC, it establishes for the first time, binding emission limits for developed country parties. Such parties are required to reduce their collective GHG emissions by 5.2% compared to 1990 levels between 2008 and 2012. Nonetheless, the Protocol softens the impact of binding targets by allowing developed countries access to three flexible implementation mechanisms that recognise compliance costs in meeting emissions targets. These market-based instruments integrate private sector and developing country participation in reducing GHG emissions. The Kyoto mechanisms are: (i) emissions trading that allows a country that has higher emissions to purchase the right to emit more, whilst a country with fewer emissions can trade its right to emit to other developed countries; (ii) the Clean Development Mechanism (CDM) allows developed countries to reduce emissions by financing emission reduction projects, e.g., planting a forest in developing states like Nigeria; and (iii) joint implementation which allows a developed country to invest in an emission reduction project in another developed country as a means of reducing emissions.[28]

More recent efforts to strengthen climate action are contained in the Paris Agreement of 2015. 150 heads of state and government gathered at the Conference of the Parties (COP) 21 in Paris summoned the political will for unprecedented action. Article 2(1)(a) of the Agreement pushes state parties to toughen the global response to climate change by:

> Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impact of climate change.

This ambitious target saw over 1,300 non-state actors such as major companies and large cities participate in pledging to meet global emissions reductions. The Paris Agreement represents six years of complex negotiations under the UNFCCC, with the added pressure of trying to avoid the fate of the failed 2009 Copenhagen Conference. Moreover, the Agreement provides for a universal and nationally driven approach that differentiates nations on the basis of capacity and not developed or developing country.

Unlike the Kyoto Protocol, the Paris Agreement does not formulate country-specific targets. Instead, it relies on voluntary mitigation measures and progressively ambitious mitigation contributions. Furthermore, the Agreement puts in place an enhanced transparency and accountability framework for countries in which there is frequent reporting on internationally agreed emission standards; progress tracking every two years to

28 Thornton & Beckwith (2004: 60-61).

ensure countries are on course; as well as a robust expert review of progress and targets achievements to avoid corner cutting.[29]

Put simply, the Paris Agreement provides a common framework that allows countries to determine their nationally determined contributions taking into account their capacities as well as the overall goal of the agreement. This collaborative approach seems to provide the basis for concerted long-term cooperation over climate change, though the jury is still out.

3.1.1 United Nations Sustainable Energy for All Initiative 2012

The years 2014-2024 have been declared the Decade of Sustainable Energy for All (SE4ALL) by the UN General Assembly in Resolution 65/151 in 2012, which cements the importance of energy to sustainable development and climate change mitigation. Three objectives are to be achieved by 2030: universal access to modern energy services; doubling the improvement rate in energy efficiency, and doubling the renewable energy share in the global energy mix.[30] It recognises that mounting energy emissions are a contributor to climate change and that the provision of cleaner and more efficient sustainable energy is in the interest of all countries.

The SE4ALL is an initiative driven by the Office of the Secretary General of the United Nations. Perhaps influential at best, it does not have the solidity of a global instrument prescribing standards of behaviour to member states. Considered together with the International Renewable Energy Agency (IRENA), an intergovernmental organisation that supports countries transiting to sustainable energy, it provides strong policy directions that underscore the significance of sustainable development and the push towards low carbon economic growth and prosperity. All of these have influential overtones on 150 SE4ALL countries policymakers, including Nigeria.

3.1.2 International Energy Charter 2015

The International Energy Charter (IEC) in its preamble states that it is a political intention declaration merely aimed at strengthening energy cooperation between signatories and does not result in financially or legally binding obligations. This Charter, however, sets out a framework for long-term cooperation at the regional and global

29 OPEC (2016). The Organisation of Petroleum Exporting Countries (OPEC) welcomed the Paris Agreements in the following terms: "The world has reached a critical turning point with the Paris Agreement. Its ratification and orderly implementation will put the entire world community on a sustainable path that secures everyone's future and preserves the planet for coming generations".

30 Sustainable Energy for All (2012).

level for sustainable energy development, energy security and the use of energy in an environmentally sound manner.[31]

Nigeria is one of 90 signatories among other 10 African countries that seek to strengthen and integrate regional energy markets in order to enhance global market efficiency by providing, e.g., access to energy markets, liberalised trade under the World Trade Organisation, investment protection, diversification of energy sources, access to sustainable energy and energy efficiency.[32] The IEC is an update of the legally binding Energy Charter Treaty 1994 which promotes energy security through open and competitive energy markets.[33] Sadly, despite an admirable bent towards energy sustainability, there is no attempt to integrate climate change, though this is now an increasingly central part of the global policy agenda.

