

**INTEGRATING CLIMATE CHANGE VULNERABILITY
INTO LAND USE PLANNING IN NIGERIA**

**Thesis submitted in accordance with the requirements of the University
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By

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ABSTRACT

Despite abundant research evidence and various international agreements signed by Nigeria, it is surprising that climate change does not feature prominently in her developmental agenda or policies. Rather than become engrossed in the debate between mitigation and adaptation of climate change, this study explores the suitability of Strategic Environmental Assessment (SEA) as a channel for integrating vulnerability concerns into Land Use Planning (LUP). In the absence of a clear Nigerian strategy, the research investigates the potentials of the current planning context to address climate change by examining the prevailing practice and exploring the perceptions of climate change amongst planning regulators.

A convergent mixed research method was employed, where quantitative and qualitative data were collected concurrently and independent of one another. The data obtained using paper-questionnaires and semi-structured interviews was given equal priority, analysed separately and then merged together at interpretation. The mixing allows a comparison which shows the extent to which the two data sets agree, diverge or combine to provide a clearer insight of the research objectives.

Findings suggest that Nigeria's planning activities are influenced by political administrative interests, community-dependent attributes and built environment preferences. Furthermore, there is an awareness that climate change is happening in Nigeria and has dire consequences, but the perspective is that there are more pressing problems than climate change. Recognising the potential contributions of Strategic Environmental Assessment in overcoming the limitations of the current planning system, a non-EIA-based version was used to develop a framework streamlining vulnerability consideration into land-use planning practice.

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1 INTRODUCTION TO THE RESEARCH

1.1 Background

Observational evidence collected has shown that many natural systems are being affected by climate change and these events would have the potential to cause very significant economic, social and environmental impacts (IPCC, 2007). The magnitude of impact varies in terms of geographical location, seasonality, population exposure and infrastructure. Research shows that some of the adverse effects of climate change will be in developing countries where the populations are most vulnerable and least likely to adapt easily to the changes (Beg *et al.*, 2002; Mirza, 2003; Grafton *et al.*, 2004). It is estimated that developing countries have absorbed US\$ 35 billion a year in damages from natural disasters in the last two decades, which is about 20 times the cost faced by developed countries (Freeman, 2001; Mirza, 2003).

What will happen to the developing countries of West Africa under the climate change scenarios currently envisaged? Even though these countries are not major contributors to climate change, they are the most vulnerable to the most damaging impacts of climate change; a situation aggravated by *having climates that are among the most variable in the world on seasonal and decadal time scales* (UNFCCC, 2007). The vulnerability in the West African region is largely due to the propensity for drought and desertification, rapid population growth, endemic poverty, dependence on subsistence agriculture, complex governance and institutional dimensions (Denton *et al.*, 2001). This indicates that climate change is an impending threat set to exacerbate any of the challenges being experienced in the region.

Despite the high volume of evidence available, it is surprising that climate change does not yet feature prominently within the policy or developmental agendas of the countries in the region (Beg *et al.*, 2002). Although climate change concerns seem to pale in importance compared to other developmental issues faced by these countries (Davidson *et al.*, 2003), it is obvious that climate change and the associated disaster risks have great potential of hindering future development (Beg *et al.*, 2002; Brooks *et al.*, 2005;

IPCC, 2007). It is also clear that the changing climate will be a major factor influencing the worst of problems in the region, including water shortage (Desanker and Magadza, 2001; Christensen *et al.*, 2007), severe hunger and poverty (Agbola, 2011), health risks (Thomson *et al.*, 2004) and conflicts (Ashton, 2002; Brown and Crawford, 2008; Oyebande and Odunuga, 2010). Therefore, rather than paying lip service to climate change under the millennium development goals, there is an urgent need to integrate those considerations into local and national policies, plans and programmes.

1.2 Research rationale

In their contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), Boko *et al.* (2007) recognise that land use and land cover changes emerge as a prominent theme in climate change issues. They report, though, that the links between land use changes, climate stress and possible feedbacks are not yet clearly understood. This reveals a knowledge gap in the interaction between the complex socio-economic, cultural and biophysical systems including the links between climate change and development in Africa.

As a source of subsistence and resources, land is literally the foundation on which all human societies are built (Caldwell and Shrader-Frechette, 1993). The changes in the use of land often lead to environmental change which can be linked through a multiplicity of direct, indirect and cumulative effects at different scales with economic, legal and political dimensions (Owens and Cowell, 2011). Land use patterns and changes are considered vital to the sustainable future in developing countries (Turner *et al.*, 2007). Since land-use is of such immense importance, it is appropriate that attention should be paid to the planning and regulation of land use change and the potential contribution in mitigating the adverse effects of climate change. The importance of investment in land-use planning and policy was also stressed at the African Initiative Congress on Climate Change (Centre for International Governance Innovation - CIGI, 2009) as a pivotal factor in improving climate change adaptability on the continent.

1.2.1 Global concerns

There is a cause-and-effect relationship between changes in land-use and climate change. This intricate interaction can be termed as a two-way dimension, where land use changes contribute to climate change and the changes observed in land use are one of the ways in which the effects of climate change are expressed (Dale, 1997; Settele *et al.*, 2014). As terrestrial beings, it is unrealistic to prohibit the anthropogenic induced changes that are constantly transforming the earth's surface through the conversion of forest regions and adjusting rangelands for settlement, industrial and agricultural expansion.

In this manner, human activity resulting in land conversion anywhere in the world, contributes to the climatic changes experienced worldwide. Considering that the nature of land use and the conditions underpinning the variations differ from one location to another, the exploitation of land resources would certainly bring about depletion in the natural quality prior to utilization. Similarly, it is impossible for there to be a universal land management system, however sustainable practice can be encouraged through holistic approach to land administration.

1.2.2 Nigerian concerns

For developing countries, climate change is just another challenge which is jostling for the resources already allocated to competing needs. As such, climate change is not a prominent feature on the developmental agenda in Nigeria. This is made more obvious, considering that a draft of a Climate Change Bill by the Nigerian Parliament in 2011 has been rejected several times by the Presidency several years after ratifying the Kyoto protocol in 2004. Although, it remains unclear why the bill was not adopted (Ajayi, 2012), a critical review of the proposal shows that the proponents may have been hasty in calling for the creation of a superfluous governmental organisation instead of establishing climate change policies that can be embedded in all sectors and at the various levels of governance. A poor

comprehension of the intricate nature of climate stress and the combined human-environmental system is seen to have motivated the draft of a bureaucratic approach to address climate change, rather than streamlining it into business-as-usual structures and frameworks. As stated earlier, the effects of climate change transcend socio-economic, cultural and biophysical systems, therefore cannot be treated in isolation.

For this reason, this PhD research approached climate change management from a vulnerability perspective, thereby considering the notion of vulnerability as an intrinsic trait of the systems under observation. Though the contribution of land use has been recognised in climate change mitigation (Pielke *et al.*, 2002; Rose *et al.*, 2012) and adaptation (Rodriguez-Lloverasa *et al.*, 2016), vulnerability explores the propensity of terrestrial systems to be adversely affected by climate change. In exploring the concept of vulnerability, the systematic review included its dimensions and manifestations, creating a learning curve for developing a much-needed contextual framework for introducing vulnerability consideration into land-use planning. This is to instigate a robust strategy for risk identification and reduction to improve societal resilience.

1.3 Aims and objectives

The overarching aim of this research is to develop a framework for integrating climate change vulnerability into the Nigerian land use planning process as one of the approaches towards addressing climate change concerns. The realisation of the aim will require the pursuit of the following objectives;

1. To critically review the theory and concept of climate change vulnerability to understand the nature, the dimensions of vulnerability, and to identify the core elements required for the inclusion of vulnerability into land use planning.
2. Investigate the potentials of current Nigerian land-use planning to address climate change

3. Linking theory with practice by exploring the perception of planning regulators on land-use planning and climate change.
4. To develop an appropriate framework that will allow the integration of climate change vulnerability with the Nigerian planning system.

With the research objectives outlined, Table 1.1 presents the sub-research questions that have been adopted to narrow the purpose statement and establish much needed signposts.

Table 1.1 - Research objectives and sub-research questions

Research objectives	Sub-research questions
1. Critically review the concept of climate change vulnerability to understand the nature and dimensions of occurrence, and to identify the core elements required for integration into land use planning.	Q1. What is climate change vulnerability? What is the concept of vulnerability? Q2. What are the core structural elements in a vulnerability framework?
2. Investigate the potentials of the current Nigerian land-use planning to address climate change.	Q3. What is the status of land-use planning framework in Nigeria? What is the historical context behind current practice? Q4. How environmental concerns are currently reflected in Nigeria's land-use planning practice?
3. Linking theory with practice by exploring the perception of planning regulators on land-use planning and climate change.	Q5. What are the drivers and influences that currently underlie planning activities in Nigeria? Q6. What are the perspectives of having climate change represented amongst planning regulators in Nigeria?
4. Develop an appropriate framework that will allow the integration of climate change vulnerability with the Nigerian planning system	Q7. What are the context factors crucial to the inclusion of climate change vulnerability into land-use planning in Nigeria?

1.4 Research design

To achieve the aim and objectives of the study, the research was designed along three phases as is shown in Figure 1.1: by first establishing a theoretical premise through review of scholarly literature; constructing the Nigerian framework by linking literature to practice through interactions with land-use practitioners; and finally, designing an integrated guideline for climate change vulnerability in Nigerian land-use planning.

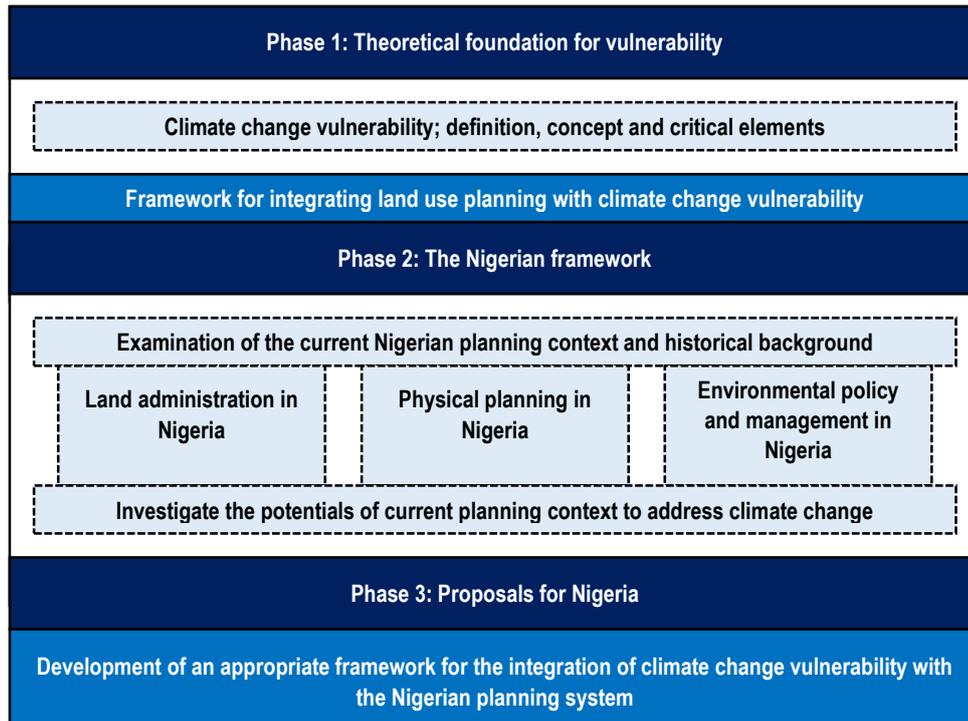


Figure 1.1 - Research design

In the first phase, a theoretical premise for climate change vulnerability is constructed. This carried out through literature review, which allows the researcher to become well acquainted with the studies that have already been carried out on the subject area. Webster and Watson (2002) write that apart from the fact that reviewing relevant literature provides a firm foundation for theory development, it advances knowledge by revealing information derived in previous studies and uncovering the gaps that may exist in the subject matter. The use of theory provides a clearer understanding of the world in a way that it makes sense to construct a framework to systematically organise the information, facts and experience gathered. However, there is a need to link the designed theoretical framework to practice, which not only provide explanations to the structure but also clarifies the actions carried out by various actors.

In the second phase, *the Nigerian framework* started by providing contextual background into the land-use planning system in the country in Chapter 4. With this, the historical context of land management was reviewed to

understand the evolutionary process that may have resulted in current practice. This was done through a literature review as a build up to determine the status of planning, the drivers, and the controlling factors and to understand how environmental concerns are integrated into the planning system.

The other half of this phase was conducted through a field work using the mixed methods approach. A paper questionnaire and semi-structured interviews were carried out with decision makers in the planning system in Nigeria to elicit information about the status of land-use planning in the country. With the absence of any climate change strategy, the participants' perception about the subject matter was also explored to understand the reasons why climate change was not a developmental agenda and to tease out a possible practical approach. Chapters 5 and 6 present the findings from the quantitative and qualitative methods respectively, culminating in the achievement of the third research objective.

The final phase to make *proposals for Nigeria*, involved the synthesis of the vulnerability criteria from the first phase and key Nigerian circumstance identified in the second phase. The combination resulted in the development of a framework for the introduction of climate change vulnerability into Nigeria's land-use planning system in Chapter 7. Based on the analysis, guidance was provided for the activity required for the successful implementation of the framework.

1.5 Structure of the thesis

Keeping with the research design, this thesis has three main phases that have been designed in line with the four research objectives as illustrated in Figure 1.2. The first chapter introduces the background to the research, the aims and objectives. It also provides the rationale for the research, the significance and presents the overall structure of the thesis.

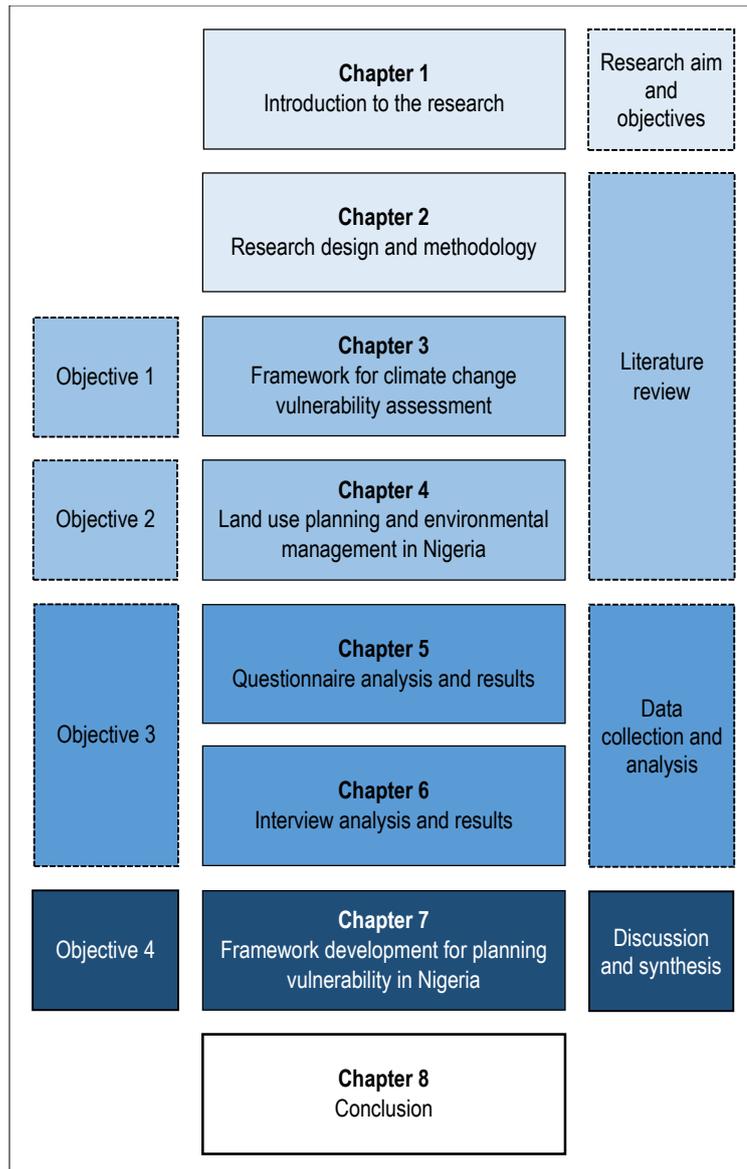


Figure 1.2 - Thesis structure

Chapter 1: Introduction to the research- The first chapter of this thesis provides the background information on the relevance of addressing the vulnerability exposed by an absence of sufficient climate change policies in developing countries. It also details the aim and objectives of the study alongside the presentation outline of the thesis.

Chapter 2: Research design and methodology- The next chapter examines the selected approach for the PhD research and justifies the methodology and

methods adopted in its execution. The researcher is pragmatic in their view and used a concurrent mixed method approach to collect and analyse data. Finally, this chapter discusses the ethical considerations used in this study.

Chapter 3: Framework for climate change vulnerability assessment- This section of the literature review goes deeper still by examining the concept of climate change vulnerability and the various approaches that have been used in research and practice to define its context. The chapter considers the possibility that biophysical vulnerability (physical and environmental conditions) precedes social vulnerability (social and economic conditions) but only in occupied places. There is also the development of climate change vulnerability criteria from the literature populated with milestone assessment touchpoints to assess its integration.

Chapter 4: Land use planning and environmental management in Nigeria- The final aspect of the literature review focuses on the history of planning and land use in Nigeria. It begins from the British colonisation era which began a system of differential planning and consequently, differential vulnerability in Nigeria. This has evolved into the current land administrative system that is fragmented, geographically varied and lacking cohesion at the various levels of land governance.

Chapter 5: Questionnaire analysis and results- This chapter presents the results gathered from the questionnaires. SPSS was used for coding and data analysis. The results reveal the three major factors that influence land use planning in Nigeria, as well as the factors that have a negative effect on its effectiveness. It considers the part politics, natural changes, and humans play in the evolving climate change landscape in Nigeria.

Chapter 6: Interview analysis and results- This chapter presents the results from the interviews and analyses them using the NVivo software, using nodes. The emergent themes of land use planning system, land use impact assessment, factors influencing land use planning and climate change issues examined what is obtainable in the system and its sufficiency in addressing climate change in addition to current needs. It found the system sorely

lacking due to issues that were for the most part mirrored by the quantitative surveys.

Chapter 7: Framework development for planning vulnerability in Nigeria- This chapter is the meeting point of the quantitative and qualitative analysis. Here, the similarities and differences between both sets of results are discussed and a conclusion is reached on what it means for the study. The findings show the potential contribution that Strategic Environmental Assessment can make in resolving the challenges in Nigeria's planning system. The derived knowledge is further distilled into action points that have been used in the development of a framework in the latter part of the chapter. The developed framework is designed to work with the current land use planning system to improve its chances of success, acceptance and functionality.

Chapter 8: Conclusions and recommendations- This chapter provides a summary of the conclusions arrived at during this study by taking another look at the research question, aim and objectives laid out in this chapter and how they have been achieved or answered. It also presents the conclusions made based on each objective and how this research has contributed originality to knowledge by theory and practice. Its final aspect is to provide some recommendations for future research.

1.6 Chapter Summary

This chapter contains the background to the study explaining the need to plan the mitigation of climate change impact in developing countries. It introduces the relationship between climate change and land use stating both the global and Nigerian concerns. The chapter also provides the rationale and context of concerns that led to the aim and objectives of the study providing its bearing.

2 RESEARCH DESIGN AND METHODOLOGY

2.1 Introductory remarks

As a process, research is described as a systematic approach to investigating a subject matter with the purpose of increasing knowledge or making new discovery (Saunders *et al.*, 2016). The procedural framework for the integration of climate change vulnerability within the land use planning system is the expected outcome of the thesis, for that this chapter would explain the principles and approaches that underline the strategy of inquiry, the techniques and procedures employed in the research design.

As argued by Saunders *et al.* (2009), the label attached to a research strategy is not as important as its appropriateness for the research to be carried out. Methodology reflects the overall research strategy which has taken the theoretical, philosophical and ethical dimensions into consideration (Henn *et al.*, 2006). However, methods are the specific research techniques (Silverman, 2000) that have been selected as the best fit for solving the research problems. In explaining the logical sequence employed in accomplishing the objectives of this research, the *Research Onion* diagram (see Figure 2.1) developed by Saunders *et al.* (2016) would be used in describing the position and assumptions that has guided the choice of research designed.

Following the layers from the outermost shell, the discussion would start from the research philosophy which provides the assumptions underpinning the nature of reality and the construction of knowledge and truth. This creates a basis for understanding the approach to the development of theory and the methodological choice employed for the inquiry. The time horizon layer would not be discussed in the chapter as it is not a crucial component integral to the research objectives. For clarification, the overarching aim of the research is to explore the state of responsiveness to climate change in Nigeria, which leans more to the snapshot cross-sectional study than a longitudinal research which considers change and development over a period (Saunders *et al.*, 2016).

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Figure 2.1 - The research onion (Adapted from Saunders *et al.*, 2016)

2.2 Research philosophy

As the first layer of the research onion, Saunders *et al.* (2016) describe research philosophy as an order of ideas, beliefs and assumptions about the construction of knowledge. Part of the assumptions made by a researcher include the stance taken about the nature of reality, how the researcher discovers knowledge and the extent of influence the researcher may have over the research process. The philosophical perspective underlines the methodological choice selected, the research strategy designed and the mode of data collection and process of analysis (Creswell, 2009; Saunders, *et al.*, 2016). Therefore, in discussing research philosophy, it is essential for the researcher to engage in a discussion of the assumptions and their implications for the study.

2.2.1 Philosophical assumptions

2.2.1.1 *Ontology*

Taken from the two Greek words, *onto* meaning being and *logia* interpreted as study, science, theory, Slevitch (2011) defined ontology as the study of reality or things that make up reality. In other words, it raises the question *what is the nature of reality?* (Guba, 1990) and requires researchers to take a stance regarding their perception of the world, the entities or phenomena that make it up and how they work (Matthews and Ross, 2010; Scotland, 2012). This assumption places attention on the nature and form of social reality by questioning if the social phenomena is real, objective and if it exists outside of the human mind or dependent on the attributed meaning given by the subject (Corbetta, 2003). It is the ontological position that establishes the process of knowing through the differences between reality, the researchers' perception of reality and the possible influence this may have on the behaviour exhibited with the social context.

2.2.1.2 *Epistemology*

This is an assumption about human knowledge (Saunders *et al.*, 2016) which raises the question, *what is the relationship between the researcher and what is being researched?* (Guba, 1990; Creswell, 2007; Denzin and Lincoln, 2011). From the Greek word *episteme*, which means knowledge, epistemology is a theory of knowledge interested with the nature and scope of knowledge (Slevitch, 2011). This standpoint is primarily concerned with how knowledge is created, discovered, obtained and transferred (Scotland, 2012), in other words *how can we know what we know* (Saunders, *et al.*, 2016). Within this context, Crotty (1998) writes that epistemology provides the philosophical foundations for deciding what kind of knowledge is possible and how to ensure that the knowledge is adequate and legitimate. Simply put, a justification for what can be known as knowledge and the criteria that it must meet to be regarded as knowledge.

2.2.1.3 Axiology

The axiological point of view refers to the influence values and ethics play in the research process (Saunders, *et al.*, 2016). It gives the researcher the opportunity to understand the possible influence that their own values and opinion may have in collecting and interpreting the data gathered for the study. This enables a review of how the researcher plans to address their own values and those of the research participants. Creswell (2007) argues that researchers assuming the axiological perspective should actively express their values and admit their biases together with the value-laden nature of data collected from the field of study.

As a summary, Table 2.1 gives a brief overview of the different philosophical assumptions, their descriptive questions, their characteristics and the relevance to this research. It should be noted that the presented perspectives are not mutually exclusive and depending on the approach to the research, anyone of them can be suitably used in the creation of a research process.

Table 2.1 - Philosophical assumptions and relevance to study (adapted from Creswell, 2009; Denzin and Lincoln, 2011) -

Assumption	Descriptive questions	Characteristics	Relevance to this PhD research
Ontology	What is the nature of reality? What is the world like?	There can be a range of reality in existence; which may be external or socially constructed; universal reality experienced by all social actors or different social realities of different social actors.	The research admits that the state of preparedness to climate change is in a constant state of flux and this may either lead to a universal reality or multiple reality as socially constructed by the participants. Therefore, the research will present the different perspectives experienced by the participants as themes developed in the findings
Epistemology	How can the researcher know? What is considered acceptable and legitimate knowledge?	Discovering knowledge may be through a medium of observable and measurable facts or as a narrative of opinions, attributed meanings in individual and specific contexts	Research question can be answered by describing and explaining events and gathering participants' understandings, beliefs and experiences

Assumption	Descriptive questions	Characteristics	Relevance to this PhD research
Axiology	What is the role of values and opinion play in the research?	Acknowledging the relationship that may or may not exist amongst the social entities, social actors and the researcher as a social being	The researcher acknowledges that the study is value-bound and reflexive in nature. The values that shape the critical interpretation would be presented along with the attributed meanings and narratives obtained from the participants.

2.2.2 Philosophical stance

The philosophical assumptions of a research do not necessarily translate directly into the techniques and tools used in acquiring knowledge. They are rather channelled through interpretative paradigms (Denzin and Lincoln, 2011) or theoretical perspectives (Creswell, 2009) in designing the strategies of inquiry that will inform the procedures. The list of philosophical worldview is continually extending as researchers find new approaches in carrying out their research. For instance, literature seems to revolve around some philosophies; positivism, critical realism, constructionism/interpretivism, and pragmatism (See Table 2.2). However, others such as feminist, ethnic, Marxist, cultural studies, queer theory (Denzin and Lincoln, 2011), advocacy/participatory and disability theory (Creswell, 2007) have emerged from their interpretive communities which has also given rise to multiple versions of those variants.

For this research, a pragmatic worldview will be adopted for its pluralistic approach in achieving research objectives. Pragmatism is not restricted to a philosophical system (Creswell, 2009), as researchers have the liberty to work from either a post-positivist orientation or constructionist principle in the first stage of their study and switch to the other philosophical position in the next phase of the study (Creswell and Plano Clark, 2011). In other words, researchers have the discretion to select the best methods, techniques and strategies that are well suited to the purposes and intent of their study.

Table 2.2 - Comparison of four research philosophies (adapted from Pruyt, 2006; Creswell, 2007; Lincoln, *et al.*, 2011; Saunders, *et al.*, 2016)

Perspective	Ontology	Epistemology	Axiology	Methodology
Positivism	One true and universal reality that is external and independent of the social actors.	Total objectivity of observable and measurable facts. There is no reason to interact with who or what the researcher is studying	Value-free research, as researchers are detached and distant from the subject, thereby limiting their influence on participants. The data speaks for themselves.	Usually scientific method that produces value data that can be replicated. Deductive in nature, highly structured, scaling and measurement. Typically, quantitative methods of analysis
Critical realism	Reality is an objective structure, intransient and stratified. Based on the human struggle for power.	Knowledge and facts are historically situated and socially constructed. Research is prompted by the study of the social structures, power and control.	Value-laden research, the researcher admits own voice but allows the values of the subject	Retrodictive, in-depth historically situated analysis of prior structures and emerging trends. Dialogic/ dialectical, ideological and range of methods and data types to fit subject matter
Constructionism/ Interpretivist	There is no single reality as it is socially constructed through culture and language by multiple meanings and interpretations of subjects	Findings are a result of the interaction between the researcher and the participants. Therefore, the focus is on the narratives, attributed meanings, opinions, perceptions and interpretations.	Value-bound research, as researcher is an integral part of the research process, as a tool, a possible influence on participant and in the reflexive process.	Hermeneutic, dialectic for eliciting individual constructions. Usually inductive in nature, small samples, in-depth investigations, qualitative methods
Pragmatism	Reality is the practical consequences of ideas that is constantly renegotiated, discussed and interpreted based on a flux of experiences and practices	Specific focus on problems, practice and relevance. Sees problem solving and informed future practice as contribution to knowledge.	Value-driven research that is initiated and sustained by the researcher's beliefs and doubts. The researcher is reflexive in the reporting	Emphasis is placed on practical solutions and outcomes; therefore, a range or combination of methods is usually employed; mixed, multiple, qualitative, quantitative research methods.

Pragmatists have often been labelled as being nonchalant in respect of the methods they use in a research (Feilzer, 2010), however the viewpoint highlights philosophical implications and justifications of their design which assist researchers to ask better and clearer questions (Biesta, 2010). The research question asked is the focus of this worldview rather than the method employed (Creswell and Plano Clark, 2011). The researcher aligns

with the stance that the world is not an absolute unity and would therefore subscribe to multiple approaches in the collection and analysis of data than to restrict to only one means (Creswell, 2009). Even though the word *pragmatic* implies a lack of principles governing the course of action (Denscombe, 2008), the approach provides another option for researchers when neither the quantitative nor qualitative route alone will not be sufficient to provide adequate data for the research being carried out. The positive outlook of pragmatic researchers places them able to use quantitative data to explain the qualitative aspect of their research, and vice versa (Onwuegbuzie and Leech, 2005). Therefore, pragmatism is adopted as a suitable philosophy as it provides the platform for both top-down deductive research and grounded inductive research (Feilzer, 2010).

2.3 Approach to theory development

The second layer of the research *onion* is occupied by the research approach which is the inferential logic and reasoning underlying the study. This rationale is a product of theory that shapes the researcher's understanding and comprehension of all the information and data they encounter. In this case, theory itself is described as a premise that can be used to explain and understand social phenomena (Matthews and Ross, 2010). The notion of theory includes related concepts regarding cause and effect relationship that may exist between two or more variables, that may have been previously tested or proposed (Saunders, *et al.*, 2016). From the above descriptions, theory is either tested in a research or created as an outcome of a research. It is on this basis of ordering and relationship between theory and data collection in research that the reasoning of deduction, induction and abduction are considered as an approach to theory development.

Owing to the pragmatic worldview adopted for this research, the abductive reasoning has been selected as a suitable approach in achieving the objectives of this research. Unlike the other two processes, it offers an iterative, cyclical approach (see Figure 2.2) that provides deeper levels of knowledge of a phenomenon (Teddlie and Tashakkori, 2011). Originating

either from a deductive (theory to data; a form of reasoning where the conclusion is logically derived from a set of premises (Ho, 1994; Ketokivi and Mantere, 2010) or inductive (data to theory; where a general principle is discovered or developed from specific occurrences or observations (Plowright, 2016), abduction is a process that allows the researcher to move between the two logical reasoning (Suddaby, 2006). With this approach to theory development, the researcher can maximise the advantages of both approach without suffering their limitations.

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Figure 2.2 - Deductive, inductive and abductive approaches (Adapted from Matthews and Ross, 2010; Bryman, 2012)

2.4 Methodological choice

This third layer of the research *onion* answers the question; *how should the inquirer go about finding out knowledge?* (Guba, 1990). This is the strategy underpinning the choice and use of specific tools and techniques in the collection and interpretation of information (Crotty, 1998). It is imperative that the selected plan of action can produce sufficient evidence that provides a justified answer to the inquiries the research seeks to answer. For this reason, the choice of research design must be able to gather data that would enable the researcher to describe the current state of land use planning in Nigeria, and explore the potentials of that system to anticipate and respond to the vulnerabilities to climate change within their jurisdiction.

The literature on research methodology shows that there are three approaches employed by researchers; quantitative, qualitative and mixed methods design (Creswell, 2009; Matthews and Ross, 2010; David and Sutton, 2011; Bryman, 2012; Saunders, *et al.*, 2016). The key difference in quantitative and qualitative approach lies in the nature of data generated or employed in the research. While quantitative research is mainly interested in collecting and working with structured data that can be represented numerically and statistically analysed (Matthews and Ross, 2010; Bryman, 2012); qualitative research is more inclined towards non-numerical representations of the social world which includes words, pictures, videos, narratives, texts and/or observations (Yoshikawa, *et al.*, 2008). However, the possibility of qualitative data to be used quantitatively or the inadequacy of either approach has led researchers to develop the mixed method strategy, by combining the complementary strengths of the two approaches as a means of gaining a better understanding of the research problem than what can be provided by either approach alone.

The mixed methods research (MMR) is the terminology used to connote the combination of both the quantitative and qualitative research in a manner that is considered appropriate and suitable in achieving the objectives of a research (Matthews and Ross, 2010; Bryman, 2012). The MMR is now being referred to as the *third research paradigm* (Johnson *et al.*, 2007; Denscombe, 2008), *methodological triangulation* (Morse, 1991) or the *third methodological movement* (Tashakkori and Teddlie, 2010; Cameron, 2011) along with the traditional quantitative and qualitative research methods. While it is possible for a research strategy to employ more than one data collection technique, it cannot be considered MMR if the methods do not cross from one research paradigm to the other.

The MMR design gives room for flexibility in the collection of multiple data using different strategies, approaches and methods in such a way that the resulting combination results in complementary strengths and no overlapping weaknesses (Johnson and Onwuegbuzie, 2004). Bryman (2012) writes that researchers often use the qualitative approach to gain perspectives and use the quantitative data to investigate specific issues they

are interested in. As a result, pragmatism is the natural philosophical framework associated with the MMR (Johnson & Onwuegbuzie, 2004; Denscombe, 2008; Creswell, 2009; Creswell and Plano Clark, 2011; Saunders, *et al.*, 2016), which provides a set of assumptions about inquiry and knowledge that can be used to answer research questions (Biesta, 2010). Another distinct quality is the iterative approach to theory development that is predominantly abductive, cycling through both deductive and inductive forms of reasoning (Teddlie and Tashakkori, 2011).

Given the philosophical stance and the abductive approach of the researcher, the MMR was selected as a suitable strategy for achieving the objectives of this study. The choice is further supported by the following reasons:

- using the strength of one method to offset the weakness of the other, the MMR provides completeness to the research topic. For instance, some information may be difficult to obtain using the quantitative method and the qualitative strategy might be hindered by physical access to willing participants.
- the opportunity to cross check the results of using one strategy with the other. This is the traditional view of triangulation (Bryman, 2012) where the findings are combined to see if they can be mutually corroborated.
- in reporting research findings, it is expected that the findings from the qualitative aspect would provide explanation and illustration to findings obtained through the quantitative method

This combination design is a pre-determined approach taken by the researcher, in which there is a clear understanding that neither the quantitative nor the qualitative, alone will be sufficient to achieve the objectives of this study. As such, the study would be able to create standardized means of obtaining information on the current land use planning practice in Nigeria, including the confirmation of possible drivers and challenges that have been identified through the literature review. On the other hand, the flexibility of the qualitative aspect allows the researcher

to alter the interaction to align with the interests of the participant or in response to emerging themes. This is an attribute that is needed for in-depth exploration of emerging themes and issues that may have not been previously identified in the literature review for land use planning and climate change occurrence in Nigeria. This aligns with the pragmatic foundations that *what works* best should be selected in answering the research problems (Creswell and Plano Clark, 2011). The quantitative data would be used to provide insight into possible differences that may exist amongst the professional from land use planning and environmental management, while the qualitative data would be used to explore the processes that lie behind the differences in their experience as regulators in the Nigerian land use planning system.

2.5 Strategy of inquiry

Within the MMR, researchers can make choices on how they combine the quantitative and qualitative strands as they relate to their study. Strands in this case, refers to the stages involved in the quantitative or qualitative approach that includes the research question, data collection, data analysis and interpretation based on the data (Teddlie and Tashakkori, 2009). Owing to the different ways the attributes within the MMR can be combined, there are numerous typologies that can be employed in carrying out a research using the strategy. However, it is essential that the researcher select a design that best answers the research questions, simple to implement and manageable within the resources available for the research. Therefore, the choice of inquiry is not just constrained by the intent of the research but also on feasibility.

The limited resources and time for data collection constrained the researcher to the convergent parallel design as the strategy for achieving the research objectives. This implies that the quantitative and qualitative data were collected within the same phase of the research and the results obtained was merged together for an overall interpretation. Nevertheless, this approach allows the researcher to obtain different but complementary data on the

same topic (Morse, 1991). This creates a richer and comprehensive understanding as it allows an exchange of the differing strengths and weaknesses of one method with those of the other. Therefore, a trade-off between attributes of large sample size, trends and generalization inherent in the quantitative method, with those of small sample size, details and in-depth knowledge of the qualitative method (Patton, 1990 cited in Creswell and Plano Clark, 2011).

The convergent strategy has been modelled in a four-phase process as depicted in Figure 2.3. The first phase involves the operationalization of the research question and subsequent data collection. The data collection is carried out simultaneously, since they are independent of one another.

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Figure 2.3 - Flowchart of process in a convergent design (Adapted from Creswell and Plano Clark, 2011)

The next phase involves analysis of the two data sets using the respective qualitative and quantitative procedures. The third phase is the point of mixing which involves the merging of results obtained from both methods by comparing or transforming the results either quantitatively or qualitatively. The final phase is the overall interpretation where the researcher determines the extent to which the results from the two data sets agree, diverge, relate or combine to create a better understanding of the research topic.

2.6 Method of data collection

This is inner core of the research *onion* that answers the question, *what tools can the researcher use to find out knowledge*. Crotty (1998) describes methods as the techniques or procedures used to collecting and analysing data required for answering research questions or achieving research objectives.

The nature of data collected is what separates the type as being quantitative, when it is in a structured and measurable form, or regarded as qualitative, when collected as unstructured, non-numeric format. For this research, the self-completing questionnaire was considered a suitable technique for the collection of quantitative data that would be used to identify the factors that shape land use practice and climate change perception in the locations administered. On the other hand, a semi-structured interview is selected as a feasible vehicle that would allow research participants express their views, opinions and experiences with regards to the research topic.

Gathering data is a physical activity that is bound within spatial, time, security and resource restraints (Matthews and Ross, 2010), therefore the choice of method may be influenced by suitability rather than appropriateness. For instance, as much as the researcher wanted to engage many individuals involved in guiding land use and environmental policies in Nigeria, the study was only able to elicit participation from the southwestern area of the country. Within this context, the activity

surrounding the data collection process would be discussed in their separate techniques using the template in Figure 2.4 below.

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Figure 2.4 - Data collection circle (Source from Creswell, 2007; 2009)

The overarching aim of this research is to develop a system for integrating climate change vulnerability into the Nigerian land use planning process as one of the approaches towards addressing climate change concerns. As such, the geographical location for collecting primary data for the research is already fixed to the Western African country of Nigeria, since it is unlikely that the researcher would be able to effectively conduct the research without engaging participants with hands-on experience of land-use practice in Nigeria. This is the beginning of the constraint described by Matthews and Ross (2010), as there is a limit to how long the researcher can stay out in the field.

Regardless, part of the planning strategy employed prior to field work, was to obtain a list of relevant, Federal Government agencies, State Institutions, planning authorities and professional bodies with direct involvement in

land-use planning and environmental management in Nigeria. To proceed, the researcher contacted all the relevant institutions and their members / offices. The low and largely negative response to the attempts at establishing contact brings to fore the issues faced by the researcher in this study. Specifically, the local barriers to the research such as:

- Very low response rate to initial contact
- A stark reminder within the Nigerian society that the nature of the researcher's cultural identity often determines the institutions or the individuals that would be amenable or willing to participate in an undertaking.
- Then, the willingness of gatekeepers to support the research by providing access to the optimal research population without incentives.

The researcher realised that formal introduction was required to gain access to regulators in the planning and environmental management field, this is not to say that their counterparts in the academia were so inclined. None of the private practitioners and institutions contacted responded to the requests sent to them.

In the end, the researcher was able to obtain introductory letters from an identified gatekeeper (Creswell, 2009), who was a top State Government official in one of the South-western States to their colleagues in the other five states in the region. These letters provided access to key contacts that were previously unreachable. Notwithstanding, the researcher was only able to engage individuals who were willing and available within the field time and resources allotted for the study. As such, nine top ranking officials were successfully recruited for the interview phase and 50 individuals with relevant knowledge completed the survey. The criteria employed in soliciting participation in the two strands of the research are provided in subsequent subsections at 2.6.1.2 and 2.6.2.3. While the nature of administering the survey did not allow the researcher to accurately track the returns of the questionnaire, Figure 2.5 provides a geographical map of the

administrative territories where the research was conducted, and the number of interviewees engaged.

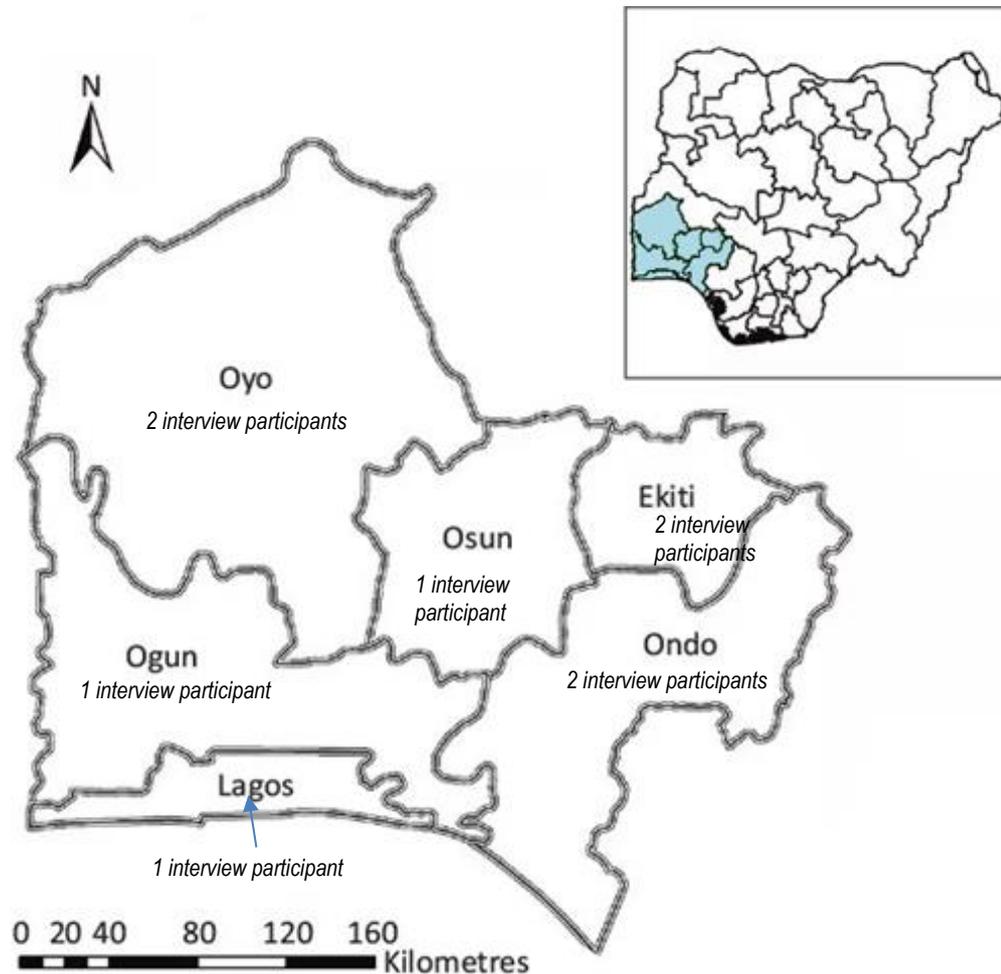


Figure 2.5 - Map showing research area and distribution of interview participants (Source: Designed by Author)

2.6.1 Collecting primary data using questionnaire

The questionnaire is also known as the self-completion or self-administered questionnaire (Bryman, 2012), and survey (Creswell, 2009). The questionnaire consists a set of written questions that require the respondents to answer themselves after reading and interpreting on their own (Bryman, 2012). Apart from the usefulness in the collection of factual data, it is an indispensable tool which can also gather primary data from people about their opinions, attitudes, knowledge, and awareness on any issue (Creswell,

2009; Matthews and Ross, 2010). This is particularly important as it will provide variability in the outlook of the respondents in respect of the subject matter.

Surveys are designed to collect large volume of primary data from a large population sample which might be spread out over extensive geographical locations, usually in numerical format (Hair (Jr) *et al.*, 2007). This form of data collection is relatively cheaper to administer when the need to travel for an interview is considered (Bryman, 2012). For this reason, the researcher can reach larger numbers of respondents simultaneously using surveys than in any of the other data collection methods. However, one of the main limitations of the questionnaire is the likelihood of a low response rate, when potential respondents do not attempt or complete them (Bryman, 2012). Kumar (2005) ascribes this to a self-selecting bias, when recipients of surveys exhibit different attributes in choosing to either complete them or have ulterior motives for returning them. Walonick (2004) laments that poor response is the bane of statistical analysis and this has a great potential to lower the confidence in the results derived. The researcher seeks to mitigate this limitation by sensitizing the potential participants before the administration of the survey. It is also hoped that the use of peer delivery of the survey will encourage a higher response rate.

Even though this method limits the amount of questions and additional data that can be collected, the use of a questionnaire minimizes researcher influence that might have otherwise shape the answers given by respondents (Bryman, 2012). Walonick (2004) affirms that surveys dispel the middleman bias by enabling a standard presentation of the questions to all the respondents. In the process of eliminating the influence of the researcher's own reasoning in the answers obtained, respondents are denied the opportunity to clarify any challenge encountered with the researcher. Therefore, the survey will be pre-tested before administering it to the respondents and contact details for the researcher will be provided on the survey format with an encouragement to use in case of ambiguity.

2.6.1.1 Designing the questionnaire

As a self-completing activity, it is essential that the structure of the questions should be as clear and concise as possible for the respondents to read, interpret and write down their answers in the instrument. Operationalizing the questionnaire requires the transformation of emerging issues identified in the literature into easily understood questions that would connote meaning to the respondent and still ensure relevance to the research. Although, Kumar (2005) suggests a four-step process in the development of the research instrument, the researcher has adopted a five-step approach, linking the research objectives all the way to the questions administered in the questionnaire as seen in the sample depicted in Figure 2.6.

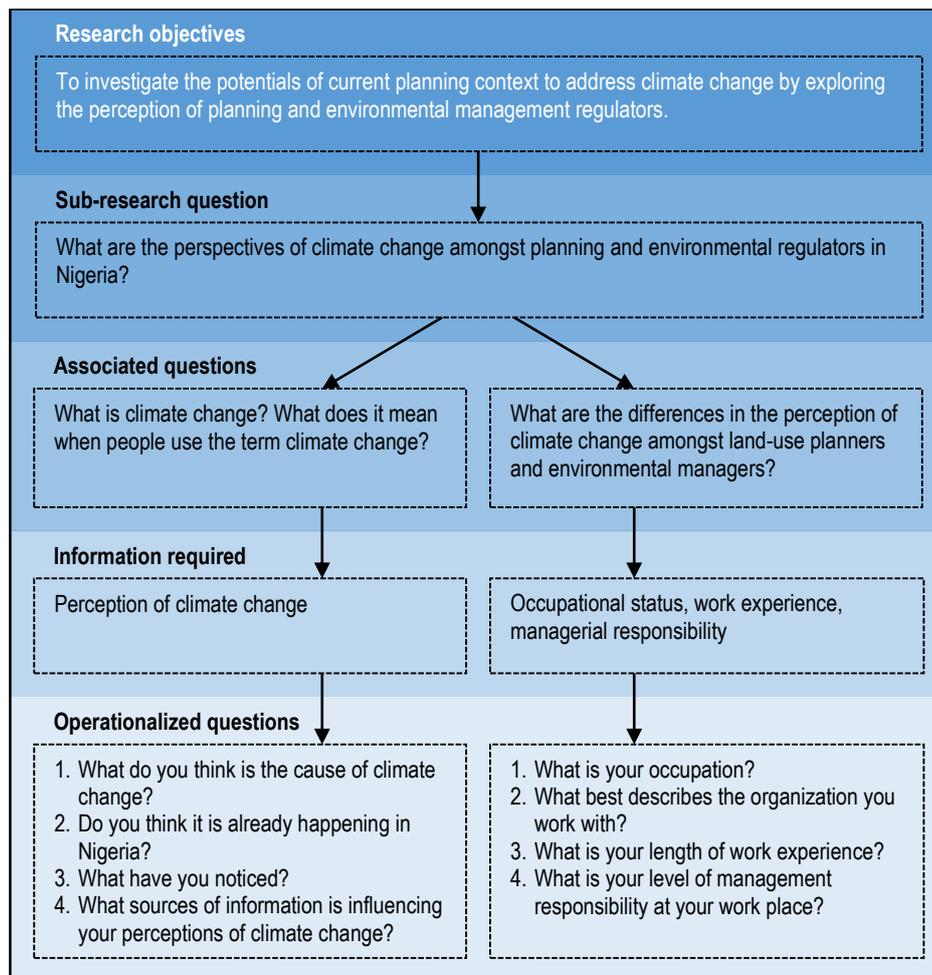


Figure 2.6 - Questionnaire design process

To create an easy layout and a sequencing of questions for the respondents, the questionnaire was divided into six broad categories in an interactive style as depicted in Table 2.3 below

Table 2.3 - Categories in the questionnaire

Categories
A. Respondent's profile
B. Drivers and influences on planning activities in Nigeria
C. Challenges in land-use planning in Nigeria
D. Environmental issues
E. Understanding of climate change as an environmental issue
F. Perspectives on climate change

Under category A, respondent's information such as their gender, age, occupation, length of experience, managerial position and educational qualification, would be collected as demographic data. This would be used as independent variables to decipher the possible differences that may occur in the responses collected through the questionnaire. Based on the literature review of land-use planning in Nigeria, a myriad of factors was identified, and the researcher sought to identify if the driving factors remained prominent or if the extant issues have been resolved. With the view to accomplish the research objectives, Table 2.4 shows the underlying factors recognised through the review of literature. A five-point Likert scale approach was used in obtaining respondents opinion on these drivers and influences.

Table 2.4 - Identified factors influencing Nigeria's planning activities

Section reference	Identified theme	Question	Reference
4.2.1, 4.2.3.1, 4.3.3.3	Economic objectives driving LUP	Provision of land for new development	Adedeji, 1980; Taylor, 1988; Arimah and Adeagbo, 2000; Ukah, 2007; Omole and Akinbamijo, 2012; The Nigerian Institute of Town Planners (NITP), Undated
4.4.3.4	Community or people needs driving LUP	Meeting the needs of the local community	NURPA 1992
4.4.3.2, 4.4.3.3, 4.5.2.4	Integration of environmental assessment into LUP process	Protection of important environmental, historical and cultural assets	FEPA 1992; NURPA 1992; Olokesusi, 1998; Echefu and Akpofure, 2003
4.4.2, 4.5.2.5	Risks arising from environmental hazards	Addressing potential environmental risks (e.g flooding, erosion, desert encroachment)	NOSDRA 2006; Omole and Akinbamijo, 2012
4.2.3.1, 4.2.3.3, 4.3.3.2, 4.4.3.4	Areas of improvement	Provision of transportation access and basic infrastructure	NURPA 1992; Aka, 1993; Adeniyi, 2011; The Nigerian Institute of Town Planners (NITP), Undated
4.2.2, 4.4.2	Identifying opportunities for change	Concerns for land use patterns	Aka, 1993
4.5.2.4	Policies and governance	Government initiatives and programmes	Anago, 2002; The Nigerian Institute of Town Planners (NITP), Undated
4.2.3.1, 4.4.2	Political influence	Political motivation	Taylor, 1988; Ejumudo, 2013
4.2.1, 4.2.2, 4.4.1	Relieving pressures in congested locations	Private sector incentives	Aka, 1993; Ogu, 1999; Omole and Akinbamijo, 2012
4.2.3.4	Expectation of LUP practice	The creation and maintenance of pleasant, healthy and safe environments	Ogbimi, 1998; NESREA 2011; The Nigerian Institute of Town Planners (NITP), Undated
4.2.3.1, 4.2.3.3, 4.4.3.1	Public participation in LUP	Outcomes of Public consultations and participation	Adedeji, 1980; NURPA 1992; Aka, 1993; Marcellus, 2009; Ejumudo, 2013

The next section focused on obtaining participant's views on the challenges that have been identified through the literature. Details of the issues discovered through the literature is shown in Table 2.5. A forced ranking system was employed asking them to rate the factors in the order which they consider them crucial for desired planning objectives.

Table 2.5 - Identified challenges to planning activities in Nigeria

Section reference	Survey question	Reference
4.2.3.1, 4.3.3.4	Lack of cadastral maps and land records	Okpala, 1982; Aka, 1993; Omole and Akinbamijo, 2012
4.3.3.4, 4.4.2	Lack of technical expertise of regulators	Okpala, 1982; Fabiyi, 1984; Omole and Akinbamijo, 2012
4.2, 4.2.3.5, 4.3.3.4	Absence of a communicated spatial plan	Uyanga, 1989; Ogu, 1999; Mabogunje, 2010
4.3.3.4, 4.5.2.6	Powerful individuals and groups	Okpala, 1982; Adegoroye, 1994; Ako, 2009; Adeniyi, 2011
4.4.2, 4.5.2.4	Administrative bureaucracy	Uyanga, 1989; Olokesusi, 1998; Ogunba, 2004; Mabogunje, 2010
4.2.3.5	Frequent changes in Government administration	Marcellus, 2009;

In investigating the perspectives of climate change amongst planning regulators, the researcher sought to explore respondents' knowledge of climate change as an environmental issue. As such, questions were raised to obtain their opinion on the contributory causes, occurrence, level of preparedness, and awareness of institutional and societal response and actions. To allow respondents to express themselves freely on their opinion on climate change, the design made use of open-ended approach as a means of eliminating researcher bias. In this respect, it is expected that it would also result in greater variety in the information gathered. Given the possibility that participants may become discouraged if the questions become long or considered too many, the researcher narrowed down the number of questions asked into a three-page format and utilised close ended approach in asking questions such as *Do you think climate change is already happening in Nigeria?*

2.6.1.2 Administering the questionnaire

Convenience sampling was the strategy employed in the administration of the questionnaire. The choice of this non-probability sampling technique is

based on the merits of accessibility to potential respondents. Even though the researcher is aware that it would be difficult to generalise the findings (Bryman, 2012), this strategy was the only viable route for soliciting participants to complete the survey. As earlier explained, the researcher was unable to get feedback from all prospective participants contacted and given the specificity of participants sought after, this choice of sampling was the most feasible. In all the six southwest States visited to conduct the interviews, the researcher used that opportunity to administer the questionnaires at relevant Government ministries, local planning authorities, consulting firms and planning schools of higher education institutions in those states. This was handed out to individuals by the researcher at each of these locations. This approach produced a convenience sample, as only those that were at work when the researcher visited and went back to collect the research instruments, and those who did not decline to participate, were administered the questionnaire.

The nature of quantitative methods is the creation of a standardized tool for collecting data from all subjects. In this case, the paper questionnaire is the instrument employed in the data collection, on which the information is recorded. Completed questionnaires were safely secured in a protected field bag and transferred into a locked storage at night to prevent loss. Apart from safe keeping in the field, the biggest hurdle was in the collection of the completed instruments. As such, the researcher had to schedule multiple visits to different locations to remind respondents to finish the survey, to collect them or recruit new participants.

2.6.1.3 Survey data analysis

In comparison with other data collection techniques, survey is easy to analyse and there are several computer software packages that can efficiently handle data entry, tabulate results and store all the data effectively (Walonick, 2004). The survey was prepared with the intention to analyse gathered data using the Statistical Package for Social Scientist (SPSS). The SPSS software is likely the most used quantitative data analysis software

(Bryman, 2012). The responses were coded in numerical format so that it can be inputted into the SPSS database. The analysed data will be of a descriptive nature including graphs, cross-tabulations and frequencies that present the variability of opinions and perspective across all the respondents. The nature of analysis conducted, and the findings is presented in Chapter 5.

2.6.2 Collecting primary data using semi-structured interviews

As highlighted by Creswell (2007; 2009), there are basically four types of qualitative data collection: observations (ranging from participatory to objective observation), interviews and focus groups (using both close-ended and open-ended approach), examination of public and private documents and discussions, and audio-visual materials (including photographs, art objects, videotapes, films etc.). For this study, the interview has been selected as the tool to collect the qualitative data, based on the inappropriateness and the unsuitable nature of the other techniques. For instance, the subject matter of the research cannot be observed within the research time-frame; it is impractical for the researcher to arrange a focus group with the intended participants owing to their different geographical locations; documentary review was eliminated by the paucity of necessary documents and the sensitivity attached to them; and the audio-visual approach is pointless to the research objectives.

Bryman (2012) reports that the interview is a widely used qualitative data collection method due to the flexibility involved. This is strengthened by the fact that it requires shorter involvement when compared to observation and less planning as demanded by focus group approach. Within literature, there are three types of interview that can be identified; Structured, Semi-structured and Unstructured. Their attributes are displayed in Table 2.6.

For this research, the semi-structured approach would be employed. Semi-structured interviews are usually employed in collecting qualitative social data when the researcher is interested in obtaining people's behaviour, opinion and understandings of how, why and what they have experienced

and what underpins their construction of the social world (Matthews and Ross, 2010). In this situation, the focus is not only on what information that is provided by the participant on the subject matter, but it also includes the way they express themselves.

Table 2.6 - Features of the types of interviews (Adapted from Gill, *et al.*, 2008; Bryman, 2012)

Structured Interview	Semi-structured Interview	Unstructured Interview
Interaction is dictated by interviewer interest. A list of pre-arranged questions with little or no variation. Participant response is limited	Interaction is guided by a pre-set outline of topics and questions. The interviewer strikes a balance between obtaining necessary information for the research and gaining insight into what interviewee considers important and relevant	Greater interest in the interviewee's views and experience. Participant is encouraged to express themselves on their values, thoughts and attributed meanings. Interaction is controlled by interviewees.
The ordering and language used in asking the question is fixed and standardized for interviewees	Interviewers can depart from any schedule to ask new or follow-up questions. The wording can be amended specific to the interviewee.	There is no structure, procedure or specific questions. Interviewer is at liberty to adjust to the situation.
Relatively quick and easy to administer.	The availability of interview guide makes the process easier to manage.	Very time-consuming and difficult to manage.
Generated answers can be coded and processed quickly	Data collected is rich and detailed.	Data collected would be rich but may include a lot of unnecessary and irrelevant information.
Useless when insight or depth is required due to the limited participant response.	Allows the discovery or provides insight into issues important to interviewees not previously identified by the researcher.	Considered useful in areas where there is little knowledge about the subject matter or in the investigation of a different perspective on a known topic.
Quantitative approach	Typical qualitative research	Useful in ground theory

The participant will be questioned at length regarding the subject matter to describe both external realities that have occurred and internal experience to include their feelings or perspectives. The interviewees will be allowed free range to talk in their own frames of reference about the subject matter to get richness of data collected and qualitative depth.