3.1.3 African Union climate change policy

African countries like Nigeria, through the African Union (AU), have addressed climate change in light of its transboundary nature and the vulnerability of member states. Driving the process is the role of the AU's Assembly of Heads of State and Government (the Assembly) which has rightly focused on developing a common negotiation position for its member countries. Thus, enhancing Africa's negotiating and bargaining power over the negligible power of its individual countries.

The principal strands of AU climate change policy are: (i) the Eighth AU Summit which endorsed climate change efforts in the Climate Information for Development Needs: An Action Plan for Africa Report 2007, which basically called on members to integrate climate change into national development plans; (ii) the Algiers Declaration on Climate Change 2009 that established a common African negotiation stance for the fifteenth Conference of the Parties to the UNFCCC (COP15) – developed countries should have mitigation commitments, while developing states mitigation actions should be voluntary and dependent on their access to technology, finance and capacity building; (iii) institutionalisation of climate change through the Conference of African Heads of State and Government on Climate Change (CAHOSCC); and (iv) the Draft AU Strategy on Climate Change 2014 that focused on the different obligations of developed and developing countries in line with the UNFCCC and Kyoto Protocol.[34]

The aim of the 2014 AU Strategy is to achieve climate-smart socio-economic development on a continent populated with some of the poorest countries in the world.

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31 International Energy Charter (2015), at <http://www.energycharter.org/fileadmin/DocumentsMedia/Legal/IEC_EN.pdf> (accessed 24-12-2017).

32 Ibid.

33 Energy Charter Treaty (1994), at <https://energycharter.org/process/energy-charter-treaty-1994/energy-charter-treaty/> (accessed 27-12-2017).

34 Chinwuba & Ayoade (2013: 86-87). See also Jarso (2010-2011).

In relation to energy, the Strategy advocates that Africa must focus on increased energy access and security, whilst at the same time, reducing emissions. Other climate change governance activities are undertaken through the New Partnership for Africa's Development (NEPAD) and the African Ministerial Conference on the Environment.

3.1.4 Economic Community of West African States

The Economic Community of West African States (ECOWAS) was modelled on the basis of the European Union and established on 28 May 1975 to coordinate and promote trade, cooperation and development in the sub-region. Even the ECOWAS revised Treaty of 1993 focuses inter alia on energy cooperation as well as economic, social and cultural activities to alleviate poverty and raise the standard of living of its people. ECOWAS does not have a specific climate change policy, though there is a 2008 ECOWAS environmental policy. Be that as it may, the ECOWAS Lomé Declaration on Climate Change and Protection of Civilians in West Africa, 2009 recommends that a special fund be established to ameliorate climate change induced inputs. Also, member states are urged to establish and promote adaptation mechanisms taking into account regional cooperation and national expertise.[35]

The ECOWAS energy policy, on the other hand, can be found in diverse documents that have sought to inter alia mainstream renewable energy and energy efficiency at the regional level in order to harmonise the legal and regulatory architecture of its member states. First is the ECOWAS Energy Charter Protocol, 2003, which is majorly concerned with international cooperation for investment promotion and protection, since it is based on the Energy Charter Treaty which it simply copies. Article 19 of the 2003 Protocol on environmental aspects does not explicitly refer to climate change, though, it reflects the importance of environmentally compliant energy investments, improving energy efficiency, and utilising renewable energy.[36]

The ECOWAS Renewable Energy Policy 2015 tries to remove barriers to renewable energy and aims to increase the renewable energy share in the total energy mix (large hydro inclusive) to 35% in 2020 and 48% in 2030.[37] To achieve this ambitious target, member states, including Nigeria, are assisted in putting action plans in place to make the goals achievable. Simultaneously, the ECOWAS Energy Efficiency Policy provides a framework for energy efficiency investments to stimulate job creation and socio-economic development; also doubling energy efficiency by 2020, assists energy

35 See Paragraph 19 of the Lomé Declaration on Climate Change and the Protection of Civilians in West Africa (2009).

36 ECOWAS Energy Protocol A/P4/1/03 2003, at <http:///www.energy.gov.si/EcowasProtocol.pdf> (accessed 24-12-2017).

37 ECOWAS Renewable Energy Policy (2015), at <http://www.ecreee.org/sites/default/files/ documents/ecowas_renewable_energy_policy.pdf> (accessed 26-12-2017).

access, energy security, and climate mitigation and adaptation.[38] The document specifically mentions environmental protection and the need to reduce GHG emissions which is assisted by the operation of the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE).

4 Nigerian energy policy and climate action

Nigeria's energy policy is based on the National Energy Policy 2003, which encapsulates the entire energy landscape of the nation. The aim of the policy is to guarantee adequate, reliable and sustainable energy supply at appropriate costs and in an environmentally responsive manner in order to benefit the economy for national development. Five of its six chapters are structured into energy sources, energy utilisation, energy issues, energy financing and planning and policy implementation.[39] The goal is to optimally use energy resources for the sustainable development of the country.

The 2003 National Energy Policy (NEP) was the first governmental attempt to guide energy policy, and there is an explicit acknowledgement that energy is critical to national development goals. The role of government and the state is to take the lead in the energy sector in order to overcome challenges. Yet, there is a recognition that overdependence of oil can be overcome through aggressive research, diversification of energy resources, and human capacity development.[40] Energy policy objectives were summed up as follows and this is fully reproduced due to its importance:[41]

i. To ensure the development of the nation's energy resources, with diversified energy resources option, for the achievement of national energy security and an efficient energy delivery system with an optimal energy resource mix.

ii. To guarantee increased contribution of energy productive activities to national income.

iii. To guarantee adequate, reliable and sustainable supply of energy at appropriate costs and in an environmentally friendly manner to the various sectors of the economy for national development.

iv. To guarantee an efficient and cost effective consumption pattern of energy resources.

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38 ECOWAS Energy Efficiency Policy (2012), at <http://www.ecreee.org/sites/default/files/ documents/basic_page/081012-ecowas-ee-policy-final-en.pdf> (accessed 24-12-2017).

39 National Energy Policy (2003). The ability of the federal government to make policy for the nation is derived from the Constitution of the Federal Republic of Nigeria 1999 (as amended). In particular, Section 16, Part II of the Constitution deals with the economic objectives of the nation and empowers the executive arm of government to make policy. Also Section 16(2)(b) of the Constitution directs that the state has harness and distribute the material resources of the nation for the common good. Furthermore, under the Second Schedule to the Constitution, mines and minerals including oil fields and natural gas are reserved to the exclusive legislative list which implies that only the National Assembly can legislate on this issue, and this also makes it an exclusive matter of the federal government.

40 National Energy Policy (2003).

41 Ibid.

v. To accelerate the process of acquisition and diffusion of technology and managerial expertise in the energy sector and indigenous participation in energy sector industries for stability and self-reliance.

vi. To promote increased investments and development of the energy sector industries with substantial private sector participation.

vii. To ensure a comprehensive, integrated and well informed energy sector plans and programs for effective development.

viii. To foster international cooperation in energy trade and projects development in both the African region and the world at large.

ix. To successfully use the nation's abundant energy resources to promote international cooperation.

This laudable set of objectives is of course reflective of the traditional approach to energy policy, which is to essentially focus on short-term development concerns, including the need to participate in the sector as the owner of the natural resource. Criticism of the NEP might include its failure to take account of the indigenous host communities that live with the consequences of oil production and development; and the failure to differentiate between onshore and offshore oil and gas resources. Of course, there is no mention of climate change as this was not yet a major international policy concern. It does, however, discern the importance of international cooperation in developing energy resources.

In relation to electricity, the NEP recognised the inadequacy of supply and the fact that the sector was then 98% owned by the Federal Government. Inadequate electricity meant that the commercial and industrial sectors relied on polluting generators which account for over half of consumed grid electricity. Hence, the policy advocates private sector involvement to ensure reliable power and the need to broaden energy options for generating power.[42] Its aim is to make electricity available to 75% of the populace. Interestingly, renewable energy resources were not considered, particularly mainstream, though there was a strategy to use renewable energy for the agricultural sector.[43]

Institutional support for energy policy can be found in the Energy Commission of Nigeria (ECN). Established by the Federal Government by Act No. 62 of 1979, as amended by Act No. 32 of 1988 and Act No. 19 of 1989, the ECN is charged with the strategic planning, monitoring and coordination of national energy policy. This includes policy implementation, promotion of diverse energy sources through guidelines, research, information dissemination, and periodic master plans. The ECN is responsible for advising the federal, state and local governments on the funding of energy research, production, etc. It also acts as the national energy data bank and liaises with all international organisations on energy-related matters.[44]