The semi-structured nature of the interview will allow the researcher to capture the viewpoint of the participant rather than restrain the interaction to the concerns of the researcher. This also provides flexibility in the data collection as the interviewer can ask new questions that will follow up interviewees' response to clarify a point raised or insight into new line of inquiry. Interview guide will be developed before the interaction to ensure that all the relevant issues have been addressed before the end of the interview. Even though the interviewer has prepared a list of questions or topics to be covered, the interviewee has a great deal of latitude in how to reply. Open ended questions will be employed during the interview to encourage meaningful replies such as, *what do you think are the likely impacts of climate change in Nigeria if any?*

Although the interview process is a time-consuming data collection method (Kumar, 2005), there is no other data gathering technique that can provide an in-depth understanding of people's behaviour and attitudes (Matthews and Ross, 2010). The presence of the interviewer can also bring about a social desirability bias in the response of the participants (Creswell, 2009) which cannot totally be eliminated but will be reduced by the skilful use of questions to elaborate and probe replies. Even though the quality of data gathered depends on the questioning skills of the interviewer and the discussion with the respondent (Kumar, 2005), it is hoped that at least, historical and indirect information will filter through the interaction.

2.6.2.1 Purposive sampling

This non-probability form of sampling was employed in the selection of the interviewees. This selection with purpose allows the researcher to engage individuals that have the necessary skillset and experience to provide information that is directly related to the research topic (Creswell and Plano Clark, 2011). As such, this sampling strategy is also referred to as judgemental sampling (Saunders *et al.*, 2016). However, the sample sizes are not statistical representations of the population size but are strategically

situated with the knowledge that the researcher requires in achieving the research objectives.

In addition, the sampling strategy would also leverage on the criterion and opportunistic sampling approach in recruiting participants using the selection filter shown in Figure 2.7. This is a wish-list for the type of participant that the researcher would like to engage. The first consideration is that they must work in a regulatory role within the Nigerian land-use planning system and they must fulfil the requirements listed under the criterion approach. Owing to the chances that the researcher may not be able to recruit, a high-ranking official in an organisation, the opportunistic stance is taken that allows interaction with individuals that may have the requisite information relevant to the study.

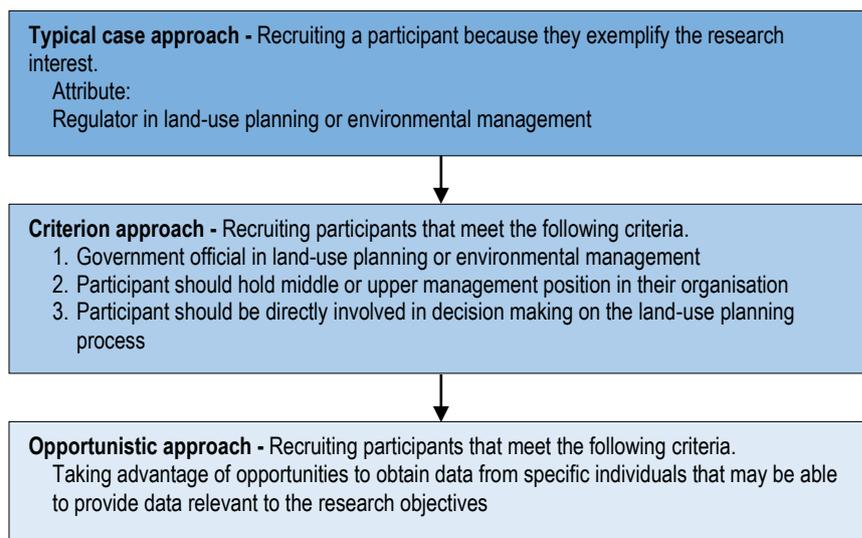


Figure 2.7 - Purposive sampling approach

Rather than selecting a large number of participants, this would allow recruitment of participants that can provide an in-depth understanding of the land-use planning practice in Nigeria and pave way for a discourse on the possible intersections that it might have with climate change.

2.6.2.2 Developing interview questions

The purpose of utilising interviews is to elicit participants view on the state of land use planning and climate change within their jurisdiction. The questions are broadly designed and general to allow the research participants to construct their own meaning while the researcher is listening intently to what is being said and how. The flexibility in the qualitative technique allows the researcher to take the interview in directions that may emerge during the interview (Bryman, 2012). Regardless, it is expected that there would be a balance of initial research ideas and the experiences and narrations elicited from the interviewees. A list of specific issues to be covered in the interview is presented in Table 2.7, which is operationalised as questions to ensure that the interviewee has the opportunity to relate their perceptions and opinions on the topics.

Table 2.7 - Emerging issues for interview guide

Section reference	Emerging issues	Reference
4.3.2.3, 4.3.2.4	What are the constraints in maximising the potentials of the 1978 Land Use Act? What are the factors (if any) influence land approval?	LUA 1978; Okpala, 1982; Fabiyi, 1984; Francis, 1984; Agbosu, 1988; Ako, 2009, Mabogunje, 2010; Adeniyi, 2011; Amokaye, 2011; Omole and Akinbamijo, 2012
4.2, 4.4	Is physical planning still reactive in Nigeria?	Uyanga, 1989; Aka, 1993; Ogu, 1999
4.2	What are the factors influencing administrative interpretation of LUP practice?	Council of Europe, 1983
4.3.2.3, 4.3.2.4, 4.4.2, 4.4.3	What is the extent to which policies, politics and social issues influence LUP in Nigeria?	Taylor, 1988; Rakodi, 2001; Ako, 2009; Mabogunje, 2010
4.4.3, 4.5	How is vulnerability, environmental risk and uncertainty addressed in Nigeria LUP?	Ijaiya and Joseph, 2014
4.4.3.2, 4.4.3.3, 4.5.2.4	How is environmental concern integrated in LUP?	FEPA 1992; NURPA 1992; Olokesusi, 1998; Echefu and Akpofure, 2003
4.2.3.1, 4.2.3.3, 4.4.3.1, 4.4.3.4	How is public participation reflected in Nigerian LUP practice?	Adedeji, 1980; NURPA 1992; Aka, 1993; Marcellus, 2009; Ejumudo, 2013
1.1	Why is climate change not a developmental agenda for Nigerian LUP?	Denton <i>et al.</i> , 2001; Beg <i>et al.</i> , 2002; Davidson <i>et al.</i> , 2003

The questions administered at the interview do not follow the exact pattern outlined above and they were modified to align with the interviewees' skill, experience and language to allow a smooth interaction and flow of information. Nevertheless, the researcher ensured that similar wording was employed in the engagement of all the participants.

2.6.2.3 *Conducting the interview*

It is critical that interviews are conducted in an appropriate manner to guarantee the quality of data produced from the interaction. This can be carried out in a variety of ways, provided they are coherent and accomplishes the research objectives. Nevertheless, Creswell (2007) describes interviewing as a sequence of actions which is captured in Figure 2.8.

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Figure 2.8 - Checklist for conducting an interview (Adapted from Creswell, 2007)

The process highlighted was applied in carrying out the qualitative aspect of this research. The first three steps have already been covered in the preceding sections. To allow the researcher to refine the interview questions,

a pilot test was conducted with an eligible interviewee with sufficient knowledge of the subject matter who has not been selected as a research participant. This process was useful in improving the quality of questions in respect to the research objectives. In addition, the pilot test allowed the assessment of the extent of researcher bias that may reflect in the framing of questions and in the collection of background information.

All the interview sessions will be recorded to ensure that the data is appropriately captured. The essence of recording the interaction is not so much for evidence, but to ensure that no part of the interaction is missing and available for referencing when carrying out data analysis. In this regard, the researcher is the data collecting tool used to elicit information from the interviewee. The use of recording equipment enables the interviewer to focus on the interview, as it eliminates the pressure to write down the respondents' words which might disrupt the flow of the discussion (Bryman, 2012). As such, it is essential that good recorders are used which would in turn influence the quality of recording obtained. Although, external or environmental problems may affect the quality of the audio, this was minimised using directional microphones. To prevent complications, Bryman (2012) advises that the researcher be very familiar with the operation of the recording equipment. For this study, the researcher used two different recorders as a preventive strategy against possible field issues that may arise from a faulty recorder. The audio file was copied off the recording machines immediately after each interview and stored on the University's secured cloud server.

The choice of venue is not within the control of the researcher as most interviewees opted for the comforts of their own offices. This was particularly appreciated as it allowed the participants to set the time for the interview when they would be free from distractions or anxiety. Prior to the commencement of the interview, consent for participating in the research and recording the process would be obtained. A consent form and a Participant Information Sheet (PIS) is provided to every respondent to inform them of the purpose of the study, what is expected of them, advise them of their rights and what the results from the interview would be used

for. Once this has been reviewed with the prospective interviewee, it is expected that a completed and signed would be returned to the researcher, while the interviewee keeps the PIS.

The final step requires the use of good interview procedures. This includes maintaining focus while asking questions, completing the interview within the agreed time schedule, being respectful and attentive, listening rather than overruling the interviewee (Creswell, 2007; Bryman, 2012). In other words, the interaction should be highlighted by short interviewer questions followed by rich, detailed, specific, relevant and longer interviewee answers.

2.6.2.4 Interview data analysis

This is the process involved in the preparation of data collected, carrying out different investigations on the relationships amongst the variables, presenting the data and subsequently, making an interpretation based on that processed data. It is on this basis that Creswell (2009) writes that there is a generic six-step process in the analysis of qualitative data as seen in Figure 2.9.

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Figure 2.9 - Generic steps in qualitative data analysis (Adapted from Creswell, 2009)

In this research, data preparation involves the creation of an accurate transcript from the audio files. Saunders *et al.* (2009) opines that the transcribing process should not only focus on the responses but also in the way the questions have been answered. This is followed by a thorough read of the transcript to get a feel and general sense of the data. Creswell (2009) writes that this gives the researcher the opportunity to think about the meaning that can be derived from the data.

Coding commences the start of the analysis. This is a process where the transcribed data is broken down into component parts and then ascribing meaning to those parts (Bryman, 2012). As such, segmented sentences or paragraphs were categorised and then labelled with a term. At this stage, a review of the codes generated would lead to the development of theoretical ideas about the codes and the data (Creswell, 2009; Bryman, 2012). Thematic analysis of the data will be conducted to recognise and create an index of recurring themes and subthemes from the interview transcript (Bryman, 2012). The data is initially arranged with respect to the core themes, and then aligned within subthemes with the framework developed. This approach will enable the researcher to realise the participants' perspective based on the way they have responded across the various identified themes (Bryman, 2012). Data coding will be carried out using NVivo, a computer-assisted qualitative data analysis software (CAQDAS). The analysis software reduces the processing time of coding, enables effective modelling, data retrieval and storage (David and Sutton, 2011). Bryman (2012) submits that the use of analysis software increases transparency in the qualitative data analysis, which will compel researchers to be reflective and specific about the analysis process.

The fifth step expresses the identified themes and their description as qualitative narratives. The usual approach is to make use of narrative passages in describing the results obtained from the analysis (Creswell, 2009; Bryman, 2012). This can vary from a detailed discourse of the themes and the sub-themes using the different points of view and quotations obtained from interviewees. The narration may also incorporate tables, visuals or figures to aid clearer understanding. The final activity involves making an

interpretation from the processed data. In this regard, Creswell (2009) writes that the meaning derived from the findings may either confirm or deviate from prevailing theories, and in other cases lead to new questions that needs to be asked.

2.7 Ethical considerations

Neuman (2000, cited in Henn *et al.*, 2006) submits that *ethics begins with you, the researcher*. Even though research is acknowledged as an important contributor to knowledge, it still does not allow the freedom to disregard and trample upon the rights of other individuals (BSA, 2002). This implies a moral and legal obligation placed on the researcher to actively preserve the interests of those participating in the study and afterwards (ESRC, 2010).

Throughout the course of this study, a universalist disposition is maintained. This perspective considers the breach of ethical principles as unlawful and improper in a moral sense and presents negative consequences for future research (Bryman, 2012). In consideration of the stance, this research will be guided by professional ethical standards which will include, the British Sociological Association (BSA) (2002), the Economic and Social Research Council (ESRC) (2010) and the Social Research Association (SRA). The Statement of Ethical Practice of the BSA reiterates that the onus is on researchers to ensure that the research does not adversely affect the psychological, social and physical welfare of its participants. This requires researchers to consider in detail, the entire research experience for the participants and seek to mitigate against undue exposure to harm that may arise because of their participation (SRA, 2003).

2.7.1 Ethical considerations in the quantitative research

In continuation of the ethical stance adopted for this study, the survey design has been carefully selected as the appropriate data collection technique for the quantitative phase of the research. Questionnaires can be anonymous in nature (Matthews and Ross, 2010) and subsequently provide immediate

anonymity and confidentiality on the respondent. In addition, the paper questionnaire administered is designed to provide anonymity to respondents and limited the use of open-ended questions to reduce the risks of hand writing recognition. As much as the researcher would have been keen to deploy the survey using internet-based solution, the inadequate internet access in the research area will drastically reduce the number of potential respondents.

The survey distribution method for this survey ensured that respondents' rights were protected and that they were not pressured in taking part in the study. Participants were given considerable time for completing the questionnaire. Unlike interviews or observations, a greater number of people have experience completing questionnaires (Walonick, 2004), therefore people are less apprehensive and will consider it less intrusive.

In line with obtaining freely given consent, all the questionnaires contain an information cover which will advise the participants on the details of the research and what is expected of them.

2.7.2 Ethical considerations in the qualitative research

As the qualitative aspect of this study involves the use of interviews to capture the policy maker's interpretation and perception of climate change realities, the prospective participants will be provided with consent forms (see Appendix I) and information sheets (see Appendix II). This will contain explicit details about the study including its purpose, the researcher, the financiers, what the participants will be required to do, the rights of participants, the use of a recording equipment, the likely risks that might arise from their participation and what the research will be used for (BSA, 2002; SRA, 2003). The information sheet and consent align with the principle of obtaining freely informed consent, which will guide prospects in their decision either to participate or not (Bryman, 2012). The process of obtaining consent also demonstrates the transparency in the research process and prevents deception of the participants (SRA, 2003). Respondents will be

informed of their prerogative to withdraw their participation at any time and withhold the use of the data they have earlier provided (BSA, 2002; SRA, 2003). The semi-structured interview has been selected for the guidance it provides in the conduct of the interview, to ensure that the interaction stay on course and refrains from overburdening interviewees with irrelevant questions or undue intrusions (SRA, 2003).

Although, the BSA (2002) submits that participants should be allowed to decline the recording of the interaction, the researcher will not be able to abide with this requirement as the data-gathering device is significant to carrying out an uninterrupted interview. However, the researcher offers anonymity and confidentiality by excluding the individual identities of interviewees from transcribed and written data, while pseudonyms will be used in the written report. The researcher will ensure that all the collected data from the participants will be secured always, transcribed data will be protected in locked drawers always and recordings of interview sessions will be kept in password protected drives. Table 2.8 provides an extensive consideration of the ethical issues that may be encountered during this research and how they will be handled.

Table 2.8 - Summary of possible ethical issues (Adapted from Creswell, 2014)

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2.8 Chapter summary

This chapter provided justification for the approach the research has taken in the methodology and methods utilized in the collection of data for this research. The researcher acknowledges that there are numerous ways in which the objectives of the study could have been achieved, however the choice of research design is premised on the pragmatic worldview that the discretion lies with the researcher to select the best methods, techniques and strategies that are well suited to the purposes and intent of their study.

Aligning to the philosophical standpoint, the mixed methods research strategy has been selected as the methodology of choice. This allows the combination of both the quantitative and qualitative research methods in a manner that results in complementary strengths and no overlapping weaknesses.

3 FRAMEWORK FOR CLIMATE CHANGE VULNERABILITY ASSESSMENT

3.1 Introductory remarks

Within the discourse, a summary will be provided for mitigation and adaptation as societal responses to climate change. This will be followed by the definition of the term, vulnerability and the dimensions of manifestation as identified through literature. This will assist in the recognition of core structural elements that are essential for a vulnerability framework. Finally, this chapter would end with the development of a generic framework for integrating climate change vulnerability into land-use planning.

3.2 Climate change vulnerability

Climate change will result in changes to human and natural systems (Schneider *et al.*, 2007). In Nigeria, a rise in sea level is expected to increase flooding risks and influx of seawater into freshwater along the 853km coastline (Awosika *et al.*, 1997; Fashae and Onafeso, 2011). Odjugo (2009) estimates that climate change-related wind and rainstorm events is responsible for the loss of 199 people and property damage in the range of \$720 million between 1992 and 2007 in 12 of the 36 states. Climate change impact has also been linked to the increasing temperatures in the country and the southward desert encroachment in the semi-arid regions (Odjugo and Ikhuoria, 2003).

However, it has not all been bad news as the Nigerian Meteorological Agency reported in 2012 that the semi-arid northeast had more rainfall than usual values in more than ten consecutive years. Unfortunately, the high intensity of the rainfall resulted in widespread flooding, that was particularly devastating in those areas (NIMET, 2012). This increases the likelihood of a paradigm shift in both human and natural systems of the affected areas. This consideration raises several questions like; *who/what will be affected, how will they be affected and what factors influence the extent of effect?*

This is the premise on which the term *Vulnerability* has been incorporated into climate change vocabulary, as the measure for assessing the level of climate change exposure and potential harm in the context of societies, regions, or ecosystems.

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) considers climate change vulnerability in terms of impact, susceptibility, resilience and adaptive capacity (IPCC, 2007). This is a broad outline with numerous components, including risk (specific, geographical and climate), impacts (scale, intensity and rate), development pathways (sustainable development) and adaptability (available resources, response capacity). The next challenge is how to analyse the problem, highlight the consequences and present it to stakeholders in easily understandable terms.

The study of the vulnerability to climate change is a field that has benefitted greatly from a wide range of experts from different disciplines and backgrounds including risk management, hazard and disaster studies (Cutter, 1996; UNISDR, 2004; Wisner, *et al.*, 2004; Wolf, 2012), social science, policy development, health, coastal management (Klein and Nicholls, 1999), ecosystems (Williams, *et al.*, 2008), to name a few out of the several other fields (O'Brien, *et al.*, 2004; Adger, 2006; Birkmann, 2006; Soares and Gagnon, 2012). Even though a wealth of knowledge is being added, the researchers create their own models, which often solve similar issues using different language specific to their own discipline. Brooks (2003) argues that the study of vulnerability can be better improved when all the researchers set aside their different backgrounds and develop a common language that is flexible and transparent to their other colleagues. The normal use of the word *vulnerability* in everyday language further lends a challenge and confusion in the common understanding of its place in the scientific context. Therefore, researchers may think they know what the other is talking about when they are working under different assumptions and conceptualizations (O'Brien *et al.*, 2004; Füssel, 2007).

3.3 Defining vulnerability

According to the Webster's Dictionary (Merriam-Webster Company, 2013), vulnerability is a noun which means 'the quality or state of being vulnerable'. The origin of the word 'vulnerable' is traced to the Latin word *vulnerabilis*, which stem from the words, *vulnero* - meaning wound, and *-bilis* - an ability (Oxford University Press, 1982). To the Latin speakers, a person that is vulnerable is liable to be wounded. This indicates how open to attack that person is or how frail and weak the person is to injury.

This is the general outlook for the use of the word in our common everyday language. The primary standpoint from this definition is the initial state of a person or system being defenceless and assailable, which however has no bearing on the possibility of a future attack. Accordingly, Wolf (2012) infers that vulnerability is a predictive concept that portrays a current characteristic that describes possible future harm.

Even though the concept of climate change vulnerability infers an effect from a likely exposure to climatic hazard, one tends to ask, when is a system deemed vulnerable? Is it after exposure to the impacts of climate change? Or when a system can no longer cope with the current trends of climate change? Or is it based on an estimation prior to the onset of climate change impacts? These questions have led to divergent views in the study of vulnerability. Some researchers consider vulnerability to climate change as a starting point of an evaluation, and there are others that view it as the end point in an assessment (Kelly and Adger, 2000; O'Brien et al., 2004). The differences in the perspectives have the potential to exert substantial issues *inter alia* levels of uncertainty, policy development and disciplinary integrity.

3.3.1 Starting point interpretation of vulnerability

Taking a cue from the linguistic origin previously described, this interpretation places vulnerability at the beginning of any evaluation. The state in which a system exists before the occurrence of a hazard. Whereby we can deduce that the vulnerability to a particular type of hazard can be

determined by their current state and their likely reaction to that hazard, rather than the consideration of the likelihood that the event may occur. This depicts a current lack of capacity to cope with external stress or pressure. If we were to construe this definition of vulnerability mathematically, it would mean

$$\text{vulnerability} \equiv \text{internal structure} \pm \text{impact}$$

The *internal structure* denoted here is characterised by the social, economic and political process inherent in a system that either promotes or reduces resilience of that society. These non-climatic factors have the potential to increase vulnerability to climate change. The internal structure is sometimes considered as *sensitivity* of a system (IPCC, 2007). *Impact* is the extent to which a system encounters adverse (beneficial) effects of climatic variation. The climate change impact does not play a significant role in this definition, as the primary focus is on the current state of the system before any impact. The level of vulnerability has a direct relationship with the degree of stability of that system. In other words, a very sensitive system will be highly susceptible to climate change. This is why this interpretation is particularly useful in structuring adaptation to uncertainty (O'Brien *et al.*, 2004), as it allows the flexibility of improving resilience to meet current levels of vulnerability. With respect to this point of view, the level of vulnerability is based on the ability of a system to control non-climatic stresses that might impede its capacity to respond to the changing climate.

This perspective is inherent in the risk, hazard and disaster approach, which examines the potential risks that may arise from exposure to hazards (Cutter, 1996; Kelly and Adger, 2000; Füssel, 2007). In relation to natural hazards, Wisner *et al.* (2004) define vulnerability as the typical features of a person or a group of people and the specific circumstances influencing their ability to prepare, manage, withstand and also recover from the impact of a natural hazard. From this definition, it is obvious that the inherent characteristics and unsafe conditions are two critical factors that determine the extent of

vulnerability. As intrinsic attributes of a person or system may be difficult to change, but actions can be taken towards reducing situations that can hinder the capacity to manage the changes. For instance, investment in flood management measures should not only include designation of flood prone areas but prevention of inappropriate infrastructure in such locations (Fashae and Onafeso, 2011).

Invariably, the starting point interpretation can take a form of social vulnerability that allows the identification of the nature, forms, spread and factors affecting vulnerability. This reality contradicts the argument put forward by Füssel (2007) that a risk-hazard approach is difficult to apply on people. Additional benefit is realised when adequate identification of limited capacity to respond is utilised as the basis for the development of framework policies that will provide necessary interventions and improve people's capacity to respond to hazards (Kelly and Adger, 2000; O'Brien *et al.*, 2004).

3.3.2 End point approach to vulnerability

With regards to the end-point perspective, vulnerability is seen as the residual consequences from an estimated level of climate change after the process of adaptation has taken place. Kelly and Adger (2000) refer to the *end point* approach as the outcome of a series of assessment starting with projections of possible future emissions trends, which is then used to develop climate scenarios and an estimation of the impact on the biophysical attributes and the adaptive options available (see Figure 3.1). With a strong emphasis on possible future climate scenarios in the evaluation, this technique is more concerned about future climate change impact rather than addressing existing vulnerability (O'Brien *et al.*, 2004).

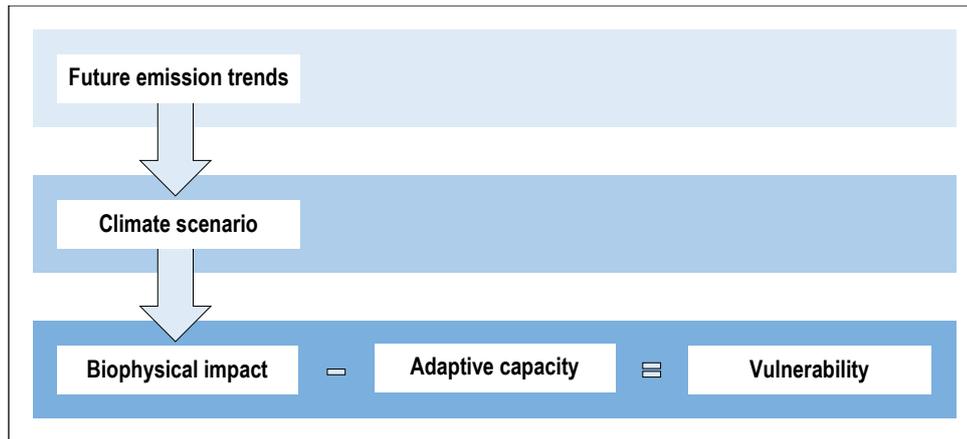


Figure 3.1 - Assessment sequence in end-point vulnerability (adapted from Kelly and Adger, 2000; O'Brien, *et al.*, 2004; Berkes, 2007)

From this standpoint, the determination of the level of vulnerability depends on the estimates of the potential climate change and the feasible adaptive responses. In this situation, the level of vulnerability is inversely related to the adaptive capacity, whereby the greater the adaptive capacity, the lower the levels of vulnerability and *vice versa*. However, this perspective highlights climate change as the main problem and would seek to identify factors contributing to it in the evaluation. In this view, the corrective measures to be obtained from this approach would be skewed towards mitigation than reducing vulnerability.

This means that for local vulnerability to be estimated, there has to be a forecast of global climate change and greenhouse gas emissions. The vulnerability of that place is then the residual aftereffect of the biophysical impact when the adaptive capacity has been exhausted. This adds a lot of complexity and scepticism due to uncertainties in accurately predicting climate scenarios, the possible effects on human and natural systems, or future socio-economic conditions that may have either improved local adaptive capacity or affect the nature of impact (O'Brien, *et al.*, 2004; Berkes, 2007).

As the approach allows quantitative representation of vulnerability in ecosystem damage, human mortality and monetary cost (O'Brien *et al.*, 2004), it has provided the means of summarizing the net impact of the climate

problem (Kelly and Adger, 2000) and development of relevant policies in climate change mitigation, compensation and technical adaptation (Füssel, 2007).

3.3.3 A third approach to vulnerability

Though the two meanings provide different aspects of the same issue, one can readily agree that they are both right in their own regards. It brings to mind the tale of the four blind men assessing different parts of an elephant. One declares that it is a tree trunk, another a wall, a rope and a solid pipe. Each arguing the finer points based on the part that they have felt. One cannot fault them in their reasoning as they have not assessed what the other has touched, but there is still a need to see the whole picture in order to make an informed decision.

In a bid to avoid the pitfall of either interpretations, the third and fourth assessment reports by IPCC (2001, 2007) changed their definition of climate change vulnerability to;

Vulnerability is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude and rate of climate change and variation to which a system is exposed, its sensitivity and its adaptive capacity.

Simply put

Vulnerability = f (sensitivity, adaptive capacity) exposure

From this definition, vulnerability is borne out of estimation of the odds that a system will be able to withstand certain levels of climate variability because of its exposure to climate change. This simply means that there are two dimensions to the evaluation of climatic vulnerability in a system, which involves an examination of the internal structure of that system and the level of external climatic pressure that is being exerted upon it. This provides an integrated approach that combines the stability from the *starting-point*

perspective and climate change effects and adaptive capacity from the *end-point* meaning. This definition gave birth to a third school of thought, which has since gathered many followers in global change and climate change research (Füssel and Klein, 2006).

As seen from the mathematical illustration, elements from the previous two interpretations have been represented. The glossary from the third assessment report (IPCC, 2001) describes *exposure* as *the nature and degree to which a system is exposed to significant climatic variations*. While exposure depicts the externality to a system, sensitivity and adaptive capacity are constituents of the internal system. The assessment reports (IPCC 2001, 2007) regard *sensitivity* to be the degree of either adverse or beneficial effects of climate-related stimuli. At the same time, *adaptive capacity* is described as *the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences*.

Invariably, one can deduce that the higher the degree of exposure or sensitivity, the greater the vulnerability to be expected. Adaptive capacity differs from the others, with its inverse relationship to vulnerability. Therefore, an increase in adaptive capacity lowers the level of vulnerability. In other words, strategies to reduce vulnerability can focus on either lessening exposure, like the coastal improvement schemes in the UK (Maslen Environmental, 2011); or improving adaptive capacity by adopting sustainable development pathways like the water-saving irrigation measures in China (Denton *et al.*, 2014).

3.4 Dimensions to vulnerability

Even though the broad meaning of vulnerability suggests the potential for loss, it vaguely describes or establishes the nature of the loss or identifies whose loss is being described. Literature on vulnerability has two frames of reference; the biophysical or natural system and the social or the socio-economic (Cutter, 1996; Klein and Nicholls, 1999; Brooks, 2003; Ford and

Smit, 2004; Birkmann, 2006; Füssel, 2007). It should be noted that the *future-explicit* and *present-based assessments* suggested by Wolf *et al.* (2013) can be considered as synonyms for the biophysical and social vulnerability respectively. The divergent perspective can still be traced to the contrasting standpoint from their definition of vulnerability. The social vulnerability is quintessentially of the *starting-point* origin, while biophysical is more aligned to the *end-point* meaning.

3.4.1 Biophysical vulnerability

The biophysical perspective is a concept that has emerged from the global environmental change research to describe the limit to which a system can withstand the negative effects of climate change and the point at which it will be unable to adapt to the impacts (Füssel, 2007). This also considers the eventual impacts of climate change, in terms of the extent of damage that will be recorded as a result of the occurrence of climatic hazard. As such, this type of vulnerability is based on the intensity and the frequency of occurrence of a specific type of hazard (Brooks, 2003).

The natural system is often the main focus in this approach and in some cases the built environment is considered where available. In this situation, vulnerability is seen as a negative outcome based on the exposure to hazard. A system is deemed invulnerable to that hazard if it suffers no net loss from its encounter with that particular hazard. However, this approach ignores the influence that the human system has in shaping the magnitude, the speed of onset and the spatial distribution of the climatic hazard (Ford and Smit, 2004).

3.4.2 Social vulnerability

The social approach concentrates on the human attributes of vulnerability. Taking its root from the social construction of vulnerability, it focuses on societal resistance and resilience to hazards (Cutter, 1996) as a function of

coping responses. Adger (1999) describes this as the situation which develops when individuals or group of people are exposed to abrupt environmental changes. This also includes the possibility of injury, death, loss of asset, disruption of livelihood and significant struggle in recovering from the shock of the exposure (Wisner *et al.*, 2004). To this end, attention is placed on the human process that impinge on cultural, political, economic and social conditions that can determine the effects of any exposure faced by the system (O'Keefe *et al.*, 1976; Ford and Smit, 2004; IPCC, 2007). This is borne out of the recognition that these societal processes have the potential to infringe on the ability of a society to anticipate, cope, resist and respond adequately to hazards. This perspective goes beyond broad descriptives of age, gender or income, but all expressions of socially constructed vulnerability and estimation of indirect effects of the hazardous event.

Adger (1999) goes further to distinguish individual vulnerability from collective vulnerability. The former hinges on the social status of an individual or household within a community, based on the income and access to resources. The latter refers to a region or nation's institutional structure, existing social security, level of development and infrastructure. Alternatively, the terms *micro-* and *macro-* can be employed in this regard as a scale of reference. The entirety of social vulnerability rests on the phrase *without people, there is no disaster* (O'Keefe *et al.*, 1976; Annan, 2003). This in itself is self-defeating, as all systems are interlinked and a hazard threatening any system will definitely lead to reciprocating effects elsewhere.

3.4.3 Between biophysical and social vulnerability

In a bid to establish a link between the two, scholars have argued on either side of independence or relationship of both vulnerabilities. Cutter (1996) considers them independent of one another; Klein and Nicholls (1999) opine that socio-economic vulnerability takes its root from natural vulnerability; while Brooks (2003) argues that biophysical vulnerability is a result of an interaction of social vulnerability and a hazard. It is interesting to note that that social vulnerability cannot exist without biophysical vulnerability,

however there can be biophysical vulnerability without social vulnerability. An uninhabited coral atoll will be biophysically vulnerable to sea-level rise, but will not be considered socially vulnerable as there are no human dwellers affected. This means that it is possible for a system to be socially invulnerable but biophysically vulnerable, and not *vice versa*.

Recent approaches has seen several vulnerability scholars consolidating their view on biophysical and social vulnerability (Fraser *et al.*, 2003; Turner *et al.*, 2003; O'Brien, *et al.*, 2004; Adger, 2006; Füssel, 2007; McEntire, 2010). This integrated approach provides the framework to assess human-environment systems including the links both within and without that impinge on their levels of vulnerability. Füssel (2007) blames the incompatibility and limited scope of the terminologies for the confusion that resulted in the disparate views. He proceeds by identifying *sphere* and *domain* attributes for the underlying factors of vulnerability. As presented in Table 3.1 below, the sphere provides distinction to the location of the factor considered as either external or internal feature to the system under review. Domain covers the traits of socio-economic or biophysical vulnerability factors that are inherent or extraneous to the system being assessed.

Table 3.1 - Example for the categories of vulnerability factors (adapted from Cutter 1996, Adger, 1999 and Füssel, 2007)

Sphere	Domain		
	Socio-economic		Biophysical
	Individual	Collective	
Internal	Household income Resource dependency	Level of development National policies	Topography Land use changes
External	GDP Welfare aid	Economic globalization International agreements	Sea-level changes Change in rainfall

This categorization has an added benefit of scalability as factors can be considered either internal or external depending on the focus of the assessment. For instance, GDP considered as an external element in the

individual socio-economic category would become an internal-collective socioeconomic attribute when reviewed on a country assessment.

3.5 Features of a vulnerability framework

With a myriad of frameworks showing interactions between several analytical and conceptual elements of vulnerability, it is essential to identify the main attributes that an appropriate framework should demonstrate. In this regard, Füssel (2007) argues that it is important to consider the following four dimensions in the development of an assessment framework; system, attribute of concern, hazard and temporal reference. The *system* refers to the unit of analysis which can be either a human-environmental system, a population group or a geographical region. The *attribute of concern* is the element of that system that is threatened by its exposure to a hazard, which can be human welfare, biodiversity or any other aspect. Whereas *hazard* is the potentially damaging physical event that may be of natural or anthropogenic origin with a propensity to cause loss of life, harm, environmental degradation, social and economic disruption (UNISDR, 2004). *Temporal reference* is the time consideration of the evaluation which may be either a point in time or a period of time. The basis of the dimension is particularly useful in understanding statements such as the *vulnerability of food production in South West Nigeria to climate change over the next 10 years*. In this regard, food production is the attribute of concern, South West Nigeria is the system being analysed, the hazard is climate change exposure and the temporal reference is given as the next 10 years.

The dimension ties in with the assertion by Cutter (1996) that vulnerability requires an expression of the place of hazard, the potential of risk/ hazard exposure and as a social response. Supporting the notion of *place-based* assessment of vulnerability, Schröter *et al.* (2005) add that such evaluations would be meaningful when the scale of the assessment matches the extent of decision making of the stakeholders. However, Turner *et al.* (2003) assert that there are other critical factors that need to be considered namely; the nature, frequency and severity of the stressors (Brooks, 2003) and the order of

exposure, the extent of sensitivity to exposure, and the capacity to cope, adjust, respond and recover. Meanwhile, Schneider *et al.* (2007) includes the estimates of uncertainty, potential for adaptation, distributional aspects of impacts and vulnerabilities, and the importance of the system(s) at risk.

With a good overview from previous studies, Soares and Gagnon (2012) report that there are nine vital elements regarded as fundamental in any climate change vulnerability assessment framework. The identified elements presented in the subsequent sections can be seen to have incorporated all the essential attributes of the criteria suggested by Turner *et al.* (2003), Füssel (2007) and Schneider *et al.* (2007)

3.5.1 The Coupled Human-Environment System (CHES)

Accordingly, the CHES exemplifies the place of hazard (Cutter, 1996), the human-ecology perspectives (Bohle, 2001), the socio-ecological system (Adger, 2006; Gallopin, 2006; Berkes, 2007) and the system of analysis (Füssel, 2007). This is the internal structure of a system that gives expression to the pre-existing condition before an impact from the starting point perspective of vulnerability. The term *coupled human-environment system* is to draw attention to the fact that the human and environmental systems are not independent of each other but are actually inseparable (Easterling and Polsky, 2004; Schröter *et al.* 2005). Adger

The CHES defines the other attributes or characters exhibited by the other elements. Wilbanks (2002) asserts that the CHES transcends social expression as it is the real context in which communication, decision making and interaction occurs. However, the CHES itself is influenced by the geographical context where it is situated. For instance, the latitude determines the general weather pattern of a place which also affects the culture and practice of the people dwelling there.

Basically, human conditions in this regard include social/ human capital, population, economic structures etc, while environmental consists of

ecosystems, geographical features, biophysical endowments and natural capital. The conditions of the CHES dictates the sensitivity of that system when exposed to a potential hazard (Turner *et al.*, 2003). These conditions determine the existing coping mechanisms and the ability to respond, adapt and recover. For example, human activities that drive land use change can aggravate the impact of climate induced events (Rosenzweig *et al.*, 2007).

This CHES provides a place for identifying and assessing the intrinsic risk of a system and where the action is needed for vulnerability reduction. It is imperative that the attribute of concern (Füssel, 2007) is analysed within the context of the CHES so that the important linkages to it is recognised (Soares and Gagnon, 2012). Even though, scholars have reported complexity in the understanding of the mechanism between the CHES (Liu *et al.*, 2007), it is believed that social and biophysical coping and response mechanisms feed-back to affect each other, where a response in the human system can make a biophysical system more susceptible or more resilient and *vice versa* (Turner *et al.*, 2003).

3.5.2 Key components of vulnerability

In climate change research, vulnerability is often viewed as a function of exposure, sensitivity and adaptive capacity (IPCC, 2007), where exposure is *the nature and degree to which a system is exposed to significant climatic variations* (McCarthy *et al.*, 2001); sensitivity is described as the extent to which the effect of climate-related stimuli is either beneficial or adverse to that system (Parry *et al.*, 2007); while adaptive capacity refers to the ability of a system to moderate potential damages that may arise from exposure to climate change, by either taking advantage of developing opportunities or endure the consequences (Parry *et al.*, 2007).

The term *adaptive capacity* can be explained as the capacity of the system to muster capabilities to adjust to a new norm from the aftermath of a hazard and may not fully embody the definition provided above. This gap has resulted in the use of the term, *coping capacity* which covers the combination

of all the available resources within a community that can reduce the impact of a disaster (UNISDR, 2004). The coping capacity can be visualized as a filter which can either withhold, limit or fail to reduce the magnitude of a potential damage. Adaptive capacity can then be viewed as the recovery and adjustment following the occurrence of that event, and may also be from resources that are now made available to that system from external sources. Be as it may, both coping and adaptive capacity are dependent on the resources available to be utilised in strengthening a community or a system. To encompass this, the term *resilience* is adopted, which is the capacity of a system to maintain basic functions and structures in time of sudden shocks, and being able to learn and adapt to changes that may arise from those perturbations (Birkmann, 2006). The similarities in the factors and drivers of both sensitivity and resilience suggests that they can be inferred to mean the same albeit from two different standpoints, whereby sensitivity can be considered how fragile a system is to climate change impact while resilience can be viewed as how much resistance a system can put up against effects of climate change.

3.5.3 Multiple perturbations, stresses and hazards

From the notion that vulnerability involves a possibility of exposure (Cutter, 1996), it is important that the nature, intensity and frequency of that risk/hazard needs to be accounted for (Schröter, *et al.*, 2005; Füssel, 2007). Gallopin (2006) makes a clear distinction by describing *perturbation* as a large-scale event that exceeds the usual range of variability normally experienced by a system, while *stress* is regarded as a gradual build up of pressure within the normal spectrum of variability. Based on this, one can easily categorise perturbations like cyclone as a climatic hazard that is external to the system and land use change as an internal factor contributing stress. The designation of a hazard as either a perturbation or a stress depends on the sphere of consideration (Gallopin, 2006; Füssel, 2007)

As perturbations occur outside the usual norm of a system, the ability of the system to withstand such event is a function of the sensitivity and the

capacity to cope inherent in the system. However, multiple occurrence of such perturbations may result in unfavorable consequences. In addition, there is also the possibility that intrinsic stresses within the CHES may amplify the effects of the external perturbations (Carter, *et al.*, 2007; Rosenzweig, *et al.*, 2007; Oppenheimer, *et al.*, 2014). Based on this, Turner *et al.* (2003) insists that the VA must understand the various pressures on a system, the likely interactions between them and the hierarchy and sequence of the relationships.

3.5.4 Scales of analysis

Easterling and Polsky (2004) posit that scaling helps in the construction of an explanation of the individual and collective interactions that occur amongst objects in a system. The scaling may be spatial concerned within the confines of a geographic area or temporal with focus on short or long term objectives (Wilbanks, 2002; Füssel, 2007). Wilbanks (2002) puts forward several reasons for the need of the use of scaling at different levels of detail; First of all, the direct causation of actions responsible for vulnerability may be inherently localized with effects that maybe regional or national. Secondly, the complex interactions within economic, social and environmental processes that govern environmental systems are often better understood at the local levels. The third reason stems from the understanding that the dynamic nature of contributing factors and processes manifest and interact over varying time scales and spatial dimensions.

However, the methodological perspective of the assessment would result in separate interpretation of the same phenomenon (Gallopín, 2006; Soares and Gagnon, 2012). This is evocative of the earlier example that the GDP which is an external phenomenon for individuals, would be interpreted as an internal constituent in a country assessment. Regardless, Schröter *et al.* (2005) asserts that VA should be attentive to nesting of scales that would account for other processes and factors that may be operating at different spheres that may affect the evaluation. Along similar lines, Wilbanks (2002) cautions that a myopic focus on any particular scale may lead to a failure in the

recognition of other interactions that may have substantial influence. A single scale can also be too narrow for a broad-based assessment.

3.5.5 Causal structures

Causality in vulnerability research has been greatly influenced by political economy approach which highlights the importance of the socio-economic and political institutions as crucial factors in determining people's vulnerability (Soares and Gagnon, 2012). In this regard, it is essential that the VA must identify risk factors or pre-existing conditions that can lead to unsafe situations (Wisner *et al.*, 2004) which magnify the susceptibility to hazard. Along these lines, Oppenheimer *et al.* (2014) writes that the presence of vulnerable conditions have the potential to make societies highly susceptible to climate-induced hazards and also affect the ability for that society to recover. It is not to enough to identify them, Turner *et al.* (2003) asserts that the relationship between the cause and effect must be tested to ensure that the appropriate links have been established. The importance of the direct causation agent is crucial in the context of policy-driven assessments for vulnerability reduction. At first this criteria seems like a reiteration of the perturbation-stress relationship earlier discussed in Section 3.5.3, however causality is enshrined in a risk approach that examines the directional dimension of the occurrence of vulnerability.

3.5.6 Differential vulnerability, adaptive capacity and exposure

This is rooted in social vulnerability, with the premise that the state of being vulnerable is socially differentiated (Adger, 1999) and it is often distributed unequally within the CHES (Downing *et al.*, 2004). Schröter *et al.* (2005) refers to this as *differential adaptive capacity* that indicates that some individuals or social identities are more likely to adjust in the face of specific pressures than others. Similarly, the factors influencing the difference is also responsible for the uneven exposure experienced by different groups within the same population (Oppenheimer *et al.*, 2014)

The source of the inequality are often inherent characteristics of the person(s) or groups. These features become heightened with the influence of complex social norms, resource endowments and political institutions (Adger, 1999). For instance, Cutter *et al.* (2006) report that race and ethnicity are clear indicators of social vulnerability in the United States, as racial disparities have resulted in lack of access to resources, and economic marginalization. Other factors include poverty (Coirolo and Rahman, 2014), gender and education (Muttarak and Lutz, 2014), resource dependency (Adger, 1999), single-sector economic dependence, density of built environment, occupation (Cutter *et al.*, 2006). The clear identification of the real causes and indicators of differential vulnerability would enable the development and implementation of strategies based on appropriate information rather than socio-political considerations.

3.5.7 Stakeholder engagement

The need for stakeholder participation is highlighted by the fact that they are the ones to be affected by climate change and they would be the ones to adjust to the effects. In defining stakeholders, Carter *et al.* (2007) includes individuals, groups of people with vested interests, monetary or otherwise, that can be impacted by climate change exposure or by any other action carried out in preparedness. On the other hand, Schröter *et al.* (2005) describes stakeholders as the people who will carry out the actions based on the results of the assessment.

These local actors possess a wealth of knowledge about historic climatic events, climatic variations and expertise on opportunities and constraints that may exist in both current and future adaptive measures (Ford and Smit, 2004; Soares and Gagnon, 2012). The interaction is a social process that allows the exchange of information and creation of shared understanding between the research team and the stakeholders (Wilbanks, 2002). Few *et al.* (2006) writes that stakeholder participation gives the process legitimacy and provides the opportunity to go beyond the usual minimal consultation practice to construction and discussion of viable alternative options that are endemic to

the locality. The credibility and validation of the vulnerability measures is often determined by the stakeholders (Schröter, *et al.*, 2005)

3.5.8 Historical and prospective analysis

As earlier established, vulnerability gives expression to a collection of historical and prevailing dynamic social, cultural, political, economic and environmental conditions (Adger, 1999; Cardona, *et al.*, 2012). Based on this premise, Wolf *et al.* (2013) report that there are usually three types of assessments in climate change vulnerability; future-explicit, present-based and combined. As expected, *future-explicit* assessments make use of models to forecast possible futures and estimate harm that may arise. The *present-based* methods appraise current capacity to cope, respond, recover and adapt and the susceptibility to exposure. The *combined* approach integrates the two methods, overcoming the myopic view of the present-based assessment and being sensitive to the current vulnerabilities which have a potential to determine the future vulnerability. It is important to note that the dynamic nature of vulnerability may not be fully appraised by any one assessment method and a combination of two or more may be required.

Jones *et al.* (2004) report that uncertainties in projections are usually evaluated using historical and statistical information to extrapolate existing and future relationships. Along similar lines, Ford and Smit (2004) write that this feature is particularly useful in the estimation of directional shifts that may occur in current risk factors and give an indication of future adaptive needs. Therefore, it is essential that the VA must be able to identify current priorities and use that as a basis for preparation against future vulnerability.

3.5.9 Addressing uncertainty

Scholars admit that it may be impossible to absolutely predict future scenarios owing to complex relationship of objects constantly interacting within the CHES (Jones, *et al.*, 2004; Berkes, 2007; Carter, *et al.*, 2007; Oppenheimer, *et al.*, 2014). Unlike one-off hazard events like flash floods that

that may be unrelated to climate change, the invisible nature of most atmospheric processes adds another layer of ambiguity (Hamblyn, 2009). This dilemma is further compounded by spatial and temporal dimension of climate change (Schneider and Kuntz-Duriseti, 2002).

Addressing uncertainty, Schröter *et al.* (2005) assert that the VA must be explicit about the assumptions included in the projections and must provide multiple systematic scenarios to communicate the possible future predicted. On the other hand, Schneider and Kuntz-Duriseti (2002) provides a two step approach; the first attempts to *make known the unknown* by data collection, research, modelling etc. The second involves the integration of uncertainty into the policy arising from the assessment. Along similar lines, Perez *et al.* (2004) suggest a dynamic and process orientated approach based on a reiterative monitoring and evaluation of established performance indicators and a corrective review at regular intervals.

3.6 Lessons learnt

Reflecting through the different archetypes and thematic attributes, a schematic representation of the relationship between the various terminologies in climate change vulnerability can be developed as seen in Figure 3.2. The model makes a clear distinction that exposure is a hazard that is external to CHES and can be a result of climate change or climate variability. The inclusion of climate variability lends itself to the assessment of potential impact of one-off events that may not be related to climate change. An easier way to view the model is to imagine that the CHES is a funnel layered with different filters and properties that influences the scenario that plays out as an unnoticeable change or as a disaster. In this regard, any of the attributed parameters can either be strengthening or reducing the resilience of a location to exposure to the climatic elements.

The spatial dimension of vulnerability is considered a function of the geographic context which in turn determines the biophysical vulnerability that may exist in the locality, e.g a low-lying delta is liable to flooding from

sea level rises, which in turn portends considerable threat to the welfare and livelihood of inhabitants dependent on it. Even though the impact can happen simultaneously on both social and biophysical levels, the loss of ecosystem services might be a precursor that might have heightened social ramifications. Along this line, this concept accepts that vulnerability in the scale being evaluated is the culmination of both the biophysical and social vulnerability. With due consideration of interactions occurring within the CHES, the model recognises that vulnerability in the natural system would lead to social vulnerability.

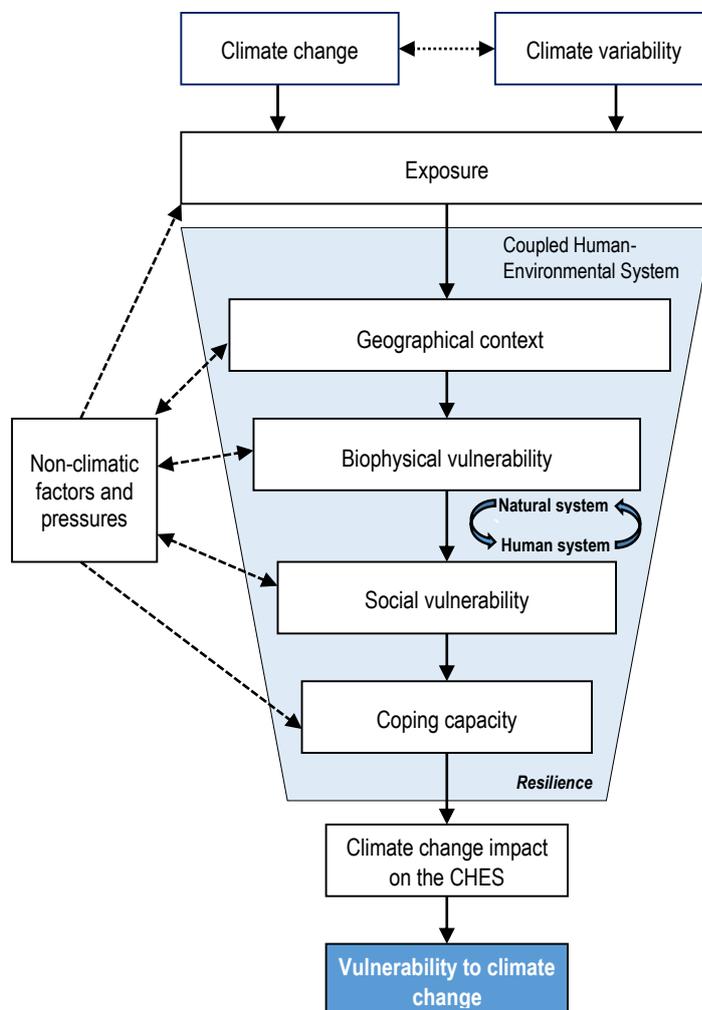


Figure 3.2 - Basic vulnerability assessment model (Based on Turner *et al.*, 2003; Füssel and Klein, 2006; Soares and Gagnon, 2012)

Furthermore, the causality dimension of vulnerability is highlighted by the understanding that there are practices within the CHES that can heighten the impact potential of climatic exposure, reduce resilience in the natural system, cause differential vulnerability and control the coping capacity of the system. Resilience is introduced as the antithesis of sensitivity, to include all the intrinsic factors and pre-existing conditions that influence the ability of the CHES to cope with the extent of exposure to climate change or climatic variability. Invariably, vulnerability is regarded as the residual impact experienced in the CHES. If the residual impact does not cause a disruption in the normal operation in the CHES, then the system is considered invulnerable to that particular hazard it has been exposed to. If otherwise, it means that the coping capacity, which is the final dam, has been overwhelmed and the CHES is regarded as being vulnerable to exposure to the climatic hazard. In this regard, the term *eventual vulnerability* is suggested based on the understanding that the inevitability of climate change means that vulnerability cannot be eliminated, only reduced and adapted to, by engaging in a trade-off in which an alternative course of action is selected to hedge against the full effects of potential climatic variation. As such the CHES can be described as either resilient or vulnerable to a particular exposure.

The significant absence of adaptive capacity is an indication that the model in Figure 3.2 is an illustration of possible interactions that may exist before and during a climatic exposure. In Figure 3.3, adaptive capacity is brought in to capture all measures carried out to improve resilience within the CHES. As identified by Klein and Nicholls (1999), adaptation may be a result of self-adjustments within the natural and human system or a planned intervention that may have originated within the human system. Along these lines, evaluation of the non-climatic influences must take into account the resources available, the capacity to utilize the resources and the willingness to act. For this reason, resilience is taken to be a combination of the coping capacity when exposure happens and the adaptive capacity of a system to recover sufficiently enough. It is also important to note that climate change

impact would place additional strain on the asset capitals and resources available within the CHES.

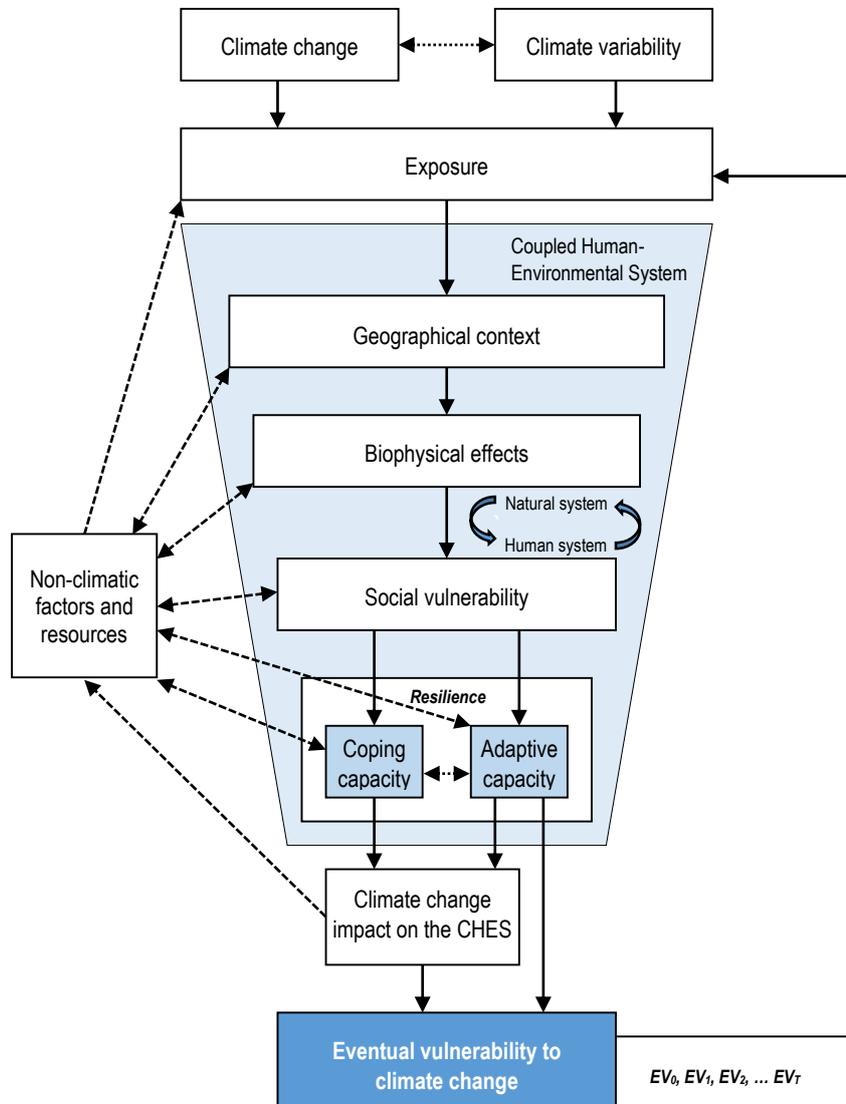


Figure 3.3 - Eventual vulnerability

From the understanding of the resources utilised for coping and adaptive capacity, a feedback relationship can be suggested between them, whereby adaptive capacity of system will invariably strengthen the coping capacity and *vice versa*. The eventual effect of climate change experienced by a system will be filtered in the manner shown in the schematic above. From the notion that current vulnerability is an indication of possible future vulnerability

(Ford and Smit, 2004), the current vulnerability (EV_0) is seen as an outcome leading to new levels of vulnerability. With this, a temporal scale of assessment ($EV_0, EV_1, EV_2 \dots EV_T$) can be included to capture historical information and predict future models.

Even though it is desired that the model can be used for larger scales, e.g region or country, it may be more appropriate to focus explicitly on localities offering similar features within a reasonable geographical area (Wilbanks, 2002). The immediate shortcoming of this model is that it assumes that climate change effect will be negative, with no possible beneficial opportunities. The conceptual representation model has been developed in the context of climate change vulnerability in West Africa, and this region has been reported to be one of the places in the world that will experience the adverse effects (Boko *et al.*, 2007). Therefore, the climate change exposure is considered an unfavorable phenomenon.

This visual representation is intended as a tool to start the discussion into recognising the likely interchanges and relationships that exist amongst the various terminologies found in the study of vulnerability. The overall aim of the framework is to provide a holistic view of vulnerability as it affects a system (either geographical region or community) in respect of the dimensions, conditions, factors and attributes that influence it. Vulnerability reduction is considered the intended outcome of the framework, borne out of the understanding that the identification and subsequent action on inherent risk in the distribution of vulnerability will lead to preparedness and strengthen the capability of a system to endure adverse climate effects.

It is envisaged that this particular approach will portend well with policy makers, as it will be able to evaluate the strength of a system's current capacity, estimate the likely damage from the failure or inadequacy of that capacity and consider the potential routes for vulnerability reduction. As seen in Table 3.2, analysis questions can be raised in a systematic review of all the factors constituting vulnerability which would aid in decision making, especially in alternatives generation, whereby the potential contribution of one line of action can be weighed against another.

Table 3.2 - Example of analysis questions for the assessment

Attribute	Possible questions
Climate change	What are the possible climate scenarios that can be experienced?
Climate variability	What are the changes noticed in the usual variability?
Exposure	What are the factors or current practices that can increase impact potential?
Biophysical vulnerability	What elements of the natural capital are at risk?
Social vulnerability	Who will be affected? How? What are the underlying factors influencing the extent of impact?
Coping capacity	What are the mechanisms or features failed or inadequate?
Adaptive capacity	What resources are available to improve our adaptive capacity?
Climate change impact	How can we reduce future impact?

In this manner, the framework provides a definitive guidance that can be implemented for the institutional approach in climate change response (Tyler and Moench, 2012; Obeng and Agyenim, 2013).

3.7 Linking land use planning to climate change vulnerability

The eventual vulnerability framework typifies the concept of risk management within the assessment of climate change vulnerability that is not research driven, but geared towards supporting decision making process of policies, planning and management options (Carter *et al.*, 2007). This is particularly useful to guide decision making in the face of future uncertainties, absence of long term targets, immense cost associated with mitigation and doubts about the efficacy of adaptation measures. Actions taken to resolve immediate risks and vulnerabilities will largely determine the future climate change impact that is avoided. This provides the opportunity for learning and mid-course adjustments as new information becomes available.

With the discourse carried on so far, it is obvious that land-use planning (LUP) has the potential to influence the extent of climate change impact

experienced in any region. Stemming from the premise that land use and cover changes can be both causes and consequences of climate change (Dale, 1997; Settele *et al.*, 2014), LUP is a critical mechanism that can influence the nature and magnitude of those changes. This is particularly important seeing that LUP can be linked to biophysical changes (Zhang *et al.*, 2009), a source of social differentiation (Walters, 2007) and integral to capacity building of resilient systems (King *et al.*, 2016).

As an inference, exposure in the vulnerability domain can be linked directly to the nature of land cover or changes thereof; biophysical effects relates to the outcome emanating from the interactions between land use and land cover changes; and social vulnerability is a direct interpretation of the differentiation that occur when land-use has been dominated through anthropocentric controls. With the recognition that LUP and vulnerability are both intrinsic features of the CHES, it is only sensible to promote an integration to introduce a holistic approach to land use and climate change.

Unfortunately, protecting the environment is largely implicit in the planning of land-use, as the agenda is often focused on achieving social and economic objectives, while little attention is given to the environmental implications of those actions (RCEP, 2002). The failure to provide a comprehensive examination of the consequences of land-use activities has given rise to assessment tools like the Environmental Impact Assessment (EIA) and the Strategic Environmental Assessment (SEA) (Selman, 1992; Glasson *et al.*, 2005). In his own submission, Selman (1992) identifies three contexts that has influenced the development of these instruments. First, the extent of some projects cut across different administrative boundaries and require multidisciplinary assessment which may exceed the immediate scope of the land-use plan. Secondly, the magnitude and complexities of some development proposals may raise concerns about strategic significance that may occur outside the competence level of planning at a local level. Thirdly, the weakness of environmental management laws can be compensated by introducing these instruments as a means of evaluating major proposals.

3.7.1 Rationale for Strategic Environmental Assessment

The requirements for general environmental assessment was first introduced by the 1969 National Environmental Policy Act (NEPA) in the United States (Caldwell, 1988; Lee and Walsh, 1992; Jones *et al.*, 2005; Fischer, 2007). Since that time, the adoption of formal EIA has become ubiquitous, translated within different contexts, legal basis and institutional framework. Nevertheless, it was soon realised that the EIA cannot in itself provide a comprehensive protection of the environment. The reality was that the EIA occurred too late in the planning process for it to sufficiently consider all the relevant alternatives, potential cumulative and /or synergistic impacts that would have been better assessed at the policy, plan or programme stage (Wood and Dejeddour, 1992; Partidario, 1999; Dalal-Clayton and Sadler, 2005). Projects are outcomes of decision making that have occurred at levels far above where EIA operates, as such the project level EIA is not in the position to anticipate or influence development proposals but rather reacts to them. For instance, EIA is unable to divert projects from environmentally sensitive areas to more resilient areas (Lee and Walsh, 1992; Therivel *et al.*, 1992; Alshuwaikhat, 2005; Glasson *et al.*, 2005). These disenchantments led to the development of the Strategic Environmental Assessment (SEA) as a decision support tool to promote environmentally integrated decision making at levels above which the EIA cannot influence.

Although a distinction between the EIA and SEA is provided in Table 3.3, the subsequent paragraphs would not be indulging in a discourse about the EIA - SEA dynamics but examining SEA potential in the reduction of climate change vulnerability. The choice of SEA aligns with the intrinsic characteristics of the vulnerability framework discussed within Section 3.5. As a decision supporting tool, it provides a systematic framework to ensure that environmental consideration of human interventions in the natural system are taken into account in the decision making process. For instance, the SEA that shapes the National Transport Policy is a part of the National Roads Plan and Programme that determines what new roads are constructed or not built. In other words, the SEA shapes the interactions within the CHES. A much appreciated attribute, is the potential to steer developments

from sensitive areas towards more resilient locations, thereby mitigating differential vulnerability.

Rather than the granularity exhibited at the localised project level EIA, the flexibility of scale allows the SEA to meet the spatial and temporal requirements of vulnerability considerations. The application of SEA in the evaluation of the environmental impacts of policies, plans and programmes (Lee and Wood, 1978; Therivel *et al.*, 1992; Fischer, 2007) evidences the scalability of the SEA.

Table 3.3 - Comparing SEA and EIA (Source: Fischer, 2007)

	SEA	Higher tiers/ Lower tiers	EIA
Decision making level	Policy	Plan	Project
Nature of action	Strategic, visionary, conceptual		Immediate, operational
Output	General		Detailed
Scale of impacts	Macroscopic, cumulative, unclear		Microscopic, localised
Timescale	Long to medium term		Medium to short term
Key data sources	Sustainable development strategies, state of the environment reports, vision		Field work, sample analysis
Type of data	More qualitative		More quantitative
Alternatives	Area wide, political, regulative, technological, fiscal, economic		Specific locations, design, construction, operation
Rigour of analysis	More uncertainty		More rigour
Assessment benchmarks	Sustainability benchmarks (criteria and objectives)		Legal restrictions and best practice
Role of practitioner	Mediator for negotiations		Advocator of values and norms, using stakeholder values
Public perception	More vague, distant		More reactive (NIMBY)

SEA promotes stakeholder participation in the decision making process (Therivel *et al.*, 1992; Fischer 2007). Public and stakeholder engagement in this instance is not as a degree of mere tokenism as stated within Arnstein's ladder of participation (Arnstein, 1969), but actively involving the affected communities in the decisions having an impact on the location they dwell. Walker *et al.* (2014) reports that social actions towards sustainability emerged when public participants of a SEA process were encouraged to critically challenge underlying assumptions that dictated their farming methods and

strategies. This supports Fischer (2007)'s submission that participation and involvement in SEA changes attitudes and perceptions, and changes established routines. Apart from obtaining local and historical information about the target areas, it provides the opportunity to investigate the sources, causes and attributes of the social vulnerability experienced. This also allows a forum to explore the range of potential interventions that are likely to succeed.

3.7.2 SEA within climate change vulnerability

Pragmatically, reducing climate change vulnerability occurs within the realms of strategic action that encompasses a range of activities spanning integrated/ development policies; budget and fiscal planning; sectoral policies, plans and programmes; land management strategy; resource management; just to name a few. The nature of thinking at such high levels can be conceptual and would undergo several iterations before a decision is made. It is within such ambiguous environments that SEA shines brightly with the ability to provide better consideration of alternatives. For instance, nuclear powered stations may be better suited in a region than renewable energy strategy that would lead to substantial land cover conversion and reduction in green infrastructure. This example indicates how SEA can influence factors governing climatic exposure and in turn the biophysical vulnerability of a locality.

As a systematic management instrument that supports decision making, SEA is advocated as a risk assessment tool to coordinate activities for addressing climate change vulnerability. Authors such as Greiving (2004) have written on the similarities between SEA substance and procedures to those of risk assessment and management. Within this context, Table 3.4 has been provided, to illustrate that hazard being referred to in the risk management field is the significant environmental effects that is being mitigated in the SEA framework.

Table 3.4 – Procedural similarities of SEA and risk assessment and management (adapted from Greiving, 2004; Therivel, 2004)

SEA process	Risk assessment and management process
Identify significant environmental effects	Hazard identification
Describe environmental baseline and significant environmental effects	Risk analysis
Predict and evaluate impacts of alternatives/ statements	Risk evaluation
Assessment of significant environmental effects of alternatives/ statements	Risk assessment
Preparation of report and establish guidelines for integration of environmental considerations into the plan	Risk management
SEA approval and implementation of guidelines	Planning measures
SEA monitoring and follow-up	Risk Monitoring

These risk management attributes are essential in mitigating against the damage potential of climatic exposures. As such, a holistic approach would leverage the SEA as a tool to provide information and establish routines, from where the LUP can then respond in organising physical land changes. Enhancing the vulnerability schematic from Figure 3.3, SEA can be seen to occupy the position previously held by the non-climatic factors as a precursor to LUP in Figure 3.4. This establishes the possible strength of the relationship between SEA and climate change vulnerability based on the relatability of their independent criteria. For instance, SEA supports the consideration of cumulative effects that may occur in regional scales outside the scope of an EIA. This means that SEA is in a position to review climate change impact on the ecosystem services and broader socio-economic systems (Fischer, 2006).

Within the schematic, there are two key attributes of SEA highlighted. First, as an information gathering tool and then as an action response mechanism. The distinction in the two stems from the understanding that some elements of climate change vulnerability are simply beyond the scope of what SEA can control or influence. For instance, climate change and climate variability are phenomena outside the remit of SEA control, however failure to collect appropriate information about them would result in inadequate plans being developed. On the other hand, the action response attribute prompts activity

going beyond data collection to analysis and appropriate reaction. For example, the realisation that previous land-use pattern has eroded the biophysical buffers can lead to the establishment of alternate land-use and regulatory standards.

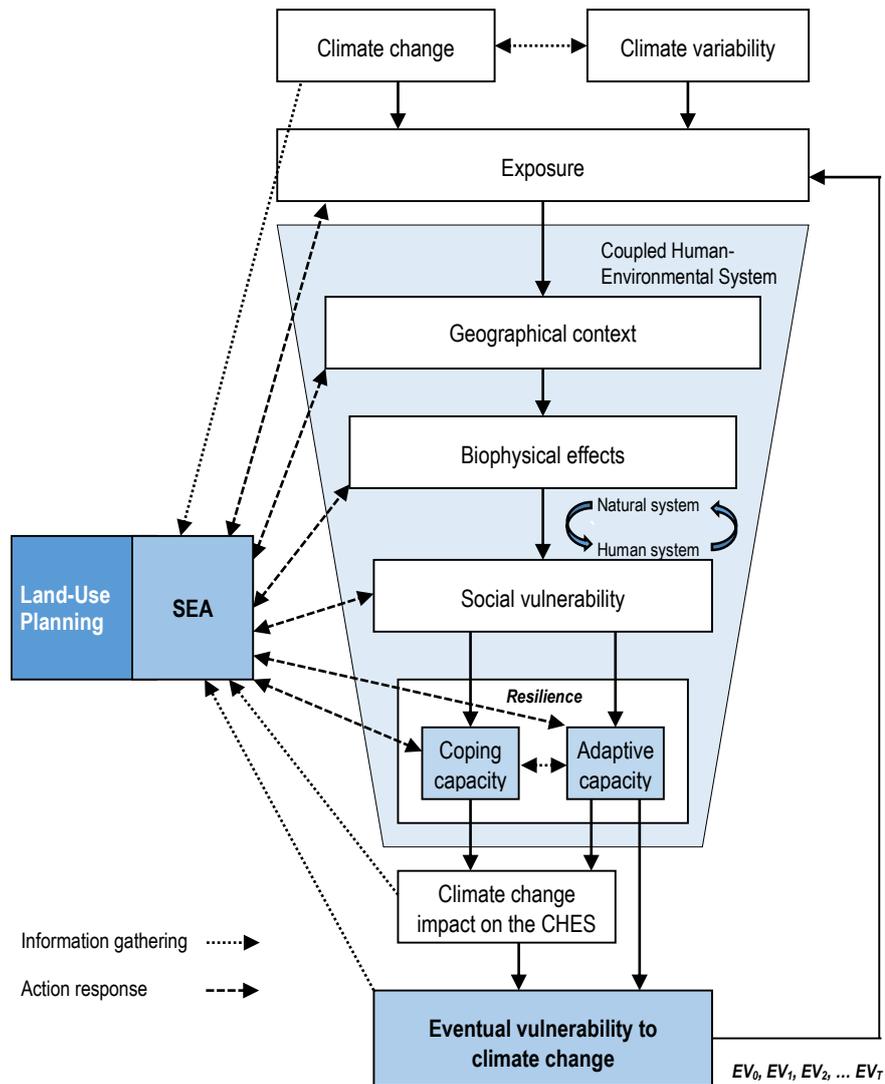


Figure 3.4 - SEA within climate change vulnerability

3.8 Chapter summary

This chapter provides an hermeneutic analysis of vulnerability by exploring the definition in origin, everyday use, in scholarly literature and in climate change research. The discussion shows that climate change research has benefitted from the use of the terminology in other disciplines, but has also led to missed opportunities for shared understanding when the interpretations are at variance with one another. The different perspectives have obviously led to different approaches and policy context in handling vulnerability. To this end the chapter examined the context expressing vulnerability in the major schools of thought and presented a consolidated view reflecting vulnerability in climate change research.

While the nature of a system's vulnerability is considered as the reflection of the physical, environmental, social and economic conditions of that system, scholars have agreed that biophysical or natural vulnerability captures the first two attributes, and social vulnerability covers the remaining two. Even though the independence of the two dimensions is proposed by some researchers, there is a consensus view that biophysical vulnerability leads to social vulnerability of a system. In addition, the discussion puts forwards the view that there can be biophysical vulnerability without a corresponding social vulnerability in places devoid of human inhabitants. However, climate change vulnerability in the social dimension is an offshoot of biophysical vulnerability.

The uncertainties associated with climate change puts LUP at a disadvantage in providing a comprehensive approach to vulnerability. Following the design of the eventual vulnerability framework, it has emerged that SEA is a critical mechanism that can provide information which LUP can act upon.

4 LAND USE PLANNING AND ENVIRONMENTAL MANAGEMENT IN NIGERIA

4.1 Introductory remarks

The previous chapter is a literature review of climate change vulnerability, exploring the concept and highlighting the core elements required for a vulnerability framework. This chapter earmarks the consideration of the framework in the Nigerian context, by examining the potential of land-use planning as a mechanism for addressing climate change. For this reason, the discourse in this chapter would provide a contextual background into the evolutionary dynamics that has culminated in the current practice of land-use planning in Nigeria.

4.2 Governance and land-use planning in Nigeria

The Torremolinos Charter (Council of Europe, 1983) aptly captures the concept of regional/spatial planning as giving geographical expression to the economic, social, cultural and ecological policies of a society. This is often a reflection of the administrative interpretation of various sectoral policies that determines the physical distribution of space. Therefore, spatial planning must be comprehensive, functional, long term oriented and still be able to account for future developments, uncertainty and interventions. Unfortunately, physical planning is rather reactive in many developing countries (Ogu, 1999; Rakodi, 2001), where development usually precedes the actual planning. In this instance, planning must play catch up. Uyanga (1989) laments that Nigerian planners are usually brought on board at the implementation stage on projects rather at the initial phase on policies. This situation portends grave implications for land use, infrastructural development and sustainability.

In presenting the current planning process in Nigeria, it is important to explore the historical background that has shaped and influenced the present land use and policies. It is important to state at this point that Nigeria, as a country, is an aggregate of autonomous ethno-linguistic groups

amalgamated into one country in 1914. The country is not a result of homogeneous cultural, social, religious, physical, economic and environmental features but one created for administrative comfort of the British (Aka, 1993). On this premise, scholars use the British intervention as a milestone to delineate the different phases of the evolution in the Nigerian land use planning regimes. They are simply identified as the pre-colonial, the colonial and the post-independence periods (Uyanga, 1989; Ogu, 1999; Arimah and Adeagbo, 2000; Omole and Akinbamijo, 2012). It is impossible to consider the current state of planning without reviewing the dynamics and influence of these different phases, as they provide a clearer understanding into the evolution of the Nigerian experience of planning regulations. Suffice to say, each of these periods have left an indelible mark on the Nigerian landscape and impinge on planning for the future.

4.2.1 Pre-colonial period

As with other autochthonous African countries, the traditional concepts of land ownership and tenure were in existence prior to British colonisation of Nigeria, where land was considered to be owned by the past, present and future generations (Famoriyo, 1984; Agbosu, 1988). In this setting, land was vested in the traditional rulers and heads of families, whereby the communal lands are under the purview of the ruler or community head, while family lands are controlled by the family heads. Omole and Akinbamijo (2012) aptly capture this legal status as that of a trustee-beneficiary as the rulers or family heads are in the position to allocate, re-allocate and supervise land use within their sphere. Regardless, it was possible for individuals to obtain unconditional, unlimited and proprietary rights on land through purchase, as a gift from the constituted authority of the parcel of land or if they were responsible for clearing a virgin forest (Famoriyo, 1984).

Even though land use at this time was subject to the whims of the trustee, some elements of planning that can be identified as growth was developed in line with the local customs and practices, existing mode of transportation and the agrarian nature of the economy (Omole and Akinbamijo, 2012). It is

important to note that the land use pattern in these settlements is an indication of the historical origin, political arrangement, the cultural, social and traditional norm existing at that time (Ogu, 1999). Pre-colonial settlements in Nigeria have varied in origin from: a community attracted by topography for defence purpose, as in Abeokuta (Omole and Akinbamijo, 2012); a cluster of hamlets encircling a King's palace, as in Benin City (Ogu, 1999); a city that started as a war encampment, as in Ibadan (Ogu, 1999); to those that emerged as a strategic link on the trans-Saharan trade route, such as Kano (Ogu, 1999).

Though formal planning of the settlements did not exist, spatial planning was an intrinsic part of local indigenous administration that determined the form and arrangement of land use to protect their cultural, political and socio-economic interests. This often led to functional differentiation observed in the settlements, to the degree that some areas in the settlements are designated as administrative, while some others perform trading, worship and defence functions (Arimah and Adeagbo, 2000). Sanni (2006) surmised that physical development in the settlements was often determined and organised by taking into account the possible effect the proposed development might have on existing structures and amenities. Given the paucity of formal management of settlements, spatial patterns have been recognised in the arrangement of physical development of the pre-colonial towns and cities. For instance, the south-western Yoruba settlements usually followed a pattern of having a central area where the King's palace and market are situated together with their most important place of worship (Sanni, 2006). The residences of the High Chiefs are often near the King's Palace, which also doubles as the town centre (Ogu, 1999). As such, most Nigerian settlements have been established around the palaces of the traditional ruler, which was then the major hub of all community activities (The Nigerian Institute of Town Planners (NITP), UNDATED). Likewise, in the northern settlements, walled cities like Kano and Zaria use the walls for defence and religious purposes with strategically located gates for communication and trade functions (Omole and Akinbamijo, 2012). In this manner, it can be agreed that land use patterns are

somewhat similar, even though the customary laws differ from one locality to the other (NITP, UNDATED).

In some measure, rudimentary forms of physical planning administration were also practised. Arimah and Adeagbo (2000) report that the responsibility for physical planning administration in the pre-colonial Ibadan city (southwest Nigeria) was borne by the local chiefs -*Baale*, who perform approval and supervisory roles on activities such as construction of houses, compounds, roads and markets, clearing of bush and drainage, as well as designation of waste disposal sites. The chiefs' function as the eyes and ears of the King, as they give regular updates and feedbacks to the ruler. Similarly, in the northern city of Kano, the Emir who doubles as both the political ruler and the religious leader (due to the Muslim architecture), has ward heads who are his representatives who oversee land allocation issues in their different wards (Ogu, 1999).

Apparently, it cannot be denied that the form of planning and control of physical development practiced in the pre-colonial period of Nigeria was effectively carried out for the various settlements as at that time. However, their scope was limited to their immediate time frame and lacked the ability to foresee and prepare for future growth and rapid expansion. Eventually, due to the increase in population and complexity of human activities, the traditional rulers, chiefs and family heads were unable to control land use and physical structures were developed in a random and uncoordinated manner (Omole and Akinbamijo, 2012). This deplorable situation created the need for a new regime of land use and management in such settlements. Most traditional settlements from this era are now marred with the problems of congestion and substandard housing conditions in the inner parts of the city (Ogu, 1999).

4.2.2 Colonial period

The British colonial expansion towards the end of the 19th century earmarks the colonial period of planning in Nigeria. This phase has been described as

first aid planning (Fry, 1946), *planning for the needs of the colonial power rather than the local population* (Home, 1983), *piecemeal and ad hoc planning* (Uyanga, 1989), *planning without intention* (Aka, 1993), *as a colonial apparatus for administering and managing resources* (Wekwete, 1995), *an imposition of foreign urban development and planning regulations* (Arimah and Adeagbo, 2000) and *planning in accordance with colonial objectives* (Marcellus, 2009). As rightly argued by Home (1983), the colonial period left a legacy of flawed spatial framework which has a consequence on hampering growth in the former colonies.

The machinery of government employed by the British in the administration of Nigeria was the *Indirect Rule*, which was to interfere as minimally possible with the native customs and way of life. This approach was championed by Lord Lugard, the then colonial governor from 1900-1914, who was responsible for the unification of the three (Northern, Western and Eastern) regions into one entity (see Figure 5.1). However, Aka (1993) argues that the policy of minimal interference can be related to the British dependence on local, traditional rulers and their institutions in the collection of revenues and enforcement of authority. He continues that the reliance becomes more pronounced in the wake of meagre revenues, lack of specific guidance from London, poor communication system and paucity of skilled personnel. As the regions, had little in common in terms of religious beliefs, cultural, social and political structures, and previously autonomous from one another, it leaves no doubt that the merger was for ease of governance.

Lugard sought to separate the physical presence of the Europeans from the native population. Thus, he established two systems of local administration under the colonial government. *Native Authorities* made up of traditional chiefs, supervised by British colonial administrators was in place to govern the native population, whilst a direct form existed in Townships in form of municipal administrators for colonial urban areas (Home, 1983; Omole and Akinbamijo, 2012). In clarifying the distinction in the two, township was described as a domain outside the prerogative of native authority in which Europeans, government employees and *native foreigners* reside. Native

foreigners are migrants who have moved into the towns from other parts of the country

**The diagram originally presented here
cannot be made freely available
because of 'copyright'.**

Figure 4.1 - Map of Colonial Nigeria (source: US Library of Congress)

In most of the pre-colonisation Nigerian settlements, the British intervention led to an eventual displacement of the traditional socio-economic arrangement of spatial land and their development systems (Oduwaye, 1998; Ogu, 1999). With their notion of minimal disruption, the use of lands by the colonial administration that would have been otherwise left as virgin lands, diminished the sovereignty and expansion potentials of the traditional dwellers. In addition, previous communication and trading routes had to give way for the new transportation systems routes being constructed for administrative and economic motives of the colonials. Even though it may

not have been their intention, the routing of the railway lines to avoid native towns and villages (Home, 1983), ultimately shifted spatial arrangements of those communities in the direction of the transportation infrastructure.

Nevertheless, the colonial authorities implemented several statutory enactments relating to land use control and management as seen in timeline in Figure 5.2. The first pronouncement after establishment of the British Colony in 1861 was the Town Improvement Ordinance Order 1863 promulgated in Lagos, which was meant to control development but more to improve urban sanitation (Ola, 2011; Omole and Akinbamijo, 2012). Oduwaye (1998) asserts that the ordinance was the beginning of the gradual disintegration of the traditional land use management structure. Soon after, the Land Promulgation of 1900 introduced title to land in Northern Nigeria. The indirect rule led to the Cantonment Proclamation of 1904 which established the European Quarters and the Government Reservere Areas, as a bid to also address arising public health problems (NITP, undated).

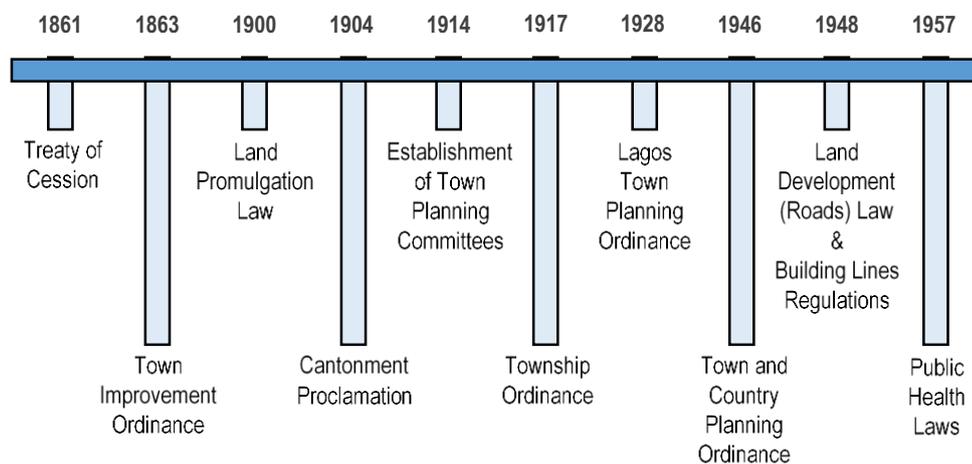


Figure 4.2 - Milestone for land use planning laws in Colonial Nigeria

Ordinance No. 9 of 1914 introduced the creation of Town Planning Committees while the Township Ordinance No 29 of 1917 legalized the

separation of the European residents from the native African populace. The outbreak of bubonic plague in Lagos spurred the creation of the Lagos Executive Development Board (LEDB) through the passing of the Lagos Town Planning Ordinance in 1928 (Omole and Akinbamijo, 2012). This is the first formal planning authority in Nigeria. As the LEDB was mainly a reaction to the sanitary problems that caused the bubonic problems, the body was mainly concerned with slum clearance, swamp reclamation and development of housing schemes (Home, 1983; Omole and Akinbamijo, 2012) rather than embarking on any actual planning.

A new lease of life was given to planning in Nigeria, by way of the Commonwealth Development and Welfare Act of 1940 (Lamond *et al.*, 2015). This was a planned reconstruction effort for Britain and the colonies after World War II. This provided guidance and resources for more professional town planners to be employed. After the war, a 10-year Plan of Development and Welfare (1946-1956) was prepared by government officials to lay the groundwork for systematic development of the country. This was a paradigm shift from the day-to-day planning and development carried out by senior civil servants under the Health Boards (Omole and Akinbamijo, 2012). The plan gave birth to the Town and Country Planning Ordinance of 1946 as there was a growing need to re-plan and create a proper layout for future growth in every town in the country (Fry, 1946).

Just before Nigeria's independence in 1960, a second Plan of Development was prepared to cover 1955 to 1963. There was no great difference between the intention of this proposition and the earlier plan that covered 1946 to 1956, as it had no direct effect on urban and regional planning, only emphasizing sectorial growth of the economy (NITP, UNDATED). In this respect, spatial integration was absent unless it had to do with improving communication and transportation of agricultural products and movement of mineral resources from the interior to the port cities.

It cannot be denied that the colonial period signified the start of formalized planning in Nigeria. This phase left a legacy of rapid urban growth together with associated challenges, such as overcrowding due to rural-urban

migration, fragmented development and the emergence of shanty towns (Home, 1983; Uyanga, 1989; Aka, 1993). The tradition of *reactive planning* in Nigeria can be traced to this period, as planning and planning legislation was carried out only when there was sufficient need for it. For example, as a response to the bubonic plague, the first town planning ordinance was enacted in 1928, which led to LEDB and saw the first professional Town Planning Officer in Nigeria, A. J. Thompson, in the same year (Home, 1983). Judging from their planning needs, the colonial masters only resorted to planning on matters likely to impact their health and their commercial activities. Reflecting on this period of planning, Home (1983) writes that the colonial officials were more concerned with village reconstruction than planning, a situation that avoids other significant issues like urban renewal and slum clearance. The failure of the colonial authorities to employ a holistic approach in town and country planning has led to a situation that it is now almost impossible to revamp the older traditional settlements and infrastructural layout (Aka, 1993).

Other planning related legislations enacted in the colonial period include the Swamp Improvements Ordinance of 1877; Leprosy Ordinance of 1916; Mineral Act of 1945 which covered briefly, drainage and pollution of land, water and air; Land Development (Roads) Law of 1948 to govern ownership, purchase and sale of land; Building Lines Regulation of 1948 which provided guidance on siting of buildings with respect to roads; Factories Act of 1956; The Road Traffic (Control of Traffic) Lagos Order of 1957; Public Health Laws of 1957 to regulate overcrowding, diseases and general urban sanitation.

4.2.3 Post-Independence

The Town and Country Planning Ordinance of 1946 was retained after Nigeria's independence in 1960, along with its inherent problems of ineffective administrative structure, disproportionate standards and inequitable provisions (Ola, 2011). Suffice to say that most development related proclamations from the colonial period were adopted with little or

no amendments by subsequent governments. It was under this influence that the first National Development Plan (NDP) was prepared by the new Nigerian Government to cover 1962-1968 based on the regions (East, West and North) and the Federal Capital Territory, Lagos.

4.2.3.1 First National Development Planning 1962 - 1968

The First NDP was like the previous plans prepared pre-independence, as the objectives favoured economic planning instead of addressing physical planning challenges and structural problems. Implementation of this NDP was plagued by two problems; firstly, it was prepared by foreign experts who performed in mercenary-like fashion and did not encourage participation from the people being planned for (Aka, 1993; Marcellus, 2009; Ejumudo, 2013); secondly, the plan was based on inflow of foreign capital that was never received (Aka, 1993). These pitfalls were avoided in the second NDP as this was prepared by Nigerians and financed with funding largely derived from Nigerian resources (Aka, 1993).

The Nigerian planning landscape was impacted by three major events in 1967. The first was the overthrow of the civilian government by the military; the subsequent decision to reduce political powers and administration by creation of twelve states from the three regions and Lagos, which was the Federal Capital Territory; and the start of the Nigerian civil war. The military regime brought authoritarian rule with laws passed as decrees to be followed with unquestioning obedience. The newly formed twelve states led to resurgence of the towns selected as the capitals, due to population growth and infrastructural development. The start of the civil war that lasted till 1970 pushed holistic planning for the country to the back burner.

4.2.3.2 Second National Development Planning 1970 - 1974

After the civil war, the second NDP 1970-1974 was prepared mainly to cater for reconstruction of the eastern part of the country damaged by the civil

war, resettlement, restoration of productive capacity, improving administrative efficiency and promoting socio-economic development (Ukah, 2007; NITP, undated). Ibietan and Ekhosuehi (2013) refer to the second NDP as the “Oil-Boom development plan” as it was the season when Nigeria made high revenue from crude oil exports. The objectives of the plan is acknowledged as the country’s first attempt to tackle physical development and define her social philosophy (Ukah, 2007).

Based on the preference the plan had in favour of urban centres, Ejumudo (2013) criticized the NDP for contradicting the egalitarian values it thrived to achieve. Along similar lines, Marcellus (2009) argues that the ambiguity in the objectives may have contributed to the inability of the plan to guide the programmes and budgets for the different administrations. However, the greatest setback was the challenges faced in acquiring land for the developmental schemes. Several projects failed due to unavailability of land for government use, stemming from exorbitant prices of land and unreasonable compensation demanded by land owners (Ako, 2009; NITP, undated).

4.2.3.3 Third National Development Planning 1975 - 1980

By the time the third NDP was being prepared to cover 1975 to 1980, quality of life and social welfare was becoming a major challenge despite the huge oil revenue. To this end, the plan led to the establishment of Federal Ministry of Housing, Urban Development and Environment to regulate environment and rural development, the Federal Mortgage Bank of Nigeria to support direct housing ownership projects and the Federal Housing Authority to promote public service programmes and social services (NITP, undated). It is interesting to note that the Nigerian government continued to prepare plans to span a five-year period as done by the previous colonial administration. One can infer that the myopic view of planning is borne out of ignorance of its importance, which was further compounded by inadequate executive capacity, dearth of reliable data, the absence of financial resources and well-trained planning personnel (Aka, 1993). Adedeji

(1980) writes that the plans are often prepared hurriedly, without the participatory involvement of the people being planned for and still released months after they were supposed to have been functioning. Other than the emergence of policies that impact private sector, the plans are an indication of capital expenditure programmes of the public sector that have been presented as financial spending targets instead of achieving the physical output objectives (Adedeji, 1980). This bears huge implication on how it is going to be implemented and the guiding principles.

The Government intended that the third NDP would serve as the blueprint for Nigeria's industrial development, unfortunately, the plan lacked political backing as the populace was more interested in sharing oil revenue than establishing industrial foundations (Ejumudo, 2013). Nevertheless, this NDP can be credited with four key outcomes. The plan produced the first definition for national urban development strategy (Omole and Akinbamijo, 2012), through integration of rural-urban development, rejuvenation of local and state government machinery for town and cities management, and correction of previous physical inadequacies. Secondly, the establishment of River Basin Development Authorities (RBDA) across the country to control and support agricultural development and other related programmes. Even though, the approach was likened to the Tennessee Valley Development Authority in the USA, it failed to deliver as a comprehensive regional planning policy and devolved into agricultural and water development strategy (NITP, undated). The third impact was the creation of a new city in Abuja, as a Federal Capital Territory, to accommodate the Federal Government being relocated from Lagos. The move to Abuja was based on a report by Justice Aguda's panel that Lagos was no longer suitable to perform the dual purpose of the capital of Nigeria and Lagos State. This had huge implications for urban and regional planning in Nigeria, as necessary infrastructure was planned and developed to enable access to Abuja from all parts of the country. Lastly, the Federal Government enacted the Local Government Reform Law of 1976, as part of an attempt to redress land use problems from the local level. With this legislation, town and country planning came under the purview of Local Governments and led to

establishment of Local Planning Authorities which had administrative powers to prepare plans and control physical developments at the grassroots. However, the potential contribution of the reform law to town and country planning was curtailed with the passing of the Land Use Decree in 1978 (Omole and Akinbamijo, 2012). The legislation was considered crucial to provision of equal access to land of all residents in any location of Nigeria. Details and impact of this legislation is explained in a further section (See Section 4.3.2).

4.2.3.4 Fourth National Development Planning 1981 - 1985

The fourth NDP for 1981 – 1985 was not totally different from the one before it, asides from the increased commitment to petroleum resources. Urban development, manufacturing, agriculture, housing, water supply and environmental sanitation were main objectives of this plan. Unfortunately, the objectives of the plan were not realised due to a sharp drop in crude oil revenue, coupled with debt servicing requirement of various foreign loans during the period (Ibietan and Ekhosuehi, 2013).

Even though a fifth NDP was mooted, it never saw the light of day, after two different attempts in 1987 and 1988 (Ibietan and Ekhosuehi, 2013). Owing to the huge deficits from the previous plans and the need to reschedule the foreign loans, the creditors gained considerable influence in determining planning initiatives in Nigeria (Marcellus, 2009). This creates a problem, as it is not possible for creditors to ignore the primary cause of their involvement and carry out plans that will entirely favour the country. Structural Adjustment Programme (SAP) was introduced by the World Bank and the International Monetary Fund (IMF), as a stabilization package and structural measure to ensure resource efficiency, provision of social services and diversification of the economy from public sector led to a private sector inspired position (World Bank, 1994). Fallout of SAP was the massive devaluation of the Nigerian currency with respect to other international currencies (Ogbimi, 1998) and this was enough impetus that invariably led to uncompleted projects, construction and maintenance of infrastructures.

4.2.3.5 *The Perspective Plan and the Rolling Plans 1986 - 1994*

By 1990, SAP was suspended, and this marked the beginning of the *Rolling Plan Period* covering 1990 to 1999. The SAP intervention provided the chance for a review of the failed fixed medium-term planning system and the development of a three-tiered planning system that had an encompassing 15 to 20-year long term plan marked by three-year Rolling Plans (Marcellus, 2009; Ibietan and Ekhosuehi, 2013). The Rolling Plans were further broken down into Annual Budgets plans which match the possible achievements with the available resources. Even though the plan was the first to be both prospective and long term in Nigerian history, the plan failed to achieve the expected objectives, due to the constant change in government administration (Marcellus, 2009).

4.2.3.6 *The National Planning Commission 1993*

The commission was established by Decree No 12 in 1992 (later amended by Act 71 of 1993), with the mandate to determine and advice Government on national policies that promotes national unity, social justice, human welfare, economic efficiency and resolution of national development issues. In carrying out its objectives, the commission is authorised to set national priorities, conduct periodic review of human and material resources, and then prepare short-, medium- and long- term national development plans. The commission is also responsible for coordinating and monitoring the plans and projects at all the levels of government. As impressive as the overarching objectives and functions of the commission seem, it is painfully obvious that economic growth is the primary interest and focus of its activities.

This is evident in the objectives of strategic policies and plans rolled out by the commission including the National Economic Empowerment and Development Strategy (NEEDS) of 2004 (covering 2003- 2007), the Vision 20:2020 (2010- 2020) and the Transformation agenda 2011-2015. It is imperative to note that the Transformation agenda was brought on by a

change in Government administration, however both the agenda and the Vision 20:2020 is still running concurrently, even though they address the same issues.

It can be deduced that spatial and actual physical development planning schemes in Nigeria are less important to economic objectives as seen from the various growth strategies adopted by the Government. This is not to say that the approaches are devoid of spatial planning attributes, but that they are reactionary in nature. In this situation, the socio-economic objectives of the policies are likely to be achieved at the expense of the implementation of sound spatial planning strategies.

The planning history of Nigeria provides a context into which the perspective of planning practice, conceptualisation and implementation is carried out in the current regime and gives an indication of what that response might be in the future. As this research is aiming to determine the level of preparedness of the Nigerian society to potential climate change effects, it is necessary to evaluate related legislations and policies that are likely to intersect issues regarding climate change.

4.3 Land management in Nigeria

The legislation relating to land use is an obvious start point, since land use policy is intricately tied in with planning and development. The land administrative system is an indication of the principles and guidelines which defines the rights and obligation of individuals, groups and institutions in the use and control of land (Udoekanem *et al.*, 2014). Land can be considered the foundation of interaction of social, economic, cultural, and biophysical systems.

With regards to climate change, land use activity is a contributing factor to climate change and the changes in land cover is a major way in which the effects of climate change are expressed (Dale, 1997). In other words, land use management is essential to mitigation of climate change and the subsequent impact, adaptation and vulnerability. It is therefore imperative that sound

land use policies should consider the strategies that will reduce land use contribution to climate change and lessen the negative potential effects of climate change while balancing the socio-economic and biophysical demands on land.

Unfortunately, the absence of a clear policy for climate change in Nigeria obviously indicates that the links between land use and climate change have not been considered. In this regard, it will not be surprising if the land policies do not have any reference to climate change. However, it will be substantial if elements of planning and environmental assessment can be recognised, as these can be evaluated for appropriateness in terms of climate change strategies.

It is impossible to provide a historical context for land management in Nigeria without referring to the British governance in the country. The synopsis of the customary land ownership and management existing prior to colonial interference has already been explained in Section 4.2.1 above, therefore the subsequent sections would focus on the land tenure system during and after the colonial administration. It should however be noted that the pre-colonial land management systems prevented overexploitation of land resources by two major ways; Firstly, the restriction of sale or transfer of communal lands deterred unnecessary land use changes; secondly, the agricultural practice of allowing bush to fallow, ridging, terracing, and the use of natural manure was also useful in improving and conserving soil resources (Chokor, 1993).

4.3.1 Land management in Colonial Nigeria

The land ownership arrangement in this period was aimed at satisfying the needs and objectives of the imperialists (Udoekanem *et al.*, 2014). As a crucial factor of production, the colonial government required land for the achievement of their economic and social objectives. The absence of a formal system regulating the land tenure system created the opportunity for colonial administrators to institute ordinances (see Figure 4.3) governing

land management. This allowed them to obtain and assign titles to land for governance and commerce purpose.

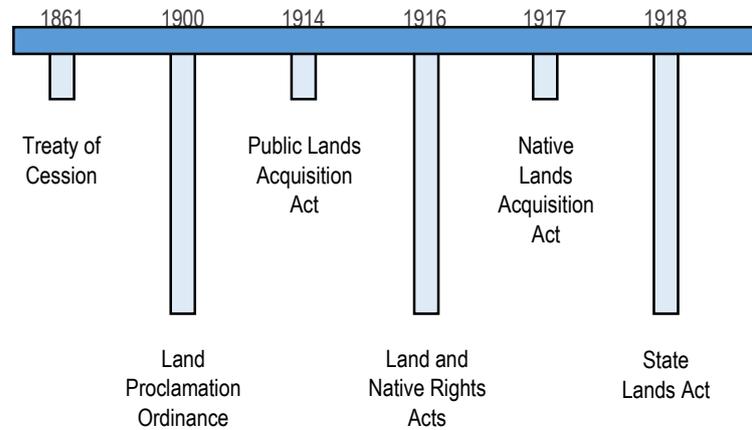


Figure 4.3 - Timeline of land management laws in Nigeria

Scholars have referred to the Treaty of Cession signed on the 7th of August in 1861 as the root title which signalled the first transfer of land ownership to the British crown. (Oyebode, 1990; Udoekem *et al.*, 2014). There is a compelling reason to agree with this line of thinking as the agreement of alliance suddenly became a subjugation which included transfer of land title and revenue generated on lands contained in the treaty (see Box 4.1).

Box 4.1 - Excerpts from the Treaty of Cession 1861 (Source: The London Gazette, 1861)

Article I

IN order that the Queen of England may be the better enabled to assist, defend, and protect the inhabitants of Lagos, and to put an end to the Slave Trade in this and the neighbouring countries, and to prevent the destructive wars so frequently undertaken by Dahomey and others for the capture of Slaves, I, Docemo, do with the consent and advice of my Council, give, transfer, and by these presents grant and confirm unto the Queen of Great Britain, her heirs and successors for ever, the Port and Island of Lagos, with all the rights, profits, territories and appurtenances whatsoever thereunto belonging, and as well the profits and revenue and the direct, full and absolute dominion and sovereignty of the said port, island and premises, with all the royalties thereof, freely, fully, entirely and absolutely. I do also covenant and grant that the quiet and peaceable possession thereof shall, with all possible speed, be freely and effectually delivered to the Queen of Great Britain, or such person as Her Majesty shall thereunto appoint, for her use in the performance of this grant; the inhabitants of the said island and territories, as the Queen's subjects, and under her sovereignty, crown, jurisdiction, and government, being still suffered to live there.

Settling into their new colony, the British administrators enacted the Land Proclamation Ordinance of 1900 that stipulated that title to land in Northern Nigeria could only be obtained from the High Commissioner. This regulation ushered the displacement of the customary land regime where land ownership rights was held within the families and communities (Udoekanem *et al.*, 2014).

The Public Lands Acquisition Act of 1914 granted the colonial Governor powers to acquire land for when required for public use without regard to the current use of that land (NITP, undated). The enactment also stipulated an avoidance of compensation if the land was occupied as at the time it was been appropriated (Udoekanem *et al.*, 2014).

In 1916, the colonial Governor declared the Land and Native Rights Act which vested all the native lands in Northern Nigeria under the control and subject to the disposition of the Governor. In fairness to the Governor, Elias (1971) affirms that the powers were to allow equal access to rights of occupancy to both *natives* and *non-natives* alike. The gaps in the 1916 legislation led to the passing of the Native Lands Acquisition Act of 1917 which was to permit *native foreigners* from other parts of the country the right to acquire land in Northern Nigeria. This law also stipulated that transfer of land title from one *native foreigner* to another can only be done with approval in writing from the Governor (Udoekanem *et al.*, 2014).

The State Lands Act was published in 1918 to administer and manage the use, settlement and development of Crown lands held in public trust. The Crown lands are State acquired lands that have been obtained for public purpose or interests (Udoekanem *et al.*, 2014). The act also prevented occupiers of the land from hiring out such property.

4.3.2 Land management since 1960

By the time Nigeria gained independence from colonial rule in 1960, the ordinances passed by their administration continued to co-exist along with the traditional customary land regime. As the Land and Native Rights Act of

1916 only applied to Northern Nigeria, land ownership still resided under individuals, families and communities everywhere else in the country. The 1916 proclamation was repealed and then replaced with the Land Tenure Law of 1962 for Northern Protectorate (Adeniyi, 2011; Olong, 2011).

4.3.2.1 *The Land Tenure Law of 1962*

The fundamentals of the legislation were similar to the principles of the 1916 ordinance it was replacing (Francis, 1984; Oshio, 1990; Udoekanem *et al.*, 2014). The new law was intrinsically exclusive (Allott, 1978), as the intention was to legislate against Nigerians who were from other parts of the country. As such the law classified all the lands in the northern region, either occupied or vacant, as *native lands* held in trust and administered for the use and common interests of the natives (Mabogunje, 2010). *Natives* refers to all persons with ancestral links to any of the states within the protectorate.

The land title issued includes both the statutory and the customary right of occupancy, valid for a limited number of years (Olong, 2011). The right of occupancy can only be sold, transferred or used as mortgage when written consent has been obtained from the Minister.

4.3.2.2 *Background for the Land Use Act of 1978*

While the Northern Protectorate, through the Land Tenure Law of 1962, made land available for public projects, the only lands available to the administrative government in other parts of Nigeria were the state lands previously acquired under the colonial rule (Mabogunje, 2010). With growing demands for infrastructural, industrial, residential, urban and agricultural development, there was sharp increase in land prices as individuals, business entities and even the government needed land (Adeniyi, 2011). This led to a proliferation of land speculators and an absurd practice of repeat sale of the same land to numerous clients (Mabogunje, 2010). The absence of a formal land tenure system was linked to the

inflationary trend identified in the economy (Olong, 2011). This becomes obvious when it is considered that poor farming families would have been paid a paltry sum for their land and the speculators then extort prospective buyers as much as possible. This invariably increased the cost of development and doing business.

The challenges hitherto described prompted the then Federal Military Government to set up an eleven-member panel in 1977, tasked with designing a National Land Policy. The terms of reference (see Box 4.3) of the Land Use Panel included a review of the current practice; examine the practicality of a single land policy for the country and to also anticipate for future urban and rural land use patterns.

Box 4.2 - Terms of reference for the 1977 Land Use Panel (source: Oshio, 1990; Adeniyi, 2011; Mabogunje, 2010)

Terms of reference for Land Use Panel

- i. to undertake an in-depth study of the various land tenure, land use and conservation practices in the country and recommend steps to be taken to stream-line them;
- ii. to study and analyse the implications of a Uniform Land Policy for the country;
- iii. to examine the feasibility of Uniform Land Policy for the entire country, make necessary recommendations and propose guidelines for their implementation and
- iv. to examine steps necessary for controlling future land use and also opening and developing new lands for the needs of the government and Nigeria's growing population in both urban and rural areas and make appropriate recommendations.

The Panel's report suggested against explicit nationalisation of land in the country, while another submission was made by one of the members supporting it (Okpala, 1982; Francis, 1984; Ako, 2009). Ultimately, the Government selected the recommendation of the minority report which led to the declaration of the Land Use Decree of 1978 (now referred to as the Land Use Act) nationalising all land in Nigeria. To preserve this decision on the land use policy, the then Military Government had it incorporated into the 1979 Constitution of the Federal Republic of Nigeria with the stringiest conditions for alterations or removal (Okpala, 1982; Mabogunje, 2010). This

made a repeal or amendment difficult, considering the cumbersome process required for a constitutional revision.

4.3.2.3 Features of the Land Use Act of 1978

The eight-part legislation and its 52 provisions were intended to streamline the land tenure system throughout the country, eliminate land speculation in urban areas and make land available for development purpose by the Government and to all Nigerians throughout the country (Agbosu, 1988; Adeniyi, 2011).

Under the decree, all land in the boundary of each state is vested in the State Governor (excluding land held by the Federal Government and its agencies) who will oversee administering and allocating statutory rights of occupancy on urban land to individuals and organizations (Ola, 2011). For individuals under 21 years, consent to the assignment is issued to a guardian or an appointed trustee. By placing authority over land in the State Governor, it can be inferred that the success of an effective planning strategy will depend on the integration of planning into land control and management. Okpala (1982) opines that the decree is in line with the recommendations of the United Nations Habitat Conference of 1976, which prescribes that public control of land use will remove major planning obstacles and aid the implementation of development initiatives.

The Local Governments were also enabled to exercise similar authority over other lands not in an urban area. They are vested with the power to grant customary rights of occupancy in the rural areas within their territory. It is easy to quickly realise that there will be bureaucratic problems and conflicts with this arrangement in places of possible overlapping functions of the Local and State Governments, where the local government area is comprised of urban areas. Another downside for the local governments is that the Governor can usurp an area generating land rental income by simply designating it an urban area.

The decree also stipulates that each state must establish a Land Use and Allocation Committee to advise the Governor on any matter pertaining to the management of land. A similar committee called the Land Allocation Advisory Committee was to perform the same duties at the local government level. Although, there is no prescription on membership size, it insists on the inclusion of a legal practitioner and estate surveyors or land officers with education qualifications obtained within the last five years. It is obvious from the committee suggestion, that the potential contribution of planning in terms of land management was not considered by the promoters of this decree.

In mitigating against the activities of speculators holding on to large tracts of undeveloped land in hopes of a rise in value, the law set a maximum cap of ½ hectare for undeveloped urban land for which a right of occupancy can be issued. This means that landowners with more than ½ hectare in undeveloped land, forfeit the excess at the promulgation of the legislation. On the other hand, landowners with over ½ hectare in developed land, are able to retain their land and can obtain a right of occupancy. In the rural area, a customary right of occupancy can cover land exceeding 500 hectares if used for agricultural purposes and 5,000 hectares if used as grazing field.

Regardless, the legislation considers it lawful for Governors and Local Governments to revoke the rights of occupancy for overriding public interest. In describing overriding public interests, the following reasons were provided;

- i. land required by the any tiers of the government for the purpose of the public.
- ii. land required for mining, extraction, oil pipelines or any other related purpose.
- iii. when land is sold, transferred or mortgaged without obtaining requisite approval or consent.

The first reason is laden with the question as to what constitutes the public purpose. LUA's understanding of public purpose varies from exclusive Government use and planned settlements to economic developments and

sanitary improvements for any King. With no clear guidelines to promote a consideration of alternatives, it is uncertain what deliberations that the government has regarded before going ahead to revoke a right of occupancy issued by the same system. This lack of transparency in the decision process fuels the perception that the political administrative system cannot carry out their function impartially (Rakodi, 2001). The situation becomes precarious in places where those the necessary political capital are being exempted from such treatments. With the second reason, it is no wonder that Ako (2009) argues that LUA is a mechanism supporting the social and environmental injustice experienced in the oil-producing Niger Delta region of the country. Through this act land appropriation in the region has led to the displacement of inhabitants on lands they had held for centuries. Such lands in the oil-rich areas have since been reallocated to oil companies, public officials and their cronies (Ako, 2009).

Nevertheless, the provisions offer compensation to occupiers of a land that have been acquired under the LUA. There are three features that form the basis under which settlement is made for lands re-acquired;

- i. an amount equal to the rent paid by the occupier for the year the land was revoked
- ii. reimbursement for any building, machinery, installation or improvements on the land
- iii. remuneration for crops that may be on the land

The value of land acquired is a glaring feature missing in the calculation of compensation. In this way, the government can acquire land cheaply, as it is not probable that the amount of rent paid in any single year can equate with the value of land. To compound the problems with settlement calculation, the amount paid for equipment, facilities and crops found on a land is not based on a standard method of calculation but on an assessment method selected at the discretion of the reviewing officer. For this reason, it is possible that the repayment awarded may be sufficiently influenced by other factors rather than the value of the assets and the depreciation. Crops within the context of the act refer to any planting of economic value and plantations

of long-lived flora. As such, this varies from person to person as this is subject to the officer's inclination and opinion. To seek redress on any issue pertaining to the LUA, the provision prescribes that the High Court would have jurisdiction. In other words, restitution and retraction of government resolution is available for entities with disposable income and resources to challenge the decision made on their land.

4.3.2.4 Challenges and criticisms of the Land Use Act of 1978

With the ambiguity in the context and excessive powers it grants to the political administrative system, it is not surprising that the LUA can be considered the most criticised legislation in Nigeria. Literature abounds with criticisms for the legislation. Agbosu (1988) describes it as the result of contradictions from the colonial and neo-colonial pseudo-capitalist architecture entrenched within Nigeria's institutional framework. Mabogunje (2010) asserts that the underlying motive for the enactment was to extend the northern style of land tenure to the other parts of the country. There are clear indications that the decision to accept the minority report recommending the legislation favoured the major ethnic groups with controlling political powers (Ako, 2009). For this reason, the enactment is plagued by its political context and this may account for the scepticism surrounding it.

This legislation is a direct displacement of the traditional land use system and substantively reduced the holdings and authority of community rulers and family heads (Francis, 1984; Agbosu, 1988; Ako, 2009; Adeniyi, 2011). The fiduciary relationship was imposed suddenly rather than been agreed upon with the people. On this basis, Mabogunje (2010) argues that the statute was a state instrument to appropriate land from families and communities without making remuneration for the loss of resource.

Okpala (1982) writes that the socio-cultural resistance, in form of the traditional rulers, communities and individuals with powerful landed interests, is the biggest obstacle in the effective implementation of the act.

Therefore, land holding in Nigeria remain fragmented with the formal system where land is administered by the three tiers of government and their agencies on one hand and the informal system which trades in privately owned lands held by individuals, families and communities under the customary leanings (Adeniyi, 2011; Lamond, *et al.*, 2015).

The custodial role of the Governors in the land management system has been criticized for its potential for abuse by the people in power (Ako, 2009; Adeniyi, 2011). Apart from problems arising from the bureaucratic and cumbersome process in for obtaining the rights of occupancy, some Governors have been known to use their consent as means of raising revenue (Mabogunje, 2010). This has created opportunities for institutionalised graft and extortion in the public sector (Amokaye, 2011). Mabogunje (2010) opines that the challenges in obtaining the Statutory Certificates of Occupancy from the State Governor is the main reason that a lot of land transactions are falsely dated before the 28th of March 1978 (the commencement date of the Land Use Decree) or conducted in the informal land market.

To compound issues, many parts of Nigeria remain unsurveyed, leading to a dearth of adequate cadastral, township or topography maps compounded by dismal land records (Okpala, 1982; Omole and Akinbamijo, 2012). For land to be appropriately managed and controlled, it would have to be surveyed and mapped, which would allow an effective integration of land ownership titles. By extension, this means that the State Governors, who are the land trustees, are oblivious of information of the land within their territories and the identity of the owners.

Along similar lines, the paucity of the appropriate category of professionals with the relevant skills and expertise to implement the tenets of the act has constituted a major problem to the implementation of the decree (Fabiya, 1984). Okpala (1982) writes three years after the proclamation that many local governments do not have the minimum required number of estate officer to carry out the intents of the law. Adding to this, the removal of the rights of individuals and families to develop layouts for their land has

created the incoherent and uncoordinated physical planning structure evidenced in most locations in Nigeria (Mabogunje, 2010).

In defining the lands that can be classified as urban or rural, the legislation provides an arbitrary measure based on the disposition of the Governor. Section 3 states that

Subject to such general conditions as may be specified in that behalf by the National Council of States, the Governor may for the purposes of this Act by order published in the State Gazette designate the parts of the area of the territory of the State constituting land in an urban area.

Mabogunje (2010) reports that several ridiculous behaviours and situations occurred, when a Governor claimed that all the land in the state was urban land. That decision led to dire consequences in the land market. A salient point absent in all the literature is that the legislation did not anticipate the creation of new State Governments (administrative divisions) and what would happen to the land ownership when a rural land suddenly becomes urban. This has huge implications as the maximum undeveloped rural land that can be held by an individual is 500 hectares when compared to $\frac{1}{2}$ that can be owned in an urban area. This becomes a key issue considering the fact that there were 19 states as at the promulgation of the decree against 36 states currently in Nigeria.

Despite the constraints faced by the land legislation in Nigeria, the legislation readily provides a platform on which an appropriate climate change response can be built if the institutional and operational challenges can be surmounted. The recognition of the authority of the State Governor over land, places that institution in a prime position to be able to integrate appropriate planning strategy that will promote sustainable development, and adequately respond to a change in climate. However, one must agree with Rakodi (2001) that legislation does not translate to legitimacy, as shared understanding needs to be created for land use planning practice to contribute effectively to tackling climate change.

4.4 Physical planning law

As earlier discussed, planning law in Nigeria has been influenced and shaped by the pre-colonial, colonial and post-independence values. By this, it can be said that the Nigerian planning law is obtained from the customary law, the received law (English Law) and the Nigerian statutes with respect to the time frame (Agbosu, 1988; Omotola, 1991). It is important to note that the potential capacity of a planning law is dependent on the ownership control that it confers on the planning authority in respect of land use. On this premise, the Land Use Act of 1978 can be lauded for providing the statutory land use control for physical planning requirements.

4.4.1 Township Ordinance No. 29, of 1917

As earlier discussed in Section 4.2.2, the Town Improvement Ordinance of 1863 and the Cantonment Proclamation of 1904 preceded the declaration of this 1917 ordinance. However, the two previous legislations were reactionary measures relating to mounting public health challenges, while the Township Ordinance provided a blueprint for physical development.

This ordinance has been hailed as the first attempt to introduce spatial guidelines into land use in Nigeria (Omole and Akinbamijo, 2012). Keeping with the policy of indirect rule, the ordinance established residential estates for Europeans, which was also regarded as Government Reserve Areas (GRA) or European Quarters. These estates were usually encompassed by green belts of undeveloped land, declared as building free zones (Aka, 1993; Ogu, 1999). Allegedly, this was done to protect the Europeans from mosquito carrying disease dwelling in the native African areas (Home, 1983). This action had far-reaching consequences for land use management, physical planning and development, evidenced by the highly slanted commitment of resources to the European reservations within the same city. Home (1983) argues that the physical separation of the colonial settlements from the native community has led to fragmented forms of *twin cities* in a shared existence. Aka (1993) concludes that the segregation highlighted the start of

dual standard for housing and location for the wealthy and the poor in Nigerian cities. This clearly indicates the potential impact that planning (or lack thereof) can have in creating differential vulnerability.

Furthermore, the increasing number of native foreigners arriving at the towns led to haphazard settlements allocated outside both the European Quarters and the local native dwellings (Home, 1983; Aka, 1993). This led to further fragmentation, as these migrants considered themselves different and temporary city dwellers with no obligation to the town, local laws or customs (Aka, 1993). As these areas fell outside colonial jurisdiction, orderly planning was not obeyed. These areas evolved into shanty towns and slums, usually characterised by high population density and poor infrastructural structure. This is in sharp contrast with well laid development areas that are allocated to the Europeans and affluent members of the society. Those uncoordinated areas have turned into poor neighbourhoods that have increasingly become difficult to restructure (Aka, 1993). As such, it is not difficult to estimate that vulnerability to climate change effects in these overcrowded and uncoordinated places is going to be higher than in the areas that have some form of organisation in the spatial pattern.