42 Ibid: 36.
43 Ibid: 72.
44 Energy Commission of Nigeria (2014).

Importantly, the NEP already outlines the key elements for the development and application of renewable energy. This includes the promotion and use of renewable energy to ensure decentralised energy supply, especially to rural areas; develop, promote and harness all viable renewable options into the national energy mix; discourage the use of wood as fuel; promote efficient use of biomass energy resources; and awareness to develop newly emergent sources of renewable energy by keeping abreast of international and technological trends. The NEP was first revised and updated in 2006, though, the latest draft revision was in 2013. The 2013 draft rightly includes an environmental and climate change policy, energy policy issues such as bilateral, regional, and international cooperation, local content, gender, human resources development and training. This is in addition to policies on energy financing, planning, and policy implementation.

Following on from the NEP, the Renewable Energy Master Plan for Nigeria (REMP) was produced in 2006 with support from the United Nations Development Programme (UNDP). It sought to assist Nigeria transition from a monolithic fossil-based economy to a less carbon-intensive economy utilising gas, and with a larger role for renewable energy. The overall objective was to provide a roadmap for national development through accelerated development and use of renewable energy resources.[45] In line with this, the Renewable Electricity Policy Guidelines were issued in December 2006 to further buttress the Federal Government's vision and policy to derive electric power from renewable energy. Moreover, the guidelines ensure that regulatory policy on renewable energy must be in line with Nigeria's international obligations on climate change. Thus, as Nigeria is a signatory to the Kyoto Protocol and eligible to participate in the Clean Development Mechanism (CDM), participation on such climate change mitigation activities is essential and has resulted in gas utilisation projects and even a hydropower rehabilitation project with countries like Norway, Italy, UK, France and Sweden.

Since socio-economic development is driven by energy, Nigerian policymakers have long realised that development goals such as the then Millennium Development Goals cannot be met without substantial improvement in energy supply and consumption. Also, the Vision 20:2020 (2008) blueprint to propel Nigeria into the rank of the top 20 largest economies by 2020 tacitly accepts this and seeks to increase energy supply from 4,000 MW in 2007 to 35,000 MW in 2020. At the same time, refining capacity should rise sharply from 445,000 bpd to 1,500,000 bpd in 2020.[46]

Vision 20:2020 envisages the usage of coal reserves estimated at 2.75 billion tones for energy production using clean coal technology.[47] This is in addition to electric power generation from tar sands or bitumen, hydropower, solar energy, wind power,

45 Sambo (2009: 6-8).
46 Energy Commission of Nigeria (2014: 6).
47 Ibid: 16.

biomass and uranium. It emphasises gas more than electricity as environmentally cleaner to oil and coal options. The added benefit would be to end gas flaring by 2008, an objective that has not been achieved.[48] Unfortunately, the vision essentially failed at conception, and much of its commendable aims were not accomplished. Promotion of renewable energy for environmental reasons, for instance, is in consonance with Nigeria's climate change obligations, though, the document does not mention climate change.

The Nigerian Bio-Fuel Policy and Incentives 2007 is yet another attractive policy recognition of the need to minimise fossil fuels and its related GHG emissions. The objective of this document is to provide a beneficial environment conducive to the development of a home-grown ethanol fuel industry, which will reduce dependence on imported gasoline and provide sustainable jobs. To ensure this, various financial incentives and tax waivers have been provided for this infant industry. Despite this, the policy has not recorded much success though biofuels can play an important role in mitigating climate change. Notable, however, is that there is no actual mention of climate change in this important document.

Perhaps more valuable is the National Renewable Energy and Energy Efficiency Policy (NREEEP) 2016. This policy document harmonises Nigeria's renewable energy and energy efficient policy with the ECOWAS Renewable Energy Policy (EREP) and ECOWAS Energy Efficiency Policies (EEEP). Its great advantage is to provide a system to implement the National Renewable Energy Action Plan (NREAP) and a National Energy Efficiency Action Plan (NEEAP) to carry out Nigeria's international obligations.