Within the enactment, a system for classifying urban settlements into different social, political and economic hegemony was developed. This ranking may have focused more on cities essential to the colonial economy to the detriment of others considered non-essential (Aka, 1993). This is considered the basis for the unequal hierarchy for planning in Nigeria, as cities with small sizes or considered non-essential are often disregarded in planning considerations. This tradition of socioeconomic bias is entrenched in planning activity and has implications for the way social vulnerability is considered and addressed.

4.4.2 Town and Country Planning Ordinance, No. 4, of 1946

This ordinance was the first country wide planning law that was passed by the colonial administration. It made provision for the re-planning,

improvement and development of different areas in Nigeria. The ordinance was directly based on the British Town and Country Planning Act of 1932 (Uyanga, 1989; Aka, 1993; Arimah and Adeagbo, 2000; Omole and Akinbamijo, 2012). The legislation allowed the creation of planning authorities with the powers to design and implement land use plans, regulate development, acquire and lease land, and impose property taxes in their designated area (Lamond *et al.*, 2015). Members of the authority were appointed from the local population and the central administration provided technical consultants (Home, 1983). With this law, planning schemes could be applied to land use in any rural area, village settlement, native town or township by the state or federal governments.

Despite the many potentials of the 1946 ordinance, very little success was recorded. For instance, the colonial administrators in Northern Nigeria did not establish any Town Planning Authority as it was perceived as a violation of the Land and Native Rights Ordinance and the indirect rule doctrine (Home, 1983). In other areas, a jumble of planning authorities was created, leading to a conflict of authority, bureaucratic delays and overlapping functions (Uyanga, 1989). Some other planning authorities were focused on development of attractive layouts while being oblivious to real challenges such as waste management, erosion control, environmental control and staff training (Omole and Akinbamijo, 2012). Others simply concentrated on building control, and the jurisdiction of the authorities did not often extend to the older areas of settlements (Aka, 1993). Taylor (1988) gives reasons for the weaknesses of the ordinance;

- i. that the government emphasized economic planning over physical planning
- ii. that the local planning authorities are under immense political influence on issues concerning development control
- iii. inadequate funding to carry out the local plans developed (Aka, 1993).

To further compound the problem, the legislation had very little room for participatory contribution in the decision making of planning schemes and

had a complicated and difficult objection route to any proposed plan (NITP, UNDATED). Regardless, this ordinance remained a nationwide law until it was eventually replaced by the Urban and Regional Planning Law Decree No. 88 in 1992 by the then Military Government (Oduwaye, 1998).

4.4.3 Nigerian Urban and Regional Planning Decree No 88 of 1992

Despite an amendment to some of its parts and sections by the Urban and Regional Planning (Amendment) Decree No. 18 of 1999, the parent 1992 legislation is the current legislation guiding spatial and physical development planning in Nigeria (Omole and Akinbamijo, 2012). This enactment sought to assign land use planning and development control within the three tiers of government in the country. The first part of the law shows the hierarchy and delineates the different levels of physical development planning, administration, composition and function in Nigeria. By this, three-tiered planning bodies are constituted at the Federal, State and Local Government levels identified as the *Commission*, the *Board*, and the *Authority* respectively. While the Commission is responsible for the formulation, preparation and implementation of national physical development policies, the Board is required to develop the State policy for urban and regional planning within the framework of the national policies. The authority is responsible for planning at the local government level. The types of plan to be prepared, approved and implemented at each planning level as stipulated by the law is summarised in Table 4.1.

Table 4.1 - Types of physical development plans in Nigeria

Type of plans	Federal Government Level	State Government Level	Local Government level
Planning institutions	National Planning Commission	State Urban and Regional Planning Board	Local Planning Authority
National Physical Development Plan	✓		
Regional Plan	✓	✓	
Sub-Regional Plan	✓	✓	
Urban Plan	✓	✓	
Town Plan			✓
Local Plan		✓	✓
Rural Area Plan			✓
Subject Plan	✓	✓	✓

4.4.3.1 Preparing development plans

The statute provides procedural guidance for the preparation of the National Physical Development Plans (NPDP) at the Federal level and stipulates that the same process be applied for plan being developed by any of the other planning institutions. As shown in Figure 4.4, the process commences when the planning authority formulates the objectives and sets the guidelines for the physical plans. To ensure coherence and consistency between all the levels and variants of physical planning in the country, the legislation mandates a call for submission from other planning bodies, other government bodies, non-governmental organisations and interested members of the public. However, there are no guidelines on how the members of the public are to be informed or what constitutes the description of *interested members of the public*.

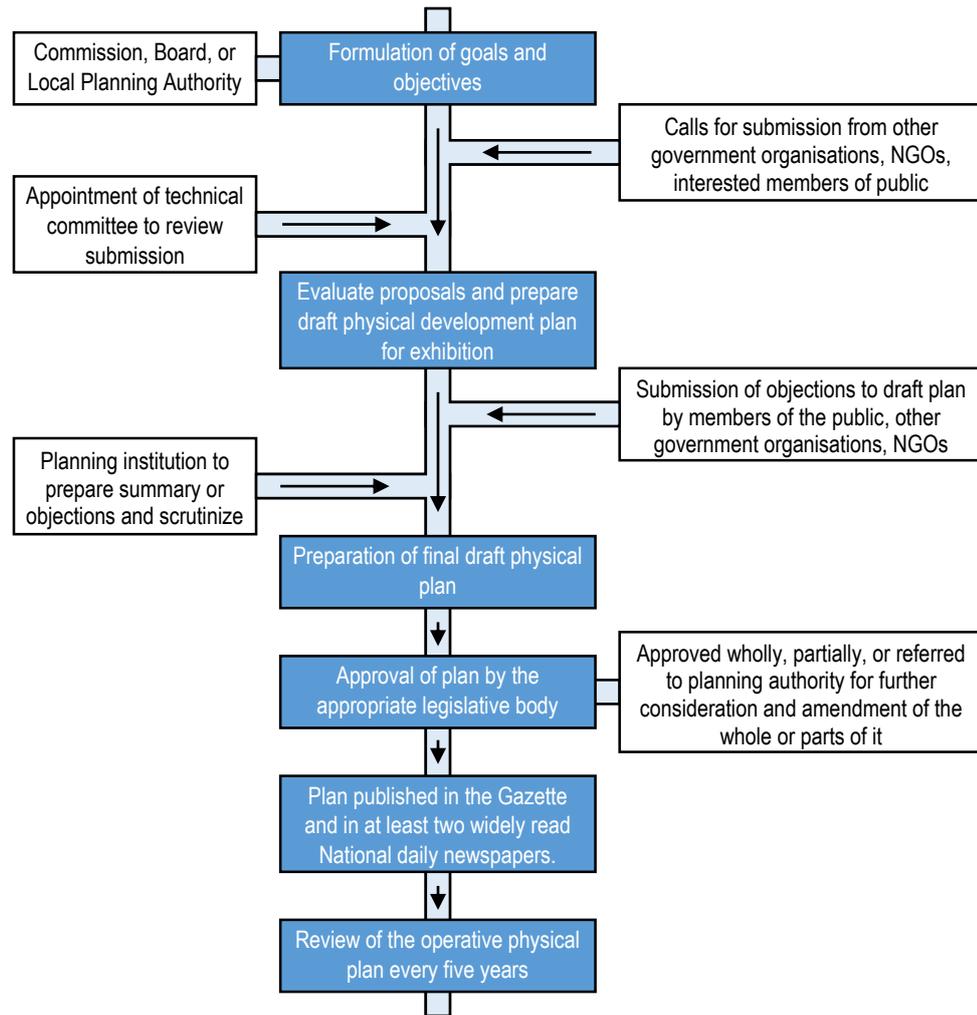


Figure 4.4 - NURPA procedures for preparation of physical development plans

A technical committee is appointed to evaluate and analyse the submissions received and use them in preparing a draft of the physical development plan that would be exhibited. For a statutory regulation that provides detailed breakdown of the composition of the planning institutions, it is surprisingly quiet on the expected requirement of the technical committee that carries out one of their core functions. Equally, the legislation is vague about the location and the duration of the exhibition, but it is optimistic that members of the public, other government institutions and private sector would have the opportunity to submit their objections about the draft plan. With only one draft plan submitted, the stipulation does not encourage the consideration of alternatives.

The planning authority has the responsibility to scrutinize the comments and prepare a summary of the received objections. It is expected that a final draft plan would be submitted for approval after due consideration of all the submissions. Following approval by the appropriate legislative body, the physical plan must be published in the Gazette and in a minimum of two national daily newspapers. Finally, the operative physical plan is subject to review every five years to align with the socio-economic realities in Nigeria.

The nature of public involvement in the physical planning process embodies the degree of tokenism identified by Arnstein (1969), where a semblance of engagement is exhibited but in actual sense, officials are basically just informing the citizens. This is an obvious outcome as the citizens make objections on the only draft plan produced and there is no other opportunity for them to review or enter negotiations about the amendments (if any) before the scheme is approved and accepted as public records. In other words, the public do not have the opportunity to influence the plan that has been developed for the shared benefit.

4.4.3.2 *Links to Land Use Act*

Like the objectives of the 1914 Ordinance of the British Colonials, Part IV of the legislation grants the institutions the powers to acquire any land that it considers essential to the implementation of their planning schemes. The various planning institutions have the powers to obtain any land that is required or at variance with the implementation of their approved physical plans. With this the authorities can revoke any rights of occupancy subsisting on those lands in accordance with the provisions of the Land Use Act (LUA).

It is quite understandable when land development that have contravened existing scheme is requisitioned but providing *carte blanche* on every land simply based on need to implement physical plan is likely to generate strong opposition. This is more so when the conditions for obtaining compensation

is subject to the recommendation of the appropriate authority that may have been politically induced to act in such manner.

4.4.3.3 *Obtaining development permit*

For projects requiring land development, more than half (48 sections) of the legislation focuses specifically on control of physical development. This is based on the understanding that effective land use planning can only be achieved through monitoring and control. The objectives of a physical development plan cannot be accomplished without development control (Omole and Akinbamijo, 2012). The planning institutions were authorised to establish multi-disciplinary Control Departments that will be responsible for implementing and enforcing adherence to physical development plans on lands within their jurisdiction. As a tie- in to land management, the powers of the institutions are limited to the jurisdiction held over the lands in review. This means that federal lands and estates are managed by the Commission, State *declared* lands are under the purview of the Board and the Authority can only exercise their power on lands within their boundaries other than Federal or State declared lands. In this regard, the approval of the relevant Control Department will be required for any land development. This may however create a bureaucratic nightmare in cases where a development might cut across different land types and require multiple approvals from the approving authorities.

To ensure that the development control unit has the necessary powers to carry out their duties, the legislation revoked previously existing law that exempted the Government and affiliated agencies from obtaining approval from the appropriate control department. Following the flowchart shown in Figure 4.5, all developers are required to apply for permit, providing information including the purpose, plans, drawings, designs and other relevant information for their application.

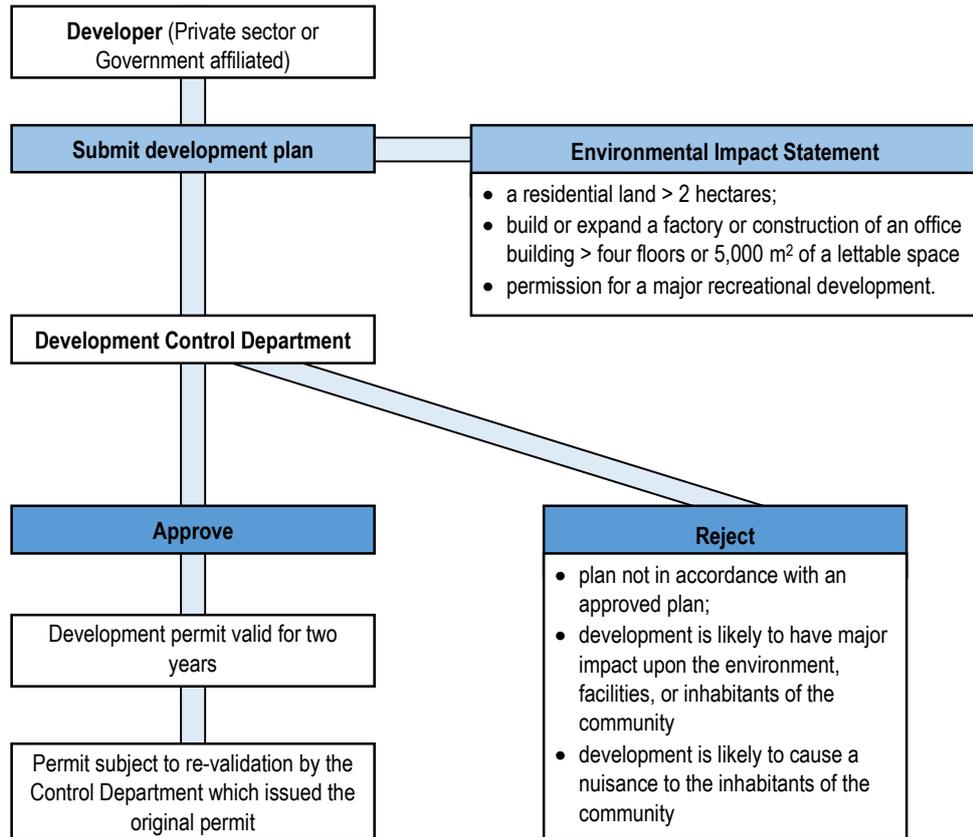


Figure 4.5 - NURPA procedures for development approval

The developer is required to submit an environmental impact statement along with the application if the project is;

- i. a residential land more than 2 hectare; or
- ii. to build or expand a factory or for the construction of an office building more than four floors or 5,000 square meters of a lettable space, or
- iii. a major recreational development

Unfortunately, the legislation does not provide any further information on what the statement should be addressing or the minimum requirements for completing the process. This means that the various planning bodies can make up their own interpretation. It is uncertain why the proponents of the law did not use the opportunity to link this to the Environmental Impact Assessment Act decreed within days of each other. Rather the authors have

assumed that the planning institutions are qualified enough to evaluate and assess the potential impact that a development may have on the environment and the community.

The control department have the powers to approve development proposals with amendments, reject out rightly, or delay approvals when they consider it necessary. In situations where permits have been approved, the issuing authority is empowered to revoke, amend or withdraw if the permits pass the two-year expiration period.

4.4.3.4 *Public consultation in improvement areas*

The legislation provides a detailed process for a participatory planning in areas that have been designated as improvement areas. Areas of improvement are areas that have been earmarked for rehabilitation, renovation and upgrade of the physical environment, basic infrastructures and social facilities. An area may be selected for improvement to satisfy the conditions of a local plan or based on the needs or demands of the community.

Although, the stipulation does not provide what a community needs to do to have their area nominated, it does however provide a framework for informing and engaging the residents and associations of the community on the improvement process. As illustrated in Figure 4.6, before an area is designated as an area of improvement, the planning authority must inform the residents of the area using the best means applicable. This infers that the means of notification should not be the ones suitable to the institution but employing the best strategy to ensure that everyone has been included in their communication. The information must also include the purposes, contents and justification for the improvement to be carried out.

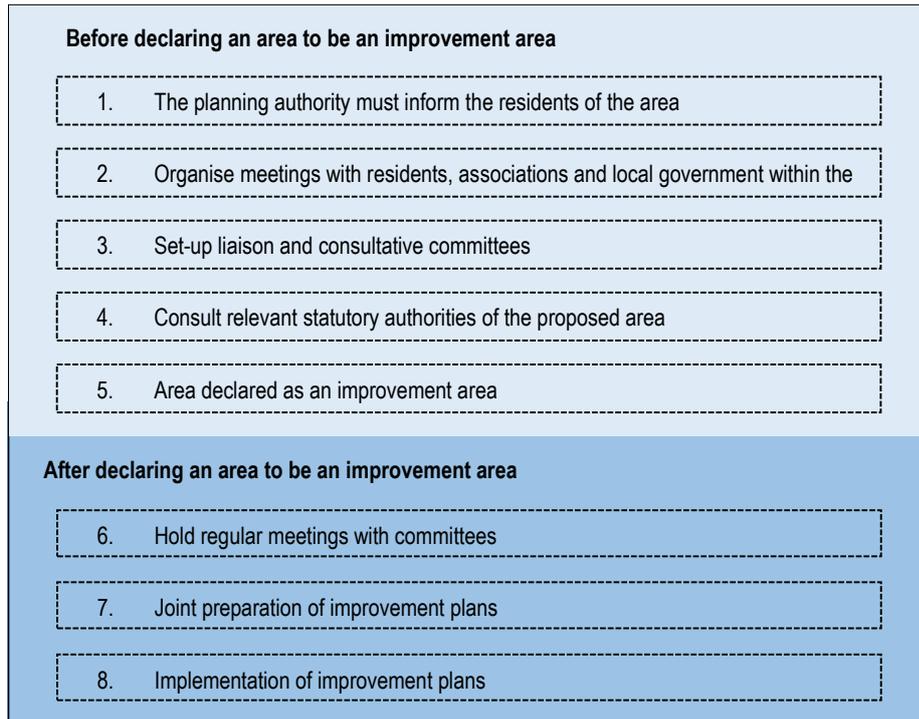


Figure 4.6 - NURPA procedures for public consultation

The planning authority is required to hold meetings with the residents of the community to obtain their views, opinions and insight. Taking this further, the engagement includes the establishment of consultative committees that would serve as liaisons between the authority and community representatives to monitor the progress of work being carried out. As good guidance, the constitution of the committee precedes consultation with other relevant statutory authorities, such that those institutions are unable to take over the committees by their own representatives. The feedback received from the meeting with residents and comments from the authorities form the basis of declaring the area an improvement zone.

Once an area is declared for improvement, it is mandated that the planning authority hold regular meetings with the established committees to apprise them of the progress of work being carried out. It is expected that the improvement plans would be discussed, designed and negotiated at those interactions. With such a detailed and appropriate procedure for public engagement, it is uncertain why the authors of the legislation have neglected

such approach in the preparation of physical development plans or in the approval of development permit.

4.4.3.5 *Raising objections*

Avoiding the challenges of raising an objection experienced under the Town and Country Planning Ordinance of 1946, Part VI of the NURPA outlines a clear appeals process. This aspect establishes an Urban and Regional Planning Tribunal in each State of the country and at the Federal Capital Territory. The tribunals are not recommended for the Local Government level; therefore, it is assumed that any grievance occurring at the Local Planning Authority would be referred to the State Tribunal. Although it can be argued that the tribunal at a State Government level reduces the burden on the Local Governments and allows for an objective review, it however adds another layer of bureaucracy, costs and disadvantage for low income people who have been affected by the formal system.

The weakness identified by Taylor (1988) in the 1946 ordinance, is reaffirmed when the heads of the planning institutions and the respective tribunals are political appointees. As such, it is highly doubtful that any appeal against a politically motivated decision might get overturned. Nevertheless, the NURPA is a vast improvement over the Town and Country Planning Ordinance, as seen from the narration. The proponents of the act understood the need to integrate planning at the local government level, which was previously insufficient (Home, 1983). Unfortunately, the indicators of limited fiscal base and restricted autonomy identified by Rakodi (2001) supports the reactive tendencies that is found in the Nigerian planning system.

Furthermore, the NURPA clearly lacks the holistic approach expected in view of land use planning. In the integration with the land tenure system, it does not make a demand on appropriate land records nor does it insist on developing cadastral maps to ensure that there is a comprehensive register of the land estate of the country. This would have created a framework that

is critical to gathering information and preparing detailed physical plans. It is impossible for spatial planning to exist in isolation without making effective and appropriate integration with other aspects of land policy (Rakodi, 2001). In addition, the powers to revoke Rights of Occupancy issued under the Land Use Act 1979 shakes the confidence anyone may have in such instrument as a title to land. Rather than such incendiary approach, a more reasonable procedure would have stipulated that the Control Department should be consulted before the issuance of the Right of Occupancy. This would have protected the legitimacy of such titles and eliminating the need to pay compensation on revoked rights. At the moment, land administration run parallel to the planning system in Nigeria.

In addition, the decree was promulgated on the 15th of December 1992 about five days after a comprehensive Environmental Impact Assessment (EIA) Decree was passed and there are no links between the two legislations. It is difficult to fathom the reasons behind the inclusion of a requirement to submit an environmental impact statement without providing guidelines, instead of routing applications through the more rigorous EIA procedure. With a very scanty description, the environmental requirement can be thought of as a last-minute addition by the authors of the legislation. Regardless, it is imaginable that the inclusion of this requirement is likely to be a source for problems in the operations of both NURPA and the EIA law.

4.5 Environmental management in Nigeria

Environmental objectives are part of the provisions in the Constitution of the Federal Republic of Nigeria (1999), wherein Section 20 declares that *the State shall protect and improve the environment and safeguard the water, air and land, forest and wild life of Nigeria*. Unlike the developmental phases in Nigeria that can be linked directly to the colonisation timeline, the evolution of environmental management and responsibility owes its evolution to the *Koko incident* of 1988, when it was discovered that a farmer in the small coastal village of Koko, was approached by a representative of an Italian company to assist in the dumping of toxic and hazardous waste (Ogbodo,

2009; Ijaiya and Joseph, 2014). Before this event, environmental issues and problems had always been treated on an ad hoc basis in Nigeria.

As seen in Figure 4.7 below, it would have been expected that historical account of environmental management would be centred on the discovery of crude oil in 1956, due to the considerable irreversible environmental implications of exploitation and exploration if not properly managed. However, legislative enactments at the time were more geared towards resolving problems relating to oil exploration and economic growth rather than environmental protection.

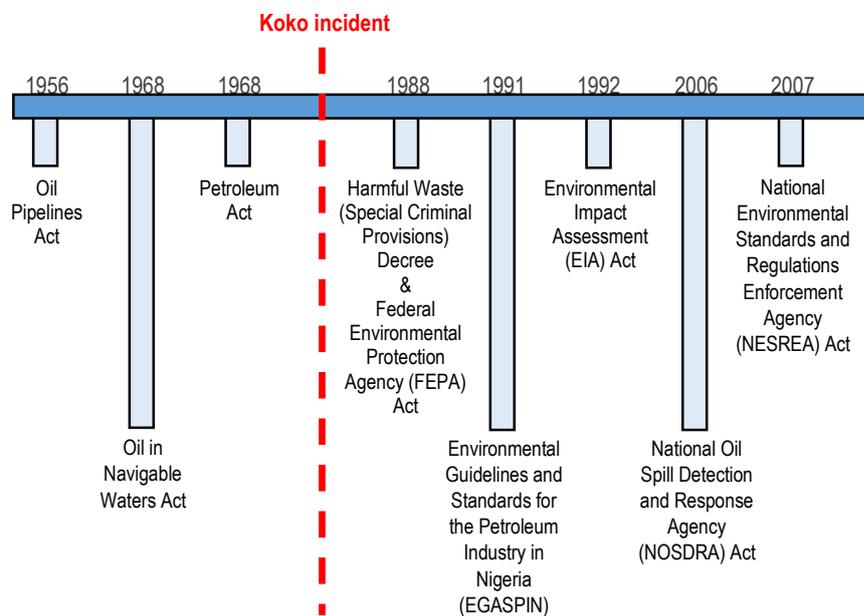


Figure 4.7 - Timeline for environmental laws in Nigeria

4.5.1 Pre 1988

4.5.1.1 Traditional environmental management

Environmental conservation values are readily identified in the customs and practices of the communities prior to the British interruption. Taboos, superstitions and religious requirements have been instrumental in preventing overexploitation and in the preservation of rare fauna and flora (Chokor, 1993). For example, the Ofu Dibu people of Cross River State

prevent men from hunting on certain days (Jimoh *et al.*, 2012); protection of the purple-blue coloured python in Uli (Anoliefo *et al.*, 2015); and the Usede pond in Delta State where fishing is allowed once every ten years (Rim-Rukeh *et al.*, 2013). These social restraints governing the community behaviour have intrinsic conservative elements even when they may not be the original intention.

Violation of these regulations is linked to mystical consequences which have social, environmental and religious implications. For example, Rim-Rukeh *et al.* (2013) report that the Okorobi people believe that provoking the gods could result in the disappearance of the rivers and streams. Beliefs such as this, established environmental awareness within the culture of the people as it is obvious that non-conformity would lead expulsion. The need to remain as a part of the society and the complexity of the rituals required to appease the gods indirectly instituted environmental values.

4.5.1.2 Colonial environmental management

Under the British colonisation, there was no legislation directly promulgated towards the preservation and protection of the environment. This is not surprising, considering the exploitation with minimal interruption policy of the colonial administrators.

Albeit, the Criminal Code of 1916 can be considered as the first enactment in Nigeria to address pollution and by extension environmental quality. In resolving offences against public health in its Chapter 23, the law considers that a person is guilty of misdemeanour if they render a water body less fit for the purpose for which is ordinarily used and if they vitiate the atmosphere as to make it harmful to the general health of people. This is based somewhat on the *polluter pays* principle. As a criminal law, it only prescribes a sentencing on the offending party in form of imprisonment, and there is no form of remediation to the damaged environment. By inference, if there is no danger to human health or loss in welfare, then there is no harm done.

4.5.1.3 Oil Pipelines Act of 1956

The commercial oil discovery at the Oloibiri Oilfield in 1956 by Shell D'Arcy ushered Nigeria into the committee of oil producing states just four years before her independence from the British rule. The legislation was since being passed to support the petroleum enterprise, in relation to oil exploitation and exploration. It is obvious that the objective of the laws enacted to the effect were to ease the problems and factors hindering economic development of the crude oil.

The legislation empowers the Minister of Petroleum Resources to issue licences for the establishment and maintenance of pipelines incidental and supplementary to oilfields and oil mining. This consent includes ancillary activities that allows the holder of the permit, to survey, dig and bore the ground, remove trees and vegetation that may impede the determination of a suitable site for the setup of an oil pipeline or supplementary installations. With no requirement to evaluate the potential impact of the pipeline survey and installation, the act can be considered the start of social inequity in the Niger Delta region of Nigeria. The provisions allow unfettered rights to licence holders, to pass over any land adjoining their routes without recourse to the owners of the land. To ensure that mining activities proceed uninterrupted, the stipulation allows the eviction and imprisonment of any person (s) that hinders or obstructs the taking or use of any land.

The act places a civil liability on the owner of the oil pipeline and is liable to compensate any person (s) that suffers economic loss or physical harm because of the operation of the pipeline. However, this raises the issues of environmental justice, as the legislation only covers direct impact to human beings and there are no other requirements for restoration of the affected natural environment. As such, this ordinance established the venerated status of the moneymaking petroleum industry irrespective of the problems that it may cause on the affected communities and their environment.

4.5.1.4 *Oil in Navigable Waters Act of 1968*

In 1968, the Oil in Navigable Waters Act was passed to implement the terms of the International Convention for the Prevention of Pollution of the Sea by Oil of 1954 (OILPOL Convention). This enactment prohibits the discharge of certain oil (crude oil, fuel, lubricating oil and heavy diesel oil) into waters within the territorial waters of Nigeria and other water bodies (including inland waters) that are navigable by sea-going ships. The provisions require ships to have equipment to prevent oil pollution, mandates the keeping of oil records, prohibits the transfer of oil at night-time and imposes the duty to report any discharge of oil into territorial waters.

One aspect which gives a hint of environmental consideration can be found in Section 13 which embraces the polluter pays principle. It states that the convicted offender may be ordered by the court to pay the whole or part of the expenses incurred in removing the pollution or making good any damage attributable to the offence. With numerous iterations and changes to the initial instrument, this legislation has not been amended to reflect the recent MARPOL conventions, neither has it revised to incorporate the relevant amendments. As such, the current standards for enforcing reasonable care and environmental responsibility for oil discharge into Nigeria's waters is based on an outdated enactment.

4.5.1.5 *Petroleum Act of 1969*

Petroleum Act was passed in 1969 to provide for the exploration of petroleum from the territorial waters and the continental shelf of Nigeria. In addition, the legislation vests the ownership of all on-shore and off-shore revenue generated from petroleum resources in the Federal Government. This means that all the petroleum designated areas automatically fall under the jurisdiction of the Federal Government. This act empowers the Minister of Petroleum Resources to grant oil exploration, prospecting, mining and refining licenses. As the primary legislation which governs crude oil exploration and exploitation in Nigeria, the law provides scant consideration

for possible environmental consequences of these economic activities. It is easy to see where the interests of the promoters of the legislation lie, as prevention of atmospheric and water pollution is not considered a crucial part of the act but an aspect that the Minister may decide to do something about if so inclined. The law does not consider land pollution and contamination as a possible impact of the licenses granted, as this is noticeably absent in its provisions.

In the same year, the Petroleum (Drilling and Production) Regulations of 1969 was released under the power conferred on the Minister for Petroleum Resources. A poor attempt was made to address pollution prevention under the sections 25 and 43 (subsection 4) of the regulations which stipulate that where any pollution occurs or has occurred, the licensee of the facility must take immediate steps to control and, if possible, end it. With this statement, regulatory controls in terms of pollution is placed in the hands of crude oil operators, as they only have a moral obligation, or show that they have taken necessary steps to control it if it is cheaper to pollute than to implement best practices. To compound this situation, there are no requirements for the polluter to clean up the pollution and restore the environment to the state before the pollution.

The need to rebuild and grow after Nigeria's civil war in 1970 accelerated a heavy reliance on petroleum production, pushing Nigeria into a single commodity economy till today. This has invariably left the petroleum sector as a sacred territory, replete with its own regulations that are only subject to the Department of Petroleum Resources (DPR). It is not surprising to find that all the statutory provisions issued in relation to the oil industry, favour the irrational use of natural resources without due considerations for the possible environmental impacts.

It can be deduced that the interdependence of development and the environment was not sufficiently recognized judging from the absence of a clear national policy or legislation aimed at environmental management, conservation and sustainable use of natural resources. The dearth of such deliberate instruments naturally signifies the absence of an institution or

agency charged with the task of protecting and the developing the environment. Ogunba (2004) opines that the general belief in the country prior to 1988 was that only the petroleum industry deserved such environmental scrutiny.

4.5.2 Post 1988

4.5.2.1 *Harmful Waste (Special Criminal Provisions) Decree of 1988*

The aftermath of the Koko incident led the Government to focus on the challenges of environmental abuse. As a first response to the event, the Harmful Waste (Special Criminal Provisions) Decree of 1988 was enacted to address all activities related to the sale, transportation and storage of harmful waste.

The act is a marked departure from previous environment related laws as it not only considers unauthorised procurement and handling of harmful waste a crime but also omitting, aiding and counselling another person to do so. Corporate bodies are not exempt under this law; as designated authorities are also liable if they acted in connivance or negligence can be proven. Civil liability is fully recognised as the *polluter pays principle* is applied without recourse to any diplomatic privileges held by any of the culpable party. Within the act, the need for a ministerial oversight for the environment was reinforced, which was previously lacking.

4.5.2.2 *Federal Environmental Protection Agency (FEPA) of 1988*

The Koko incident brought to the fore that Nigeria did not have the legal and institutional framework to address environmental issues (Chokor, 1993). Soon after, the Federal Environmental Protection Agency (FEPA) Decree No. 58 was passed in December 1988, establishing an agency that had the responsibility to protect the environment and promote biodiversity conservation in Nigeria. The agency was tasked with spear-heading sustainable strategy in the use of the nation's natural resources and seek

ways to bolster investments in environmentally friendly technology. Rather than the usual reactive control measures that the regulations play on environmental issues, the act placed the agency in an advantageous proactive role, as they were empowered with policy initiation capabilities which gave rise to several regulations including; the National Environmental Policy (1989, revised in 1999) , the National Guidelines and Standards for Environmental Pollution Control in Nigeria (1991), National Effluent Limitation Regulation (1991), Environmental Impact Assessment (EIA) Decree No. 86 (1992) and National Agenda 21 (1999).

With the FEPA act, Nigeria established an institution that was solely responsible for developing criteria, guidelines, specifications and regulations geared towards enhancing national environmental standards. This agency is said to be Africa's first established national institutional strategy for environmental management (NESREA, 2011). These standards were considered under water quality, air quality and ozone protection, noise control and hazardous substances. State and Local Governments were encouraged to establish their own equivalents of the agency for the maintenance of environmental quality within their jurisdiction. It was however silent on the roles and expected relationship between the agency and these other environmental institutions. Part of the core functions of the agency was to prepare periodic master plans, and to promote cooperation amongst inter-governmental agencies, regional and international bodies, in the protection of the environment and conservation of natural resources.

In addition to the precautionary principle underlining the act, the polluter pays principle is also evident as it makes spiller's liable for any discharge into the environment that was not caused by a natural disaster, war or sabotage. As laudable as the provisions of the act are, the agency plays second fiddle to the DPR in the removal of oil-related pollutants released into the environment. In the stipulations in section 24, it is obvious that the agency cannot interfere without a request from the DPR in oil-related discharges. This supports the earlier notion that the petroleum industry is a protected sector whose interests supersede any consideration and regulations that would normally apply in every other aspect.

In 1999 the FEPA act was repealed, and the Federal Ministry of Environment was created tasked with mainstreaming environmental concerns into development activities (NESREA, 2011). This was born out of the need to create a direct representative for environmental issues at the highest level of decision making in the country (Okorodudu-Fubara, 2012).

4.5.2.3 Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) in 1991

The journey to the EIA regulation can be traced back to Nigeria's involvement at the Stockholm Declaration of the United Nations Conference on the Human Environment (Anago, 2002) held in 1972, where national governments and international organizations deliberated on the need to attain a common outlook and principles necessary to inspire and guide the peoples of the world in the preservation and enhancement of the human environment. It will take almost 20 years and several participations at such gatherings for Nigeria to promulgate her own legislation on environmental assessment. Even though, the fourth NDP (1981-1985) recognized importance of environmental impact assessments for both public and private projects (Olokesusi, 1998), this was not backed up by a formal legislation.

The release of National Policy on the Environment by FEPA in 1989 highlighted the need of the EIA as an integral part of environmental protection and management. The aftermath of this led to the first EIA system for the oil sector in the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) by the DPR in 1991. The guidelines highlighted the need for planning and monitoring of new projects and installations to prevent environmental degradation (DPR, 2002).

The environmental abatement procedure of EGASPIN provides two approaches depending on the scenario to be examined; an Environmental Evaluation (Post-impact) Report (EER) which appraises the extent of damage already caused by oil exploration and exploitation to the environment, and the Environmental Impact Assessment (EIA) report to evaluate the potential

impact of proposed projects or facilities. This is the first time that the Nigerian petroleum industry would be required to integrate environmental concerns into their operations.

The guidance provides a step by step systematic workflow for environmental assessment. As seen from Figure 4.8, the EIA process suggests a four-stage report; covering screening (Environmental Screening Report), a preliminary assessment, EIA draft of potentially significant impacts and a final EIA report which includes EIA monitoring and an environmental management plan.

The EIA requirement is not shirking in impact identification as it goes beyond asking project initiators to not only distinguish between probable primary and secondary (indirect or induced) impacts, but to also identify short term, cumulative and long-term impacts. To ensure the validity and reliability of the EIA reports produced, the regulation instructs that the reports should be prepared by parties with a Certificate of Eligibility issued by the DPR. Accordingly, the EIA consultants and reviewers would have been assessed by the institution and considered competent before awarding the certificate. Even though public forum is considered a requirement for obtaining environmental permit from DPR, the approval workflow shows that other stakeholders are the only form of consultation carried out at the preliminary EIA stage. Therefore, an inference can be made that public involvement is more informatory rather than participatory.

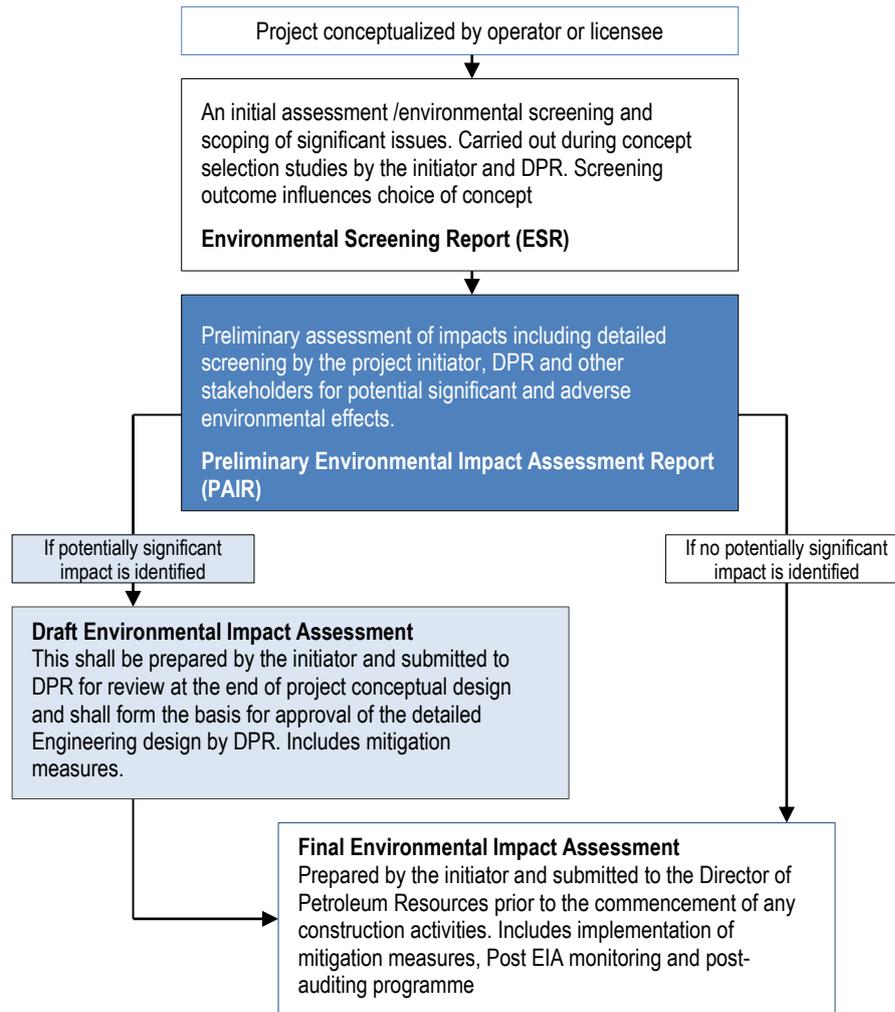


Figure 4.8 - EIA sequence under EGASPIN

As a measure to prevent project sponsors from renegeing on agreed approvals and mitigation measures, EGASPIN requires a function chapter on an environmental management plan in the final EIA report. This section discusses the implementation of the amelioration measures and obligations to stakeholders, and it also establishes a monitoring and auditing scheme. In addition, a summary report of post EIA monitoring is to be submitted to the Director of Petroleum Resources, two times in a year in the construction phase and annually for a minimum of five years in the operational stage.

The guideline is a giant leap in curtailing the actions of the petroleum industry that have gone unrestrained since 1956. However, there is a lot of faith placed in the technical skills of the DPR that they would be able to

appropriately evaluate environmental concerns. The EIA requirement is not backed up by any law and the enforcement powers wielded by the DPR is based on the authority it has to issue or withdraw of oil-related licenses.

4.5.2.4 *Environmental Impact Assessment (EIA) Decree of 1992*

As EGASPIN only applied to the petroleum sector, a comprehensive systematic, legal and institutional framework for identification, prediction and evaluation of potential environmental impacts in development planning and approval of development permit was then promulgated in 1992 through FEPA. Arguably, this can be linked to the decisions of international agencies such as the World Bank and the Organisation for Economic Cooperation and Development (OECD), mandating the adoption of EIA procedures and methods as conditions precedent to granting aid or for the funding of major projects (World Bank, 1991; OECD, 1992). Commentators such as Wood (2003) link the widespread uptake among developing countries to the influences of development agencies demanding that the governments adopt EIA systems as part of the requirements for granting aid or project funding. As such, the ethos behind the implementation of EIA in such countries may not be a response to endemic demand for better environmental management but as a condition required for obtaining financial support. As such, it cannot be expected that the EIA systems borne under such drivers would deliver the same levels of environmental improvements when compared to others that have been developed based on native consciousness to protect the environment. This provides an insight into the reason why the EIA system has been treated as a standalone structure rather than embedding it within the formal planning structure established in the same year.

Under the EIA legislation, all project proponents, either in the public or private sectors, are required to consider the environmental effects of their intended projects at an early stage. This consideration involves obtaining FEPA approval that significant adverse environmental effect would not be caused by the project and any such effect will be sufficiently mitigated. Even though the EIA law provides a list of activities subject to mandatory review,

the Guideline for EIA procedure released by FEPA in 1994, further categorizes projects into three groups (see Figure 4.9) based on, project magnitude; scope and extent; duration and frequency; associated risks; significance of impacts; and availability of mitigation measures for the potential and associated impacts identified (Olokesusi, 1998).

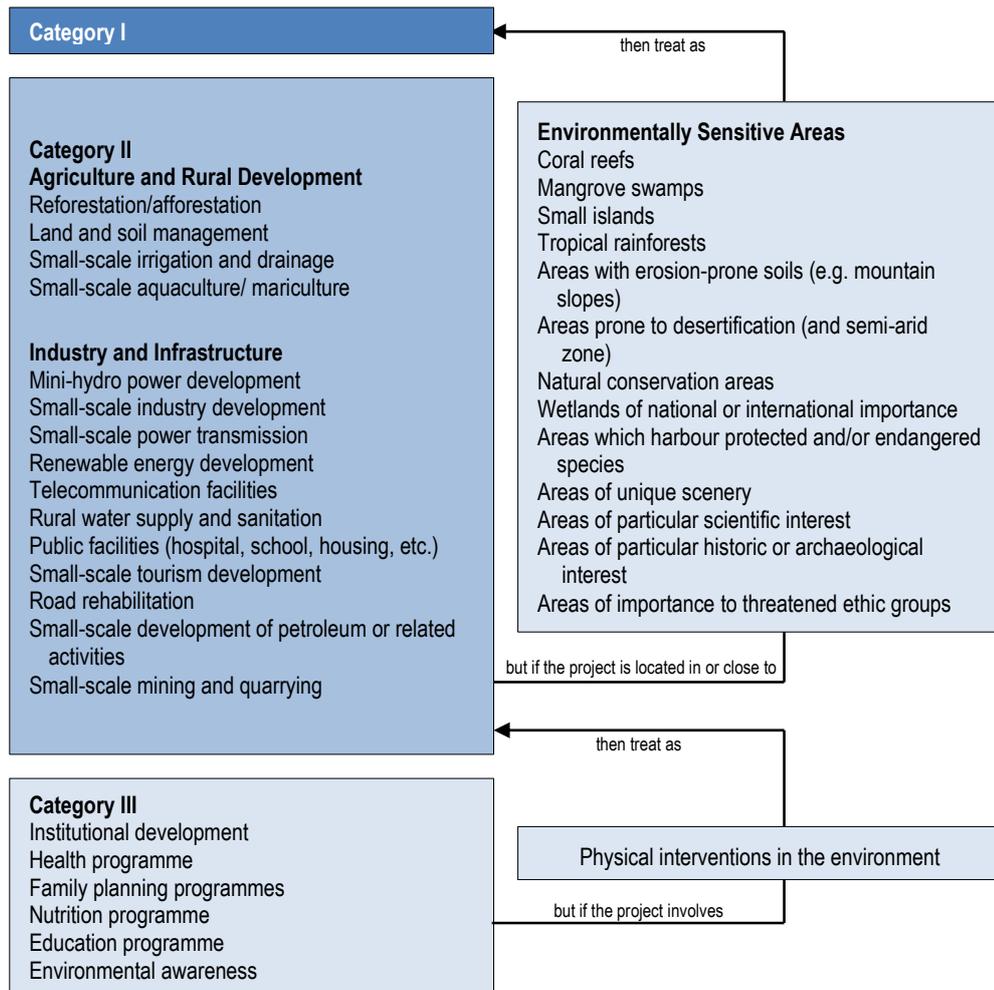


Figure 4.9 - Projects requiring mandatory EIA studies (source: FEPA, 1994)

Category I projects are those requiring full and mandatory EIA studies. Whereas projects in Category II are those smaller in capacity and/or size to Category I types that would normally not require a full EIA, unless they are likely to be situated in environmentally sensitive areas. Category III projects are considered essential (Olokesusi, 1998) with beneficial impacts on the

environment (Echefu and Akpofure, 2003) that does not often require physical intervention, but when they do, they become Category II and if located in environmentally sensitive areas they become Category I.

As illustrated in Figure 4.10, the EIA process is triggered by the project proponent when they submit their project proposal. It is expected that this would include the description of the activities, an assessment of the potential environmental impacts, a description of the measures available for the mitigation of those impacts and the possible locations that may be affected. While the regulation provides the expected pathway for the EIA process, it follows the negative trend identified by Wood (2003) when it fails to be explicit about the integration of the EIA into other decision-making procedures.

The EIA process under the EIA Act is quite similar to the procedure under EGASPIN as the same procedural documents are still required. First, the project proponent submits the proposal, which undergoes a preliminary assessment and screening to determine if EIA is required. For projects requiring EIA, scoping is conducted, and a draft EIA report is submitted for review by a review panel. The report is made available to the public for their comments and contributions. A review report containing the panel recommendations and summary of comments received from the public is sent to the project proponent for amendment. A final EIA report is then submitted to the technical committee whose function is to approve, suggest changes or decline.

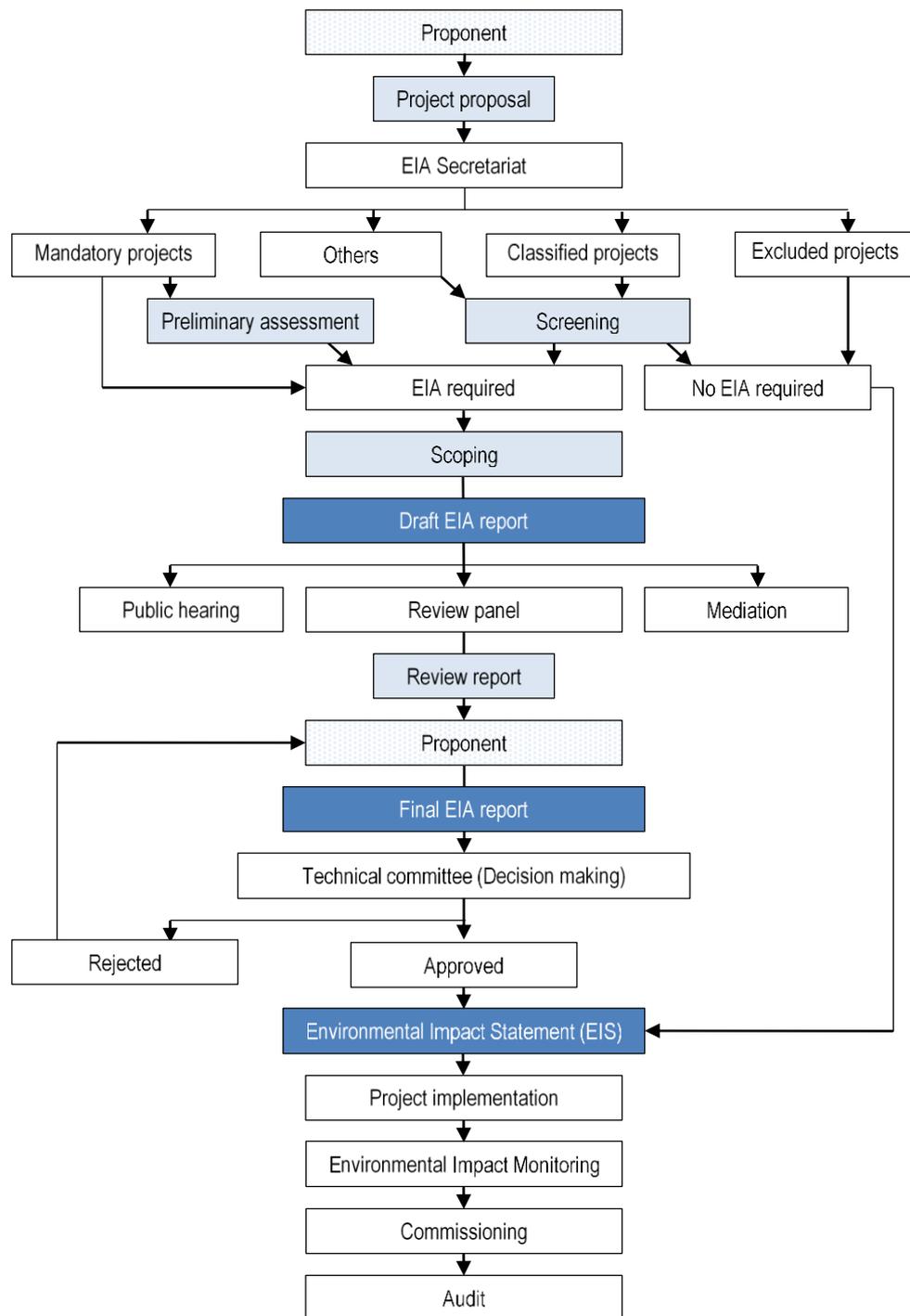


Figure 4.10 - EIA process flowchart in Nigeria (source: FEPA, 1994)

With the procedural framework depicted it is probable that the Government may bypass the EIA process, since it is possible to get as many projects on the exclusions and classified lists. It has also been reported that some government agencies refuse to conduct EIAs for their project as they do not consider themselves subject to controls by another governmental agency

(Wood, 2003; Ogunba, 2004). Anago (2002) reports that the various levels of Government often approve projects without conducting the mandatory EIA study. In such cases, EIA reports are then commissioned as post-mortem evidence to tick the boxes. For instance, dredging activities for the Dubai-styled Eko Atlantic City commenced in 2009 before the 2011 submission of the EIA report (Okorodudu-Fubara and Fagbohun, 2012). The fact that construction work had started three years prior to gaining consensus on project impact and mitigation measures, in this case makes the EIA exercise a pointless activity.

As remarkable it is for Nigeria to have EIA regulation, the features of this legislation have eroded most of the benefits of having an EIA system. For starters, the President's opinion on the likely environmental effect of a project guarantees the exclusion from the mandatory study. It is unclear how the President arrives at this perspective; neither does it explain what the conditions precedent to this decision should be. Even though, a simple explanation can be offered that the legislation was prepared under a Military Government and it was necessary to bestow the Commander-in-Chief of the Armed Forces an *all-knowing* wisdom in all things, this still remains the same under the current democratic dispensation.

Added to the problems of transparency in the classification of projects, there is little room for public participation, as this is not a requirement considered crucial in the decision making and approval process. It is obvious that EIA approval can be obtained without due consultation with the public that are likely to be affected by the projects. Often times, the affected public are not properly notified of the potential impacts and in most cases unable to interpret the EIA reports (Nwoko, 2013). The failure to mandate public participation supports the suggestion that the implementation of the EIA was not borne out of societal yearning for better environmental protection. As it is, the review panel can make their decisions to approve the EIA without recourse to the public, which negates the transparency the EIA ethos promotes. The legislation does not provide a viable platform for challenging the final EIA report that goes to the approving Technical Committee. Any dissatisfaction would have to be taken up under the earlier discussed

NURPA (if relevant) or at the Courts. Both choices are exclusive options available to people with the means to access them.

Furthermore, EIA administration in Nigeria is layered with complexities owing to the three different systems running simultaneously under the NURPA, EGASPIN and the EIA Act. This creates a unique problem for projects requiring approval from more than one of the agencies. It means that the proponent is likely to be subjected to different conditions under the separate processes and a continual resubmission according to the preference of the institutions (Olokesusi, 1998). Ogunba (2004) reports that permit seekers often ignore one of the agencies.

Though, the EIA process stipulates consideration of alternatives, the weak coordination with land use administration results in situations where site procurement occurs prior to an assessment (Olokesusi, 1998; Nwoko, 2013). At this stage, the EIA can only function in a permitting capacity to try to mitigate the impact of the project rather than recommending an environmentally favourable choice. This typifies the weakness of the EIA to be able to redirect development in environmentally sensitive areas to areas that offer more resilient features (Lee and Walsh, 1992; Alshuwaikhat, 2005; Glasson *et al.*, 2005).

4.5.2.5 *National Oil Spill Detection and Response Agency (NOSDRA) Act, 2006*

As an oil producing country, uncontrolled discharge of crude oil into the environment is an unintended consequence associated with the exploration, production, transportation and storage of petroleum resources. The source of the unwarranted release is many and varied, including poor maintenance of infrastructures, corrosion, accidents, equipment malfunction, sabotage and oil theft (Amnesty International, 2013; Rim-Rukeh, 2015). Although an actual information of the spill incidents and the quantity of oil discharged into the environment remain unknown, rough estimates indicate that there must have been over 10,000 spills, with the DPR reporting 4,835 incidents and a discharge of 1.8 million barrels between 1976 and 1996 alone (Amnesty

International, 2013). There is no gainsaying that oil spillage has enormous human, social, economic and ecological implications.

In response to the rising number of spill incidents, the National Oil Spill Detection and Response Agency (NOSDRA) Act was passed in 2006, to establish an agency that would spearhead the immediate response to oil spill incidents. This federal agency is tasked with the responsibility for spillage detection, surveillance, identification of high-risk areas, establishing a National Control and Response Centre, and the coordination and implementation of the National Oil Spill Contingency Plan (NOSCP) for Nigeria. Although the legislation is light on the functions and expectations of the agency, the federal agency was empowered with regulations making abilities.

In 2011, the Oil Spill Recovery, Clean-up, Remediation and Damage Assessment Regulations was released by NOSDRA as a guideline for their activities. The main thrust of the regulation is the constitution of a Joint Inspection Visit (JIV) as an immediate follow up to any oil spill incident. The JIV is to include the operator or owner of the facility, representatives of the affected community, State and the Agency. As the NOSDRA act mandates the facility operators to notify the agency within 24 hours of oil spillage, the JIV is expected to immediately visit the site, investigate the cause, assess the volume of oil spilt and submit their findings to the agency.

The JIV has been lauded for the participatory approach (Rim-Rukeh, 2015) as it enables stakeholders to synergise and gain shared understanding which is essential for future interaction. However, the investigation relies heavily on the oil companies as they determine when the JIV would be carried out, provide transportation to members of the JIV and furnish the team with technical expertise which is often lacking on the part of the regulators and the community representatives (Amnesty International, 2013). Paucity of skilled personnel, poor financial resources and requisite technology (Olaniyan, 2015) are all contributing factors that have made a mockery of the JIV process and NOSDRA.

Furthermore, activities in the petroleum industry are regulated by the DPR and part of the stipulations under EGASPIN is commencement of clean-up within 24 hours and reporting the incident to the Director of Petroleum Resources. Apart from the fact that this leads to two reports to NOSDRA and DPR, JIVs are often scheduled days after the oil spillage is reported (Olaniyan, 2015). This means that substantial remediation actions would have been carried out before the arrival of the JIV.

At the moment NOSDRA can be likened to a *paper tiger*, lacking the ability to detect and investigate oil spillage. Aside from the challenges of funding, technology and expertise, DPR must be made to relinquish authority on all matters relating to oil spillage to NOSDRA. These would allow NOSDRA combat the systemic flaws in the current oil spill investigations.

4.5.2.6 National Environmental Standards and Regulations Enforcement Agency (NESREA) Act, 2007

The establishment of NESREA as a federal agency under the Federal Ministry of Environment has been heralded as a new dawn in environmental management in Nigeria (Ladan, 2012). The repealing of the FEPA law and subsequent conversion into a federal ministry necessitated the creation of an agency with appropriate legal framework for environmental enforcement (NESREA, 2011). This agency is responsible for the instituting environmental regulations, adoption of multilateral environmental agreements, review of environmental standards and liaison with relevant stakeholders on enforcement of standards and guidelines. With all these functions, NESREA is regarded as the Chief Enforcer of the Federal Government (Okorodudu-Fubara, 2012).

However, the duties of NESREA do not extend to the oil and gas sector, which is also stipulated in Section 8 of the act. There is no rational explanation to be provided for this exclusion given the environmentally destructive nature of oil exploration, production, transportation and storage.

The DPR continues to hold sway over the nation's economic lifeline with limited supervision of oil spillage by the NOSDRA.

As a means to allow for effective implementation of environmental standards, the agency is able to create regulations through the Minister of Environment. This enables NESREA to transit multilateral environmental treaties into subsidiary legislation that would have otherwise been delayed by the legislative process (Okorodudu-Fubara, 2012). These powers have allowed the publication of 24 regulations tackling several environmental issues that have not been previously addressed. The regulations focused mainly on establishing industry standards, biodiversity conservation, waste management and pollution control. Ladan (2012) opines that the regulations were aimed at the major environmental challenges experienced in Nigeria, being; effluent control in the industry sector, prevention and reversal of desertification, and natural resource management and conservation. Regardless, the regulations have relevant features essential for managing the environment. Some of the elements include the requirements to adopt best practices, intrinsic polluter pays principle, auditing of environmental performance, realistic fines and sanctions (Okorodudu-Fubara, 2012)

Being the chief environmental manager, it is uncertain why the agency has not translated the various climate change agreements into regulations. Three assumptions can be made in this regard;

- i. a possible conflict with the Department of Climate Change within the Federal Ministry of Environment
- ii. climate change is not considered a developmental issue for the country, as reported by Beg *et al.* (2002)
- iii. they do not have a strategy on how to translate them into explicit policies and regulations.

Although the introduction of NESREA adds to the multiplicity in regulatory institutions governing environmental management in the country, the agency has the potentials of achieving the intended objectives if a conducive environment is available. It is uncertain why the Federal Ministry of

Environment decided to keep the lacklustre NOSDRA and not merge it with NESREA to ensure that a holistic approach to the country's environmental management. Unfortunately, powerful individuals and groups (Adegoroye, 1994) with vested interests in the petroleum industry are unlikely to welcome the intervention of stringent environmental measures in the activities.

4.6 Chapter summary

This chapter has presented a historical and contextual background of land use, planning and environmental laws in Nigeria. While the British colonisation of Nigeria can be viewed as the beginning of the implementation of formal guidelines in land use planning, the regulations have become rather imposed and imported rather than having an organic growth which would be endemic to the Nigerian society. The intentions of the colonials and their approach to planning can be seen as an introductory source of differential planning and by extension differential vulnerability into the Nigerian society.