Linked to the NEP 2003, NREEP seeks to provide, for instance, Mandatory or Voluntary Renewable Portfolio Standards (RPS) which determine the amount of energy generated from renewables by a target year; Power Production Tax Credit (PPTC) to encourage electricity producers to generate from renewable sources; Feed-in-Tariff (FIT) offering a favorable pricing structure for renewable; Public Benefits Fund (PBF) that allows a tariff percentage to support on and off-grid renewable energy projects; and the provision of generous tax holidays, capital grants and other incentives.[49] Behind this is the desire that renewable energy constitutes about 20% of total energy supply in the long term, whilst there will be reliable electricity in the near term to meet the aims of Vision 20:2020.[50] Again, in this document, there is no mention of climate

48 Ibid: 19.

49 National Renewable Energy and Energy Efficiency Policy (2015). It is interesting that the Ministry of Power, and not the Energy Commission of Nigeria developed this policy. Other interesting aspects of the policy include that it allows for the active participation of states, local governments, and NGOs in renewable energy and energy efficiency matters. In addition, it provides for a monitoring and evaluation watchdog group under the control of the Minister of Power. The latter is supposed to tackle the notorious deficiency of government in implementing and enforcing its own rules.

50 National Renewable Energy and Energy Efficiency Policy (2015).

change implications of the policy, though its overall purpose does fit into a climate mitigation agenda.

This section is devoted to the latest policy documents governing the petroleum and natural gas sectors. The National Petroleum Policy (NPP), 2017 and Natural Gas Policy (NGP), 2017 are rather important as they represent the latest thinking of policymakers and their being written at a period in which climate change is at the top of the regulatory agenda around the world. The central objective of the NPP is to maximise hydrocarbon production for national economic growth so that the sector is much more than a provider of foreign exchange. For the NGP, its purpose is to centralise the role of natural gas in the national industrial economy and at the same time capture international markets. Despite the attractive roadmap and action plans provided in both documents, there is still a significant failure to take climate change into account as there is barely any mention of this important issue. This is particularly regrettable bearing in mind the link between gas and electricity generation.

The Nigerian electricity sector is underpinned by the National Electric Power Policy (NEPP) 2001, which was developed by the Electric Power Reform Implementation Committee which provided for the privatisation of the electricity sector, establishment of an independent regulator, and wholesale market trading structures.[51] This was supported by the Electric Power Sector Reform Act (ESPRA) passed by the National Assembly in 2005. ESPRA is primarily concerned with licensing and regulation and does not particularly concern itself with the link between energy policy and climate change. For instance, the regulator, the Nigerian Electricity Regulatory Commission's (NERC) job is focused on general regulation, and there is neither mention of renewable energy nor climate change as areas of interest.[52]

Despite the number of policy options available to the Nigerian government, it is clear that much of the policies cannot be regarded as successful, particularly as regards climate change obligations. While some of the documents nod towards the need to take climate change into account, there is no instrument that gives policy priority or prominence to climate change; take for instance, the failure to end gas flaring and the moves towards coal use in the Vision 20:2020, which is perhaps indicative of the general lapses in extant policies from the climate change perspective.

From the above, it could be rightly surmised that the Nigerian state is publically committed to combating climate change. While the UNFCCC, the Kyoto Protocol and the Paris Agreement have been ratified, there has been no attempt to domesticate the agreements into national law for implementation and enforcement. Under Section 12 of the 1999 Constitution, an act of the National Assembly is essential to treaty implementation and application. However, the National Environmental Standards and Regulations Enforcement Agency (NESREA) does have the statutory responsibility of

51 Maduekwe (2011).
52 Section 32 of the Electric Power Sector Reform Act, 2005.

enforcing international agreements, protocols, treaties and conventions on the environment including climate change.

Furthermore, the Nigerian government has put in place a National Policy on Climate Change and Response Strategy (NCC-RC) and National Adaptation Strategy and Plan of Action on Climate Change for Nigeria (NASPA-CCN) 2011.[53] These documents are reactive to climate change, but neither focused on energy issues nor on sustainable energy. All the same, NASPA-CNN provides specific strategies for the energy sector, and this includes measures on higher specifications and construction of energy infrastructure; risk assessments to increase energy sector resilience; develop secure energy backup mechanisms; and expand sustainable energy sources.[54]

5 Integrating climate change and national energy policy options

The central role of energy to development is incontrovertible, as earlier discussed. In Nigeria, the Federal Government has the overall responsibility for formulating, enacting and also enforcing all climate change and energy policies. Turning to the issue of climate change, the inspiration is external and arrived in the form of climate change obligations freely entered into by the Nigerian state. This extends from the UNFCCC to the Kyoto Protocol and now the Paris Agreement.