Nigerian LUP currently operates on three parallel systems that have been conceived to function autonomously but expected to work in tandem. The land administrative system issues rights of occupancy to use land without conferring with the planning unit. On the other hand, the planning unit can grant development permit without involving the EIA system. The absence of appropriate links in the operation of these structures contributes to the reasons why land-use planning in Nigeria has been reduced to regulatory function, reactive decision making and crisis management. The extent of those operations is subject to heavy political influence and limited fiscal resources that are strained just trying to keep pace with decisions made by the other systems.

There are appropriate laws addressing different environmental concerns in Nigeria. However, they are not useful if they have not been properly integrated into the land-use planning system. Unlike, the planning system

that can stop activities on a development without much damage, environmental deterioration commences once construction work begins. This is the plight of environmental management as it continues to trail behind approval of development permits. In addition, environmental management is plagued by a multitude of lead regulators including; NESREA, DPR (covering all issues relating to the petroleum industry), NOSDRA (responding to oil spill incidents), Federal Ministry of Environment and the other State Government counterparts and State Environmental Protection Agencies. This jumble of actors is a recipe for administrative bureaucracy, multiplicity of effort and waste in resources.

5 QUESTIONNAIRE ANALYSIS AND RESULTS

5.1 Introduction

As earlier discussed in the second chapter, the research employed a mixed data gathering strategy using both quantitative and qualitative methods. This chapter shows the presentation and analysis of data collected through the paper questionnaire method. An extensive review of the legislations and guidelines covering land use, planning and environmental management in Nigeria was the basis for both the interview and the survey conducted. With the understanding that climate change is not a prominent feature in Nigeria's policy, the data gathering strategy was built from the premise that possible land use and environmental management systems within the country may be sufficient to handle climate change concerns. In this way, a clearer picture of the land use planning (LUP) system will emerge, allowing a critical evaluation of the processes, whilst also providing an insight into climate change perceptions of the stakeholders.

The survey was conducted in order to gain a broad insight into LUP activities in Nigeria and explore climate change views of regulatory officials in relevant institutions. On the other hand, the interviews were to provide in-depth understanding of the process, the influencing factors and the challenges that impinge on desired outcomes on both land use and climate change as a subject matter. Ultimately, the information derived from the combined process would allow the achievement of the third objective of this research; *to evaluate the Nigerian land use planning system and to explore stakeholder perspective on climate change.*

Results from the survey is discussed in this chapter while the data from the interview is presented in the following chapter. The survey data was coded and analysed using the SPSS statistical software. Out of the over 200 paper questionnaires distributed to prospective participants, the researcher received 50 complete and valid responses. The fact that the questionnaire was administered using the convenience sampling approach did not reduce the poor return rate bemoaned by other scholars (Walonick, 2004; Bryman, 2012). Accordingly, the researcher agrees with Kumar (2005) that the low rate

may not have anything to do with the design of the survey, but that individuals often have unexpressed reasons that prevent them from completing the questionnaire. The researcher visited all the locations where the survey had been administered multiple times to retrieve the paper instruments. There was no evidence to infer a saturation borne out of responding to questionnaires on the subject matter, only a reluctance to complete any form of survey.

5.2 Demographic information of respondents

To explore the opinions and perception of the respondents with respect to planning, environmental processes and climate change in their locality, specific variables such as their gender, age, discipline, work experience, managerial role and educational qualification was considered. This information was used in building demographic profile for the individuals that have participated in the research and used as independent variable to examine if any of these attributes had any influence over their opinion on any of the issues raised in the survey.

5.2.1 Discipline and employment sector

Even though this was not intended, an equal number of participants with specialization in environmental management (EM) and physical planning and development (PP) responded to the survey as presented in Table 5.1. A greater number of the respondents (88%, n=50) worked in the public service sector and the remaining 12% were academics from higher institutions within the same territories. Employees from the State Government constituted the responses received from the civil service as there were no responses received from the other tiers of Government.

Table 5.1 - Discipline of respondents across the employment sector

		Employment Sector		Total
		Civil Service	Academic/ Universities	
Respondent's discipline	Environmental Managers	44.0%	6.0%	50.0%
	Physical Planning	44.0%	6.0%	50.0%
Total		88.0%	12.0%	100.0%

5.2.2 Gender and age of survey respondents

As shown in Table 5.2, 86% (n=50) of the survey participants were Male. This is not to suggest that this is a true representation of gender distribution in the planning and environmental sectors, neither can it be deduced that the female gender was not inclined to responding to surveys on the subject matter. The absence of proper data in terms of personnel in the research region has deprived this research an opportunity to also explore if gender had any significance in the opinion provided by the participants.

Table 5.2 - Gender of respondents

		Gender of respondents		Total
		Male	Female	
Respondent's discipline	Environmental Managers	42.0%	8.0%	50.0%
	Physical Planning	44.0%	6.0%	50.0%
Total		86.0%	14.0%	100.0%

The age group of the respondents is displayed in Figure 5.1. Even though the result is slightly bimodal, it is determined that the average age group of the respondents to be within 41 and 50 years in age. The absence of respondents 60 years and above, can be linked to the compulsorily retirement age in the Nigerian Civil Service, which is the earlier of 60 years of age or 35 years of pensionable service. It is interesting to note that there are more respondents aged 30 years and above amongst the respondents. The researcher was unable to deduce any reasons for the paucity of responses of people less than 30 years of age, as there was no age pre-requisite in gaining employment in the sectors explored.

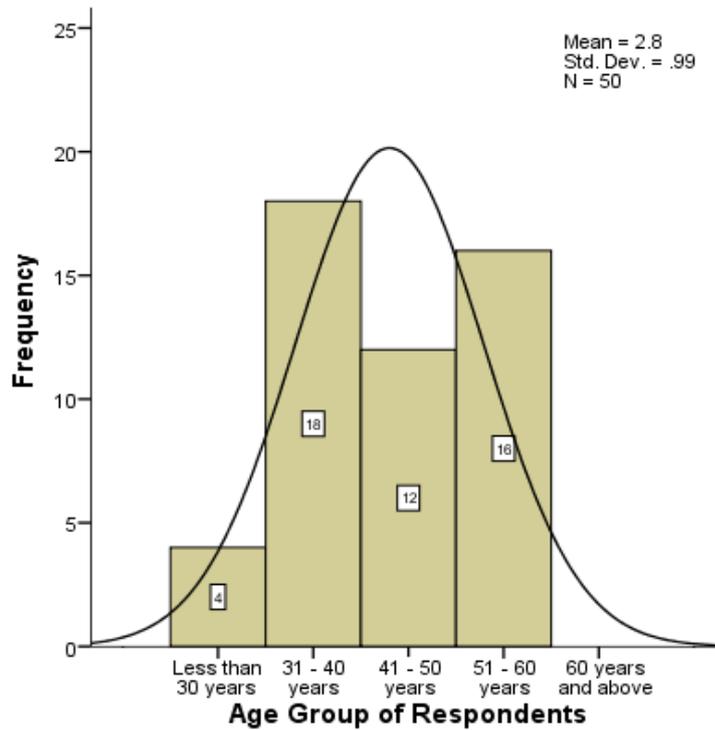


Figure 5.1 - Age group distribution of survey respondents

5.2.3 Length of work experience of respondents

As shown in Figure 5.2, 50% (n=50) of the participants had been working for over five years but less than 15 years. The second largest group was respondents with over 15 years' experience making up 34%. With due appreciation that 84% of the participants had over five years' experience, it is expected that the answers would reflect critical reality and as such reduce unnecessary optimisms. The research had slightly more PP personnel with five years and above experience (46%) compared to the EM which had 38%.

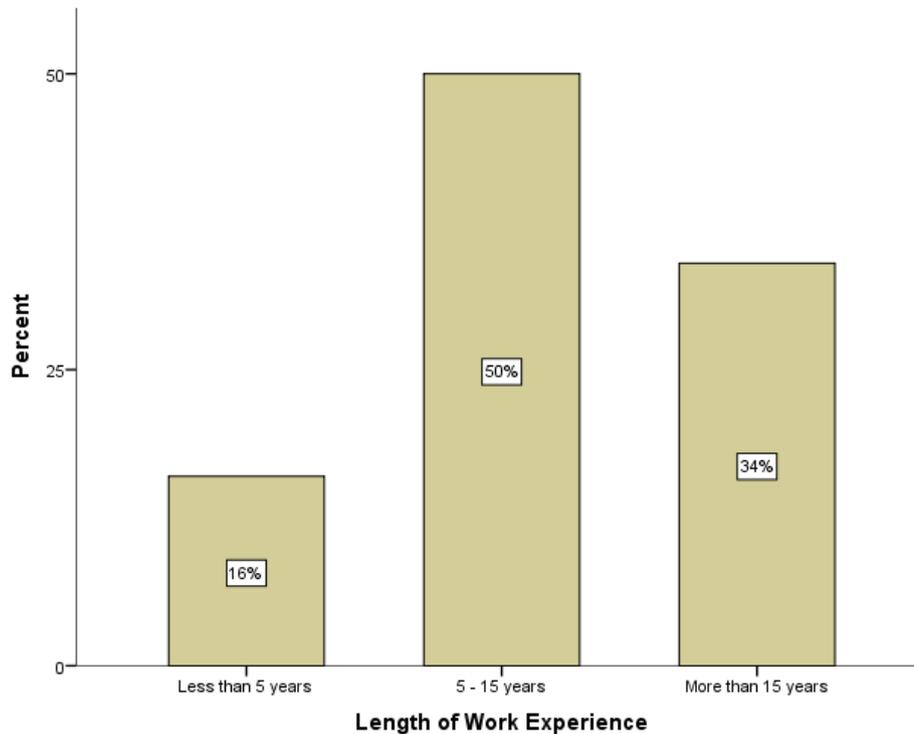


Figure 5.2 - Respondents' work experience across their discipline

5.2.4 Managerial level of respondents

The respondents were asked to indicate the managerial position which they occupy and 60% (n=50) of them held *Middle Management* positions as presented in Figure 5.3. The second largest group was from the *Upper Management* rank making up 32% and the remaining 8% was split equally between the *Junior Management* and the *Not applicable* status. Given that 92% of the participants are working in positions of considerable influence, it is anticipated that their responses would provide insights into current mind-set and inner workings of their organisations, which is a possible prediction of the direction of future policies and their implementation.

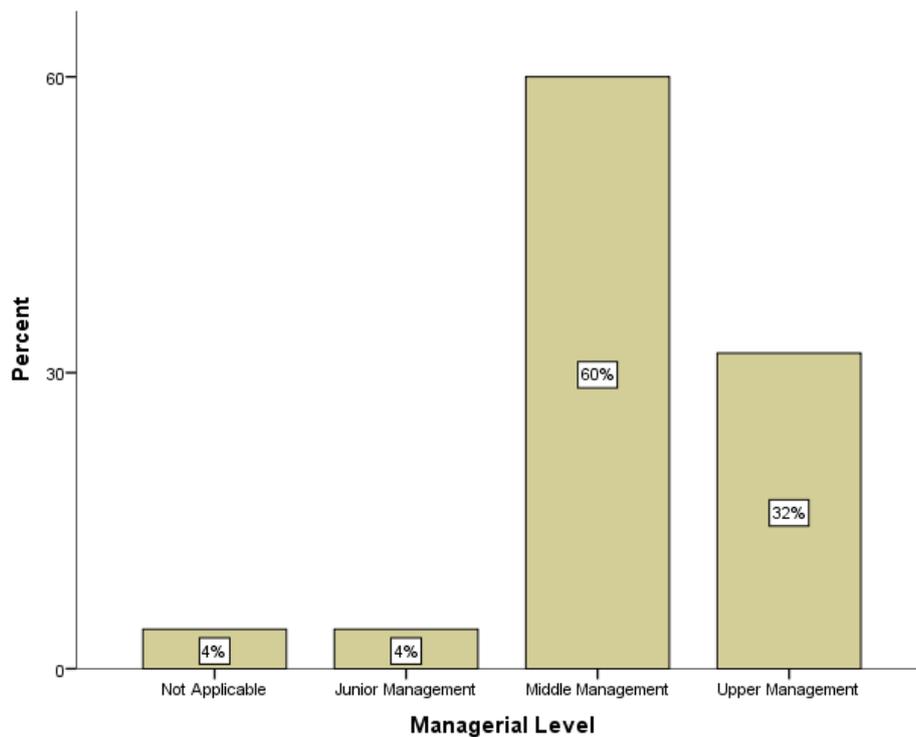


Figure 5.3 - Respondents' managerial positions

In exploring the data further, the Somers' d test was run to examine if there was any association between the years of experience and the managerial level amongst the 50 participants. There was a strong, positive correlation between the years of work experience and the management positions, which was statically significant ($d = .628, p < .05$). The longer the years of experience, the higher the possibility of managerial responsibility.

5.2.5 Educational qualification of survey respondents

As seen in Figure 5.4, over 92% ($n=50$) of the respondents have a University degree, the remaining 8% had higher diplomas. The largest group had postgraduate qualifications (70%) which indicates a degree of expertise in the chosen field. It can be inferred that some level of education is essential for both the EM and PP field as all the participants had more than the basic level of education. On another note, it is interesting to note that an almost equal split can be observed in the qualifications of the EM and PP.

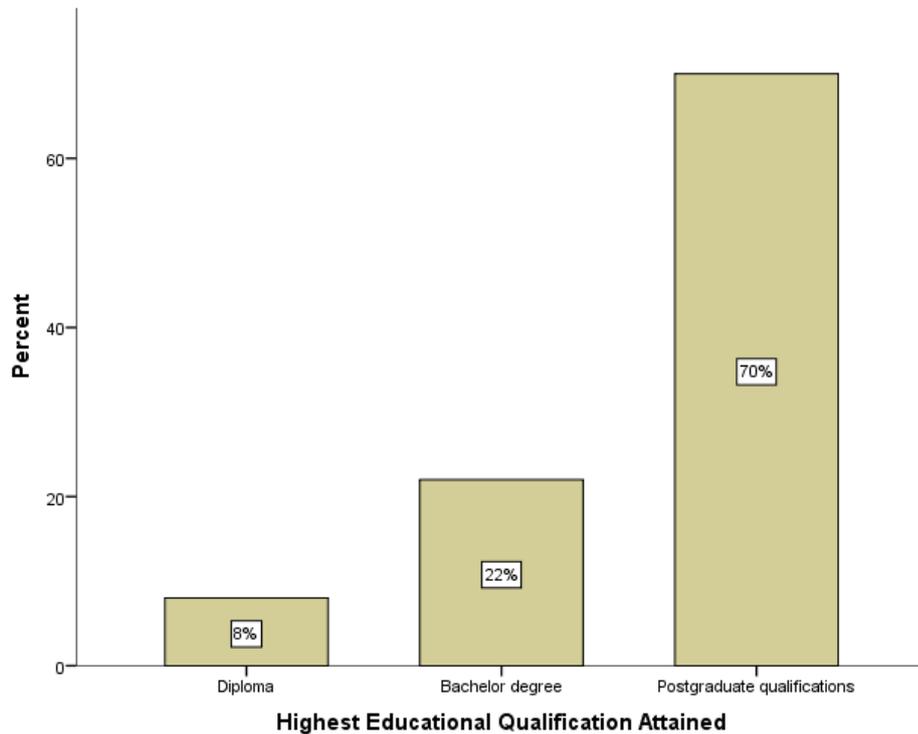


Figure 5.4 - Educational qualifications of respondents

In trying to determine if there was any relationship between the educational qualification and the managerial responsibility, the Somers' d test was performed. A weak, positive relationship was obtained ($d = 0.275$) which cannot be considered statistically significant as $p > .05$. It can be inferred that the years of work experience is considered more in the selection for management positions rather than the educational qualification of the candidate.

5.3 Drivers and challenges to LUP activities in Nigeria

One of the objectives of this research is to evaluate the current LUP practice, by drawing out the opinion of the stakeholders on the possible indicators that have been identified through literature. To this end, the survey respondents were asked using different ranking scales to give an opinion of how they perceive certain factors. The drivers would be first presented in the

next subsection and subsequently followed by a ranking of their views on factors that impeded LUP within their jurisdiction.

5.3.1 Perception of drivers and influences on planning activities

The respondents were asked to give their views on emerging themes that had been identified through literature as possible factors influencing planning activities (See Table 2.4). A five-point Likert scale approach was used to obtain the information about the controlling factors in LUP from the respondents. They were asked to indicate the strength of the possibility that the attributes determined planning activities in Nigeria, ranging from very unlikely to very likely. The first step in the analysis was data reduction and this commenced with the calculation of the Cronbach's alpha to determine their internal consistency. Even though the treatment of Likert scale as an interval data is highly controversial (Jamieson, 2004), there is a consensus in scholarly literature that the Cronbach's alpha can make meaningful contributions to Likert data analysis (Sullivan and Artino, 2013; Warmbrod, 2014; Bonett and Wright, 2015; Subedi, 2016). The scale of the underlying constructs had an adequate level of internal consistency, as determined by the alpha coefficient of 0.824 obtained. It is recommended that the scale should have a high coefficient as possible, at least 0.7 to be considered internally reliable for the purpose (de Vaus, 2002; Bryman and Crammer, 2011; Manerikar and Manerikar, 2015).

A principal axis factoring was conducted on the 11-item attribute underlining the planning activities in Nigeria. The suitability was assessed before commencing the analysis. A review of the correlation matrix indicated that all the variables had at least one correlation coefficient greater than 0.3. The overall Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.726, classified within middling to meritorious according to Kaiser (1974). Bartlett's Test of Sphericity was statistically significant ($p < .05$), indicating that the data can be factorised.

The factoring analysis revealed three factors that had eigenvalues greater than one and which explained 35.2%, 10.9% and 7.9% of the total variance, respectively. The three-factor solution captured 63.5% of the total variance. An oblique rotation was then employed to aid the interpretation of the factors. As seen in Table 5.3, the items that have loaded on the first factor suggest that it embodies the *political administrative interests* underlying planning, the second factor captures a *preference for the built environment* and the third factor hints at the *community-dependent attributes* that may be involved.

Table 5.3 - Pattern matrix for drivers and influences on planning

	Factor		
	1	2	3
Government initiatives and programmes	1.026		
Addressing potential environmental risks	0.516		
Political motivation	0.443		
Concerns for land use patterns	0.422		
Provision of land for new development		0.900	
Private sector incentives		0.540	
Provision of transportation access and basic infrastructure		0.467	
The creation and maintenance of pleasant, healthy and safe environments		0.333	
Protection of important environmental, historical and cultural assets			0.971
Outcomes of public consultations and participation			0.579
Meeting the needs of the local community			0.327

"Extraction Method: Principal Axis Factoring.
 Rotation Method: Oblimin with Kaiser Normalization."
 a. Rotation converged in 15 iterations.

Internal consistency coefficient was subsequently calculated using the Cronbach's alpha and the results have been summarised in Table 5.4. Component based scores was then generated for the three factors, based on the average of the items that had loaded primarily on each factor (Boone and Boone, 2012; Field, 2013; Subedi, 2016).

Table 5.4 - Descriptive statistics for the planning scale factors

	Number of items	Mean	Std. Deviation	Skewness	Kurtosis
Political administrative interests	4	4.1278	0.69393	-1.498	3.340
Built environment preferences	4	4.0598	0.60728	-1.293	2.067
Community-dependent attributes	3	4.1189	0.63387	-0.892	0.344

The higher mean scores indicate a greater perception that the underlying constructs have been considered to have more influence over planning activities in Nigeria. The interest of the political administration is the underlying factor that the participants reported the most with a negatively skewed distribution, showing that majority of them believed in this attribute. However, the nearness in mean values of the three factors indicate that the factors are close determinants constantly shaping the direction planning takes in Nigeria.

5.3.1.1 *Political administrative interests*

As seen in Table 5.3, the statements that have loaded primarily in this subscale are: Government initiatives and programmes; Addressing potential environmental risks; Political motivation; and Concerns for land use patterns. As the values for the factor have loaded in this order, it can be surmised that Government initiatives and programmes is a dominant item in this group, even though the respondents may have been inclined towards addressing potential environmental risk (See Figure 5.5).

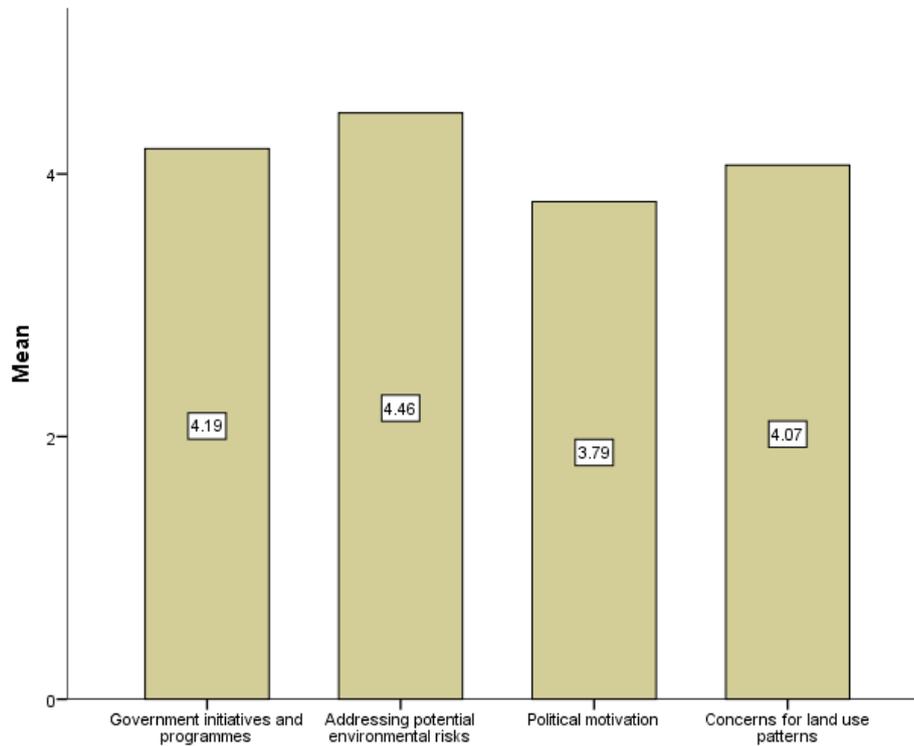


Figure 5.5 - Mean of items within political administrative interests

The Cronbach's alpha was carried out on the subscale factors to determine the level of reliability. This factor produced the highest coefficient of 0.766 amongst the three subscales. The result infers a good internal consistency within the items existing within the factor (de Vaus, 2002; Bryman and Crammer, 2011; Manerikar and Manerikar, 2015). A Kriskal-Wallis H test was conducted to determine if there are any demographic traits of the respondent that may influence the perspection of political administrative motives. The non-parametric route was selected due to the presence of outliers in the distribution groups and the failure of the data to pass the Shapiro-Wilk test of normality (Field, 2013; Guo, *et al.*, 2013). A summarised result of the H -test is provided in Table 5.5 below.

Table 5.5 - Summary of Kruskal-Wallis test for political administrative interest

Independent variable	Test statistic (<i>H</i>)	Degree of freedom	<i>P</i>
Discipline	0.258	1	.611
Employment sector	0.458	1	.499
Gender	8.667	1	.003
Age	4.870	3	.182
Level of education	0.541	2	.763
Management level	5.729	2	.057
Years of work experience	1.796	2	.407

Management level was close to being significant at $p = .057$ but statistically significant result ($p < .05$) was obtained when gender was used as an independent variable. The mean rank obtained for the variable groups, male ($n = 43$) and female ($n = 7$), was considered significant. In addition, a Mann Whitney U test conducted which revealed that perception of political administrative interests was statistically higher in the female gender (mean rank = 40.43) than in male (23.07), $U = 255$, $z = 2.944$, $p = .002$. As such, it is implied that the female gender in planning and related profession in Nigeria are more likely to have a viewpoint that the interests of the political administration dictate planning activities in Nigeria than their male counterparts.

5.3.1.2 *Built environment preferences*

As seen from Table 5.3, the statements in this subscale have loaded in this order: provision of land for new development; private sector incentives; provision of transportation access and basic infrastructure; and the creation and maintenance of pleasant, healthy and safe environments. Interestingly, Figure 5.6 indicates that the respondents were more inclined to report that the creation and maintenance of pleasant, healthy and safe environments as an influence of planning activity within the group.

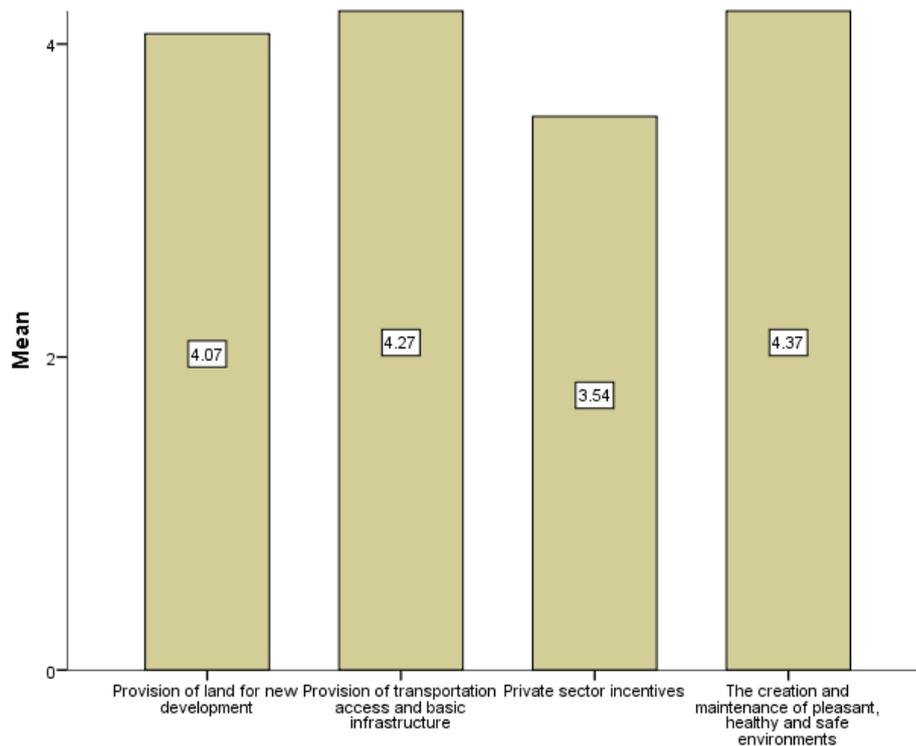


Figure 5.6 - Mean of items within built environmental preferences

This subscale had the lowest Cronbach's alpha out of the three factors at 0.696, but still considered acceptable as it occurs between 0.6 and 0.7 (Manerikar and Manerikar, 2015). Table 5.6 shows the summary of the results obtained from the Kruskal-Wallis H tests that was carried out to determine if there was any demographic variable that may be significant for the perspectives of this factor.

Table 5.6 - Summary of Kruskal-Wallis test for built environmental preferences

Independent variable	Test statistic (<i>H</i>)	Degree of freedom	<i>P</i>
Discipline	3.038	1	.081
Employment sector	1.640	1	.200
Gender	5.486	1	.019
Age	1.024	3	.795
Level of education	0.695	2	.706
Management level	0.151	2	.927
Years of work experience	1.848	2	.397

Again, the only statistically significant result ($p < .05$) was obtained when gender was used as an independent variable. A Mann Whitney U test confirmed that the mean rank values obtained for the female (37.36) on the built environment preference can be considered to statistically higher than in their male colleagues (23.57), $U = 233.5$, $z = 2.342$, $p = .018$. This infers that female professionals in planning and associated fields are more likely to have the perspective that the preferences for built environment is an underlying driver for planning activities in Nigeria.

5.3.1.3 *Community-dependent attributes*

In order of values, the statements that have loaded on this scale through the factor analysis are protection of important environmental, historical and cultural assets; outcomes of public consultations and participation; and meeting the needs of the local community. As seen in Figure 5.7, the mean value obtained from the *protection of important environmental, historical and cultural assets* matches appropriately with the strength of loading observed in Table 5.3. This indicates that this attribute ranks very high in the opinion of the participants.

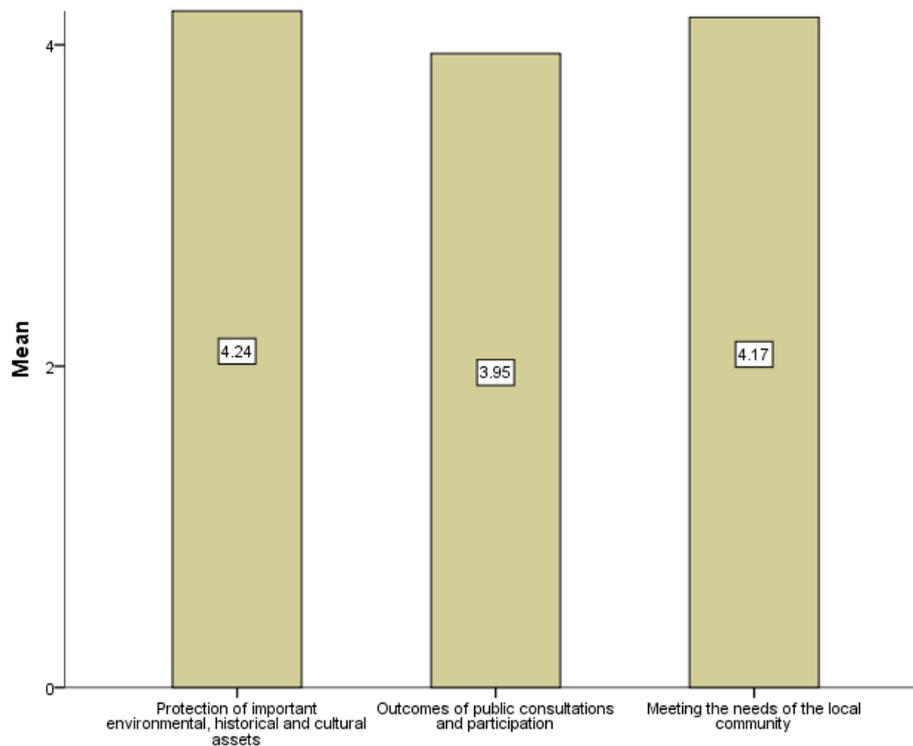


Figure 5.7 - Mean of items within community-dependent attributes

This subscale had an alpha coefficient of 0.710 for the three items that loaded on this factor. This is considered acceptable for the purpose as the result obtained is above 0.7 (de Vaus, 2002; Bryman and Crammer, 2011; Manerikar and Manerikar, 2015). To explore the perception of this factor, the Kruskal-Wallis H test was carried out to determine if there are any differences that can be observed using the demographic variables. A summary of the result is provided in Table 5.7 below.

Table 5.7 - Summary of Kruskal-Wallis test for community-dependent attributes

Independent variable	Test statistic (<i>H</i>)	Degree of freedom	<i>P</i>
Discipline	0.005	1	.945
Employment sector	0.206	1	.650
Gender	7.791	1	.005
Age	2.220	3	.528
Level of education	5.226	2	.073
Management level	1.356	2	.508
Years of work experience	1.105	2	.576

As observed in the table, gender was the only independent variable to produce a statistically significant result ($p < .05$). In addition, a Mann Whitney U test was conducted to explore the differences within the group. The generated result confirmed that the mean rank values for this attribute in the female (39.57) is statistically significant to the mean rank for the male gender (23.21), $U = 249$, $z = 2.791$, $p = .004$. This infers that the female perspective of this attribute is sufficiently higher than the views of their male colleagues. The significance of the difference of the female gender infers that they are less conservative in their opinion in respect of circumstances around them. This agrees with the views of scholars like Moser (1989) and Villamor *et al.* (2014) that there are benefits that can be gained through a gender perspective of land-use decisions.

5.3.2 Challenges to planning in Nigeria

In a bid to get a balanced view of planning activities in Nigeria, survey respondents were asked for their opinion on challenges facing planning activities in Nigeria. The question required the respondent to rank their response in order of magnitude from the first position to the sixth position based on statements derived from literature review (See Table 2.5). A weighted ranking of the result was carried out in SPSS using the coding; 1st position = 6, 2nd position = 5, 3rd position = 4, 4th position = 3, 5th position and 6th position = 1. A graphical representation of the weighted average of their response can be seen in Figure 5.8 below.

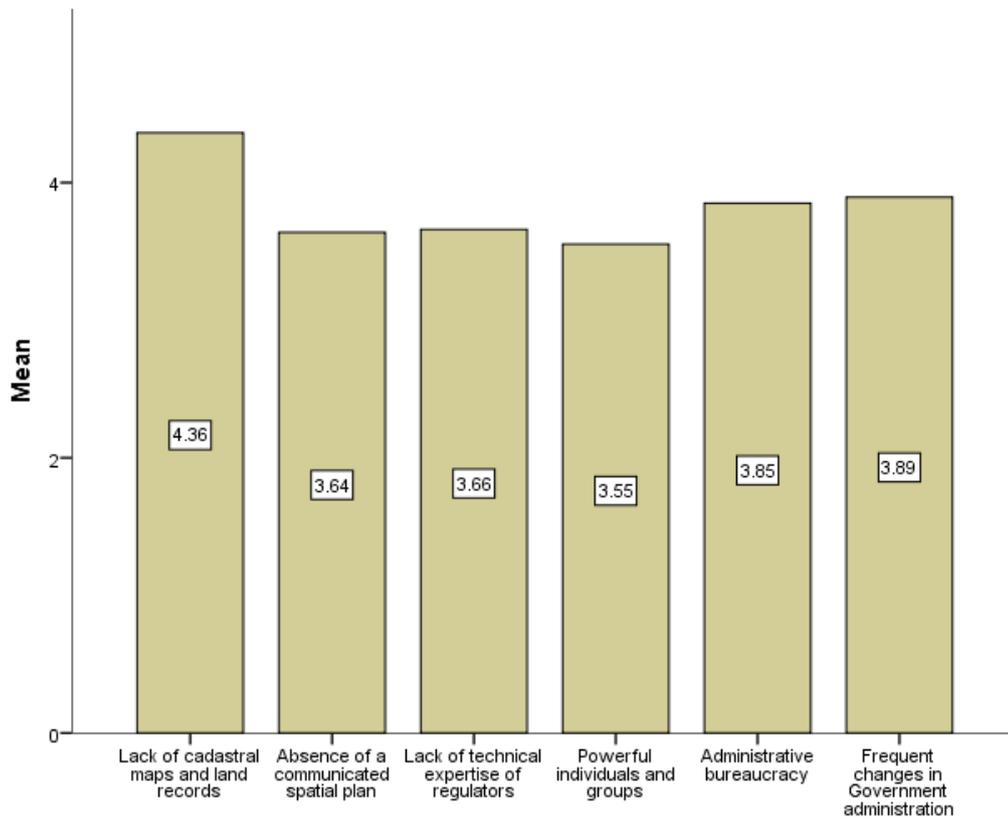


Figure 5.8 - Ranking of challenges to planning in Nigeria

As seen from the graph, the *lack of cadastral maps and land records* is considered the major challenge facing planning activities in Nigeria. On the other hand, the influence of *powerful individuals and groups* is regarded the least problem. This infers a notion that the availability of appropriate maps and records would curtail uncooperative activities within planning and land use management.

To explore the responses further, Kruskal-Wallis test, the rank based non-parametric measure, was selected to determine if there are any statistically significant differences that can be observed within the groups of the independent variables of the participants on the ordinal responses collected. The researcher is aware that there are other statistical hypothesis tests other than non-parametric tests that can be used for data analysis, such as the *t*-test and ANOVA (Analysis of Variance). However, the success of parametric tests is hinged on four basic assumptions, a normally distributed sampling

distribution, homogeneity of variance, independence and interval data (Field, 2013). The data set gathered for this study cannot fulfil the conditions required by the parametric measures. For instance, parametric tests do not perform well in situations where the data is not normally distributed or for small sizes (< 20) per sample groups (Kitchen, 2009; Guo, *et al.*, 2013).

The summary of the results obtained from the Kruskal-Wallis test is shown in Table 5.8. There are six statistically significant differences ($p < .05$) observed from the between the groups of the independent variables; (i) *discipline of respondents * lack of cadastral maps and land records*, (ii) *gender of respondents * absence of a communicated spatial plan*, (iii) *gender of respondents * lack of technical expertise of regulators*, (iv) *age group of respondents * absence of a communicated spatial plan*, (v) *length of work experience * administrative bureaucracy*, and (vi) *length of work experience * frequent changes in government administration*.

Table 5.8 - Summary of Kruskal-Wallis test for community-dependent attributes

		Lack of cadastral maps and land records	Absence of a communicated spatial plan	Lack of technical expertise of regulators	Powerful individuals and groups	Administrative bureaucracy	Frequent changes in Government administration
Discipline	Test statistic (H1)	4.566	1.061	0.187	1.267	1.990	0.010
	<i>p</i>	.033	.303	.665	.260	.158	.922
Employment sector	Test statistic (H1)	0.135	0.152	0.303	1.899	1.909	0.010
	<i>p</i>	.714	.697	.582	.168	.167	.922
Gender	Test statistic (H1)	0.766	4.609	5.392	1.369	0.067	0.040
	<i>p</i>	.382	.033	0.20	.032	.796	.842
Age	Test statistic (H3)	3.892	9.758	2.522	0.474	7.400	4.434
	<i>p</i>	.273	.021	.471	.925	.060	.218
Level of education	Test statistic (H2)	3.155	0.372	0.678	3.581	1.300	1.848
	<i>p</i>	.206	.830	.713	.167	.522	.397
Management level	Test statistic (H2)	0.520	0.756	4.377	0.757	3.966	5.419
	<i>p</i>	.771	.685	.112	.685	.138	.067
Years of work experience	Test statistic (H2)	0.285	2.575	0.776	0.188	8.564	7.324
	<i>p</i>	.867	.276	.678	.910	.014	.026

The first three analyses were carried out using the Mann-Whitney U test as the SPSS software did not perform multiple comparisons due to the independent variables (discipline and gender) having less than three groups in them. The generated result for *discipline of respondents * lack of cadastral maps and land records* revealed that the mean rank values of 28.17 for Environmental Managers is statistically significant to the mean rank of 20.00 obtained for Physical Planning, $U = 180, z = -2.137, p = .033$. This implies that Environmental Managers have ranked this attribute higher than the Physical Planning professionals. The outcome of *gender of respondents * absence of a communicated spatial plan* indicated that the mean rank of 34.07 obtained for the female gender is statistically significant to the 22.24 mean rank for male, $U = 210.5, z = 2.147, p = .033$. This signifies that the difference in the perception is gender subjective as the female professionals have voted this attribute higher than their male counterparts. Likewise, the analysis of *gender of respondents * lack of technical expertise of regulators* produced similar result where the mean rank for female (34.93) is statistically significant to the mean rank obtained for male (22.09), $U = 216.5, z = 2.322, p = .020$.

For the remaining three significant results, homogeneous subsets were produced from the Kruskal-Wallis test, using the Stepwise step-down procedure for multiple comparisons (Field, 2013). The post hoc analysis for *age group of respondents * absence of a communicated spatial plan* revealed that the 41-50 years' age group considered the *absence of communicated spatial plan* significantly lower when compared to all the other age groups. The other age groups had no significant effect on the ranking of the variable ($p = .734$). To investigate the possibility of an ordered pattern within the categories of the age groups, a Jonckheere-Terpstra test was carried out (Field, 2013). The result did not detect any significant trend in the age groups, $J = 338, z = -.987, p = .324, r = -.14$.

For the intersection of *length of work experience * administrative bureaucracy*, the Jonckheere-Terpstra test revealed a statistically significant trend in the data: as the years of working experience increased, the ranking of this variable decreased, $J = 222, z = -2.351, p = .019, r = -.34$. This implies that the professionals with more working experience are likely to view other issues

greater than the administrative bureaucracy or they might be well equipped and experienced to navigate the red-tape waters more effectively.

Post hoc analysis of *length of work experience* * *frequent changes in government administration* pointed out that respondents with less than five years' work experience and those with over 15 years' experience ranked the *frequent changes in government administration* significantly lower when compared to those with 5- 15 years' work experience. However, for participants within the 5-15 years' work experience, their years of experience had no significant effect on their opinion of the possible impacts of changes in government. The results of the Jonckheere-Terpstra test conducted did not identify any significant trend in the pattern of their ranking, $J = 320.5$, $z = -.322$, $p = .747$, $r = -.05$. The absence of a trend and the ambiguity within the 5- 15 years' work experience made the researcher consider if a shorter scale would have yielded clearer outcomes.

5.4 Concerns about environmental issues

To gain insights into the stakeholders' opinion on issues about the environment, the respondents were asked to select three environmental issues that concerned them out of ten options provided. These choices are based on current environmental concerns that either affect or are an effect of gaps in the present land use planning practice in Nigeria. As an extension, the issues directly or indirectly relate to climate change as an agenda for societal response. Their response is collated and presented in Figure 5.9 below.

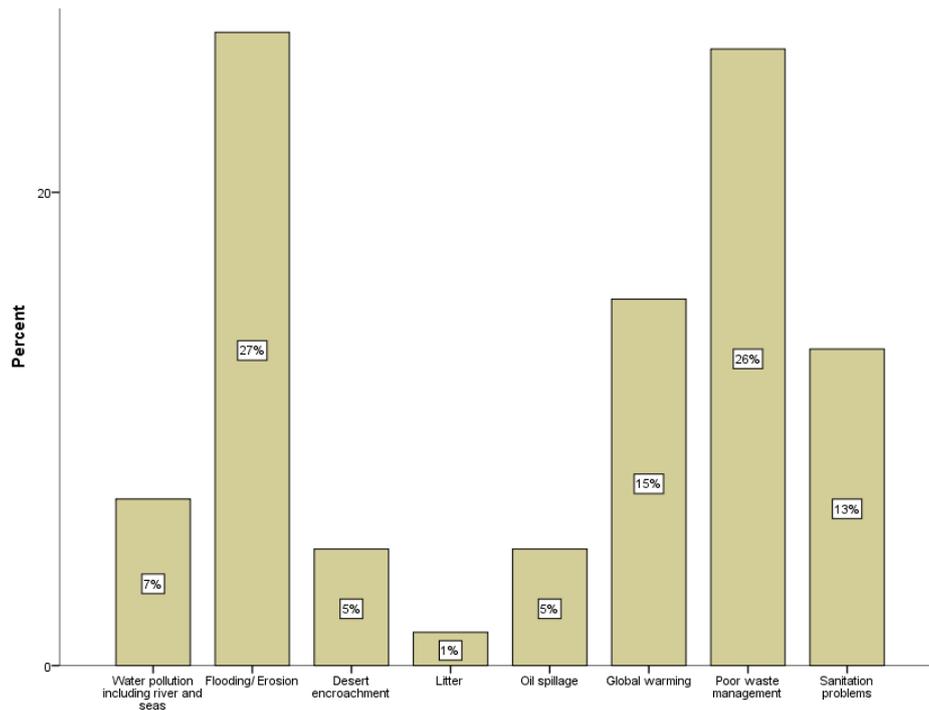


Figure 5.9 - Respondents concern over environmental issues

Given that the research was carried out in the south-western region of Nigeria, issues such as gas- flaring and land contamination did not receive any consideration, which may have been different if the data was collected in the oil-producing Niger Delta region of the country. As seen from the graph, flooding/ erosion received the most attention, immediately followed by poor waste management. Global warming occupied a distant third position while sanitation challenges ranked fourth. With a view that sanitary issue is steeped in the environmental health domain, it can be directly associated with problems emanating from poor waste management system.

With a range of statistical analyses that could have been carried out to explore the data further, the researcher laments at the low response rate from prospective individuals who have agreed to complete the survey but have not returned them. As such, the data size was not robust nor enough for homogeneity tests that would have been useful in determining if the multinomial distributions were statistically significant among the different demographic variables. Regardless, a cross tabulation among the variables

showed a similar trend in their consideration of environmental issues when the respondents' discipline was examined. As presented in Table 5.9, there is a similar pattern in the manner the PP and EM have considered the environmental issue that concerned them the most.

Table 5.9 - Environmental issues across discipline

	Physical Planning	Environmental Managers
Water pollution including river and seas	6	4
Flooding/ Erosion	18	20
Desert encroachment	2	5
Litter	0	2
Oil spillage	3	4
Global warming	8	14
Poor waste management	21	16
Sanitation problems	11	8

The voting trend of the two groups indicate that they consider the same issues in a similar fashion, except that poor waste management ranked higher for the PP while flooding/erosion was top priority for the EM. Likewise, the EM had more preference for global warming whilst their PP counterpart chose sanitary issues for their third ranked concern.

5.5 Participants' view of climate change

The findings presented in this section are the participants' perspective on the various themes encountered in the climate change literature, bothering on contributory causes, possible occurrence and effects, nature and extent of preparedness, knowledge about societal responses and institutional strategy. It is expected that the results obtained would provide insight into how climate change is being considered in the absence of clear agenda in shaping development policies. Even though a five-point Likert scale approach was employed in gathering some of their perspectives of climate change, the result of those findings would be treated as Likert type items

(Boone and Boone, 2012; Subedi, 2016). This is due to the poor coefficient that was obtained in the Cronbach's alpha in the anticipation of a data reduction approach for factor analysis (de Vaus, 2002; Bryman and Crammer, 2011; Sullivan and Artino, 2013; Warmbrod, 2014; Bonett and Wright, 2015; Manerikar and Manerikar, 2015)

5.5.1 Cause of climate change

There is a consensus amongst the respondents that human activity contributed to climate change (96%, n=49). As seen in Figure 5.10, 45% of them consider human activity to be solely responsible for climate change.

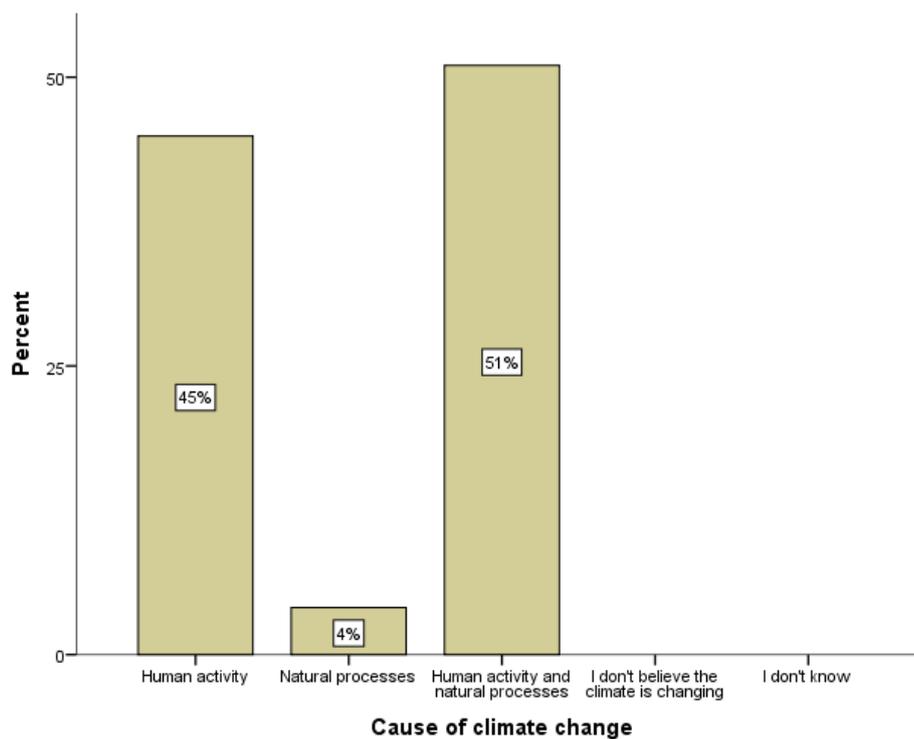


Figure 5.10 - Respondents' perception of the cause of climate change

Multiple tests of homogeneity and association were carried out using the demographic features as independent variables. The tests did not reveal any statistically significant association between their responses. Given the role of

human activity in climate change, the respondents were asked for their viewpoint on the debate that industrialised and advanced countries should be blamed for climate change. As seen in Figure 5.11, it can be said that the perception is mixed with 42% dissenting to the view, 34% concurring with the statement and a good 24% maintaining a neutral stance (n = 50).

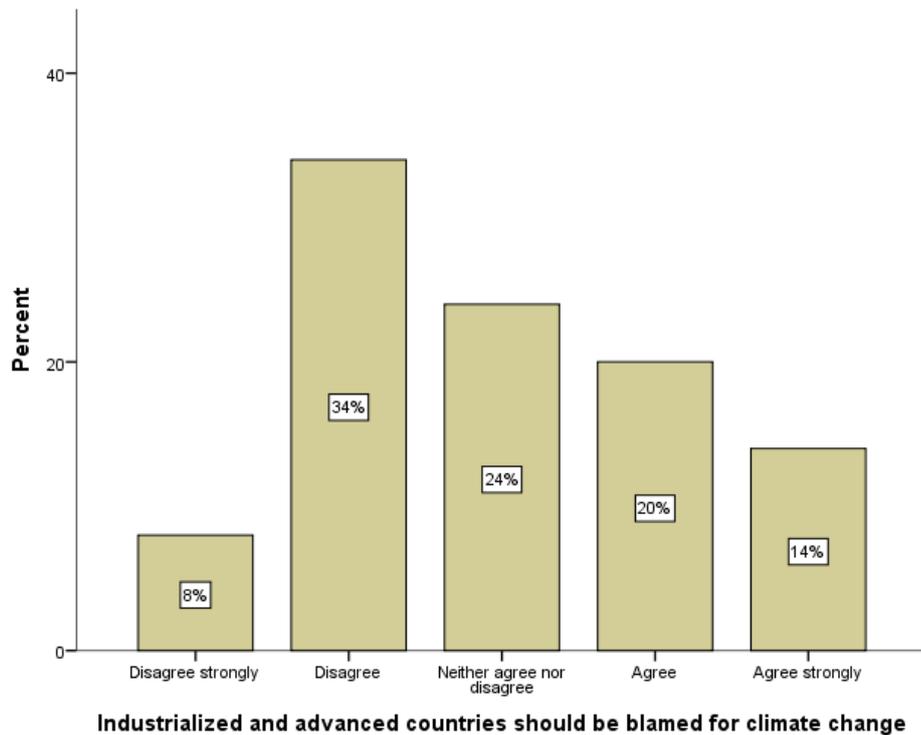


Figure 5.11 - Opinion on developed countries to be blamed for climate change

A Kruskal-Wallis test was carried out using the demographic traits as an independent variable to explore the answer further. The only attribute to produce a statistically significant result was the length of work experience, $H_2 = 7.430$, $p = .024$. A post-hoc analysis using the Stepwise step-down revealed that respondents with less than five years' work experience and those with over 15 years' experience do not blame industrialised and advanced countries for climate change as much as those with 5- 15 years' work experience. The result did not yield any statistical significance for respondents having 5-15 years' work experience. A further Jonckheere-

Terpstra test did not detect any significant pattern in their opinion, $J = 394.5$, $z = .267$, $p = .790$, $r = .04$.

Linking this to parties that should take responsibility for addressing climate change responsibility, 64% (n = 50) of the participants answered that this must be handled by everyone. There are a few dissenters as shown in Figure 5.12 which have selected other options. Their opinion on blame about the anthropogenic contribution to climate change has not affected their view that it requires a collective effort respond to it.

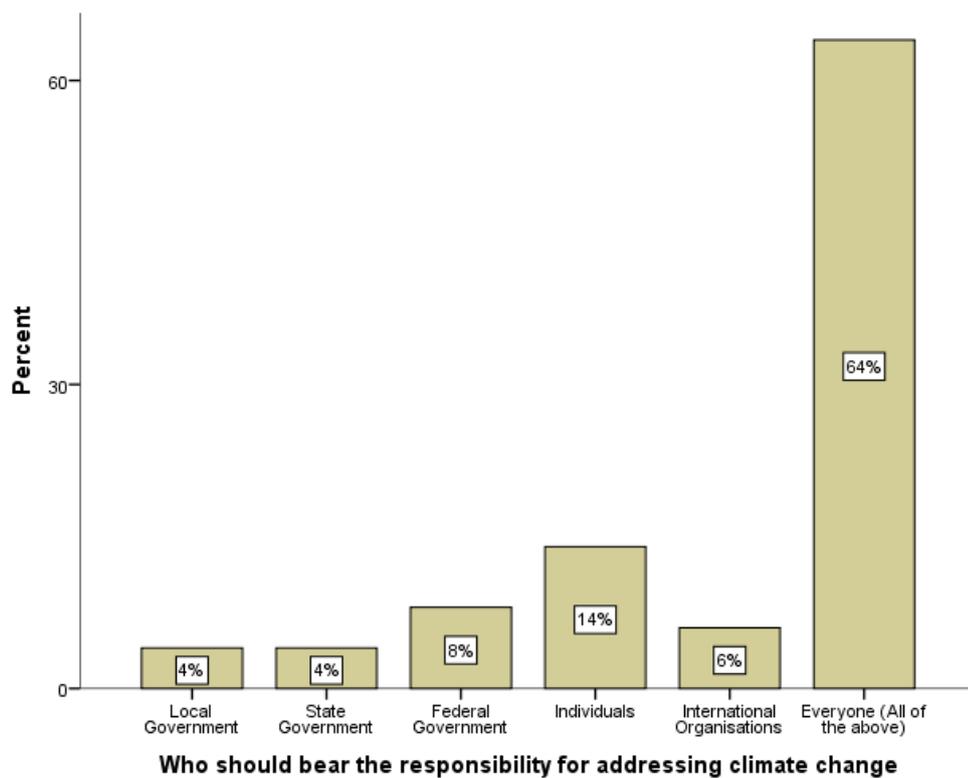


Figure 5.12 - Responsibility to address climate change

5.5.2 Climate change occurrence

When asked if they thought climate change would happen in Nigeria, 96% (n = 48) of participants responded that it will happen. As shown in Figure 5.13, 90% of them believe it is already happening.

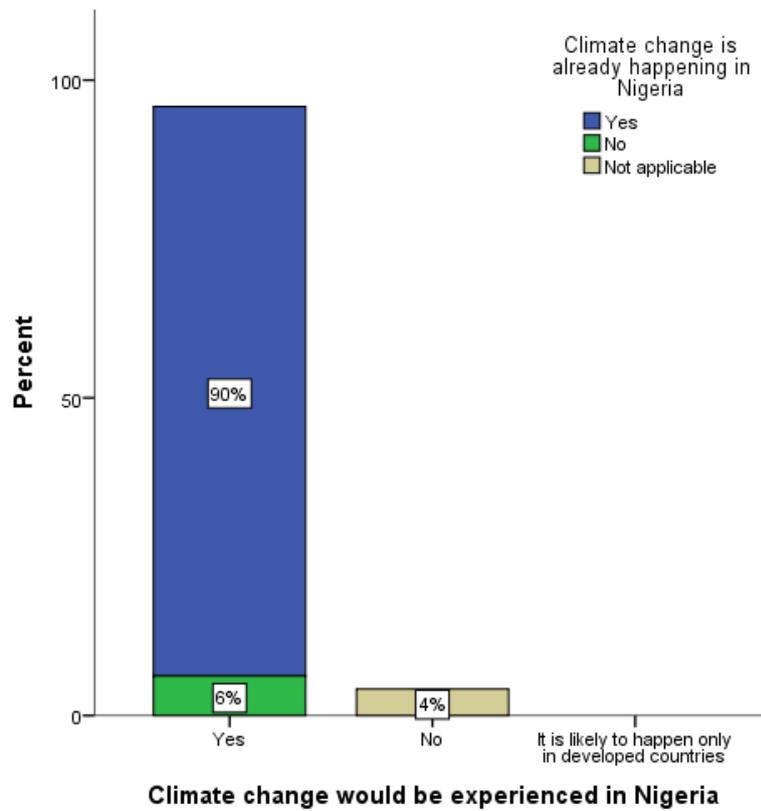


Figure 5.13 - Perception about climate change happening in Nigeria

As a follow up, an open-ended field was included to encourage freedom and spontaneity of the answers to allow respondents provide their own observation of the effects they perceived to be happening. As presented in Figure 5.14, 42% of the participants reported seasonal variation and changes in rainfall pattern. Flooding / erosion comes at a distant second with 22%.

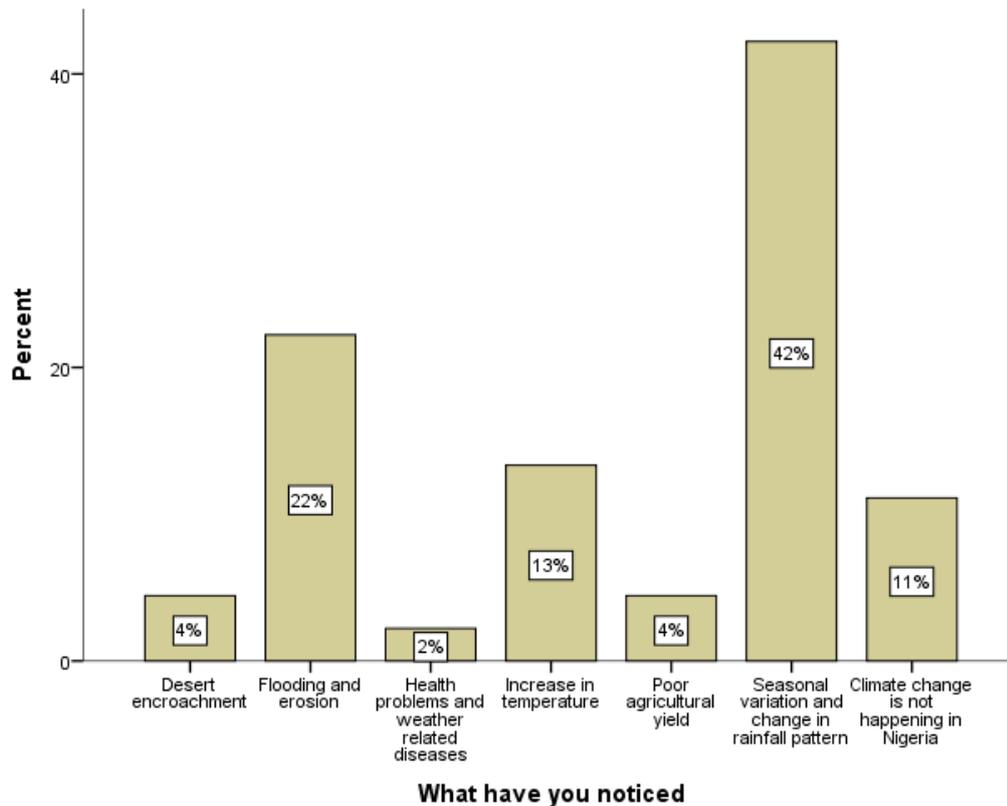


Figure 5.14 - Observed climate change effects

The multiple tests to determine a relationship or association conducted using this result as a dependent variable. However, this did not yield any statistically significant differences in what they have noticed as climate change effects. Regardless, the findings agree with the results obtained when the five-point Likert type approach was used to ask if climate change was likely to happen in their generation. As seen in Figure 5.15, there is a greater perception that climate change is already happening with the 86% agreeing that it is a phenomenon that would be experienced in their lifetime. The dissenting views were found to have also responded that climate change was not happening in Nigeria in Figure 5.14.