As also noted, energy policy is rather fragmented, though the principal instrument is the National Energy Policy, 2003 which tries to encompass every component of the fossil and renewable energy options available to policymakers. Despite the huge importance of energy policy to Nigeria, an outdated instrument is in place, as even the most up-to-date revised draft of 2013 does not seem particularly reflective of climate change. Supporting instruments such as the Renewable Energy Master Plan for Nigeria, the Renewable Electricity Policy Guidelines 2006, Vision 20:2020, and most recently, the National Renewable Energy and Energy Efficiency Policy 2016 derived from ECOWAS, do unveil a rough strategy pointing towards sustainable energy.

In sum, Nigeria's energy policy consists of domestic and transnational elements that perhaps coexist uncomfortably. This is due to the central dilemma facing policymakers all over the world, though it is particularly sharp for energy-producing developing countries. Fossil fuels (oil, natural gas and coal) are the traditional tools for industrial, economic development and national prosperity. Not only can such countries not sell on such products, but indeed it cannot be freely utilised domestically. Evidently, there is a need for robust policy imperatives that will enable a sustainable energy transition.

53 National Adaptation Strategy and Plan of Action on Climate Change for Nigeria (2011), at <http://csdevnet.org/wp-content/uploads/NATIONAL-ADAPTATION-STRATEGY-AND-PLAN-OF-ACTION.pdf> (accessed 25-12-2017).

54 National Adaptation Strategy and Plan of Action on Climate Change for Nigeria (2011).

On the one hand, the international global agenda has instituted and promoted climate change mitigation and adaptation as a crucial policy goal to save the planet from serious global warming ramifications. Against this, economic self-interest and existing energy policies are directed towards carbon-intensive activities as shown in the Natural Gas and Petroleum Policies of 2017. Perhaps more serious is the argument that rich developed countries are yet to definitively prove that a low carbon economy is not only possible but that it is compatible with socio-economic prosperity.

Notwithstanding these difficulties, mainstreaming of climate change policy is slowly emerging with the 2012 Nigerian Federal Executive Council (FEC) adoption of the National Policy on Climate Change and Response Strategy (NASPA-CCN) as the key document for implementing climate action. The FEC which is the highest ranking executive body in the nation has provided backing for its key objective which is to promote low carbon, sustainable high economic growth to build climate change resilience. Interestingly, the document was developed by the Nigerian government and civil society organisations. Of course, stakeholders' participation increases policy credibility and adds to potential regulatory success.

Undoubtedly, there is clearly a sufficient number of policies governing climate change and energy in Nigeria. Yet there remains a gap between the two concepts which undermines their viability and effectiveness. One would, thus, posit that there is an urgent need to integrate climate change and energy policy into one integrated policy. The existing approach where they are treated separately allows for policy contradiction and is not sustainable in the long term. This would mean a substantial overhaul of extant climate change and energy policies through a stakeholders meeting that will incorporate government, sectoral experts, NGOs and civil society. However, transparent and accountable the process to develop an integrated climate change and energy policy may be, there might not be much actual change unless the policy is reinforced through legislation. Policy provides guidance, while implementation, compliance and enforcement benefit from the imperatives of statutory enactment. With regard to climate change in Nigeria, for instance, there is no climate change law in place, though, the federal legislative arm, the National Assembly, has over the years introduced bills on climate change that would, if signed into law, begin the process of mainstreaming climate change adaptation and mitigation action.

In relation to renewable energy policy which is scattered into diverse documents such as the 2001 National Electric Power Policy and the National Renewable Energy and Energy Efficiency Policy 2016, there is a need for policy integration with climate change and legislative enactment. At present, countries like China and India have sought to provide legislative backing for renewable energy through China's Renewable Energy Law of 2005 and India's draft National Renewable Energy Act, 2015.[55] However, we argue beyond the narrow confines of renewable energy law, for the need

55 Ogbodo & Stewart (2014: 17-18).

to put in place a Nigerian Climate Change and Energy Policy as well as National Climate Change and Energy Act. The proposed integrated policy and statute will bridge the policy gap between climate change and the energy sector, and provide the legislative architecture for the transit to a low carbon economy. Both policy and law should make it clear that the dangers emanating from climate change shifts and Nigeria's international commitments to tackle climate change are the basis for the new approach. The new instruments will encompass, among others: fossil fuel developments and target dates for leaving resources in the ground; financial incentives driven investments in renewable energy and low carbon sources; significant reduction in GHG emissions; and increased improvements in energy efficiency.