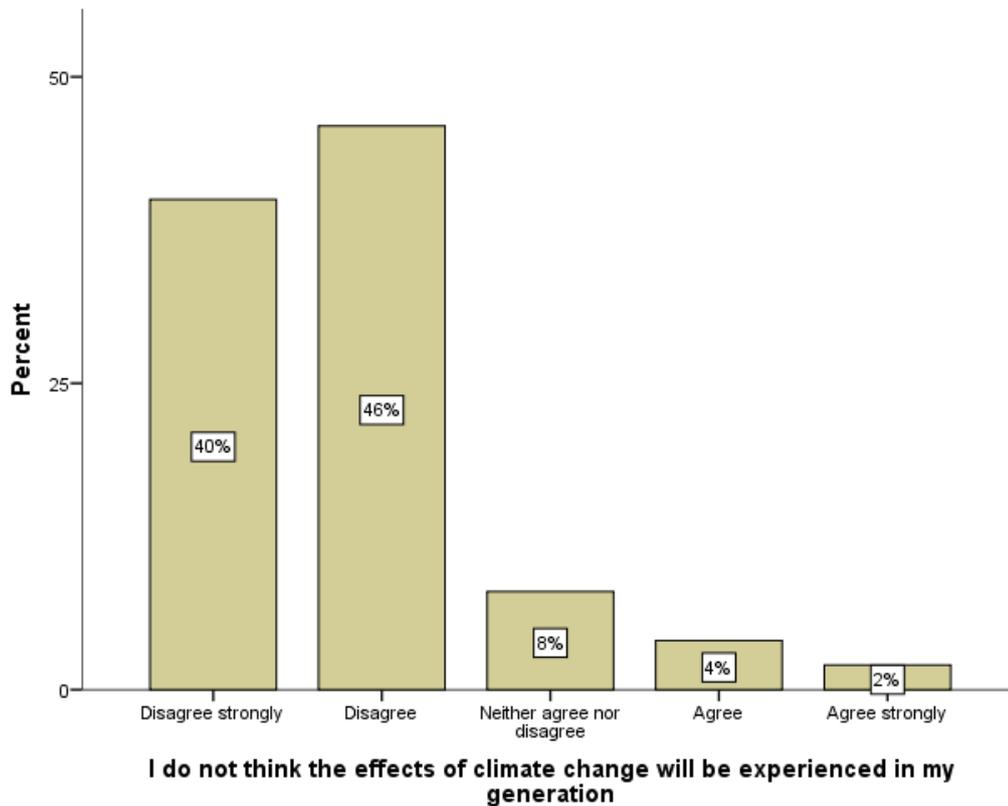


Figure 5.15 - View of timescale for climate change effects

Non-parametric tests were conducted to investigate any significance difference that may exist among the respondents. The only statistically significant result was obtained when respondents' *level of management* was used as an independent variable. Even though the Kruskal-Wallis test did not detect any statistically significant differences within the categories of the group ($H2 = 5.758, p = .056$), a pattern was identified through the Jonckheere-Terpstra test: the higher the management level, the higher the conviction that climate change would be experienced within their lifetime, $J = 221.5, z = -2.340, p = .019, r = -.33$.

5.5.3 Concerns about climate change

Knowing that the survey has the potential to have stimulated the thinking about climate change, participants were asked to what degree they had

considered the subject matter before engaging in the research. 34 of the respondents (68%) had thought a lot about climate change prior to being involved in the research. As shown in Figure 5.16, 32 of them who had thought about it earlier were very concerned about it. Surprisingly, part of those who have expressed the views that climate change was not happening in Nigeria (Figure 5.14) responded that they were concerned about climate change. One of them was very concerned and thought about it a lot, three of them had given climate change a little consideration before the study but are very concerned, and the last individual had was slightly bothered and had paid it little thought. It is unclear why they have expressed different views on both questions as it cannot be associated with a bias for social desirability.

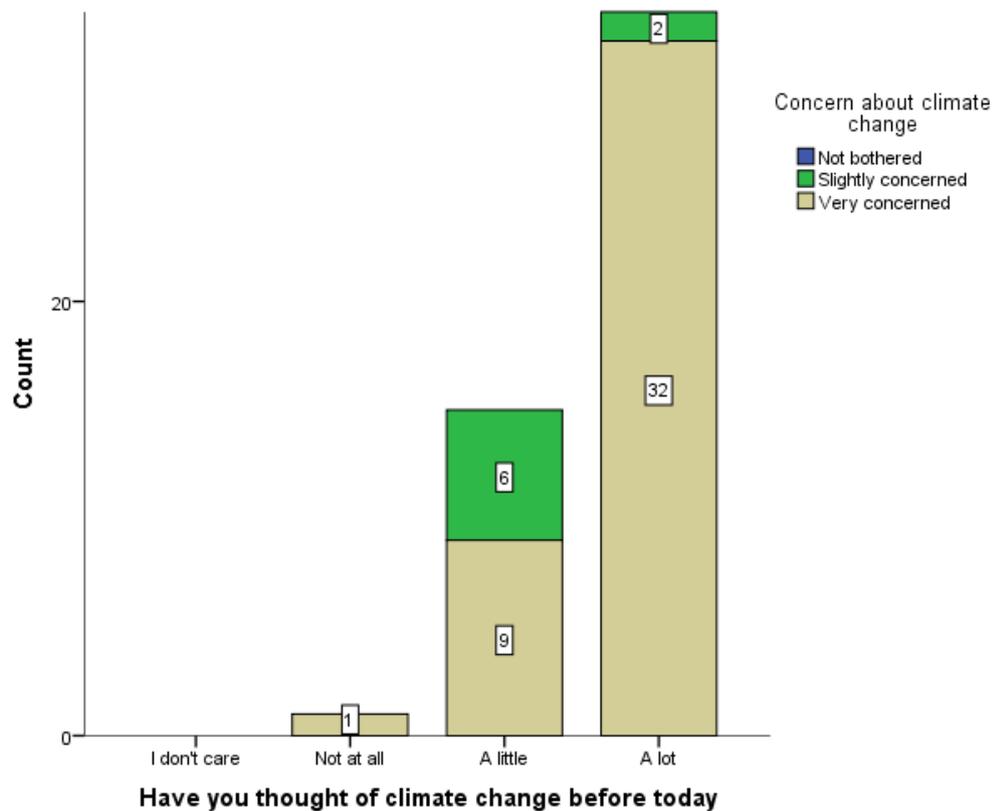


Figure 5.16 - Concerns about climate change

A Spearman's rank order correlation was run to assess the relationship between the amounts of time respondents spent contemplating climate

change and the anxiety that they have about it. There was a positive significant correlation between both variables, $r_s = .387$, $p < .05$, which indicates that the more time spent thinking about climate change, the more concerned they became.

5.5.4 Opinion on climate change debates

5.5.4.1 *Uncertainty affects climate change credibility*

Based on the nature of uncertainty in climate science and the impact it has on forecasting possible effects; respondents were asked on how strongly they agreed or disagreed with the notion of a changing climate. The result displayed in Figure 5.17 shows that 66% (n=50) believe the ambiguity in the science does not diminish the evidence from the research.

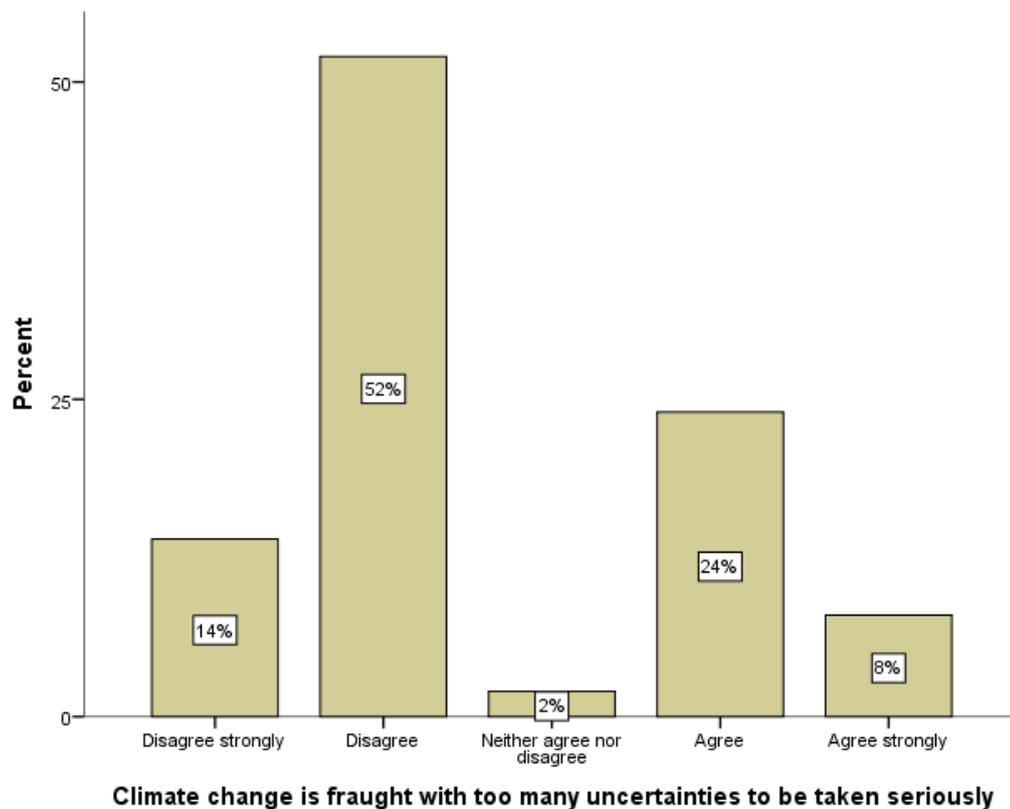


Figure 5.17 - Respondents view on uncertainties in climate science

To explore their answers further, non-parametric tests were carried out to determine if there are any statistically significant differences between their opinions within the groups of the demographic traits of the respondents. Using the SPSS software, a Kruskal-Wallis and Jonckheere-Terpstra test was applied simultaneously, then the significant results were recorded. Out of the seven attributes that have been used as independent variables, the four presented in Table 5.10 yielded statistically significant results.

Table 5.10 - Summary of non-parametric test for view of uncertainties in climate change

Independent variable	Kruskal-Wallis test			Jonckheere-Terpstra test			
	<i>H</i>	<i>Df</i>	<i>P</i>	<i>J</i>	<i>z</i>	<i>p</i>	<i>r</i>
Age	7.915	3	.048	298.0	-2.729	.006	-0.39
Level of education	10.668	2	.005	155.5	-2.938	.003	-0.42
Management level	6.501	2	.039	218.5	-2.397	.017	-0.34
Years of work experience	7.964	2	.019	240.5	-2.809	.005	-0.40

The post hoc analysis for the *age group of respondents* revealed that respondents *less than 30 years* of age believe the uncertainty in climate change affects the credibility compared to the other categories within the variable. This is also confirmed by the test of trends which indicated that the higher the age of respondent, the more likely they are to disagree with the view that uncertainty affects the authenticity of the phenomenon.

For the *level of education*, the homogeneous subset disclosed that respondents with *Bachelor's degree* only significantly regarded the uncertainty as a crucial factor affecting the credibility about climate change than the other groups within the variable. The pattern of trend suggests that the more educated the respondent is, the less likely they would consider uncertainty an issue in climate change.

The results indicated that respondents in *upper management* did not regard uncertainty as an issue that affects the seriousness of climate change. Their view is significantly lower when compared to the categories of managerial responsibility. The Jonckheere-Terpstra test revealed a statistically

significant trend in the data: as managerial level increased, the less they thought that the uncertainty affected the reality of climate change. Similar result was obtained for the *length of work experience*, where the perception of uncertainty as an issue for climate change reduces with the length of work experience. The opinion of respondents with *over 15 years' work experience* is statistically significant as they do not regard the uncertainty a factor for climate change consideration.

5.5.4.2 *Climate change is just a buzz-word*

Given arguments that climate change is an avenue for alarmists to overstate their case (Linden, 1993), respondents were asked for their opinion on climate change as a current fashionable buzzword. As presented in Figure 5.18, 90% (n=50) of the participants respond that climate change is not a fad, or an issue that is followed with exaggerated zeal. In a turn of events, respondents who have expressed the views that climate change was not happening in Nigeria (Figure 6.14), also believe that climate change is a substantial issue that requires attention.

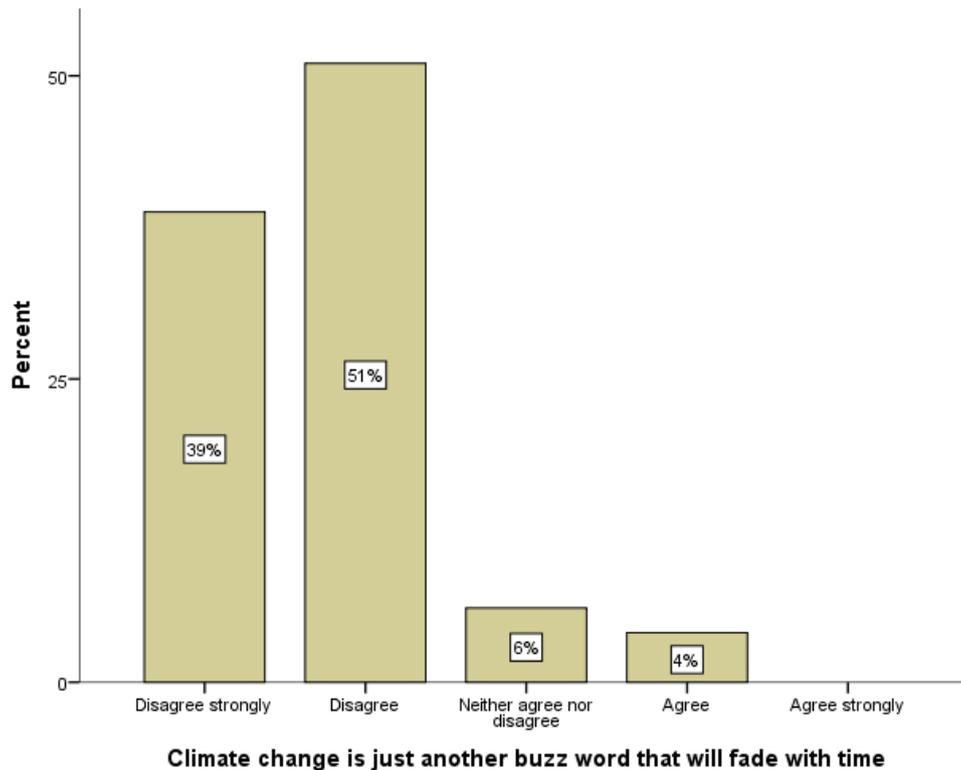


Figure 5.18 - Climate change is not another buzz word

To investigate any significance difference that may exist among the respondents, non-parametric tests was applied for all the demographic variables. The only statistically significant result was obtained when the *discipline of respondents* was used as an independent variable. The homogeneous subsets produced from the Kruskal-Wallis test revealed that the EM views was significantly stronger in their opinion that climate change in not a buzz word in comparison to their physical planning colleagues, $H1 = 4.416, p = .036$. This is not to imply that the PP do not consider climate change a substantial issue, but that while the median of the results obtained loaded on *disagree*, the EM is primarily loaded on *disagree strongly*.

5.5.4.3 *The effect of climate change on social, economic and ecology*

From the premise that climate change may be an extension of climate variability with little or no impact on socio-economic and ecological conditions, respondents were asked if they thought the extent of effect

would extend beyond the atmospheric domain. As displayed in Figure 5.19, 96% (n=50) of the participants are of the view that climate change has the potential to influence social, economic and ecological conditions.

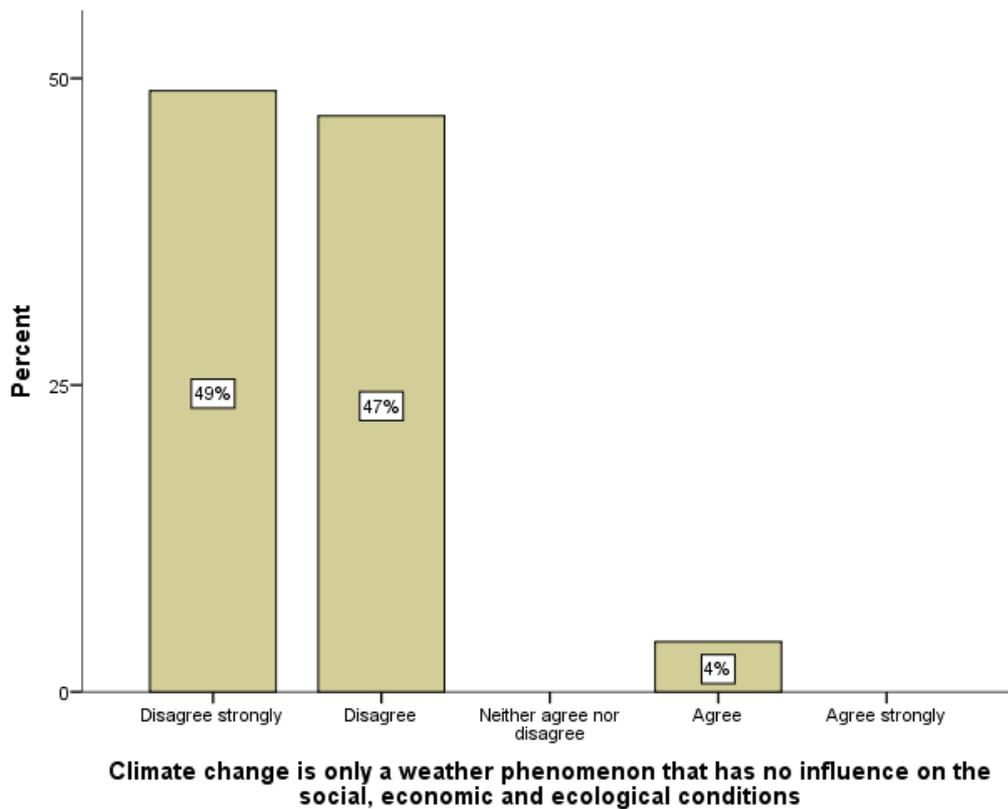


Figure 5.19 - Views on influence on social, economic and ecological conditions

Non-parametric tests were conducted to investigate any significance difference that may exist among the respondents. The only statistically significant result was obtained when respondents' *level of management* was used as an independent variable. The post hoc analysis produced from the Kruskal-Wallis test revealed that the *middle management* respondents' views were significantly lower in their opinion that climate change would affect socio-economic and ecological systems compared to the other managerial categories within the variable, $H2 = 6.784, p = .034$. The result of the pattern analysis through the Jonckheere-Terpstra test, did not detect any significant trend in the age groups, $J = 306.5, z = -.194, p = .846, r = -.03$.

5.5.5 Source of information about climate change

The respondents were asked for the sources of information that has shaped the context of their understanding of climate change. This was done to examine what may have contributed to the decision-making process due to the framing of the subject matter. The result displayed in Figure 5.20 show that the newspaper accounts for the highest source of information at 19% (n = 50) while government report and releases is the lowest at 8% of the overall contribution. The low figures observed from the government report confirms the report by Beg *et al.* (2001) that climate change does not feature prominently within institutional policies within the West African region.

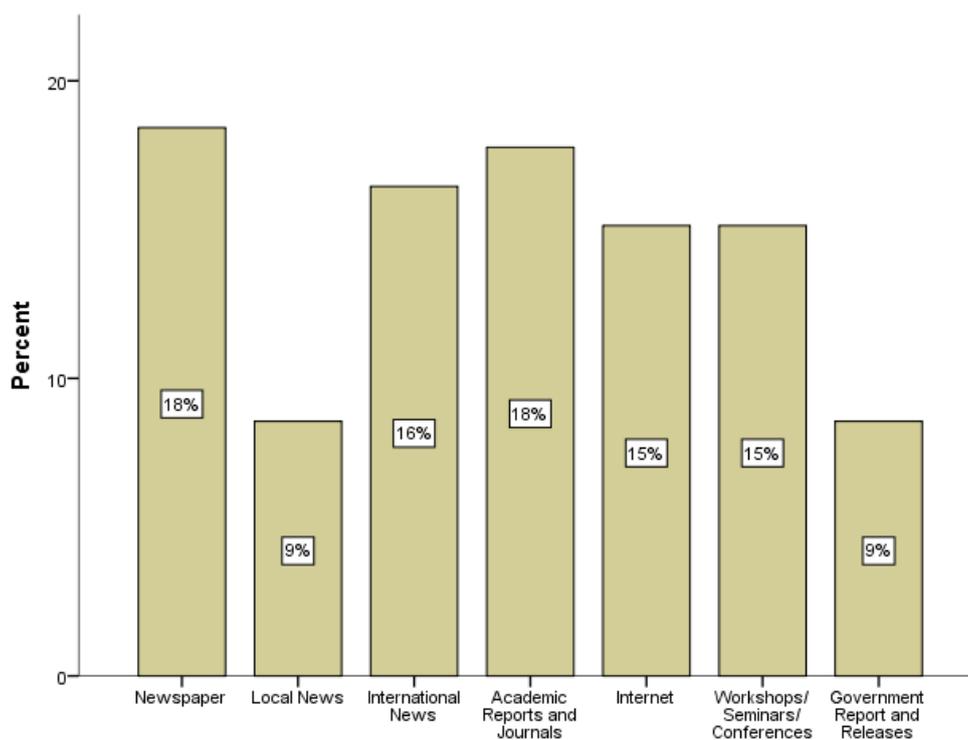


Figure 5.20 - Source of information on climate change

Multiple tests were carried out on the variable to explore the answers further using the demographic attributes as independent variables. The small size was a constraint in this regard as it eliminated a wide range of tools that could have been utilised and the available measures did not yield any statistically significant differences.

5.5.6 Tackling climate change

Using an open-ended format, respondents were asked for their views on how climate change can be addressed. Their response displayed in Figure 5.21 shows that the overall strategy proposed is afforestation, tree planting and conservation, which has 36% of the feedback. The result can be easily linked to an adaptation action in reducing the impact of flooding and erosion activities which has featured prominently in the previous paragraphs.

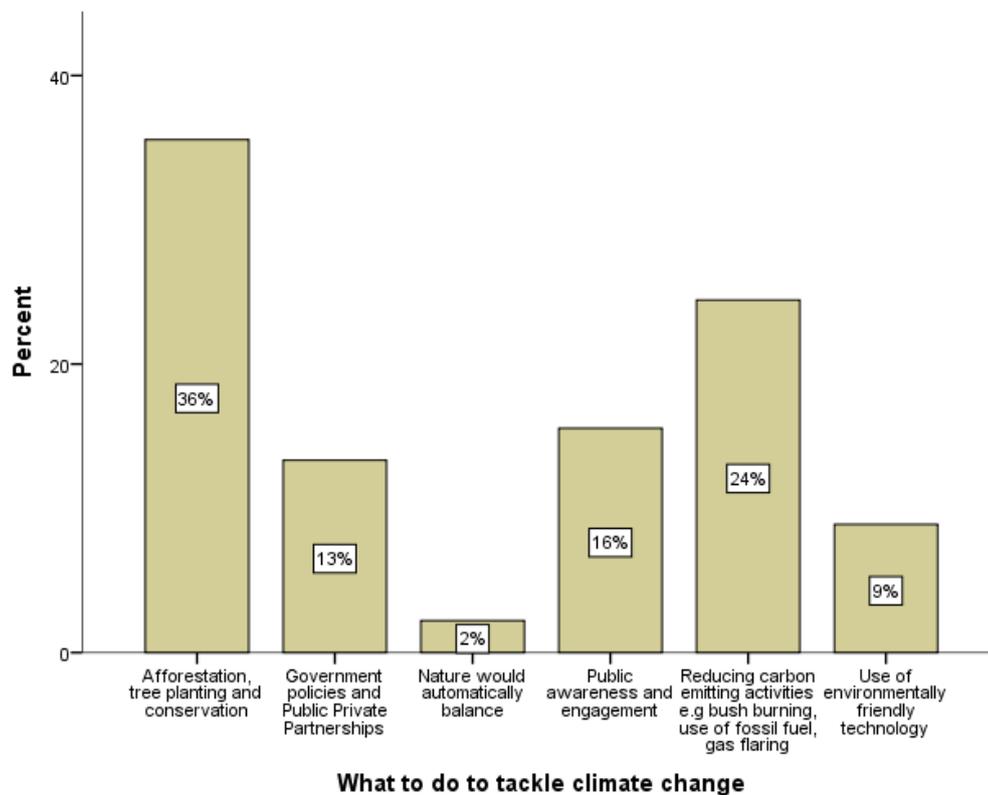


Figure 5.21 - Tackling climate change

5.5.7 Level of preparedness to climate change

Given the noticeable absence of climate change agenda in developmental policy, the research sought to explore if the country had effective mechanisms in place to address climate change effects. The composite information would shed more light about the current or on-going institutional response strategies and give an indication of the priority attached to issues stemming from climate change.

5.5.7.1 Knowledge of government's response to climate change

In determining the level of preparedness in respect of climate change and the associated risk, the respondents were asked for their awareness of any government strategy in this regard. As displayed in Figure 5.22 below, majority of the respondents (65%, n=49) know little about the strategies or responses the government is developing in addressing climate change. This results places things in a different light with the consideration that a large number of respondents are regulators that would be instrumental to policy development and implementation.

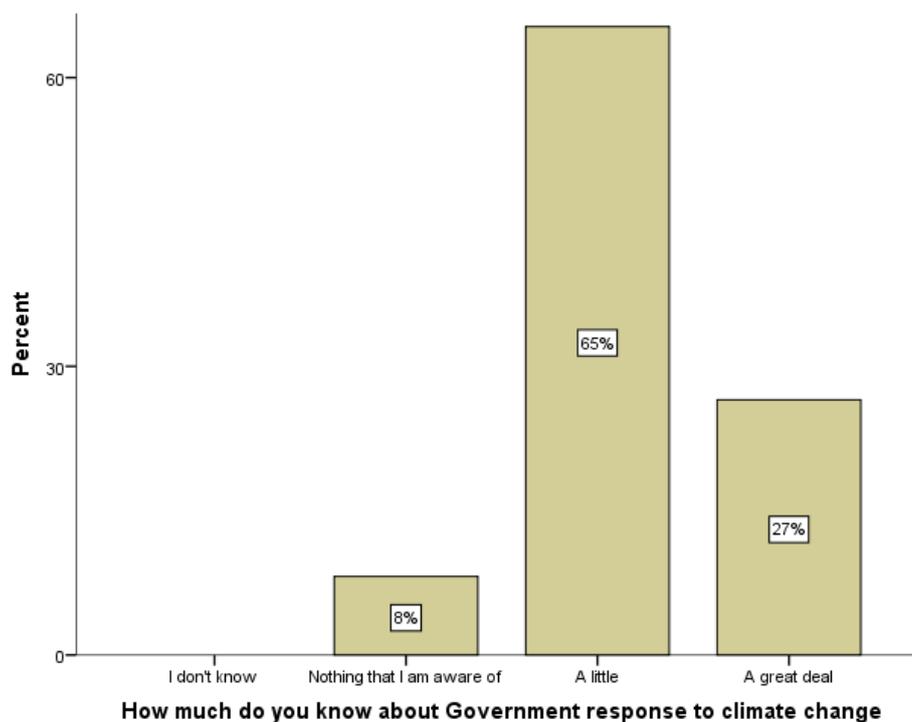


Figure 5.22 - Awareness of government strategy

The result of the Kruskal-Wallis test identified statistically significant differences when the *discipline of the respondents* ($H_2 = 4.612, p = .032$) and the *level of education* ($H_2 = 8.078, p = .018$) was used as independent variables. The EM knowledge about government's response to climate change is significantly higher their planning colleagues. Similarly, the awareness levels of *postgraduate degree* holders were significantly higher than the other categories in the variable. In addition, the Jonckheere-Terpstra test revealed

a statistically significant trend in the data: the higher the educational qualification, the higher their claims to knowing about government's response to climate change, $J = 362$, $z = 2.171$, $p = .030$, $r = -.031$.

5.5.7.2 Awareness of relevant legislation and strategies

Using a Likert scale to range their agreement or disagreement, the overall result presented in Figure 5.23 show that 50% of them do not believe that Nigeria has appropriate legislation and mechanisms in place to respond to the events arising from the changing climate.

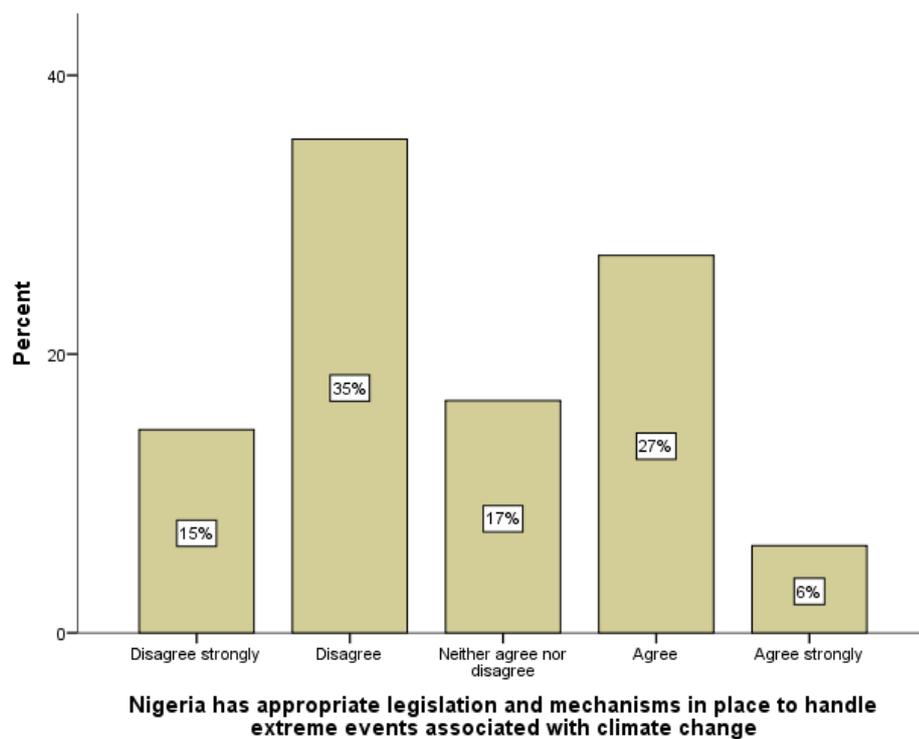


Figure 5.23 - Perception on legislation and mechanisms to address climate change

The only significant result obtained when a statistical test was carried out, was when the respondents' *level of management* was used as an independent variable. The homogenous subset produced from the Kruskal-Wallis test disclosed that *middle management* perception is that Nigeria does not have appropriate legislation and mechanisms to address climate change. This is

significant in comparison to the optimism expressed by *junior management* and the neutral stance by the *upper management*, $H2 = 6.592$, $p = .037$. The Jonckheere-Terpstra test did not identify any significant trend in their opinion of this variable, $J = 298.5$, $z = -.150$, $p = .881$, $r = -.02$.

5.5.7.3 Climate change as a developmental agenda

Taking an opportunity to explore a possible reason why climate change may have not ranked high as an imminent challenge (Davidson *et al.*, 2003), the questionnaire asked the respondents if there were more immediate issues than climate change. As displayed in Figure 5.24, about 67% of the participant return that there are more immediate problems in Nigeria than climate change.

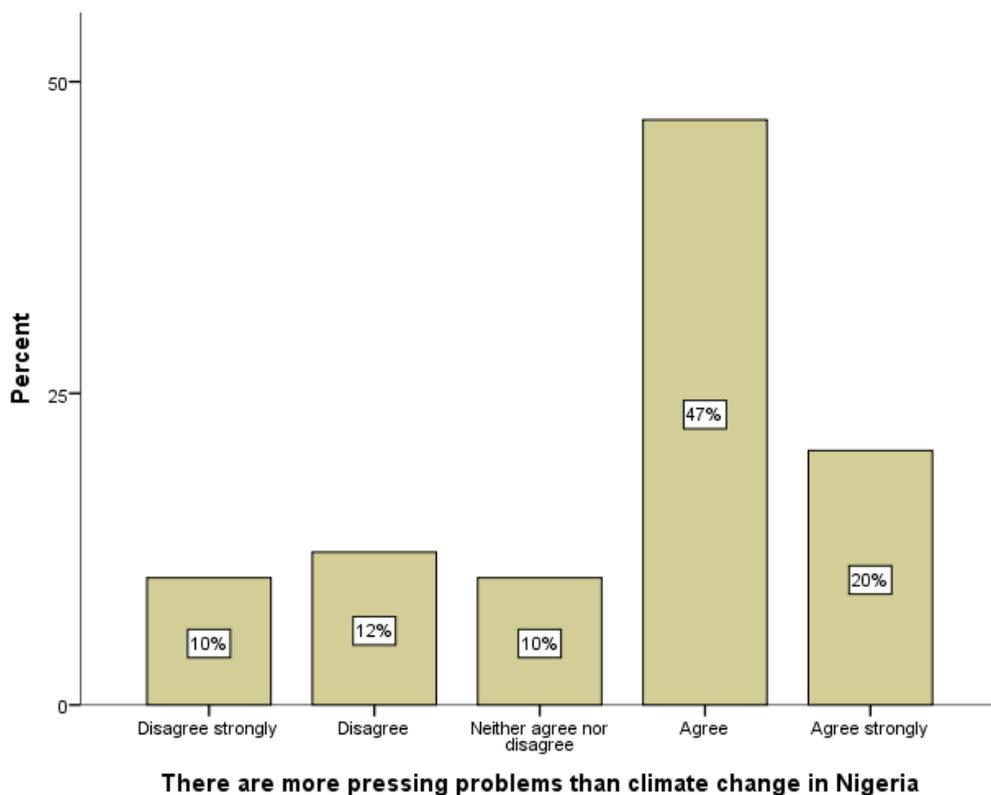


Figure 5.24 - Opinion on climate change as a developmental issue

To explore the answers obtained, non-parametric tests were conducted to examine if there were any statistically significant difference between their views within the groups using the demographic attributes of the respondents as independent variables. Using the SPSS software, the Kruskal-Wallis and Jonckheere-Terpstra tests were carried out simultaneously and the results recorded. Of the seven attributes that have been used as independent variables, the only three that have produced statistically significant outcomes ($p < .05$) have been summarised in Table 5.11 below.

Table 5.11 - Summary of non-parametric test for view of climate change as a developmental agenda

Independent variable	Kruskal-Wallis test			Jonckheere-Terpstra test			
	<i>H</i>	<i>Df</i>	<i>p</i>	<i>J</i>	<i>Z</i>	<i>P</i>	<i>R</i>
Age	8.509	3	.037	309.5	-2.457	.014	-.35
Management level	4.976	2	.083	230.5	-2.100	.036	-.30
Years of work experience	5.324	2	.020	262.5	-2.320	.020	-.33

The post hoc analysis for the *age group of respondents* indicated that respondents *less than 30 years* of age strongly believe that there are more pressing problems facing Nigeria other than climate change. The test of trends implies that the higher the age, the lower the conviction of the respondents. For the *level of management*, the Kruskal-Wallis test did not identify any statistical significance, but the Jonckheere-Terpstra test suggests that the higher the managerial level, the lower the strength of their belief that climate change is not a pressing issue. In a similar fashion, the *length of work experience* did not reveal any significance in the homogenous subset, but a statistically significant trend in the data: the higher the years of work experience, the lower the sentiment that climate change was not an urgent developmental issue.

5.6 Chapter summary

This chapter shows the results of the paper survey conducted in this study. The survey responses were coded into SPSS for data analysis. The survey

employed the use of closed, open, sequencing and ranking questions in obtaining participants opinion on the planning system, current environmental challenges and their notion of climate change.

Using an exploratory factor analysis technique, data reduction resulted in the discovery of three factors underlying planning activities in Nigeria; political administrative interests, community-dependent attributes and built environment preferences, in the order in which their mean scores indicate their perception. For factors hindering LUP, the absence of cadastral maps and appropriate land records had the clear margin of being the utmost challenge besieging spatial planning in Nigeria. This is followed by the frequency in which there is a change of government administration.

Majority of the contributors agree that human activity has contributed greatly to the changing climate. Nearly all the respondents maintain that climate change is already happening in Nigeria citing flooding, seasonal variation and increase in temperature as the effects that they have noticed. Afforestation, tree planting and conservation is considered the top strategy in tackling climate change within their territory. The newspaper and academic reports are the top sources of information that is framing the climate change discussion for the contributors.

Based on the opinions explored, the consensus view seems to be that there is a dearth of appropriate strategies and action plans to address climate change in Nigeria. In contrast, the respondents put forward the argument that there are more challenges weighing more than climate change in Nigeria.

6 INTERVIEW ANALYSIS AND RESULTS

6.1 Introductory remarks

As earlier discussed, the semi-structured interview was selected as the means to elicit information on current planning practice and the possible anticipation for climate change. The conducted interviews provide the information for achieving the third objective of this research. In the semi-structured format, the interaction is flexible and responsive to new issues that may arise. The interview participants were carefully approached based on their knowledge and direct involvement in the planning schemes in their jurisdiction. The interview questions were centred on emerging issues that have been identified through a review of literature and already outlined in Section 2.6.2.2.

6.2 Interviewee profiles

The researcher was successful in conducting nine interviews and the participants' profile is displayed in Table 6.1. Out of the 14 participants who have previously agreed to participate in the interviews, nine successful interviews were conducted. The remaining prospects later declined and were unavailable to take part in the study. Four of the participants are directly responsible for physical planning and development (PP) in their states, while the remaining five oversee environmental management (EM) in the same territory.

Table 6.1 - Profile of interviewees

Participant	Organisation	Current position	Gender	Length on current position	Total work experience
#EM1	State Environmental Protection Agency	General Manager, Environmental Protection Agency	Male	3 years	19 years
#PP1	State Urban Renewal Agency	General Manager, Urban Renewal Agency	Male	4 years	19 years
#EM2	State Ministry of Environment	Director, Nature Conservation and Climate Change	Male	5 years	Over 18 years
#EM3	State Ministry of Environment and Sanitation	Director, Forestry Regeneration and Utilization	Male	5 years	Over 20 years
#PP2	State Ministry of Lands, Physical Planning and Urban Development	Director, Physical Planning	Male	Over 5 years	Over 20 years
#EM4	State Ministry of Environment and Mineral Resources	Chief Meteorologist and Climate Change Officer	Female	4 years	10 years
#PP3	State Ministry of Housing, Physical Planning and Urban Development	Assistant Director, Town Planning and Urban Development	Male	Over 4 years	Over 14 years
#PP4	State Ministry of Housing, Physical Planning and Urban Development	Deputy Director, Development Control	Female	Over 4 years	Over 13 years
#EM5	State Ministry of Environment and Habitat	Assistant Director, Environmental Pollution Control	Male	3 years	11 years

As seen from the table above, none of the participants was lower than an Assistant Director grade in the different ministries or organisations. Coupled with their length of experience both on their current position and total work experience, it is certain that they would be able to provide invaluable insights into the subject matter. The states that the participants work in has not been included on purpose for ethical reasons, as the individuals will be easily identifiable if their states are included.

The interviews lasted between 30 and 45 minutes and all interactions were tape-recorded and transcribed for clarity and data purity.

6.3 Theme identification

The transcribed interview data was introduced into the NVivo software to assist in a thorough review of the breadth and depth of the qualitative data. To get well acquainted with the qualitative data, the audio recordings and interview transcripts were listened to and read several times to ensure a thorough familiarisation.

After this data immersion process, identified themes were coded into single nodes and tagged with relevant texts from all the transcripts. From the coded nodes, a feasible and manageable framework index was created by establishing the possible links between the themes. A workable structure was created by first identifying associations within the nodes, thereafter, putting them into mid-level themes. The mid-level nodes were then regrouped into high-level themes. Table 6.2 shows the structure of themes that has emerged from the categorisation.

Table 6.2 - Identified themes from interview data

	EM	PP	Total references
Land use planning system	20	36	56
Contextual elements in process evaluation	51	37	88
Controlling factors over LUP	38	33	71
Climate change issues	77	19	96
Overall nodes	186	125	311

From the tabulation, a greater portion of remarks was recorded from the EM with 186 comments against 125 highlighted from the PP. As expected, the PP had supplied more information on the land use planning system than the EM but had provided less under the climate change subject. It can be inferred that the PP were less conversant with climate change as a topic than their EM colleagues which is vice versa in terms of the land use planning system.

The following sections discuss the findings from the interview with extracts from the interview transcripts to ensure that the contributions of the interviewees are captured appropriately.

6.4 Land use planning system

This high-level theme contains all the nodes with relevant information pertaining to the legislative provisions governing Nigeria’s land use planning activities, the institutions created from the laws, their functions and jurisdictions. The understanding gained in this regard provides insight into the context through which land use planning is interpreted and the administrative procedures guiding its application. This is considered crucial, as it provides the basis for the definitions and functions of the various actors and activities carried out in the land management system in Nigeria.

As seen from Table 6.3 below, this major theme comprises of two mid- level themes covering legislation and administration. A total of 56 references were identified from the transcripts covering different aspects of these themes. Legislation is selected as the obvious start point, as it defined the nature and character of the areas of authority under the various administrative institutions. The mid-level themes are further presented in the following sub-sections.

Table 6.3 - Thematic profile for land use planning system

Land use planning system	EM	PP	Total references
Legislation	7	11	18
Administration	13	25	38
Overall nodes	20	36	56

6.4.1 Legislation

In this mid-level theme, 18 passages were identified as having direct references to the significance of the legislation in instituting and shaping the current land use practice in Nigeria. **Institutional jurisdiction** created from through the stipulations from the enactments and the **interpretation and implementation** of those laws were the two nodes identified from the responses as seen in Figure 6.1 below. The responses coded under this node are direct responses to questions with respect to land use legislation, to determine the extent of influence on the land use practice.

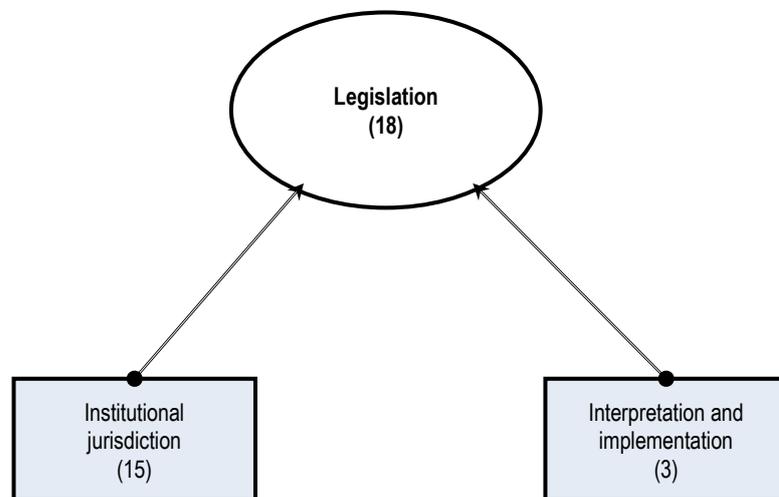


Figure 6.1 - Node grouping for legislation

In terms of **institutional jurisdiction**, the respondents confirm that the institutions governing any aspect of land administration have been created as a result of the State Government adopting a national legislation. Even though there are several statutory regulations found from the literature that directly or indirectly impinge on land use, the respondents only referred to the Land Use Act (LUA) of 1978 in the discussions. The respondents also unanimously agree that the federal LUA (1978) is the fundamental legal provision governing land management in their states. In this regard, #PP2 validates this position that *the idea then was to ensure that we have direct access to land. ...that is the Government without mincing words has access in acquiring land for overriding public interest and this is one of the principal objectives of the*

Land Use Act. #EM1 affirms that it is the responsibility of the Land Services Department to allocate to whoever is interested in such land. ...and to make sure it doesn't belong to government or that the Government is using it. As seen from the narratives, the tenets of the LUA and the Land Services Department created from it, is only focused on land acquisition and allocation. This is more like a land registry services that does not bother with making physical plans or development control.

The power to undertake development control is conferred by the Nigerian Urban and Regional Planning (NURPA) of 1992 which stipulates the creation of a Planning Authority. #PP3 explains that his department *is saddled with the responsibility of controlling, monitoring physical development in the State. Precisely, we do give approval to any development, physical development applications in the state. Also, we do regulate and implement the law that guides building [structural, physical] development in the state.* To this end, it is easy to observe that the area of supervision commences when physical development is required on a land that has already been acquired and legally allocated.

As an expected condition for obtaining planning approval, an environmental audit is carried out on the proposed planning applications. This is a pre-condition made mandatory by the federal Environmental Impact Assessment (EIA) regulation of 1992. #EM1 captures this process; *our function as prepared by the law, is to vet and approve EIA. ...before [planning] approval can be granted, depending on what I want to put on it [land], they are expected to refer me for an environmental impact assessment.* Consequently, the jurisdiction of the body governing environmental approvals does not directly extend into land acquisition only in certain planning permissions requiring environmental assessments. However, #EM1 may have been a little optimistic in stating that environmental assessment must be carried out as part of the process. This may be due to his inclination as an environmental manager as his planning counterpart #PP2 comments that *in our ministry, we only require environmental impact analysis reports on some major projects and when the report [is] submitted, an investigation is conducted which we call site inspection, just to ascertain what they have put inside the reports.* This implies that his department often approve planning permits without further consultation

with their colleagues in the environment sector, provided they have conducted a field audit of the environmental report.

Respondents moan that the underlying challenge with the current land management practice can be directly linked to weak **interpretation and implementation** of the various land management statutes. Along these lines #EM2 argues that *if the Land Use Act had really been put in place, you would see that there would be proper management of land and structures*. Comparatively, #PP2 explains that *at times the original land owner do prove stubborn by not allowing the government or its agent to move fully to the land for usage*. The above statements indicate that the ineffectual understanding of the land management laws is not just limited to the citizens but to the Government and the agents that should be taking full advantage of the statutes. More importantly, even though the land within the territory of the state is vested in the State Governor, this is not absolute and may still not yield optimised land management. On this note, #PP3 opines that the LUA is contradictory and *based on a kind of fundamental error, in the sense that the clause that [there are] people that have been in possession of that land, the law still recognises them. So [if] the law recognises that some people were there, [already] possessing it [the land], it means that government does not own any land, because some people were there are already owning it and you are now saying that the land is vested in the hands of the Governor*. Based on this argument, it is fair to infer that some of the challenges experienced with the implementation of land management practice can be linked directly to the ambiguous nature of the provisions in the LUA.

6.4.2 Administration

Having established the role and influence of legislation in shaping the land use planning structure, the administrative nature of the land use system is the next emerging theme. Under this theme, 38 references were coded and categorised as seen in Figure 6.2. This theme focuses mainly on the nodes that explicitly captures the specific roles and responsibilities carried out by

the various organizations in land use management; how they carry out their functions, how and when they become involved in the decision-making process, the extent of the powers they can wield, their interpretation of the authority they have and how they interact with one another and the public.

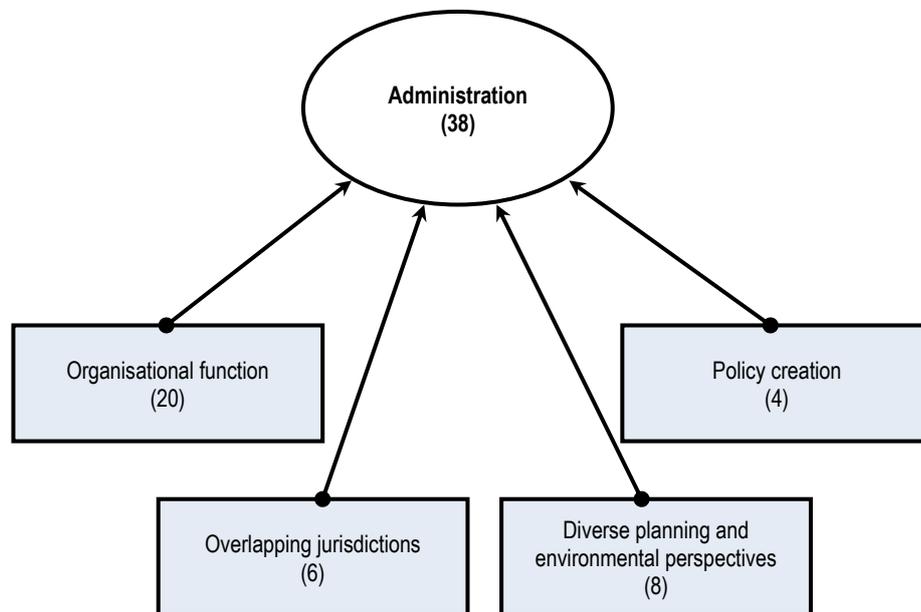


Figure 6.2 - Node grouping for administration

This mid-level theme has **organisational function** (20 passages) which in all ways can be likened to the institutional jurisdiction earlier discussed under legislation. While the previous discourse is taken from the standpoint of the legislative provision, the nodes collected here is focused on how the organisations are currently carrying out their duties in respect of land management. In trying to understand the current responsibilities carried out by the main administrative units, #EM1 summarises

...if I have a land which I want to build [on], I will approach Land Service [that] I want a C of O [Certificate of Occupancy] for this land. They give you that C of O ...that means they have already consented that land to mean that you can use it ...no litigation from anybody ...that means I have the right to use. It is then that I can now approach Planning [Department] to obtain an approval for the project. And before that approval can be granted, depending on what I want to put on it, they are expected to refer me for an environmental impact assessment on that project

From the above narrative, it can be observed that there are primarily three different departmental units whose function run parallel to each other instead of working in tandem. In a bid to understand where #EM1 would have obtained the land used in the analogy, #PP3 clarifies the state of landholding in Nigeria that

...the ministry also has some agents, a kind of commission. They have got their own setup, Property Development Corporation... The State gives them the priority [authority] to engage in providing land and sell to individuals. ...I want to tell you that individuals are still selling exorbitantly, even to the extent that even if the State Government want to use the land, the state government still has to make payments either directly or indirectly.

The above statement confirms the findings of Adeniyi (2011) and Lamond *et al.* (2015) about the fragmented nature of landholding in parts of the Nigerian society. With the multiplicity abounding in the land market, the only way anyone can lay claims to any land is by obtaining the Certificate of Occupancy (C of O) from the Land Services Department. The C of O is a legal document that confers land title and right to use the land to which it has been issued.

The mid-level theme for **overlapping jurisdictions** (6 references) rounds up the points of intersections where the jurisdiction of one institution coincide with the functions of another. In the narratives provided by the interviewees, a horizontal overlap can be recognised when it occurs within agencies, parastatals or ministries of the same administrative level. #PP1 comments that *the function of any Government agency is complementing other functions of other agencies*, which infers that there are situations in which the departmental units are expected to function together. However, this does not happen, #EM4 moans that *the synergy is not there*. With all the optimism expressed by #PP1, he admits that his own institution is not involved in the planning decision making process, but *where your approval to commence a programme intersects our own job, you have to contact us*. This is a fair stance on the issue. However, it begs the question for projects intersecting their jurisdiction, why is it that a planning approval has been granted without due

consultation with this institution? In the same vein, #EM2 laments that it is *when they run into problems they will come*. This indicates a system which prefers crisis management than preventive coordination of activity within the same administrative levels. Likewise, the vertical overlap reveals the same disconnect between the Federal and State administrative levels of governance at which land-use decisions are made. This trend has gained notoriety especially in issuing of mining licences. #PP4 moans that *the Federal Ministry do not really know what is happening in the states* but grant permits without due consultation with the relevant institutions at the other administrative levels or finding out the potential impact of the decision at the lower levels.

The **planning and environmental perspectives** (8 references) captures the attitude and approach of the administrative institutions towards forecasting, resolving problems in terms of physical development and environmental considerations. As expected, there is a variation in the views of the environmental managers from the planning team, where the former believes that the latter focuses on resolving current problems without considering future implications. When asked to describe their impression on land use planning activity in their location, #EM5 opines that *I see it addressing more of the current problems than looking to the future*. Likewise, #EM2 adds that

...if the Land Use Act had really been put into place, you would see that there would be proper management of land and structures. And it would also help us to do our job, and that is why the Urban and Regional Planning should be made to be responsible or have to do their jobs properly.

Having established these positions, it is obvious that the environmental team considers the capacity and ability of the planning team crucial to the success of their own mandate. In trying to understand the viewpoint of the planning team, #PP3 responds that *there is no way we want to solve a particular problem, that you will not start from the past, then relate it to what is happening, and anticipate, forecast for the future*. To this end, one may conclude that information sharing between both institutions would resolve the disparity

in view of what is being done, how it is being carried out and challenges being experienced.

Interestingly, all the respondents spoke with a certain bias in favour of the built environment, as all their actions were primarily geared towards the human environment. When asked about the activities carried out in respect of the environment, the replies do not vary much from tree planting and landscaping at the proactive end, to environmental impact assessment which is reactive in nature. It is observed that an ambiguous definition and dimensions of the environment presents a problem which can lead to duplicated efforts and waste in resources. For instance, #EM2 who handles Nature Conservation explains that *in this department we are into raising nursery, we want to have park and garden, want to preserve our plants our trees and make sure that we prevent the wind from damaging some of our structures*. In this context, the participant unconsciously equates environmental management to urban ornamentation. Whereas the same government has a Department of Forestry and an Urban Renewal Agency that are also planting trees with the same undertones. To resolve the fruitless multiplicity, a clear understanding of the environment is crucial as it shapes the mandates and functions of these public institutions.

The node for **policy creation** (4 references) is a collection of the answers relating to the degree to which they can initiate policies relating to land-use within their jurisdiction. All the planning interviewees express with strong enthusiasm that they have the powers to make decisions without interference from the political administration. #PP3 proudly declares that *we are the policy makers concerning planning issues*, but through his explanation, a clearer picture emerges that it is in an advisory role;

...we give advice in the form of memo to government of the day that something like this is needed in this particular area. And if government will be able to, or keen enough to consider our memo, then they may implement it.

As such, if the policy proposed does not align with the agenda of the present government, it may not be considered. This situation was confirmed by both #PP1 and #PP2 that every government administration comes with their own agenda that takes priority. These agenda are often developed without due consultation with the practitioners working in the regulatory capacity, hence they get co-opted.

6.5 Contextual elements in process evaluation

The nodes within this theme captures the various environmental, health, social, cultural and planning considerations that are involved in the appraisal process for approving land use. About 88 related references was captured from the interview data, with the EM supplying more than half of the information as seen from the breakdown provided in Table 6.4 below. This theme has four sub-themes, with the *EIA in land-use decision making* category containing the largest number of references and the *risk assessment* having the least remarks.

Table 6.4 - Thematic profile for elements in process evaluation

	EM	PP	Total references
The place of EIA in land-use decision making	20	13	33
Expert consultation	13	5	17
Public involvement	10	18	28
Risk assessment	9	1	10
Overall nodes	53	36	88

6.5.1 The place of EIA in land-use decision making

The role of EIA in the decision-making process of LUP was explicitly mentioned by the interviewees as seen from the 33 references grouped in Table 6.4. The nature of their comments revolved around situations about when it is carried out, how it is carried out and issues bothering on the

appropriateness of jurisdiction and competency. The subsequent subsections would present excerpts of the relevant responses in this respect. The distribution of the gathered nodes is presented in Figure 6.3 below.

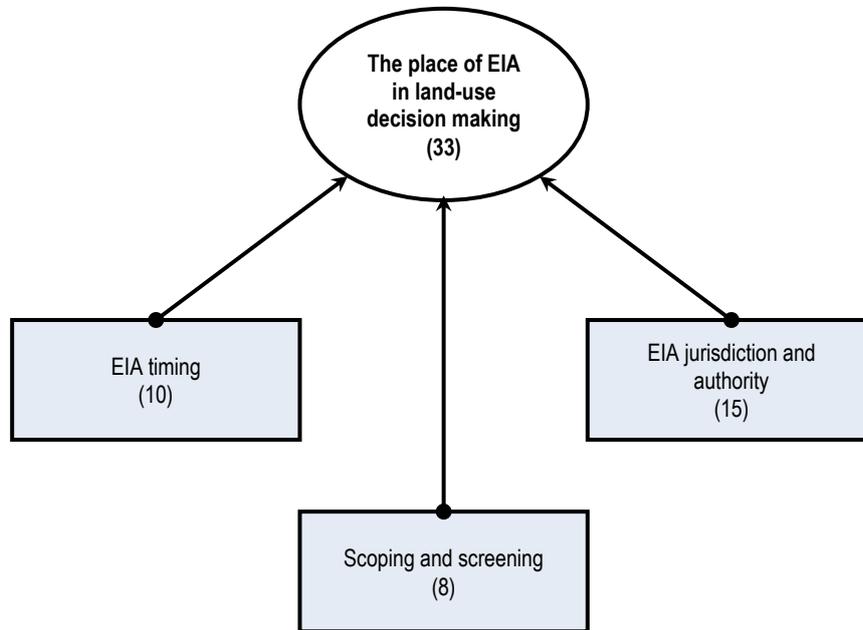


Figure 6.3 - Node grouping for EIA in land-use decision making

6.5.1.1 *Timing of the EIA*

The discussion relating to the commencement of the EIA process was mainly mentioned by the EM, with an overwhelming 8 references out of the 10 passages captured. Within this #EM1 states that *we have to carry out that one [EIA] before the commencement of a project. So we have to know the negative impacts and positive impacts.* #EM5 situates the EIA *right before anybody disturbs the environment*

In trying to clarify the positioning of the EIA, #EM1 and #EM5 confirm separately that environmental assessment occurs after land purchase but before project approval. This procedure resonates with the experience shared by the other four participants that touched on this issue. Unfortunately, the interviewees were unable to recognise the ineffectiveness of positioning the EIA process after land purchase, as it reduces the potential

to encourage project proponents to consider alternative locations in situating their facilities.

Regardless, #PP3 points out that the review must include the possible problems associated with the proposed projects and how they would be mitigated. #EM4 adds that some of the impacts may be either positive or negative.

6.5.1.2 Scoping and Screening

The review within this category is based on the understanding that it is not every project that would require an environmental assessment. References to scoping and screening of project approvals was made equally by the EM and the PP with 4 mentions each. Both groups acknowledged that there are some forms of criteria that determines the decision to conduct an EIA. #PP2 submits that *we only require environment impact analysis reports on some major project ...It depends on the nature of the proposed industry*, while #EM4 specifies that if the project intersects a watercourse or a flooding area then an environmental assessment is required.

The interviewees infer that there is a screening criteria employed which seem to be different from the provisions of the federal EIA regulation. When asked if the criteria are readily available to the public, #EM1 surmises the general response *it's not available*. Invariably, the absence of a written and communicated decision matrix creates ambiguity in the approval process.

6.5.1.3 EIA jurisdiction and authority

An almost equal contribution was captured from the respondents with 8 mentions captured from the EM and 7 references from the PP. From the varying responses, it was apparent that the EM are still struggling to establish their authority in deciding land use.

#EM1 - In fact it was just last week that Executive Council approved and gave us power now to carry out the EIA on all projects of the government and all public projects ...That's the reason why we have to go to EXCO [State Executive Council] to give us the approval, give us more power so that we're able to do the right thing.

#EM5 - You see what we are discussing now, this issue came up like, in the last three weeks, we had a meeting with town planning and urban development. So, at that meeting we resolved that every town planning approval must be subject to our EIA here, for every development project.

On the other hand, the PP convey that they reserve the right to determine project proposals that require EIA. #PP2 declares that *if it is one that is going to have negative impact, a major impact on the environment, we'll refer them to the ministry of environment, while #PP3 confirms that at the level of the Ministry [of Physical Planning], we will say that there are measures that are put in place to solve any problem that we may think the proposal will bring up.* Based on the PP statements, it seems fair to suggest that scoping, screening and environmental appraisals are often carried out on project proposals by the PP without due recourse to the EM.

6.5.2 Expert consultation

As seen from Table 6.3, this category holds the second largest response with 13 passages from the EM and the remaining 5 from the PP. The distribution of the identified nodes is presented in Figure 6.4 below.

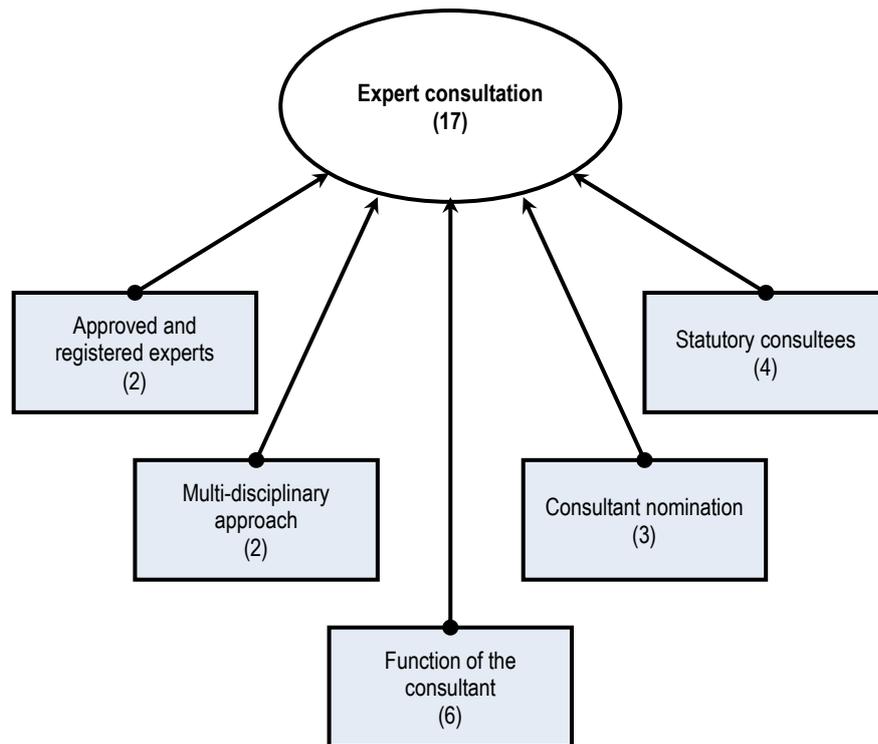


Figure 6.4 - Node grouping for expert consultation

Although, the Federal EIA regulation does not specify the use of an expert consultant in the EIA process, the EM report that project proponents must ensure that the consultant employed must be on their list of **approved and registered** subject matter experts. The underlying argument put forward by #EM5 on the need for the experts, is that EIA requires a **multi-disciplinary approach**, *we cannot get all these professionals in the Ministry.*

The PP confirm that they also engage experts in their structural plan development, and in the same way as the EM, the experts' function as chaperones over the process. #EM5 adds that

...the private consultant, is like the coordinator, he is the one that will go to the Federal Ministry of Environment, go to the State, go to the community, go to the client, will bring everybody together. Ours, is to make sure the thing is done properly, but the private consultant will be the one to coordinate... it is the consultant that will go to the site and see things for himself, so it is what he puts in the draft copy of what he sends that we are going to...

In this regard, the experts can be likened to project lobbyists as they have free rein over the assessment criteria, stakeholder identification, community involvement and public engagement. Furthermore, the EM seem to have direct interests in the experts selected for projects as they confirmed that they often recommend certain experts to proponents. The basis of nomination was not specified but there is a possibility that an assessment may still not be received favourably if any other consultant was selected.

Given the extensive use of experts in land use planning, the researcher sought to identify if there were any **statutory consultees** engaged in the decision-making process. However, the term statutory consultees are immediately translated as the traditional institution available within the project area.

6.5.3 Public involvement

This sub-theme produced 28 references, with over 19 passages coming from the PP compared to 11 from the EM. The discussion covers all the related information regarding the nature of public engagement carried out in the land use process. Figure 6.5 depicts the nodes categorised under this sub-theme for ease of presentation.

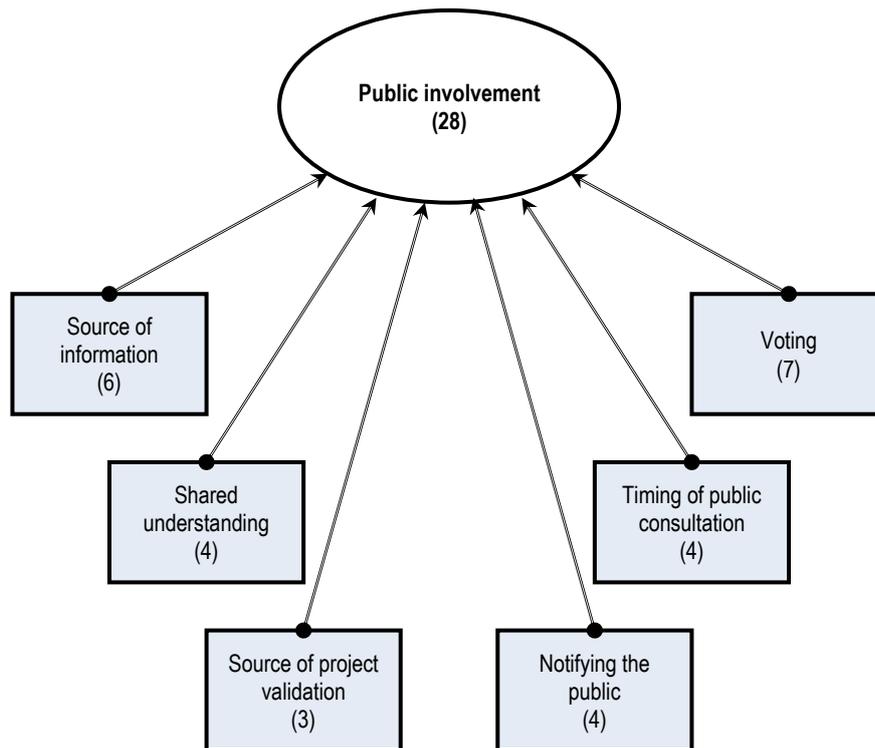


Figure 6.5 - Node grouping for public involvement

As a **source of information**, #PP2 declares that consultations have provided both current and historical context useful in developmental planning. He also asserts that *the local contact/people will serve as pointer* to useful resources. Likewise, #EM4 adds that public information is a crucial input for the yearly EIA reviews carried out in their ministry.

The PP argue that involving the public at the inception of their projects creates a **shared understanding** of the objectives and benefits of the intended outcomes. Citing an example of a public driven project, #PP3 attests that if the public had not been involved, *they will not have the keen interest to actually guard it jealously and make sure that it's functioning*. In this way, the PP consider the public a **source of project validation** on completion. #PP2 expands on this that *we do that [Public engagement] at inception and then during the implementation period. To say okay, when we first came to you, you said this, and this is the result, is this according to your own wish?* With this simple process, the public is used as yardstick to determine performance delivery on projects.

In **notifying the public**, both the EM and PP declare that they use newsprint, radio and television announcements. Their responses were standard with no variation to align project type and potential target audience. More importantly, the respondents were vague in regard to the notification and the **timing of the public consultation**. #EM5 was very enthusiastic in his response that it became impractical when he stated that the public become involved *during scoping, from the initial to the final stage*.

A **voting** system is touted as the deciding criteria in the public engagement process. #EM1 gives an overview of the process

...everybody would come, and you'd give your own opinion concerning that [project] and you compile everything. If at the end of the day the people that is against that project is more than the people that support it, then they will stop it. That is the essence of the public hearing. And they do it on all projects

Unfortunately, the voting system is too simplistic that it can be skewed in any direction based on other factors rather than ones the relating to the project. A weighted voting system may be appropriate for its ability to recognise that all members of the public cannot be impacted by a project the same way. In addition, the respondents inferred that meetings held in rural communities often occur in the traditional ruler's palace. It is not likely that the public in attendance would deviate from the monarch's desires.

6.5.4 Risk assessment

The 10 references gathered under this sub-theme focus specifically on the risk identification and assessment process employed in the land use process. As seen from Table 6.4, 9 of the passages have been supplied by the EM, with only 1 mention by the PP. From the responses collected, there is a paucity of a risk review strategy. The responses collated have emerged based on the interaction the interviewees had with the researcher. Figure 6.6 provides a representation of the related nodes

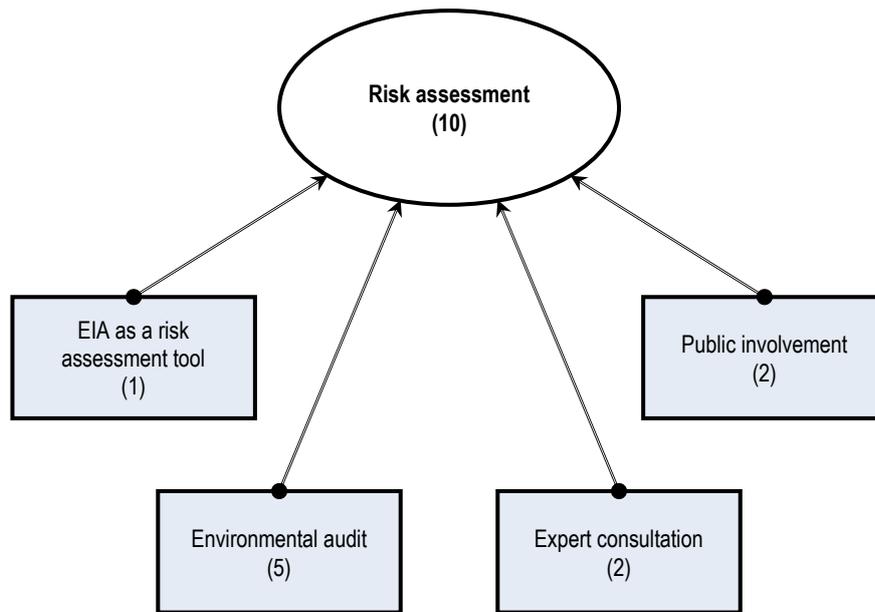


Figure 6.6 - Node grouping for risk assessment

#EM1 infers that the EIA is used as a risk assessment tool *to know the negative and positive impacts*. Given that projects are often times implemented without EIA, #EM1 adds that *where we have an existing project, what we do now is an environmental audit of that project*. According to #EM4, the environmental audit report is a *yearly report...*, *we go through the report, we invite some relevant stakeholders as well, some panellist and the company as well, carry out inspection, so if it's not in line with what is written, they are told to readjust*. The absence of baseline data pre-project brings to question the validity and reliability of the audit reports. As an audit report, it is historical in nature and can only contribute little in terms of prevention.

#EM5 insists that the expert consultant is solely responsible for the risk assessment, since *it is the consultant that will go to the site and see things for himself, so it is what he puts in the draft copy of what he sends that we are going to [approve]*. Meanwhile, #PP2 opines that public involvement is crucial in risk assessment as *you would need to tap some information that are vital from them [public], coupled with your own professional experience*.

6.6 Controlling factors over LUP

This theme discussed the underlying factors influencing the current land use practice. As presented in Table 6.5, 69 related passages were collated, with the EM supplying 36 of the mentions and the PP providing the remaining 33. The elements identified are considered critical success factors that determine the effectiveness of land use policy. The five key factors teased out from the interviewees are discussed in the following paragraphs.

Table 6.5 - Thematic profile for controlling factors over LUP

	EM	PP	Total references
Governance	12	7	19
Political interests and influences	11	6	17
Financial resources available for regulatory controls	5	2	7
Societal attitude	6	16	22
Socio-economic factors	4	2	6
Overall nodes	38	33	71

6.6.1 Governance

The importance of governance was considered a crucial factor as it had the potential to directly and indirectly influence the other elements on the list. 19 references were collected in relation to governance from the interview transcripts. The distribution of the gathered nodes is presented in Figure 6.7 below.

Even though the discussion was carried by the EM, the experiences relayed by both the EM and PP are the same. To start off, the interviewees bemoan **government's apathy for policies**, #EM4 shares that *you see some activities being carried out by the government without EIA*. In the same vein, #PP3 adds that *even among the government, an area that has been earmarked for commercial use, you will find somebody doing something contrary to that use*. Considering the attitude of the government toward her own policies, it is no doubt that **policy enforcement** would become challenging if the proponents of a regulation

choose not to follow them. Invariably, this results in non-effective policies owing to implementation and application problems.

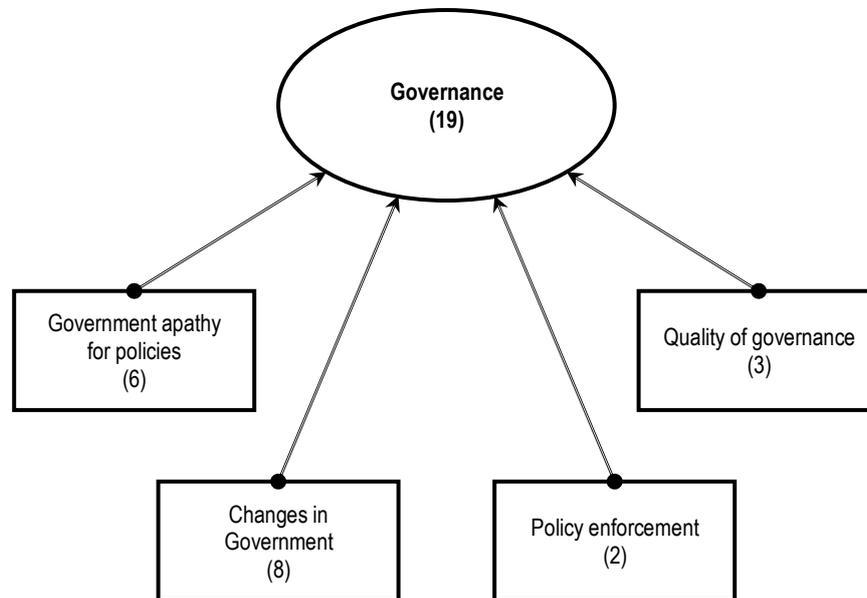


Figure 6.7 - Node grouping for governance

Regardless, the respondents agree that the government policy of each regime provides the direction and nature of land use practice. The fragile nature of democratic ruling in Nigeria brings about frequent **changes in government**. This has the potential to bring about continuous variation in practice as aptly captured by #EM2 that *each government has its own interest, so the interest of the outgoing one may not be the same as that of the incoming one*. The lack of continuity in the approach to land use planning continues to intensify the challenges experienced in this sector. In contrast, the **quality of the governance** is regarded more important than government change, as #PP3 argues that *when you have good governance, you see things moving along smoothly, but when you have bad governance...* It can be inferred that if good governance follows a bad regime, then it is likely performance would improve and good practices would fall if bad governance succeeds good governance.

6.6.2 Political interests and influence

This sub-theme is closely related to the Governance sub-theme, since most of the behaviours exhibited under governance are because of the political influences exerted. The sub-theme is made up of three nodes with the **interests of elected officials** taking 12 out of the 17 related passages as seen in Figure 6.8 below.

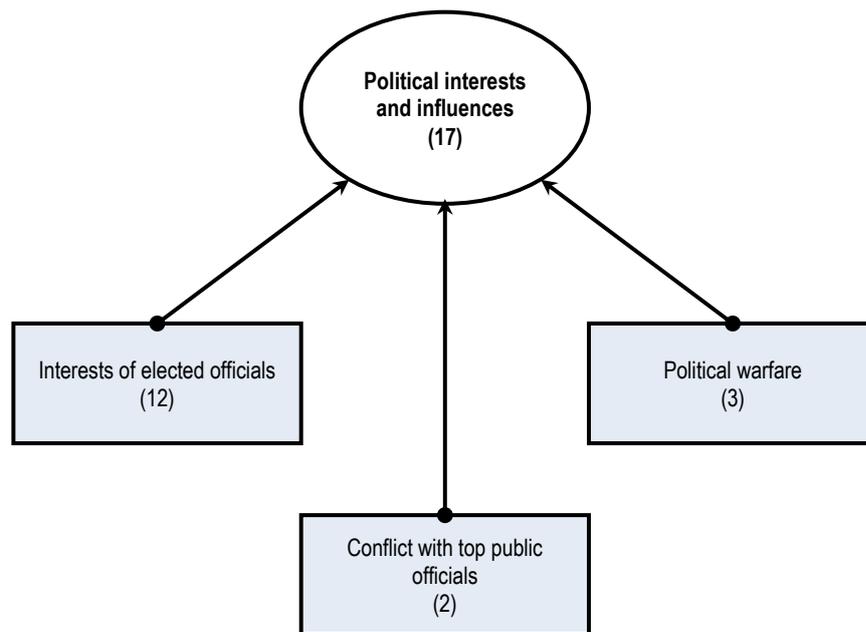


Figure 6.8 - Node grouping for political interests and influence

It can be reasoned that the interests of the elected officials influence all aspects of the points raised under governance. #EM4 surmises that *most times [the] major problem we normally have is the political view ...is because it depends on where the interest of the government lies*. From the interview transcripts, it may be fitting to rephrase that the political view determines where the government interests lies. Public officials and their appointed representatives often adopt varying guidelines to refract statutes to align to their own interests. In an example cited by #PP2, the Lands Department have the responsibility to calculate compensation on government acquired lands but *it is the Governor or his appointed somebody who will say, you're not entitled to compensation, the government can only afford to give you so, so, so*. In this situation, it is not clear how the Governor or the representative comes about

this figure, but this is obviously carried out in line with the wishes of the elected principals. Unfortunately, a wrong practice carried out by any government is then considered a precedence for succeeding governments.

The problems facing the policy enforcement earlier described, can also be linked with this sub-theme, as respondents complain that their regulatory duties are often subverted when it conflicts with interests of top government officials or individuals with strong political influences. #EM5 describes the experience that

...because of the political climate, you can receive calls from people with high political ties and they caution you from carrying out your duties, so then you cannot be effective and that's one of the greatest challenges we have. Especially with the elections approaching, we have stayed action and we are dancing to their tunes to avoid repercussions.

Furthermore, some of the policies developed and enforced are sometimes used as tools of **political warfare** to subdue opposing parties or to acquire political advantages. #EM5 recalls that a project was developed to monitor atmospheric emissions, was initially successful, until the *politicians came in and hijacked the project from us and when they hijacked the project from us, their objective was totally different from our objectives*. The change in objective led to dire consequences and the project was discontinued.

6.6.3 Financial resources available for regulatory controls

This sub-theme focused on the funding challenges experienced in developmental control. Seven related references were captured under this grouping and the EM group supplied four of the passages collected. Two major nodes were identified as depicted in Figure 6.9 below.

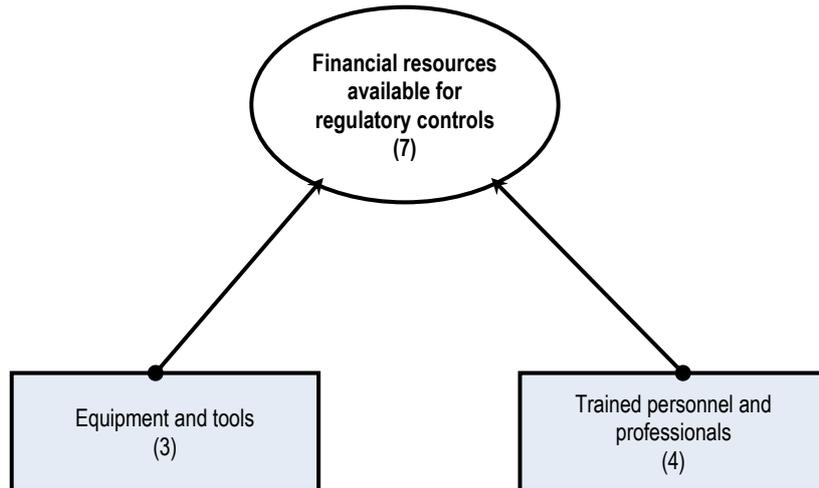


Figure 6.9 - Node grouping for financial resources

The nodes collected under **equipment and tools** were provided by the EM as they lamented the lack of resources to carry out their duties. Mobility was ranked high as both #EM5 and #EM4 whined that *vehicles should be there for us to go monitoring. Even if there are vehicles, fuelling the vehicles...?* The importance of dedicated transport was highlighted as #EM4 relates that if *you take personal vehicles, they are not given the attention, unlike when you have the ministry, the name of the ministry emblazoned on the vehicle. It goes a long way.* On the other hand, #EM2 deplores the state of office equipment available, absence of data banks and analytical laboratories to carry out environmental tests.

The paucity of skilled and trained personnel was equally raised by the EM and PP (2 references each) as a challenge to effective LUP. In this regard, meagre financial resources have been directly linked to low staff recruitment and trained personnel in relation to amount of work to be done (#EM2 and #PP3), poor culture of staff upskilling through training and conferences (#EM4), and the proliferation of *quackery* in LUP.

6.6.4 Societal attitude

19 references have been collected under this sub-theme, with the PP providing 12 of the passages in comparison to the 7 supplied by the EM. The nodes collected, as seen in Figure 6.10, relate to societal behaviour and the role it plays in influencing LUP.

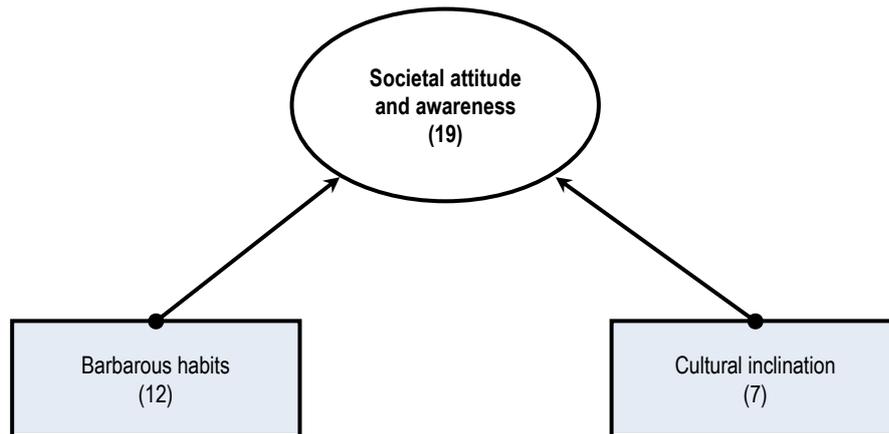


Figure 6.10 - Node grouping for societal attitude

Barbarous habit was considered the most notorious societal attitude plaguing LUP as seen from the 12 references gathered in the node. An equal amount of passage was provided by both the EM and PP (6 references each) all relating to the experiences they have encountered in trying to encourage the public to embrace a more cultured approach in their daily living. Five out of the six interviewees responding on this, cite the example of members of the society using the drainage system as their own means of waste disposal. #PP3 expresses that *you won't believe that when it rains, somebody would bring up all this refuse [waste] and start putting it inside the drains thinking that it will flow out [automatically]*. The practice has become so entrenched that when alternatives are provided, they are not utilized as #EM1 report that *designated areas are continually ignored and they pour refuse into drainages when it rains*.

The second node relates to the **cultural inclination** of the society. The passages generated under this node have all been supplied by the PP owing to their involvement in developing physical master plans and regeneration projects. Firstly, #PP2 cites the links to the ancestral heritage as a major obstacle in the rehabilitation of indigenous areas, where the occupants refuse to allow an overhaul despite the poor condition in those areas. Secondly, a cultural paradigm reinforced by frequent changes in government policy and lack of enforcement, has created a societal attitude where the citizenry is inclined to disregard LUP policies. This is better captured by #PP3

...as a town planner, I want to tell you emphatically that our culture is totally parallel to the implementation of what we have as master plan. ...our culture has never given room to the functionality of all the master plan

This explanation corroborated by the other PPs, reveal that current LUP practice does not include the elaborate preparation of development plans that was stipulated by the NURPA 1992 (See Section 4.4.3.1). Within the discourse, #PP3 explains that the prevailing practice has disregarded this activity as it is usually sidelined and frustrated by elected public officials. This attitude has since evolved into a situation where previous plans have become out of touch with current realities and the attempt to enforce them become a mockery.

6.6.5 Socio-economic factors

This sub-theme has generated the least amount of related references with the EM providing four out of the six passages. As seen in Figure 6.11, the two nodes identified cannot be considered to cover all socio-economic factors, the term is used broadly to capture the responses relating to population and economic pressures on LUP.

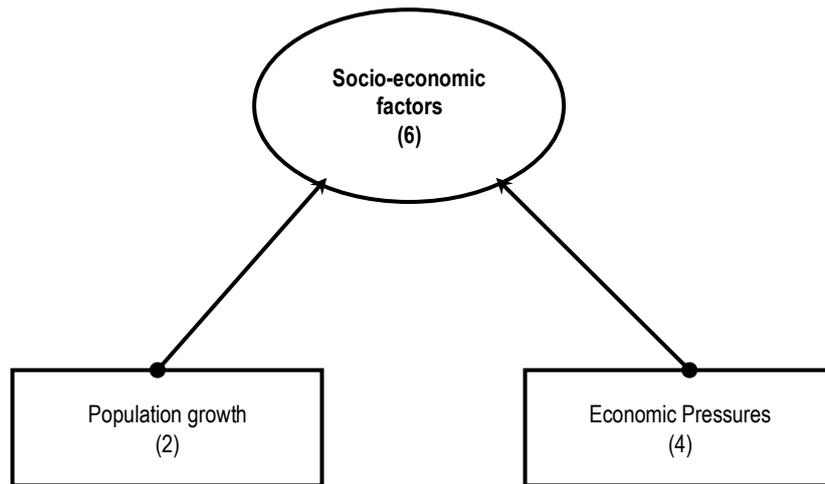


Figure 6.11 - Node grouping for socio-economic factors

In his response, #EM3 identified that **population growth** was placing a great demand on land, with the need to provide new infrastructures, increase food production and land required for industrial development. He bemoans that the pressures linked directly and indirectly to the population is putting tremendous strain on current land use often hampering their ability to maintain the forest reserves.

The term *economic pressure* has been used as an overarching concept rather than the more colourful word *poverty* that permeated the interview transcripts. There are four passages in this node contributed equally by both the EM and PP. #EM2 relates that the financial gain to be realised in a land purchase transaction often overrides any caution to be exercised by the citizenry. In his words, *the level of poverty in this state, so when you see people, companies, they buy the land at exorbitant prices, so they don't even mind what they want to do there, they will sell it immediately*. Unfortunately, the impact of some activities may not be immediately identified until irreparable damage may have been done. On the other hand, #EM3 describe that illegal tree felling activities spurred on by the economy, has continued to change the forest landscape.

The main challenge that we have is with illegal tree fellers who will just go, even in the night to fell trees illegally... If a tree is fell today and we grow, or we plant another one, it will take a while, unless we plant Tick and Melina which will take some 10 or 15 years or 20 years. We are not talking about our own local trees, it's another challenge that we have, people who just want to make ends meet, they want to cut trees illegally.

On the other hand, the socio-economic status determines the level of attention and treatment it gets from the planning authority. #PP2 inadvertently admits that their approach to planning activities differs from one location to another,

If you want to plan for a housing estate or making land use, there will be a place where they can plan low cost housing for high density population. So, for example now, where we have a low-density population it means the people to be there will be very few and there will be developments. It's not the same as 'Jankara' [meaning for the poor, numerous, crowded and stuffy] type. When we talk about the high density, we're talking about a different plan...

This is a confirmation that the LUP practice has been unwittingly contributing to differential vulnerability through the preferential treatment given to people with access to resources and assets. As such, the status of the people expected in an area determines the type and grade of infrastructure it gets. This evidence the double-faced nature of the Nigerian planning system, where socioeconomic-related factors play a larger role in determining the quality of resources invested.

6.7 Climate change issues

This discussion within this theme comprises of all the remarks and opinions offered by the interviewees about climate change and the level of preparedness at the sub-national level. As a prelude to the discourse, the following captured statements must be highlighted as they are considered beneficial for creating context.

#EM4 - that it is a newest scourge, it's really taking its toll on us right now, and we are losing out, a lot of things are changing

*#PP3 - Let me just say it in an absolute manner, it is still alien to us. Even, we don't know the genesis, we don't know the research...
...When you know where your enemy is coming from, it is then you know where to run to. But in this situation, where you don't even know your enemy, you don't know where he is coming from. So, it becomes a problem. So, something you don't know about it, how will you tackle it?*

The two statements above are not necessarily representative of the views of either the EM or PP, however it points out that climate change is considered a *new* developmental challenge, for which the intricacies and complexities are yet to be understood. In all, this theme produced the highest number of references, with the EM dominating the discussion by providing 78 out of the 96 captions as seen from Table 6.6. The breakdown of the different sub-themes identified would be discussed in the following sections.

Table 6.6 - Thematic profile for Climate change issues

	EM	PP	Total references
Causes of Climate change	6	2	8
Perception of Climate change occurrence	11	2	13
Knowledge of Climate change policy	6	3	9
Response to Climate change	38	11	49
Challenges to Climate change response	16	1	17
Overall nodes	77	19	96

6.7.1 Causes of climate change

To create a context for the discourse, the researcher sought to explore the respondents' thoughts on what may have triggered climate change. The understanding of the mind-set of the regulators on the links to climate change provides an insight into the likely attitude to policy development and implementation. As shown in Table 6.6 above, eight references were collected under this sub-theme.

Several of the participants identify that climate change can be linked to anthropogenic activities; #EM3 relates this to *indiscriminate felling of trees ...effluent from the industries*, #EM1 argues that it is a result of *global warming and then caused by the depletion of the ozone layer, due to all these greenhouse gases*. In contrast #PP1 concludes that *Climate change at times may be a natural thing. It's not man made, it's little or nothing we can do about that*. The opinion provided by #PP1 cannot be said to be representative of the group, as #PP2 associates climate change with human activities. #PP4 expresses that *the activities here is not really up to the levels to be concerned*.

6.7.2 Perception of climate change occurrence

This sub-theme is a collection of responses in respect of climate change occurrence. All the participants were given the opportunity to express if they believe that climate change may have been experienced in areas under their jurisdiction. Change in rainfall pattern and the effects of flooding, erosion and wind action were the two nodes identified from the transcripts as shown in Figure 6.12 below.

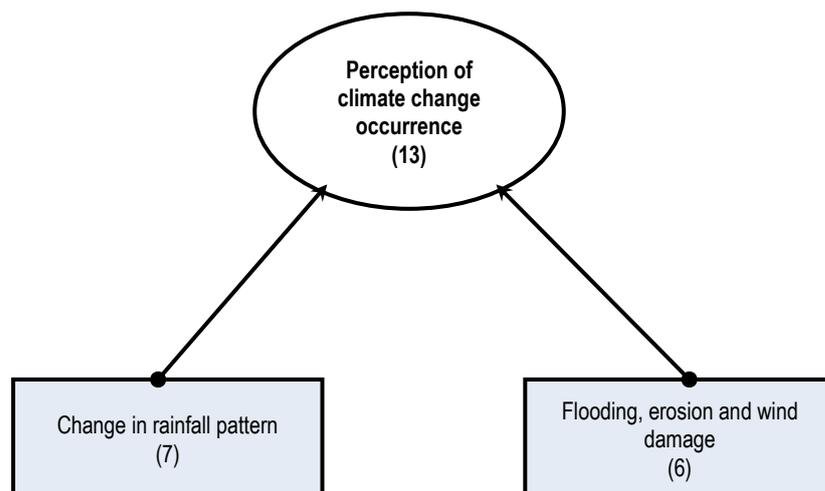


Figure 6.12 - Node grouping for perception of climate change occurrence

All the EM deduced that there has been a noticeable change in the usual rainfall pattern. #EM1 states that rainfall has become irregular and difficult to predict, #EM2 bemoans the absence of the usual August rainfall break which has severe consequence for food production cycles and #EM4 declares that the new norm is rainfall every month of the year. Likewise, #EM3 summarises that *the rainy season is becoming wetter and the dry season is becoming longer*.

A different trend was recognised in what the respondents considered as climate change experience; due to events that may or may not have been caused by climate change was reported. Indeed, rainfall may lead to an extreme flooding event which may have been climate change induced, however, the participants inform that some of the events may not be related to climate change as they may have been caused by human activity. For example, #EM1 report that his area of jurisdiction is categorised as a low-risk flood area, but severe flooding incidence has been brought on by people dumping household waste into the drainage and uncontrolled activities at riverbanks. Also, erosion and wind action engendered by removal of tree cover have been associated with climate change.

6.7.3 Knowledge of climate change policy

With the views given by the participants that climate change occurred within their area of authority, the researcher sought to determine if there was any working paper or guidelines being developed or employed. Nine references were supplied under this sub-theme with six of the passages supplied by the EM.

While the PP were unable to confirm the existence of any climate change strategy in their state, the EM were very optimistic in their response that there was a climate change policy, but they did not have access to it. In trying to understand the position of the Environmental Protection Agency on climate change strategy, #EM1 responds *I know there is a policy, but it has not devolved down to the state level, not yet. We haven't developed our own policy, but*

we are planning to do that. Probing further, #EM1 expresses that *the problem of climate change came actually to the attention of government just about two years ago.* Likewise, #EM2 describes climate change as the *newest scourge* which the government has recently become aware of. Whereas #EM3 declares that *on the national level, it is an issue we tackle when we have the meeting with the national council on environment.* Clearly, discourse on climate change is still at the infant stages at the State level, and it can be suggested that the advances noticed at the Federal level have been bereft of State Government input.

6.7.4 Response to climate change

Owing to the lack of climate change strategy at the State Government level, the institutional response to climate change effects was explored. In this regard, 49 passages were generated from the transcript under five nodes as shown in Figure 6.13 below. Majority of the related passages have been provided by the EM with the PP supplying 11 out of the 49 remarks.

The **parties responsible for addressing climate change** was a more discussed node generating nine nodes, from which five from the EM and remaining four from the PP. There was no consensus in the response obtained from either the EM or the PP, as their answers varied differently. #EM5 argues that the responsibility to address climate change is for everybody and not the government alone. Even though #PP1 agrees that everybody is responsible, he says that *the professionals are better, than the non-professionals in that particular.* In contrast, #PP2 declares that it is the responsibility of the Government (Federal, State and Local) to address climate change within their jurisdiction.

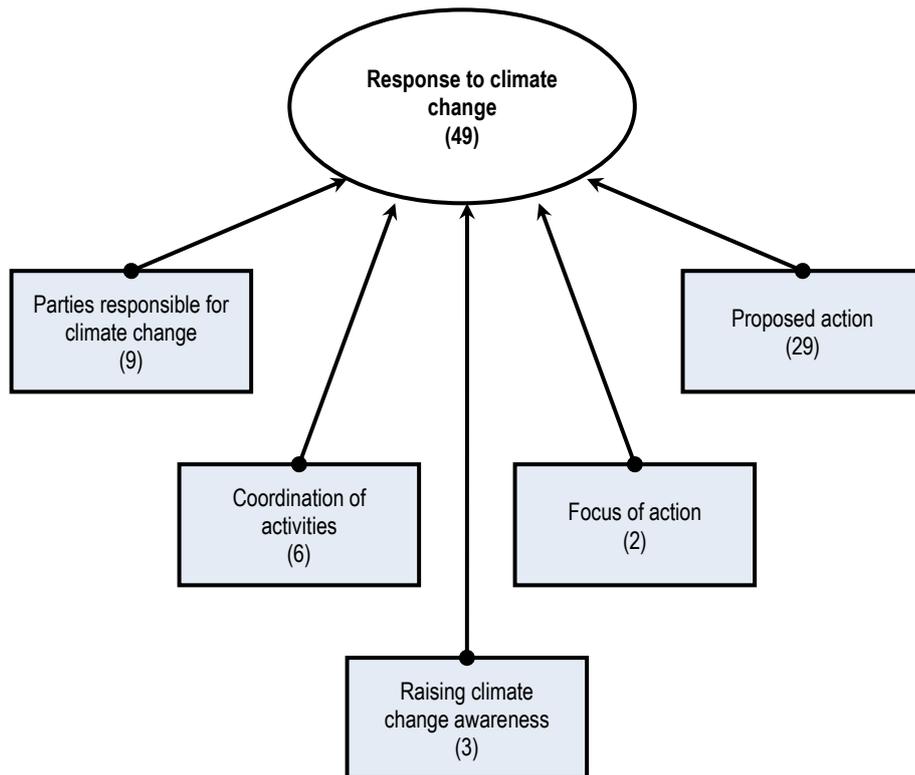


Figure 6.13 - Node grouping for response to climate change

Two of the EM interviewees responded that they were instrumental to the **coordination of activities** relating to climate change within their territories. #EM3 notes that *correspondences from the national level, from Abuja, to do with climate change ...will come through my table to the department*. This infers a top-down activity route which is always initiated at the Federal level and no indication of a flow in the other direction. Though information is disseminated from the National level to the State level, none of the respondents comment on any working relationship they have with the other officials at the Local Government level. However, #EM3 and #EM4 confirm that organizing climate change summits has been useful in **raising climate change awareness** and educating the general public. This approach may be selective as it is not feasible that everyone would be able to attend, let alone understand what is being discussed at these intellectual summits.

A small number of passages (two) were established from the statements that gave pointers to the **focus of action** for emerging climate change response. While #EM4 concludes that *the government is only focused on the built environment*, #EM1 speculates that the focus would be on mitigation as Nigeria is still developing and there *will be a lot of developmental projects. The development for the next 20-30 years will see a lot of construction work going on*. It can be inferred from both responses, that there would be an increase in future land use activity skewed in favour of the built environment. With due consideration of the real and assumed climate change effects, the government may be inclined to lean towards adaptation as suggested by #EM4 rather than mitigation that #EM1 predicted.

Given that the interviewees were unaware of any climate change strategy as presented in Section 6.7.3 above, they enthusiastically discussed related policies that they were recommending to the Government. The **proposed actions** that were being considered generated about 29 references, the EM providing 22 of the remarks gathered. The projected schemes can be easily grouped into five categories as displayed in Figure 6.14.

Tree planting and forest protection was the most mentioned strategy by the interviewees. Although #PP2 highlights the advantage of using trees to improve carbon sinks, the EMs were considering the benefit trees provide as wind breakers, and in the reduction of flood and erosion risks. In addition, the EM and PP equally agree that policies aimed at the creation of green spaces and integration of urban planning and drainage would improve the adaptive capacity in the urban areas. It is obvious from the intended actions that they are responses to the perceived climate change effect, discussed in Section 6.7.2, experienced within their territories. This is a more endemic reaction than the ardent drive to start implementing clean energy technology.

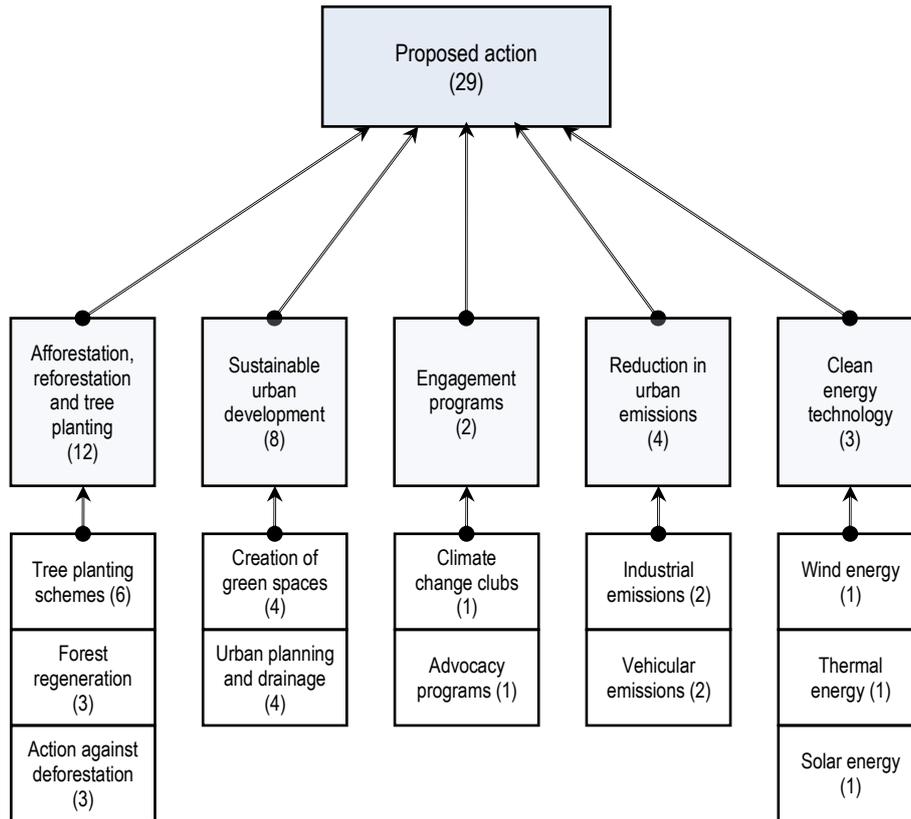


Figure 6.14 - Node grouping for proposed action to climate change

6.7.5 Challenges to climate change response

The discussion captured under this sub-theme was dominated by the EM, as they supplied 16 out of the 17 references collected. Three major nodes were identified as shown in Figure 6.15, with very similar attributes with the controlling factors over land use planning discussed in Section 6.6.

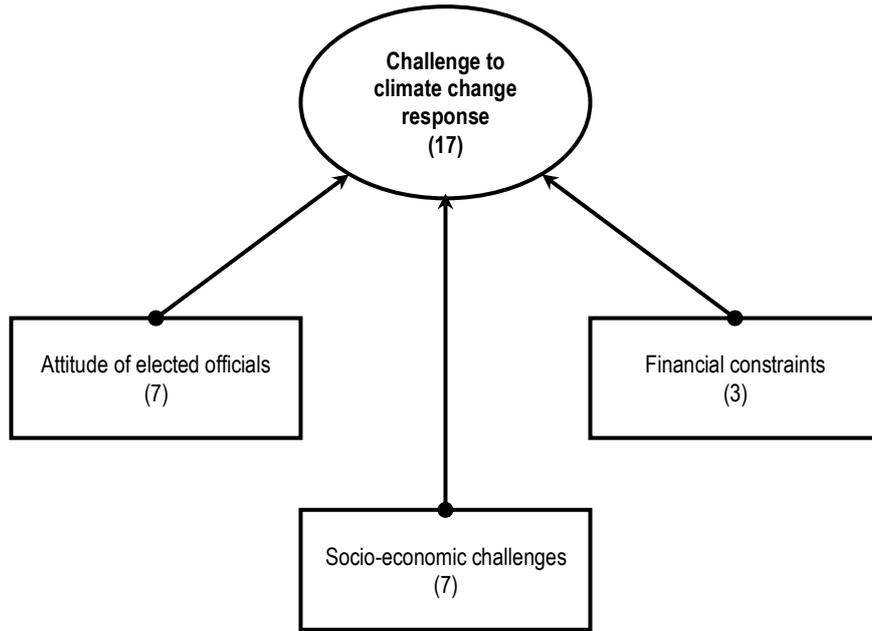


Figure 6.15 - Node grouping for challenges to climate change response

The **attitude of elected officials** was identified as a major obstacle in addressing climate change. First, some are in denial about the occurrence of a changing climate, #EM2 reports that *whenever we talk of climate change, even within the elites, they say it is a lie*. #EM5 adds *our policymakers, they don't believe in climate change... They see it as something very scientific, very abstract*. Secondly, most elected officials are only interested in schemes that are physically tangible and can be highlighted as milestone achievements. #EM4 laments that *they're not patient enough* as the gains for investing climate change actions are often not immediate but have long term benefits. Coupled with the first two reasons, bureaucracy and bias towards colleagues presents another level of complexity. #EM4 responds that *you need to pass things through files and sometimes it takes a long time to be implemented and if they don't like your face, they may not pass it through [approve]*. Lastly, climate change policies do not align with financial interests of elected officials and there is a misconception that their wealth immunizes them from climate change problems. #EM4 opines that *the interest is not there, in as much as their needs*

are met to know what it is, what it means. So, it's as if their attitude is if I have money, I don't have the problem of climate change.

In terms of **socio-economic challenges**, seven passages were captured with the PP supplying only one of the remarks. Two focal points were raised by the respondents. The first linked availability of tree cover to climate change, whereby population growth and economic pressures would lead to the conversion of forests into farm lands and other physical development. Unfortunately, planted trees cannot immediately replace the trees cut down due to the time required for growth. The second point centred on the society not being able to understand the linkages between individual and/or societal actions interact with other elements of both the built and natural environment, and the possible outcomes of such interactions.

Three references were supplied by the EM under the **financial constraint** node. This node directly echoes the findings reported in Section 6.6.3, as the availability of funds is required for the purchase of equipment that would improve data collection, monitoring, forecasting and climate modelling. In addition, #EM4 and #EM5 complain that there is a shortage of staff to carry out the necessary work and for the few staff available, they have not been able to adequately train them for the new challenges.

6.8 Chapter Summary

This chapter has presented the results of the semi-structured interviews conducted in this study. The interviews were recorded, transcribed and coded into NVivo for data analysis. The findings presented have been extracted through thorough and systematic analysis and synthesis of the interview transcripts. Relevant remarks were captured using nodes, which were then grouped together into sub-themes and re-arranged into the overarching themes.

The first theme was the Land use planning system which had two sub-themes; Legislation and Administration. They provided insights into current

land use practice by exploring the interpretation and implementation of relevant legislation which by extension allowed an examination of administrative functions. This theme is the foundation on which land management takes its bearing from and rarely changes due to the constraints in the amendment of the crucial Land Use Act of 1978.

The second theme was the Land use impact assessment which had six sub-themes; EIA timing, scoping and screening, EIA jurisdiction, expert consultation, public involvement and risk assessment. This theme focuses on how and what happens when an assessment is considered for an intended land use. Unlike the first theme which has some factors that are viewed as being sacrosanct, the elements in this theme are often circumvented. To make matters worse, assessments have been placed far behind land approval, that it becomes reactionary in nature and diminished in potential, since it can only then be considered a necessary evil.

The third theme explored the controlling factors influencing land use planning. Five sub-themes were identified; Governance, political interests and influence, financial resources available, societal attitude and socio-economic factors. It was recognised that the elements in this theme hold sway over good guidance and best practice to be realised from the previous two themes. They can be likened to critical success factors required for creating an enabling environment for a systematic, proactive and holistic process in land use planning.

The fourth theme relates to the climate change issues discussed with the respondents. Five sub-themes emerged from the engagement; Causes of climate change, perception of climate change occurrence, knowledge of climate change policy, response to climate change and challenges to climate change response. Climate change is considered a new phenomenon to which the officials are yet to respond to. The reasons for the delayed reaction vary from disbelief in the science and difference in priority to a possible wariness of every environmental event being linked to climate change.

7 FRAMEWORK DEVELOPMENT FOR PLANNING VULNERABILITY IN NIGERIA

7.1 Introductory remarks

The previous two chapters have presented the findings from the questionnaires and the semi-structured interviews carried out in the collection of primary data. As earlier stated, the information would provide an in-depth understanding of the current state of land use planning (LUP) in Nigeria, give an indication of how environmental concern is integrated in the planning system and allow an exploration into regulator's perception of issues about climate change. This chapter is the point of convergence where the results obtained from both the quantitative and qualitative strategies would be merged. Interpretation would be furthered by the extent to which the two data sets agree, deviate or combine to give better insight of the research objectives. In this respect, the limitations of the small sample size experienced in the quantitative technique is complemented by the rich and detailed *narratives* that have been provided by the interviewees.

For this reason, the discourse in this chapter would provide much needed information to achieve the third and fourth objectives of the research. This would be accomplished by consolidating the knowledge obtained through the literature review with the information extracted from the primary data collected. The proposed framework for integrating climate change vulnerability into land use planning (LUP) will be discussed within this chapter. This will be described through the meaning-making process of assembling and combining useful elements from the analysed data with the theoretical criteria for vulnerability developed through literature review in Chapter 3.

7.2 Current status of LUP in Nigeria

Chapter 4 provided a background to the LUP system through the review of literature, and to link this with practice, Chapters 5 and 6 provide the findings obtained through the questionnaire and semi-structured interview.

To allow a better understanding of the prevailing state of LUP, the findings associated with the similar themes or addressing the same aspects would be merged together. The outcome of the merged findings is presented in the following sub-sections.

7.2.1 LUP legislation and administration

This is the only attribute that is featured in the interview results and absent in the quantitative result. Legislation and administration were designated as the LUP system through which the Nigerian society give spatial interpretation to their social, economic, cultural, historical, political and ecological values. It is within this sphere that that all the drivers, influences and challenges are expressed and substantiated. Table 7.1 provides a summary of the information derived from the interview result (See Section 6.4) and reveals the significance of the attributes, and its relevance to the framework. The review gives an outline of identified pain-points within Nigeria's LUP legislation and administration. It is not to imply that the outlines have the same relevance but to consider the significant contribution each theme can provide. For instance, it may not be possible for the different administrative bodies to have the same planning and environmental perspectives, however organisational functions can be rearranged to ensure that there is a holistic approach to the land use approval process.

As expected, Nigeria's LUP legislations give birth to the institutions that govern the different aspects of land use management. The statutes not only create the administrative institutions; it also defines the nature and extent of authority conferred to them. The interviewees corroborate the outcomes of the literature review when they unanimously agree that the Land Use Act (LUA) of 1978 is the central legislation underpinning land use management in all the states of the country. For this reason, every state government has a Land Services Department that handles land approvals and rights of occupancy to prospective land users. Unfortunately, the function of this department has not evolved beyond simplistic consent and registry duties into developing comprehensive links with spatial planning.

Table 7.1 - Summary for LUP legislation and administration

Theme	Summary	Significance	Relevance
Legislation			
Institutional jurisdiction	Legislation gives legitimacy to the institutions that have been created through it.	Legislation plays an important role in the creation of institutional authority for land related activity	✓
Interpretation and implementation	The predominant view of the law has been from a strict perspective that does not demand more from the regulatory institutions	A need to develop a holistic and multidisciplinary approach to land-use	✓
Administration			
Organisational function	The land, planning and environmental regulators work parallel to one another. There is no synergy or noticeable contributions made by one unit in the duties of the other	Puts planning and issues about the environment in a reactive position.	✓
Overlapping jurisdiction	In addition to poor working relationship amongst Ministry, Departments and Agencies (MDA) of the same administrative level, there is the problem of a top-down approach where the federal level does not consider priorities and challenges at the lower level.	This may lead to oversimplification and misinterpretation of emerging issues relating to land use.	✓
Planning and environmental perspectives	The absence of a shared understanding of cause-and-effect for resolving problems emanating from the built environment.	The disparate views are responsible for the blame trading and activities that would yield little effects, aesthetics at best.	✓
Policy creation	Officials in Nigerian LUP occupy advisory roles rather than policy making. The nature of their creation of policy is subject to the interests of the political administration.	LUP officials must be creative in their presentation of emerging issues to ensure that it aligns with the desires of any government in power.	✓

The findings indicate that the institutions in charge of land administration have been created through direct translations of the provisions stipulated in the national legislation at the State administrative level. As such, the physical planning and the environmental management establishments are adaptations of the administrative units proposed by the Nigerian Urban and Regional Planning (NURPA) of 1992 and the Environmental Impact Assessment (EIA) regulation of 1992, respectively.

Having established the role and influence of legislation in shaping the land use planning structure, the administrative nature of the land use system is the next emerging theme. Figure 7.1 shows the links between the legislation

and the administrative institutions created from the statutes. This clearly captures the specific roles and responsibilities carried out by the various organizations in land use management; how they carry out their functions, how and when they become involved in the decision-making process, the extent of the powers they can wield, their interpretation of the authority they have and how they interact with one another and the public.

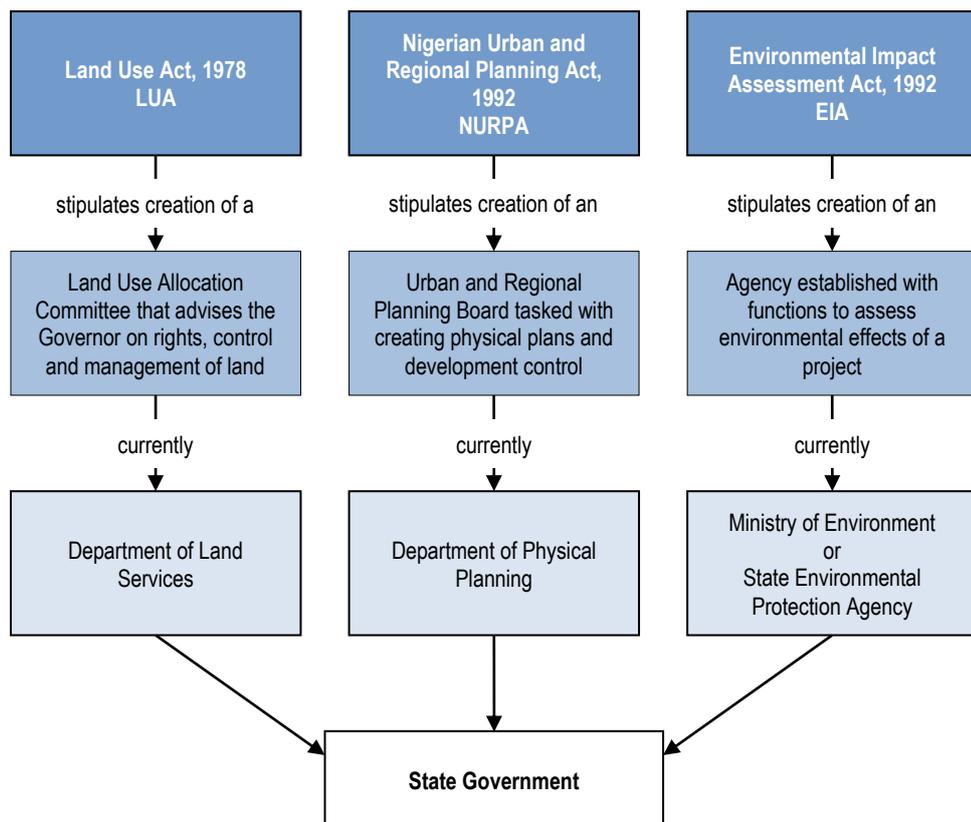


Figure 7.1 - Land-related legislation and administrative jurisdiction

The designation for the part of government that carries out the function stipulated by the legislation vary from one state to another. In some of the states, the Land-use allocation committee suggested by the LUA is an autonomous bureau or agency reporting directly to the Governor and in others it is a department within a larger Physical and Urban Development Ministry or Lands and Housing Ministry.

Through the explanation provided by the interviewees, it is obvious that current practice confirms the conclusions of previous research (Uyanga, 1989; Aka, 1993; Ogu, 1999) that LUP is rather reactive in Nigeria. Even though the physical planners (PP) express an idealist view that the focus of LUP is to resolve historical problems in the anticipation of the future, the construction of current practice indicate a different picture where planning is constantly responding to every situation which it finds itself. For instance, there was no indication of any working synergy mandating the land services unit to consult the planning team before issuing a certificate of occupancy (C of O) granting unrestricted use of land by an entity. The absence of this link implies that the development control unit of the PP become aware of this if the land owner approaches them for planning permit or if their monitoring team stumbles across the structure without an appropriate permit.

The stages required in obtaining development approval are very similar in all the states as described by the respondents. Using the complete narration of a typical approval process provided in Section 6.4.2, we can illustrate this as shown in Figure 7.2. Using a project proponent as the focus of the interaction with the LUP institutions, the schematic shows the step-by-step process in obtaining development permit requiring the use of land. The developer in this case, refers to private sector proponents, public sector bodies and government affiliated organisations. As presented in the graphical representation, the interviewees inadvertently admit the existence of an informal land trading practice where land purchases and transfers occur outside the dictates of the LUA. To legalise the acquisition, the new owners then approach the relevant land services department for the rights to use the land. It is obvious that in such cases, the lands registry is simply reacting to actions that have occurred in the informal system. This confirms the report by Adeniyi (2011) on the fragmented state of land holding in Nigeria.