Furthermore, there is the need for a robust institutional governance infrastructure to ensure proper implementation and compliance. Nigeria's experience in the energy sector, and indeed other sectors of the economy, unveils myriad laws but rather poor compliance and enforcement. Such lacunae cannot be permitted in this sensitive arena as the proposed changes have fundamental and profound implications for the national economy and well-being of Nigerians. Although institutions such as the National Climate Change Trust Fund, the Department of Climate Change in the Federal Ministry of the Environment and the Energy Commission of Nigeria already have specific mandates, there is a need to merge all the relevant extant bodies to create a Climate Change and Energy Agency or government department to ensure a smooth transit to a low carbon future.

6 Conclusion

The global agenda on climate change is increasingly cohesive and dominant as every nation now has to take cognisance of the transformation of international commitments into targets and goals within domestic legal frameworks. Starting from the 'soft' approach of the UNFCCC, there is a gradual hardening of climate change policy as it transits from the Kyoto Protocol to the much more rigorous Paris Agreement which requires state parties including Nigeria to limit surface temperature rise to less than 2°C. On the face of it, international consensus even when the AU and ECOWAS are included, is seemingly gathering momentum.

The transnational approach to energy policy may be regarded as more nebulous to some extent. This is the case where one considers the UN driven SE4ALL and International Energy Charter, which are soft law and with debatable prospects of becoming hard law. Perhaps this criticism is not justified as the history of energy operations is soaked in state sovereignty and nationalism. Also, the difficulty of reaching consensus among a wide range of countries with diverse development and aspirations means that an initial soft law approach is inevitable for a developing international energy policy.

One reasonably common thread is the need for international cooperation and investment. This view is similarly replicated in the ECOWAS Energy Charter Protocol.

At the national level, substantial government policies already exist in the National Policy on Climate Change and Response Strategy, 2012 and the National Energy Policy, 2003. These principal instruments are supported by policies as diverse as the Renewable Energy Master Plan, Renewable Electricity Policy Guidelines, and the National Renewable Energy and Energy Efficiency Policy. Also commendable is the concrete support of ECOWAS instruments and institutions which is recognition that there is a global approach to solutions.

The main problem with this large network of policies and even the few laws is that they are essentially parallel to each other. While there is minor recognition of climate change in some energy policy instruments, there is no strategy to centralise climate change as a fundamental aspect of energy governance. The suggestion in this chapter is the need to bridge the gap by integrating climate change and energy into a holistic document. The view is that only a tripartite Nigeria Climate Change and Energy Policy, a National Climate Change and Energy Act and a Climate Change and Energy Agency will provide the building blocks for sustainable clean energy. This radical integration of climate change and energy policy and law is not without substantial challenges. Undoubtedly, there will have to be substantial political will on the part of the Nigerian government, which must be accompanied by the backing of stakeholders, especially, the business and industrial sector, civil society and the general public. Whatever the case, the writing is now on the wall as the transformation of climate change and energy at the international, regional and national level becomes a reality. This informs the need for Nigerian policymakers to be proactive in planning the county's transition to a sustainable low carbon future.

References

Akinyemi, O, A Ogundipe & P Alege (2014) "Energy supply and climate change in Nigeria" (2014) 4(14) *Journal of Environmental and Earth Science* 47-61.

Beecher, JA & JA Kalmbach (2012) "Climate change and energy" in J Winkler, J Andresen, J Hatfield, D Bidwell & D Brown *U.S. national climate assessment Midwest Technical Input Report*, at <http://glisa.msu.edu/docs/NCA/MTIT_Energy.pdf.> (accessed 25-12-2017).

Chinwuba, NN & MA Ayoade (2013) "Nigeria: adequacy and effectiveness of legal and institutional framework in mitigating and adapting to climate change" 1(3) *Olabisi Onabanjo University Journal of Public Law* 86.

Daigneau, E (2013) "Is hydropower a renewable energy or not?", *Governing the States and Localities* (at <http://www.governing.com/topics/transportation-infrastructure/gov-hydropower-renewable-energy.html> (accessed 29-12-2017).

Energy Commission of Nigeria (2014) *Energy implications of Vision 20:2020 and beyond*.

Farah, PD & P Rossi (2011) "National energy policies and energy security in the context of climate change and global environmental risks: a theoretical framework for reconciling domestic and

international law through a multiscalar and multilevel approach" 2(6) *European Energy and Environmental Law Review* 232.

Hamilton, MS (2013) *Energy policy analysis: a conceptual framework*.

Hansen, J (2008) "Climate tipping points: the threat to the planet" Presentation given 19 February 2008 at Illinois Wesleyan University, at <http://www.columbia.edu/~jehil/> (accessed 24-12-2017).

Hunter, D, J Salzman & D Zaelke (eds) (1998*) International Environmental Law and Policy*.

Ifeanyi-Obi, CC (2012) "Climate change, effects and adaptation strategies: implication for agricultural extension system in Nigeria" 2(2) *Greener Journal of Agricultural Sciences* 53-60.

International Energy Agency (2018) "Climate change", at <https://www.iea.org/topics/climatechange/> (accessed 20-12-2017).

IPCC / Intergovernmental Panel on Climate Change (2007) *Climate change 2007: Synthesis Report*, at <http://www.ipcc.ch /publications and data/ar4/syr/en/main.html> (accessed 23-12-2017).

Ismail, OS & GE Umukoro (2012) "Global impact of gas flaring" 4 *Energy and Power Engineering* 290-302.

Jarso, JF (2011) "Africa and the climate change agenda: hurdles and prospects in sustaining the outcomes of the Seventh African Forum" 11(2) *Sustainable Development Law & Policy* 38-89.

Kerr, M (2002) *Tort based climate change litigation in Australia* Discussion Paper, at <http://www.acfonline.org.au uploads/res climate changejlitigation.pdf> (accessed 24-12-2017).

Ladan, MT (2009) "Promoting efficient and renewable energy for sustainable development and climate change mitigation in Nigeria: policy, legislative and regulatory challenges" Paper delivered at the 3rd Symposium and 2nd Scientific Conference of ASSELLAU, University of Nairobi, Kenya, 23-25 March 2009.

MacGill, I (2008) "Assessing Australia's sustainable energy technology options: key issues, uncertainties, priorities and potential choices" 11 *Asia Pacific Journal of Environmental Law* 85.

Maduekwe, NC (2011) "Unbundling and privatisation of the Nigerian electricity sector: reality or myth?" Centre for Energy, Petroleum and Mineral Law Policy", at http://www.dundee.ac.uk/cepmlp/gateway/files.php? (accessed 25-12-2017).

Maguire, R (2012) "Incorporating international environmental legal principles into future climate change instruments" 2 *Carbon and Climate Change Law Review* 109-110.

Mckie, R (2018) "Burning wood for power is 'misguided' say climate experts" *The Observer* (31-12-2017) <https://www.theguardian.com/environment/2017/dec31/biomasss-burning-misguided-say-climate-experts#img-1> (accessed 31-12-2017).

Nwaogaidu, JC (2013) *Globalisation and social inequality: an empirical study of Nigerian society*.

Ogbodo, SG & N Stewart (2014) "Climate change and Nigeria's sustainable development of Vision 20-2020" 20(1) *Annual Survey of International & Comparative Law* 17-34.

Ong DM (2010), "International legal efforts to address human-induced global climate change" in M Fitzmaurice, DM Ong & P Merkouris (eds) *Research handbook on international environmental law*.

OPEC (2016) "OPEC embraces adoption of historic Paris Agreement on Climate Change" *OPEC Bulletin Commentary* (January-February 2016), at <http://www.opec.org/opec_web/en/press_room/3432.htm> (accessed 26-12-2017).

Sagar, AD, HH Oliver & AP Chikkatur (2006) "Climate Change, Energy and Developing Countries" 7 *Vermont Journal of Environmental Law* 71-94.

Sambo, AS (2009) "The place of renewable energy in the Nigerian energy sector" Presented at the World Future Council Workshop on Renewable Energy Policies, Addis Ababa, Ethiopia UNGA resolutions and other resolutions or decisions or policy.

Segger, M (2006) "Advancing the Paris Agreement on Climate Change for sustainable development" 5(2) *Cambridge Journal of International and Comparative Law* 202-237.

Smith, JA, J Vargo & S Pollock Hoverter (2017) "Climate change and public health policy" 45(1) *Journal of Law Medicine and Ethics* 82-85.

Sustainable Energy For All (2012) "Sustainable energy for all: an overview", at <http://www.un.org/millenniumgoals/pdf/SEFA.pdf> (accessed 24-12-2017).

Thornton, J & S Beckwith (2004) *Environmental law*.

Todorov, AV (1986) "Reply" 25 *Journal of Applied Climate and Meteorology* 258-259.

World Energy Council (2007) *Energy and climate change*.

Zaelke, D & J Cameron (1990) "Global warming and climate change – an overview of the international legal process" 5(2) *American University International Law Review* 249-290.