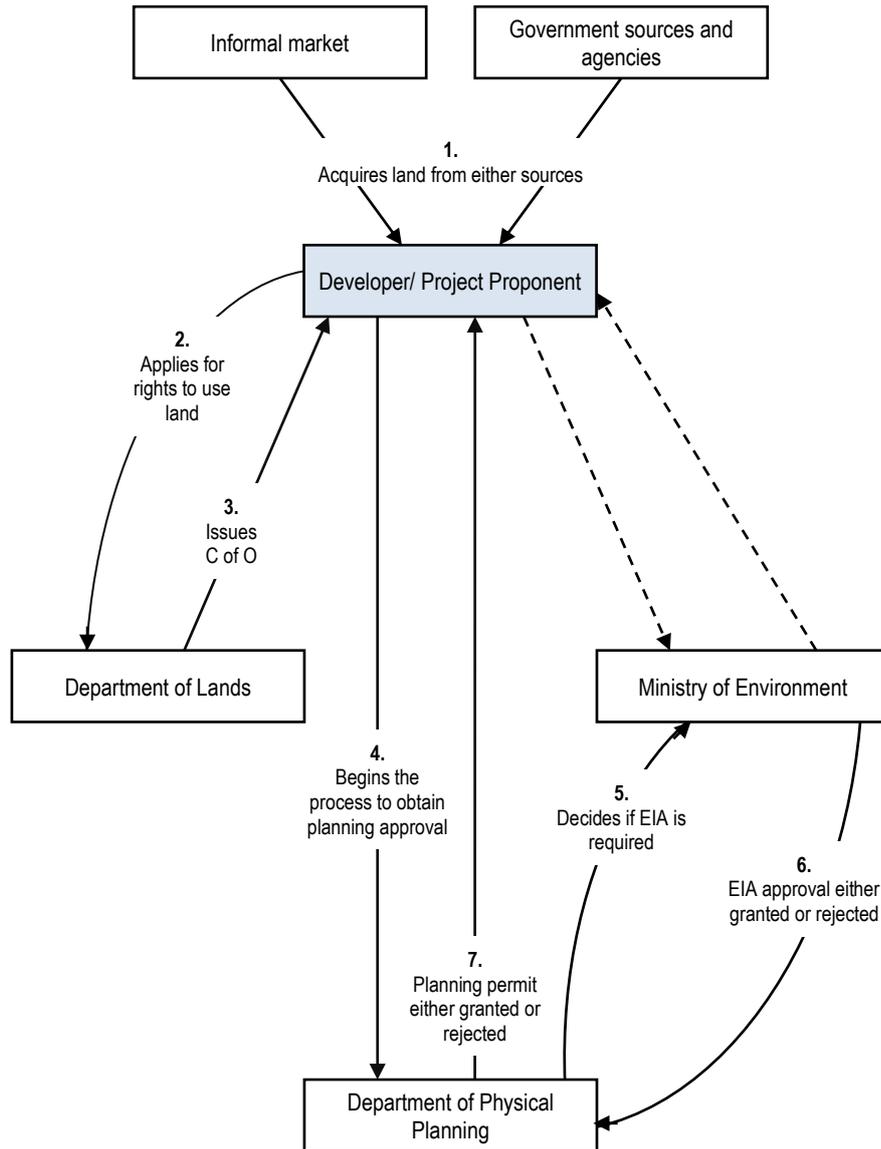


Figure 7.2 - Approval process of development proposal

With no requirement for the lands department to inform or consult the Planning unit about the C of O issued, there is an expectation that the project proponent would consult the relevant development control offices to obtain a planning permit. With a second glance at the NURPA, it is becoming apparent that the inability to fashion a proper integration with the LUA, is the reason why the planning enactment has 48 of the 92 provisions addressing development control. On this basis, officials of this planning team are constantly traipsing through construction sites and development projects to confirm if they have obtained appropriate permits for their

structure. This disconnect between the land management and the planning system confirms Ogu's (1999) declaration that physical planning is mostly reactive in developing countries as development projects are often initiated prior to receipt of planning approval. In a situation where development control is lagging behind both the informal land market and formal land approval system, there are dire consequences for environmental management and sustainability.

7.2.2 Reflection of environmental concerns in LUP

Following over two decades since the adoption of environmental assessment in Nigeria, the practice is yet to gain influence in promoting environmental consciousness in the decision-making process. This affirms Wood's (2003) submission that the EIA regime has been prompted by other drivers other than environmental management. A situation further exacerbated by the lethargy in properly integrating policies governing the environment into land management edicts. The schematic diagram of Figure 7.2 shows the phase at which environmental effects are typically considered within the LUP process. The positioning indicates that EIA is unable to provide a balance between environmental quality and physical development activities in the decision-making process. As such, EIA takes the form of environmental licensing, a form of administrative and bureaucratic process stripped of any meaningful contribution in terms of changing project location, scale or consideration of alternatives.

For projects that are not location-specific, the best alternative scenario may be often lost as the EIA can no longer prevent the siting of a development in environmentally sensitive areas, because the land area has already been acquired by the proponent. In such situations, an environmental audit is carried out, which is a feeble attempt at due diligence. This indicates that the EIA is often seen as an addendum for planning proposals, rather than the systematic decision-supporting tool which should balance the merits of a development action against those of environmental quality (Weston, 2000; Glasson *et al.*, 2005).

The role of the PP as gatekeepers for physical development creates an implicit role for them as protectors of the environment. This role is further bolstered by the provision in the planning legislation that allows them to review impact evaluations for project proposals. Unlike the stringent criteria dictated by the EIA, there are no clear guidelines for how the PP conducts the evaluation, the nature of evidence required or conditions that must be fulfilled. For the PP, environmental assessment is simply another activity that is observed when site inspection is carried out.

Given the dual role of the PP in approving environmental statements and determining scoping and screening of projects, all the EM interviewees admit that there is an on-going struggle to establish their authority as the competent body to examine environmental appraisals conducted for development projects. The conflict can be seen in the absence of a working relationship between the PP and the EM. This resonates with the findings by Wood (2003) that the organisations responsible for implementing EIA provisions in developing countries often lack the influence or political status and are most times ignored by other more powerful institutions. Even though the EM participants claim that they have recently achieved recognition for their function, it can be considered a half-measure at best if it does not integrate fully with land administration, which is the starting point for the LUP process in Nigeria.

This is not to say the EM fare any better than the PP in their own appraisal of project impact. They boast about the use of competent experts that they have pre-approved to carry out such evaluations. Invariably, both the PP and EM have a register of acceptable consultants that are recommended by the departments. This portends administrative problems in cases where a consultant is not recommended and not in both lists. With the multiplicity of report, there is doubt about the genuineness of such investigations. Considering the issues raised in respect of the substance of the environmental assessment conducted in the LUP process, it casts aspersions on the validity of the risk strategies touted by the interviewees.

Even though the survey participants have responded enthusiastically about the priority placed on the environment (See Figures 5.5 and 5.7), the descriptions provided by the interviewees reveal that the corresponding actions are random and superficial in practice (See Section 6.5.1). To aid the development of the framework, Table 7.2 summarises the significance of the identified themes and indicates their relevance to the proposed guideline.

Table 7.2 - Summary for environmental concerns in LUP

Theme	Summary	Significance	Relevance
The place of EIA in land-use decision making			
EIA timing	In a typical development project, the EIA is said to be conducted after land acquisition and prior to the granting of planning permit	This reduces the alternative options that can be considered, as the EIA is constrained to the landed property.	✓
Scoping and screening	The PP have weaker criteria for the identification of development projects that require an environmental assessment	There is a possibility that several projects with harmful impacts have been approved without EIA	✓
EIA jurisdiction and authority	There is an on-going struggle for the EM to establish their authority to approve EIA, against the powers exercised by the PP in approving impact statements.	Countless EIA reports may have been approved using the less stringent requirements by the PP.	✓
Expert consultation			
Approved and registered experts	There is a registry of professional experts that have been subjected to a vetting process by the regulatory body	To prevent the infiltration by phony experts	✓
Multi-disciplinary approach	The notion that the potential impact of a development may be too diverse and may require other skill sets to carry out a comprehensive review	Awareness that impact assessment cuts across various spheres including social, economic and ecological.	✓
Function of the consultant	The pre-approved consultant facilitates the impact assessment process	The duties carried out by the consultant is not as important as the due diligence applied in the review and approval of the EIA report.	✗
Consultant nomination	The official insist that they should be the ones to nominate the consultant used on any project	The use of a pre-approved consultant signifies the level of confidence in the quality of professional work carried out by them	✗
Statutory consultees	This is often translated as the traditional institutions ruling a community	The misinterpretation and absence of statutory consultees leads to the exclusion of organisations that should have been included if properly considered	✓

Theme	Summary	Significance	Relevance
Risk assessment			
EIA as a risk assessment tool	Assessment of risk is based on the EIA report, which is often started after land acquisition, construction activities or examined through weak measures	The only risk strategy is reactive and is not in the position to avert risk or learn from it	✓
Environmental audit	This is a yearly report to evaluate the environmental performance of organisations and projects	Used as an environmental monitoring tool, where the data have been gathered through self-reporting	✓
Expert consultation	Using experts as authority in the identification of risk	Decision making on the nature of risk based on the opinion of the experts	✓
Public involvement	Leveraging on public reporting for the identification of risk and emerging issues	The response and feedback from the public is used as a basis for investigating risk.	✓

7.2.3 Drivers and influencers of LUP

The questionnaire results revealed three underlying factors influencing planning activities in Nigeria (See Table 5.4). The attributes relating to the interests of the political administration (See section 5.3.1.1) aligns directly with the governance (Section 6.6.1) and political interest (Section 6.6.2) themes from the qualitative data. Likewise, the statements that have been factored together as community-dependent traits (See section 5.3.1.3) have direct inferences with the nature of public involvement (Section 6.5.3), societal attitude (Section 6.6.4) and socio-economic (Section 6.6.5) themes obtained from the interview analysis. However, there was no direct correlation for the built environment preferences (Section 5.3.1.2) in the qualitative results.

7.2.3.1 Underlying factor 1: Political administrative interests

Through the review of the quantitative and qualitative findings, a likely explanation of the interaction between the items within the political administrative interests can be provided. The emergence of this factor aligns with the sentiments expressed by Caldwell (1988) that the extent of

effectiveness in the integration of environmental priorities reflects the nature and direction of political will expressed in the interpretation of the environment and its protection.

The high preferences for addressing potential environmental risks (See Figure 5.5) may be an optimism expressed by the survey participants, as it has become glaring that government initiatives (policies and programs) defines the nature and extent of that response (Table 5.3). In a similar fashion, the qualitative results indicate that political interests often determine the priorities and direction of government policies. This confirms Taylor's (1988) submission that LUP is under immense political influence on issues concerning physical development. It also aligns with Rakodi's (2001) description that planning in most developing countries is a state-directed activity, which is largely governed through agenda-driven priorities and restrictions. As such, their aspirations and goals determine the resources allocated to specific attributes of the LUP (Healey and Shaw, 1993; Greed, 2000; Parker and Doak, 2012). Table 7.3, gives a summary of the relevant themes emerging within these attributes, signifying those useful in the development of the framework and discarding the unnecessary items.

Table 7.3 - Theme summary for political administrative interests

Theme	Summary	Significance	Relevance
Governance			
Government apathy for policies	At times the government flouts their own rules	The contempt for policies connotes disdain on the part of the government	✓
Changes in government	Each government administration has their own agenda and priorities. This determines the nature of directives issued and resources allocated.	Frequent changes in administration leads to incessant changes in the direction of land use policy	✓
Policy enforcement	The decision to implement and enforce compliance to specific policies	The interest of the government often determines the nature and extent of policies that are enforced.	✓
Quality of governance	The ability to identify and integrate emerging issues that were not previously government agenda.	The streamlining of land-use policy is essential for a comprehensive approach to LUP	✓

Theme	Summary	Significance	Relevance
Political interests and influence			
Interests of elected officials	The likelihood that public officials would make decisions that would have a favourable political outcome	Obtaining cooperation of elected officials to ensure a smooth transition of LUP	✓
Conflict with top public officials	The political view comes on top, even where it is at odds with land-use policy.	It is impossible to separate LUP from the political environment in which it operates	✓
Political warfare	Setting up and enforcing land related policy to subdue opposing groups or to gain political advantage	Specifically targeting landed property of dissidents or oppositions	✗

7.2.3.2 Underlying factor 2: Community-dependent attributes

When considering the community-dependent attributes, it is not enough for LUP to claim public involvement, as there is a need to be explicit and realistic in their approach to how the community is engaged in the decision-making process. The nature of social organisation within that community governs the extent of inclusion of individuals and groups, and by extension the degree of freedom to which power negotiated amongst the social entities.

The use of the term, *social organisation* goes beyond public participation to the ideological orientation of citizen or community involvement in the land use decision-making process. This borders on issues concerning the motivations and objectives of the participation, the timing, strategies employed and who is involved (Randolph, 2004). In this regard, one can look to the Arnstein's (1969) ladder of citizen participation which shows the differences in power distribution among decision makers and the citizens.

Nevertheless, there are other features of a community that determine if the project would be successful or not. These intrinsic societal characteristics, line up with the cultural underlying causes identified by Geist and Lambin (2002) where they found out that public attitudes, values and societal behaviour underpinned land use changes. In this respect, the degree of indifference that the community have for the environmental conditions is

reflected through their low morale for ecological values, the lack-lustre consideration for future generations; and the situation-specific economic traits relating to poverty, lack of income opportunities and low education. Table 7.4 provides a summary of the themes recognised through the findings and highlighting the useful items for the framework.

Table 7.4 - Theme summary for community-dependent attributes

Theme	Summary	Significance	Relevance
Public involvement			
Source of information	Engaging the public is seen as an essential part of data collection, useful for information on both past present issues	This provides local knowledge about the subject area, which may not be found anywhere else.	✓
Shared understanding	Doing this at inception, allows the public to have a clear understanding of the objectives and benefits of the intended outcomes.	Promotes an environment of transparency and mutual trust between the public and decision-makers	✓
Source of project validation	Using a form of public consultation to determine the performance of the plan against pre-determined objectives	This attribute is useful to monitoring implementation of plans and provision of feedback if there are problems	✓
Notifying the public	There is a high preference for the use of newsprint, radio and television is considered	Public notification must take into cognisance the specific attribute of the target area. Other alternatives must be considered if newsprint, radio broadcasts may not be effective	✓
Timing of public consultation	Public consultation must start as early as possible and participation must be inclusive	Planning must actively promote participation at the early stages of the process, rather than be seen to establish it to douse tension	✓
Voting	A voting system is used as a basis for determining public opinion	The voting system does not consider stakeholder analysis. This may lead to a high incidence of locally unwanted land-use	✓
Societal attitude			
Barbarous habits	Unconcern about the environmental conditions and values	The ignorance of the society regarding cause-and-effect on environmental issues may lead to the undoing of any achieved milestone	✓
Cultural inclination	Attachment to the ancestral significance of land and way of life preventing indigenes from wholeheartedly embracing changes to the spatial arrangement	Scepticism and reluctance to change indicates that the land use pattern remains the same regardless of the challenges encountered.	✓

Theme	Summary	Significance	Relevance
Socio-economic factors			
Population growth	The impact of natural population increment, transmigration and population density determine the rate of land demand	Spatial distribution of population needs to be regularly examined and analysed to reduce social and differential vulnerability	✓
Economic pressures	Unconcern by the society about the environment as reflected in lack of income opportunities, resource-poor farming, low living standard, aspirations commonly associated with extremely low-income levels	The desire to take advantage of available economic opportunities often result in disregard of sound environmental practices.	✓

7.2.3.3 Underlying factor 3: Built environment preferences

The preferences for the built environment (see section 5.3.1.2) detected within the quantitative result is a direct reflection of the infrastructure extension that Geist and Lambin (2002) identified as proximate causes of land use. In the same way that the quantitative factoring categorised issues relating to human settlements, private sector incentives and infrastructural development together; they also grouped land-use causes like settlement expansion (including the encouragement of local transmigration), transportation services (roads, railroads), utility services (water, electricity), and private enterprise infrastructure (market, industry) in the same vein. Taking into account the previous categories, one can infer that the attributes within this grouping are factors that may have been triggered by the other drivers. For instance, the provision of transportation can be seen as a fallout of government policies within the first factor or meeting the needs of the local community. In this manner, items relating to this can be considered as secondary with respect to the others.

Regardless, the nature of the relationship between the underlying factors suggest that institutional interests, community needs, and infrastructure expansion have an interconnection which dictates the general transformation of societal use of land. Given the intricacy of their connections, these values may vary spatially or temporally.

7.2.4 Operational challenges

Rather than the range of challenges that have been itemised through the literature review, the survey results revealed that the challenge of LUP in Nigeria is more operational than any other type. The lack of cadastral maps and land records received the clear margin as a factor that was affecting the effectiveness of LUP (see Figure 5.8). This result is similar with the findings of previous research (Okpala, 1982; Omole and Akinbamijo, 2012) reporting that LUP in Nigeria is plagued with the paucity of adequate and appropriate survey maps showing extent and ownership of land. It is unfortunate to note that there has been no great difference in this regard in over 35 years of LUA in Nigeria. Without considering any other factors, this barrier puts planning activities in the backseat as it becomes an unwilling passenger unable to forecast and guide development as it should, only being able to act as a rubber stamp or respond in cases of damage control.

On the other hand, the interviewees indicate that the operational challenges of LUP can be directly traced to the extent of financial resources available for regulators to carry out their function. In this regard, they explain that the poor funding has affected their capacity to acquire essential equipment, recruit much needed personnel and upskill their current staff. The composite information corroborates Aka's (1993) report that the problems of the Nigerian planning system is compounded by the dearth of reliable data, the absence of financial resources and well-trained planning personnel. This situation is not different from what was reported over 24 years ago.

For the framework being developed, integrating vulnerability into LUP does not exactly require land records, although it is helpful to use the registry as a means of identifying stakeholders. In this regard the provisions of the LUA become particularly useful. As far as topography maps are available, the need to fill the gaps in missing information for the framework would encourage the setting up of an appropriate database. However, the problem of funding has a direct relationship with the interests of the political administration. As earlier stated, financial resources are available for the issues that are considered priority for the institutional element. Table 7.5

shows the summary of the relevant items for the framework being developed.

Table 7.5 - Summary for operational challenges (Section 6.6.3)

Theme	Summary	Significance	Relevance
Financial resources available for regulatory controls			
Equipment and tools	Poor financial resources are seen to be responsible for the lack of appropriate equipment for data collection, analysis and monitoring of environmental performance	Equipment and instruments are needed for the collection of data, analytical laboratories and machinery for environmental monitoring and investigation of anomalies	✓
Trained personnel and professionals	The ability to recognise trend and make appropriate judgment is dependent on the quality of staff available.	Personnel need to be skilled and well trained to be able to utilise the equipment they have and make meaningful interpretation from analysed data	✓

7.3 Perspectives on climate change

There is a lot of consensus on the information derived from the analysis of the questionnaire and the qualitative interview with respect to the climate change topic. For both groups of research participants, there is a firm understanding that human activities contribute to climate change and that the effects are already being experienced in Nigeria.

The similarity in the results obtained includes the recognition of changes in usual rainfall pattern and flooding/ erosion as the main effects that have become noticeable. A careful consideration of the attributed meaning reveals that there is a difference in the effects that is being reported by the participants. While the recurring seasonal variation can be traced directly to climate change; the flooding/ erosion observed may be a result of the societal attitude where people discharge their waste into the drains during rainfall, failure to identify flood risk areas, amongst all other possible causes. In this regard, it can be deduced that the climate change experience can be classified as *Real* and *Perceived* climate change effects. The term *real* is used as an indicator for experiences that cannot be linked to immediate human activity,

while *perceived* embodies observed events that may have been directly instigated and worsened by human actions or inactions in locations where they have been reported. In this regard, seasonal variation and change in rainfall pattern observed by 42% of the questionnaire respondents (see Figure 5.14) can be considered *real* effects. On the other hand, flooding and erosion is considered *perceived*, especially for events that may have been triggered by the habitual disposal of household waste into drainages and waterways (see Section 6.6.4). This separation would allow the proper delineation of the problem and ensure that the appropriate solution is developed and applied.

With respect to knowledge of government strategy for climate change response, there is a lot of belief on the part of the EM interviewees that they are cognisant of the government's approach. This idealism may be borne out of an expectation that they ought to keep abreast of happenings within their sphere of operation, as they were unable to identify or explain any of the strategies, they claim to be aware of. This inclination is confirmed through the survey result where 27% of the respondents allege to be in the know of current response strategies (see Figure 5.22).

Given that all the research participants reside in the southwestern part of the country, the survey respondents and interviewees indicate that afforestation and tree planting was the most viable strategy for tackling climate change in their location (see Figure 5.21 and Figure 6.14). With this obvious support for tree planting activities, there was a glaring lack of evidence to indicate that this view has been translated into any meaningful action. This signifies a disconnect in the ability of the participants to link LUP to climate change response strategy.

Exploring the likely barriers to climate change strategy, the interviewees reveal a similarity between the controlling factors of LUP (Section 6.6) and the hurdles that need to be crossed in the development of institutional response. This outcome is comparable to the findings of Settele *et al.* (2014) that the underlying causes of land use and cover changes can be directly or indirectly responsible for influencing climate change.

7.4 Recognising the potentials of Strategic Environmental Assessment

There is an air of lethargy surrounding environmental protection and management in the prevailing LUP practice. The findings from this research reveal that the agenda is predominantly focused on achieving political, social and economic objectives with little emphasis about the environmental implications of those actions. The EIA system that ought to promote environmental consideration within development appraisal is seen to be employed sporadically rather than systematically. The problem with the EIA process is not only centred on effectiveness but includes the challenges of streamlining it within the land-use decision making process. Situations such as these supports the arguments for the introduction of a more strategic form of environmental assessment (Glasson *et al.*, 2005; Fischer, 2007) that can anticipate development proposals instead of reacting to them.

Given the absence of a Strategic Environmental Assessment (SEA) framework in Nigeria, it is not surprising that the project level EIA is unable to influence decision making at the policy and programme tiers above it. For the situations where the EIA is even carried out, it is unable to divert projects from environmentally sensitive areas to more resilient areas, as land acquisition usually precedes the evaluation. Unlike the EIA which revolves around designing mitigating measures against negative environmental impacts at project level, the SEA is proactive in preventing adverse impacts and enhancing positive developments (Fischer, 2007) by prompting the effective consideration of wider environmental impacts and alternatives at the earliest deliberations of strategic actions.

Furthermore, SEA has the potential to resolve challenges of transcending jurisdiction (see Section 6.4.2) by integrating and reconciling the goals and objectives of different administrative tiers along with the systematic decision making levels of policies, programmes and plans across different sectors (Fischer, 2003). Regardless, the recommendation of the SEA in the Nigerian context is based on the capacity of the mechanism to strengthen the flailing EIA system and the ability to act as a risk management instrument for assessing climate change.

The SEA is not a replacement for the EIA, rather a tool that can strengthen and solve the failures or inadequacies of project EIA (Alshuwaikhat, 2005). This is evident in Nigeria's situation where the EIA practice is not only threatened by jurisdictional challenges but procedural integration, where it occurs relatively late in the deliberation process (see Figure 7.2). An effective SEA system would be able to inform proposals before irreversible decisions such as financing commitments and acquisition of land. As such, propositions that would lead to adverse environmental effects can be prevented upfront rather than at the EIA stage where mitigation is the only recourse available. Furthermore, the SEA is applied in a strategic context that proactively evaluates a wide range of alternatives, selects a preferred option and then the EIA examines in greater detail, the potential impact of that alternative.

SEA provides a platform for increased transparency and participation in the land-use decision process. Public participation in the current LUP occurs within the EIA component. Given the relegated position of EIA in the approval process, there is no doubt that the public participation suffers the same fate. Even though, SEA scholars (Glasson, *et al.*, 2005; Fischer, 2006; 2007) have argued that it is a tool that promotes public involvement, Crncevic (2007) report that this must be explicit within the legal requirements for it to be effective. Regardless, improving public participation in the identification of perceived needs and local problems gives the opportunity for changing attitudes and societal culture.

While the potentials of SEA within climate change vulnerability has been explored in Section 3.7, the failings of the current EIA regime strengthens the case for a strategic framework that can shape future conduct within LUP and provide better environmental outcomes. Such contribution has been reported in Namibia, where voluntary SEA had steered decision making and led to sound monitoring procedures (Hipondoka, *et al.*, 2016). In the same vein, Oberling, *et al.*, (2013) report that voluntary initiatives have been instrumental in helping Brazilian stakeholders understand and visualise the implications of their strategies in the definition of land-use planning criteria for territorial and sectoral policies. Findings such as these, highlight the

potentials of the SEA process to drive important conversations and provide experiential learning that can lead to optimization of the Nigeria planning process.

To ensure that the pathways to the SEA system incorporates the flexibility required in a developing country context (Retief, 2007), the non-EIA based SEA process (Fischer, 2007) has been recommended based on the its iterative process design that allows a fit into the typical planning process (Alexander, 1992; Glasson, 1992; Randolph, 2004). In this regard the SEA process can be expressed as the climate change vulnerability criteria presented in Table 7.6 below.

Table 7.6 - Criteria for climate change vulnerability in LUP

Non-EIA-based SEA process	Criteria for climate change vulnerability
Problem diagnosis	Diagnosis of past, current and likely climate-related impacts or threats
Goal setting and articulation	Develop vulnerability related objectives
Analysis	Identify causal structures and sources of differential vulnerability
Consideration of alternatives	Conduct vulnerability assessment of alternatives
Decision making and plan preparation	Include vulnerability reduction strategies
Monitoring and evaluation	Devise provisions for monitoring vulnerability-related measures

Although Fischer (2007) opines that the non-EIA-based SEA is methodically less rigorous than the EIA based versions, this option is selected to prevent a suggestion that the SEA replaces the EIA and should be treated in the same manner. The first stage involves problem identification, which involves specifying the climate-related issue. In this regard, it would be necessary to describe past, current and likely climate related impacts, experiences or threats. This would help identify the inherent climate-related issues that are likely to be encountered and serve as a diagnostic for the causes of the risk and potential constraints to change.

Once the objectives has been established, the analysis should involve a systematic analysis of identified causal structures in the estimation and projection. This is particular useful in separating the symptoms and the underlying causes, so that action responses taken are effective and comprehensive in nature. In addition, this would allow an easier transition into designing alternative options as it provides a template for assessing climate-related distributional effects. In all, the formulated plan has the opportunity to reduce the overall climate change experience, once it has been able to initiate appropriate measures to mitigate against the attributes that have been identified in the appraisal and decision making of the final plan. However, the capacity and ability to carry out these measures is subject to the proximate and underlying causes of change (Meyer and Turner, 1996; Geist and Lambin, 2002), the controlling factors of LUP (Parker and Doak, 2012) and the prevalent non-climatic, societal conditions (IPCC, 2007; King *et al.*, 2016).

In line with a continuous learning approach, provisions should be made for monitoring the climate related objectives to assess if they are adequate in the accomplishing their goals. In this regard, it is expected that the level of climate change impact on the coupled human-environmental system (CHES) should be monitored and regularly analysed to identify the nature of impact and to judge the capacity of the system. This would allow LUP to move from a remedial position to a preventive role when it can immediately distinguish between an outlier in climatic variation and the inadequacy in one of the structures.

7.5 The proposed integrated framework

The notion of a typical planning process is used as the foundation for the development of the framework using the perspective derived in section 3.7. Taking into consideration that climate change is not seen as a pressing developmental issue (see Figure 5.24), the proposed framework must not suggest a disparate structure that cannot be easily implemented. Using the theoretical criteria for climate change vulnerability in LUP (see Table 7.6) as

a template, Figure 7.4 shows a series of activities that should be carried out to operationalise the framework.

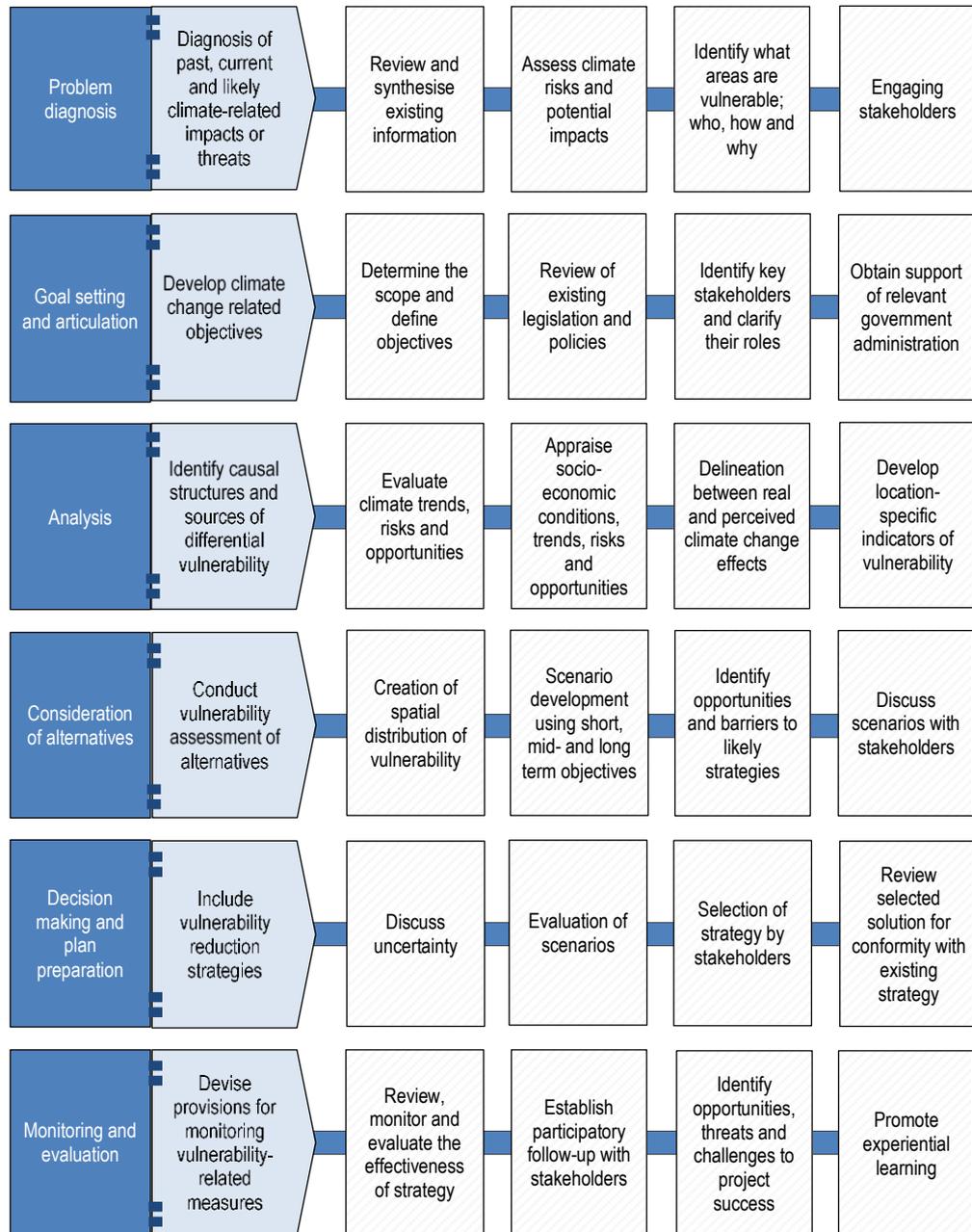


Figure 7.3 - Framework guide for integrating climate change vulnerability into LUP

The framework has been designed with a bottom-up approach as means of responding to the priorities and problems that may exist at the lower

administrative levels for land use decision making. This aligns with the knowledge derived from the interviewees that the higher tiers of government are often oblivious of the challenges experienced at the lower levels. Rather than attempt the top-down approach, which is considered very ambitious given Nigeria's nascent democracy, a more pragmatic option has been selected (Niang-Diop *et al.*, 2004). The following sub-sections give a synopsis of the suggested activity to be carried out at each of the stages.

7.5.1 Diagnosis of climate related impacts and threats

As much as it is desired that the integrated framework would be proactive and anticipatory in every aspect, there is a realisation that the challenges posed by climate change would only receive attention when there are noticeable threats to the way of life. This is seen from the admission by the research participants that while climate change is happening in Nigeria, there are other prominent issues taking centre stage.

As a reasonable starting point, it is essential to collect and review available information about the exhibited environmental risk and the current land-use situation. This template is useful for the identification of vulnerable areas, the people within the location and the ways that they are vulnerable. It is important to understand the governing rules that dictate the interactions within the human-natural system and the influence they may have on the vulnerability expressed in the target area. The information gathering should not be limited to legislation, regulations, and policies but due consideration must be given to the realities that have developed as a result of these rules.

In order to link statutory guidance to real-world experiences, it is necessary to engage with the stakeholders and people within the target areas to understand the nature of climate risk experienced. It is anticipated that such interactive sessions would lead to an information exchange where stakeholders are educated and are able to separate *real* climate change effects from *perceived* ones; and the stakeholders are able to provide background knowledge about the historical instances of climate variation that is useful in

modelling future climate risk. Apart from the wisdom that can be gained from past and/or successful local strategies, there can be an indication of practices or factors that may have contributed to the effects experienced. For instance, Walker *et al.* (2014) reports from Kenya that SEA participation led to sustainability action at the community level when participants were challenged to critically reflect on assumptions underpinning their farming practices.

Given the complexities of intermingling factors underlying land use, a multidisciplinary approach suggested by the interviewees and Schröter *et al.* (2005) is considered an appropriate vehicle to extract and make meaningful sense of the situation. This is to say that apart from the use of experts from a range of scholarly field, a synergic working relationship is required by the land-related administrative teams.

Even though LUP is restrained by the absence of cadastral maps and land records, the integrated approach would encourage the collection of basic information about the planning area. This can be augmented by field observation to make up for missing gaps in the data base. Likewise, the interaction with experts and people who know the area can be invaluable sources of information confirmed through the interviews. While it is expected that the level of information becomes more detailed as the process progresses, the continued interaction would lead to capacity building for both facilitators and participants.

7.5.2 Develop vulnerability related objectives

The activity at this stage involves the formulation of specific outcomes and measurable objectives relating to the problem. Collecting all the issues and problems that appear to be related, this provides the opportunity to distinguish between the symptoms and the underlying causal structures responsible for the events observed. This delineation allows the identification of concerns that are within the scope of LUP and those outside it. In the scoping and screening process, LUP relies on the available

legislation and policy to determine the boundaries of its operations. The review of statutory and policy guidelines allows a recognition of how the strategy can be developed, and what mechanisms would be considered feasible (Ebi, *et al.*, 2004; Spanger-Siegfried, *et al.*, 2004). This immediately highlights opportunities available within the provisions of such policies and those that may impose constraints.

In defining the objectives of the process, it is essential to establish the stakeholder process. In this regard, it is imperative to identify the key stakeholders and clarify their roles. The stakeholder analysis by the National Research Council (2008) becomes very useful in separating those with direct interests in the outcome of the plan and the unaffected, observing public. Special attention must be taken to ensure that the selection is both inclusive and representative of the primary community affected, including the most vulnerable group(s) of people in decision-making. The legitimacy of the decision-making process may hinge on the extent to which the various groups within the directly affected stakeholders have been represented and heard (Few *et al.*, 2006)

Taking into consideration, the nature of political influence over decision making in Nigerian governments, it is at the stage that it is necessary to obtain a buy-in of elected officials. The interests of the political administration have been identified in the course of the research as the foremost underlying factor shaping the planning process in Nigeria. In the same vein, political buy-in has been reported as critical to SEA performance in South Africa (Retief, 2007), and Makaba and Munyati (2018) opine that formal SEA legislation in Botswana can enforce political commitment. It should be noted that the political administrative stakeholders are those responsible for carrying out the activities required in and from an assessment. Therefore, a nuanced approach to securing political buy-in is recommended. This includes dynamic coordination of initiatives within relevant decision windows that provides evidence-based information and ensures minimal interruption of existing system. It is anticipated that the transparent nature of SEA and stakeholder inclusion in the decision-making process can boost the public rating of such political administration.

Improved public perception can prompt the desired paradigm shift and serve as a gateway for the political buy-in.

However, a balance must be struck between satisfying public officials and those who would be affected by the plan and/or proposal. The objectives must invariably lead to feasible, relevant and appropriate vulnerability reduction strategies. The selected objectives must be the results of agreement between the decision-makers and the people within the planning areas.

7.5.3 Identifying causal structures and differential vulnerability

With consensus reached on the goals and objectives, the next activity involves a systematic review of what can be done to achieve them. The significance of the integrated approach is not just about mapping current land patterns but deciding on how present land features can be modified to improve resilience to current and future climate-related risks and threats. For this reason, it is not enough to characterise the climate trends and potential impacts, but there is a need to evaluate the community dependent attributes that may have contributed to the effects experienced; and identify the causes/ sources of the intrinsic vulnerability of the target area.

The outlining of the climate threats paves way for the distinction between the real and perceived effects of climate change to determine appropriate response strategies. For a comprehensive approach, it is important to identify the causal structures that may be partly responsible for the vulnerability in the target area. The research findings agree with Soares and Gagnon (2012) that the socio-economic features and political institutions are crucial factors that may account for the pre-existing conditions that have led to the unsafe situations which magnified the susceptibility to the hazard. For this, Schröter *et al.* (2005) advises that the assessment can begin with the examination of the consequences and then investigating their causes, or *vice versa*.

Within the causal analysis, there is a need to recognise that vulnerability can be differentially distributed among the various groups of the same

population. For this reason, it is important to recognise the different ways land use may have contributed to the spatial distribution of vulnerability and seek to rectify the assumptions that lead to those differences. Reasonable proof of the pointers of differential vulnerability would enable the development of appropriate strategies based on real-world information as opposed to socio-political contemplations.

7.5.4 Vulnerability assessment of alternative scenarios

A major outcome of the previous stage is the creation of the place-based set of indicators for the components of vulnerability. Considering that the use of land differs from one locality to another, there are no established measures for vulnerability or its components (Schröter *et al.*, 2005). As such, it is important to understand situations that may be endemic to the area so as to explore alternatives with the highest success factor. Stakeholders must be able to comprehend the indicators and be explicit enough to be spatially mapped (Schröter *et al.*, 2005; Moss, *et al.*, 2010). This facilitates an easier discussion of the strategy options with the stakeholders.

The index created is a reliable tool that can be used in the evaluation of the possible solutions that have been developed as strategies to address the identified climate threats. The potentials of the scenarios can be assessed in order of relative significance, options, opportunities for change and the likely hindrances in the implementation of such strategies. Even though there are several scenarios that can be developed for emissions, the climate and the environment, the vulnerability assessment provides crucial information for evaluating the extent to which the people are going to be affected by the changes in climate (Moss, *et al.*, 2010). This examination reveals how the different factors underlying LUP influence vulnerability and the ability to adjust to potential impacts.

In line with the choices available to LUP (FAO, 1993), the vulnerability reduction strategy may fall into one or a combination of the five options including; the consideration of non-land use planning options, like the establishment of early warning systems and evacuation schemes for areas

prone to climate threats; the allocation of specific land use, such as green belts, to certain land areas to act as a buffer for vulnerable areas; introducing new land use that was not previously practiced; making infrastructural improvements, like sustainable urban drainage, to existing land-use types; and the suggestion of new standards, guidelines and limits, such as restricting land use activities within identified flood risk areas. It is anticipated that the expression of the alternatives will allow stakeholders to understand the potential outcomes that may arise from their decision. Oberling *et al.* (2013) reports that this lead to proposals establishing land limits for monoculture, incentivising diversification and multiple-use forests in Bahia State, Brazil.

7.5.5 Including vulnerability reduction strategies

Following the design of the several alternative scenarios, they can then be organised with different techniques and, in this manner, strategies can be dismissed, deferred, or selected for the degree of feasibility. Though the ability of environmental assessment to integrate climate change concerns has been expressed by several scholars (Larsen and Kørnø, 2009; Posas, 2011), Niang-Diop *et al.* (2004) writes that it is unlikely that one single strategy can deal with all the conceivable cases. They argue that the risk arising from climate change may not be so different from what would have been experienced historically, as such, more attention should be placed on the noticeable increase in frequency, and the intensity of such occurrence. For this reason, literature within the adaptation assessment framework typically suggest the use of Cost Benefit Analysis (CBA), Multi-Criteria Analysis (MCA), Cost Effectiveness Analysis (CEA), and expert judgement (UNFCCC, 2002; Niang-Diop *et al.*, 2004)

Regardless, stakeholder support may be the most significant factor that determines whether the strategy is successful or not (FAO, 1993; Spanger-Siegfried, *et al.*, 2004). For instance, the poor performance of SEA in South Africa has been linked to the lack of consultation and a weak understanding of the underlying political context driving the decision-making process

(Retief, 2007). Therefore, the selection of the feasible option is better conducted through a deliberation with the relevant and appropriate stakeholders. Given the qualities of environmental assessment as a decision-making support tool (Weston, 2000; Fischer, 2002; Glasson, *et al.*, 2005), the SEA can provide a lot of information that would aid the process effectively. At this stage, it is also important for issues on uncertainty to be outlined. Schröter *et al.* (2005) argues that denying uncertainty in any assessment affects the credibility of instrument support for decision making. The dialogue may lead to the selection of one of the scenarios, a blend of the strategies or prompt an iteration of the whole process if there is a lack of consensus, or if the solutions have been based on faulty assumptions. Subsequently, the selected strategy must be reviewed to prevent conflict with existing strategies and to ensure it conforms to other policies and priorities.

7.5.6 Provisions for monitoring vulnerability-related measures

Within the monitoring and evaluation stage, it is imperative that there must be the review of the strategies to identify the measures that are working, those that are not and to determine the reasons why. This would ensure that corrective measures are carried out as soon as possible before they lead to dire consequences. Perez *et al.* (2004) writes that a good monitoring framework is based on clearly stated objectives and measurable outputs; and the availability of quality data.

Asides from diagnosing faulty aspects of the strategy, it is particularly useful in the creation of an experiential learning process that would reveal what and how the various land use factors influence the LUP strategy. This would contribute to the understanding of what works and what does not, allowing subsequent strategies to become increasingly effective. This expresses the nature of SEA as a systematic decision-supporting mechanism, which is about the process and less about the product (Retief, 2007). Every iteration will result in improved understanding and capacity building that is useful to the next implementation.

Apart from setting up institutionalised monitoring, the interviewees expressed that the public have been instrumental to the regular review of the state of implemented projects. This confirms the submission by Perez *et al.* (2004) that encouraging participatory approach to project monitoring and evaluation provides a continuous feedback-correction cycle. Following through with the appropriate stakeholders engaged in the LUP process, a system of other concerned institutions and could be set up.

7.6 Chapter summary

This chapter is the merging point for the mixed method research strategy employed in this study. The discussion centred on deriving meaning from the agreement, deviation and overlap that occurred within the two sets of data presented in Chapters 5 and 6. This chapter links the stakeholder perspectives to the literature background provided in Chapter 4. In this context, the research reflects on the LUP practice in Nigeria and has identified the failure of the current process to promote any form of environmental consciousness. While the potential contributions of SEA to climate change vulnerability has been discussed in Chapter 3, the limitations of the EIA system have strengthened the argument for SEA as a flexible and proactive mechanism that can be designed to fit within existing governing conditions. Even though, research findings indicate that formal SEA regulation would be required in Nigeria, it cannot be denied that the route to a statutory instrument may involve incremental voluntary initiatives that would provide opportunities for capacity building and experiential learning, like those experienced in Brazil (Oberling *et al.*, 2013), Kenya (Walker *et al.*, 2014), Namibia (Hipondoka, *et al.*, 2016) and Botswana (Makaba and Munyati, 2018).

Through the discussed results, the third and fourth objectives of this research have now been achieved. The designed framework is the expression of the theoretical criteria commenced in Chapter 3, through the realities of LUP in Nigeria. The guidelines have been conceptualised with a bottom-up approach by placing emphasis on local priorities and taking full advantage

of the local knowledge in the development of endemic solutions to climate-related threats and risks. However, the considerations remain applicable for implementation with sectoral and territorial policies.

8 CONCLUSION AND RECOMMENDATIONS

8.1 Introductory remarks

This chapter provides an overview of the aims and objectives of this study, the findings and contributions to research, limitations and recommendations for further study. The primary focus of this research was to define and develop a framework for integrating vulnerability consideration into land-use planning (LUP) process in Nigeria as one of the approaches towards addressing climate change concerns. To accomplish this, there were four research objectives to structure the literature review and guide the research process. The subsequent section gives a brief on the extent to which those objectives have been addressed within the research.

8.2 Achieving the research aims and objectives

By developing a framework with guidance for addressing climate change vulnerability in land-use planning in Chapter 8, the overall aim of this study has been achieved. Likewise, the four research objectives presented in Table 1.1 have been accomplished;

1. *To critically review the theory and concept of climate change vulnerability to understand the nature and dimensions of occurrence, and to identify the core elements required for the introduction into land use planning.*

Chapter 3 provided a review of the concept of climate change vulnerability. Working through definitional and typology perspectives, core structural elements were identified that are considered integral to the assessment of climate change vulnerability. A vulnerability criteria was then developed for typical land-use planning activity.

2. *To investigate the potentials of the current Nigerian land-use planning context to address climate change*

The research evaluated the country context in an examination of the physical planning frameworks to determine the potentials of the current system to address climate change. Starting in Chapter 4, a

historical background was provided as a premise to understand context in land-use planning operates in Nigeria. This was done through a literature review to identify the contextual factors governing planning and how climate change concerns feature in the process.

3. *Linking theory with practice by exploring the perception of planning regulators on land-use planning and climate change.*

Through the data collected, analysed and presented in Chapters 5 and 6, the research was able to construct a picture of the current status of land-use planning in Nigeria. This confirmed literature finding that planning in the country is mainly reactive and subject to the political administrative interests that do not consider climate change a pressing developmental issue.

4. *To develop an appropriate framework that will allow the integration of climate change vulnerability with the Nigerian planning system.*

Using the vulnerability criteria developed at the end of the second objective, a framework was developed following the collection of information on the status of land-use planning and climate change perception in Nigeria. In addition, the research identified the contextual factors that were considered crucial to the success of the implementation of the framework in the country's context.

8.3 Research contributions

Protecting the environment and preventing the human society from hazard is an implicit function of LUP. However, more often than usual, LUP is seen to be solely interested in physical development without due consideration of these other functions. With the advent of climate change, the role of LUP should evolve to making conscious actions in the identification of vulnerable systems and proactively addressing it. To be able to achieve this potential, this research has done a review of the current notion of climate change vulnerability and provided a clearer illustration of the concept, including the

core structural elements that are requisites of a vulnerability assessment. Adopting a place-based approach to the design, the diagrammatic guideline makes it easier for decision makers to visualise the possible outcomes of their selection. Relating this to LUP, the criteria for integrating vulnerability consideration into typical planning process was developed. Rather than the introduction of a new system of addressing vulnerability, the development of a criteria approach provides much needed flexibility and an easier learning curve that can be immediately streamlined into existing systems.

The research recognises the potential contribution that strategic environmental assessment (SEA) can make towards streamlining environmental concerns within Nigeria's LUP system. Findings indicate that EIA practice is struggling to overcome the challenges of legitimacy and limitations centred on the relatively late stage when the assessments are carried out. The suggestion of a SEA framework provides a proactive, systematic, process-oriented and participative instrument that can prevent environmentally unfriendly proposals before irrevocable investments are made. In addition, the SEA process was used as a basis for developing the framework for integrating climate change vulnerability into LUP.

Nigeria is a signatory to several climate change agreements, including the Kyoto Protocol (ratified in 2004), the Copenhagen Accord (signed in 2010) and the Paris Agreement (2016). Unfortunately, these agreements have not been translated into policies and strategies for addressing climate change in the country. In this context, this research is the first integrated framework to streamline climate change vulnerability into an existing planning process. This is considered a feasible approach, considering the reluctance to adopt the signed agreements and the low perception of climate change as an imminent challenge. With the designed framework, decision makers can easily adapt the concepts of the guidance to any policy, plan or program that may require the use of land. This would gradually promote an anticipatory approach to LUP and improve the significance of *environmental planning* in the higher levels of decision making.

8.4 Research limitations

The researcher acknowledges that it is impossible to carry out a study free of limitations. Apart from the usual constraints relating to the availability of relevant literature for the subject matter, four key limitations were identified in the course of the research.

The first can be seen from the strategy of inquiry employed in the research. Even though the convergent parallel method used in data collection provides a comprehensive analysis of a research problem, the choice of this strategy was mainly influenced by resource constraint. With the difference in geographical location of specific people having situational knowledge about the subject matter, the interaction was constrained by resources available to conduct field work at those locations and the spatial context that defined the amount of time available for data gathering. This is not to suggest that one methodological approach was better than the other, but an admission that it is possible a somewhat different conclusion may have been reached if a qualitative research was conducted, analysed and the result used to build a quantitative instrument as a follow up, or *vice versa*.

Secondly, the study was a stark reminder for the researcher that everything in Nigeria revolves around the socio-cultural identity. An overview of the Nigerian society, which was discussed within Section 4.2, shows not only spatial alliance but a social construct around tribal identities which is a powerful influencer of access, even to purportedly national organisations. As such, the chances of success in gaining support of a gatekeeper may increase with the commonality that can be perceived in the researcher. The researcher was able to find one of such gatekeepers willing to support the study without incentives in the Western part of the country. It is not known if the same results would be obtained if there was access to data from other parts of the country; or carried out in turn at the different regions to see if the outcomes would differ spatially.

The third limitation proved that gatekeeper support does not equate to information access. For this study, the researcher was unable to obtain any documentation to evidence actual land use plans or Environmental Impact

Assessment. The interviewees alluded to the existence of such documents but were not willing to produce them. Though Nigeria was the ninth African country to enact a Freedom of Information (FoI) law in 2011, many Nigerians are not aware of it, while some others are indifferent (Adeniji, 2017). Authors such as Ezegwu *et al.*, (2013), Omotayo (2015) and Apuke (2017), have posited that the Official Secret Act 1962 and the long era of military rule that criminalised the release of official information had entrenched a culture of secrecy and suspicion that every request for information of government activities must be borne out of ill motive. The latitude given public institutions to deny access to requests for information based on security, personal privacy and discretion to determine what information can be released, gives room for refusal to provide information. It is entirely possible that the authority that the consenting gatekeeper wields may influence the degree of cooperation received. On the other hand, the reluctance may be smokescreen for the prevalent poor culture of record keeping, maintenance, information retrieval and other bureaucratic shortcomings of Nigeria's public institutions. On this premise, it is anticipated that SEA practice will foster an environment of experiential learning which promotes transparency in sharing of information and systematic evidence gathering.

Lastly, the researcher bemoans the low response rate of the paper-questionnaires by the prospective participants. Given the numerous scheduled visits and returns alternatives arranged with all the prospective respondents, the researcher was unable to improve the odds associated with the quantitative research. For the qualitative aspect, the researcher was unable to recruit any participant in the lands services department. As such, the study can only claim to have obtained the views of those in physical planning and environmental management but not able to determine how officials in land services view their role in land-use planning or how they feature in the climate change strategy. In addition, the researcher was unable to enrol other decision makers from the federal and local administrative levels to see what insights they might provide.

8.5 Recommendations for further studies

Given the relatively theoretical nature of the developed framework, there is no indication of its effectiveness in the current state. As such it would be interesting to see the application in a real-world scenario to gauge the potentials of the framework in mitigating against vulnerability to climate change. This can be extended into a longitudinal study where the eventual vulnerability experienced in a location is tracked over a period of time and the effectiveness of SEA in influencing vulnerability can be evaluated.

In the analysis of quantitative data, findings revealed that the female gender was significantly more vocal in their responses to issues on land-use planning and climate change. This was an attribute that was not previously considered by the researcher and it would be beneficial to carry out a gender-based research of climate change vulnerability within the Nigerian land-use decision process.

While comparative research can be conducted in other parts of the country, there would be more mileage in the availability of documentary evidence rather than perceptions of government workings. This can be possible under two scenarios; where the researcher is able to gain the support of highly influential gatekeepers who are able to provide access to relevant documents, or when there is a countrywide acceptance and full implementation of the freedom of information.

8.6 Conclusion

While it has been established that land-use planning and climate change vulnerability are intrinsic to the human system, the research has highlighted the importance of SEA as a strategic decision supporting tool that is integral in ensuring sustainability in the face of the climate change onslaught. Rather than focusing on mitigation or adaptation, vulnerability provides the basis for considering other critical elements like exposure, impact, coping capacity and adaptive capacity. Although Boko *et al.* (2007) write that the links between land use changes and climate stress is not yet clearly understood,

the study demonstrated the role of the LUP system as a critical component for vulnerability assessment. This was taken a step further by developing criteria for the integration of climate change vulnerability into planning activity in Nigeria.

The research acknowledges that climate change is considered one of the other challenges jostling for the already allocated resources in Nigeria. For this reason, the developed framework employed an endemic, bottom-up approach fashioned after a non-EIA-based SEA process for easy integration into Nigeria's LUP.

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APPENDICES

Appendix I – Interview participant consent form



Committee on Research Ethics PARTICIPANT CONSENT FORM

Title of Research Project: Addressing climate change in Nigeria: Vulnerability Assessment and Strategic Environmental Assessment

Researcher(s): Adedamola A. ADERIYE (PhD Researcher)

**Please
initial
box**

1. I confirm that I have read and have understood the information sheet dated September 2014, for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my rights being affected. In addition, should I not wish to answer any particular question or questions, I am free to decline.

3. I understand that confidentiality and anonymity will be maintained, and it will not be possible to identify me in any publications by name, address or any other personal details

4. I agree for the data collected from me to be used in future research and understand that any such use of identifiable data would be reviewed and approved by a research ethics committee

5. I understand and agree that I can opt out of the audio recording of my participation. I am aware that the use of these recordings is for the following purposes; to enable the researcher to recall what was said and in what order it was said; as well as utilising direct quotes in the thesis. All direct quotes will remain anonymised, in this and future publications.

6. I agree for the data collected from me to be used in relevant future research.

7. I understand that my responses will be kept strictly confidential. I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research.

8. I understand and agree that once I submit my data it will become anonymised and I will therefore no longer be able to withdraw my data.

9. I will like to receive an electronic copy of the result of this research.

My email address is

10. I agree to take part in the above study.

_____	_____	_____
Participant Name	Date	Signature
_____	_____	_____
Researcher	Date	Signature

Student Researcher:

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[Version 2 – 04/09/2014]

Appendix II – Interview participant information sheet



Participant Information Sheet

Title of Research Study: Addressing climate change in Nigeria: Vulnerability Assessment and Strategic Environmental Assessment

Researcher: Adedamola A. Aderiye (PhD Researcher)

You are being invited to participate in a research study. Before you decide whether to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and feel free to ask us if you would like more information or if there is anything that you do not understand. We would like to stress that you do not have to accept this invitation and should only agree to take part if you want to.

Thank you for reading this.

The purpose of the study

As a source of subsistence and resources, land is literally the foundation on which human societies are built. The changes in the use of land often lead to environmental change which can be linked through a multiplicity of direct, indirect and cumulative effects at different scales with economic, social, legal and political dimensions. Land use patterns and changes are invariably vital to sustainable development. With this in mind, spatial planning can be simply described as giving geographical expression to the economic, social, cultural and ecological policies of a society. The reflection of the administrative interpretation of various sectoral policies that determines the physical distribution and management of land and space. This connotes that spatial or land use plan must be comprehensive, functional, long term oriented and still be able to account for uncertainty and future developments.

Based on the understanding of the critical role that land use planning plays in the society, this research aims to explore stakeholder views and perspectives in respect of the current planning regime (legislation and practice) in Nigeria, gauge the factors influencing the practice, the consideration of environmental concerns and responsiveness to uncertainty both current and future. It is expected that the feedback will link theory to practice as it will enrich the framework, developed from documentary sources, as it integrates estimation of environmental uncertainty into land use planning.

In order for the endeavour to be successful, viewpoints other professionals, experts and regulators working in planning and directly relevant fields will be obtained and cross referenced. Your participation in this research will contribute immensely to this collection of professional views and opinions, and this information will be gathered by way of a semi-structured interview.

Questions you may have

- 1. Why have I been chosen to take part?**

You have been asked to take part in the study because of your experience in planning, land use and environmental management. You have been identified through a combination of desk-based research and discussion with the supervisory team for this project.

2. Do I have to take part?

No. It is up to you to decide whether or not to take part. Your participation in this research is completely voluntary. Should you choose to participate, you will be given this information sheet to keep and be asked to sign a consent form. You are free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect you in any way

3. What will happen if I take part?

The interviews will be conducted by the researcher.

The interview is 'semi-structured' in nature, which means you will be asked prompt questions relating to best practice in your area of expertise. The information that you share will be combined with the results of a documentary analysis to construct the framework for integrating environmental uncertainties into spatial planning.

Interviews will take place at a mutually agreed destination. In recognition of the fact that you are giving up your time to aid this research, the researcher has made themselves highly flexible regarding locations and times of interviews, allowing you as the participant to set a time and place which best suits you.

It will help the process if the interview is audio recorded, as this will eliminate the pressure of struggling to write down the discourse which may interrupt the flow of the interaction. Please let the researcher know if you are happy for the interview to be recorded. It is important to remember that all information supplied will be anonymised – no personal information is stored beyond the period of data collection (up to publication) and if the dissertation uses direct quotes, it will not be identified or identifiable in the dissertation or academic papers or reports that may result from the research. These details about your anonymity are provided in the Participant Consent form which you will be asked to sign before research can commence.

The only researcher you will have direct contact with is Adedamola Aderiye (PhD Student), although the confidential and anonymised information you provide may also be viewed by the supervisory team at the University of Liverpool during the research study period.

The interviews session will last up to a maximum of one hour, and you may request as many breaks as you need. The researcher aims to take up as little time as possible.

4. Are there any risks in taking part?

There are no likely disadvantages or risks involved in participating in this interview. However, you might become curious in getting to know the outcome of the research.

5. Are there any benefits in taking part?

You might be able to gain new perspective about land use and spatial planning and how to integrate environmental uncertainties in future considerations.

6. What if I am unhappy or if there is a problem?

If you are unhappy, or if there is a problem, in the first instance make it clear to the researcher (Adedamola Aderiye) that you are unhappy and if this is not appropriate, please feel free to contact Professor Thomas Fischer via email fischer@liverpool.ac.uk and he will try to help. If you remain unhappy or have a complaint, please contact the Research Governance Officer at ethics@liv.ac.uk. When contacting the Research Governance Officer, please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.”

7. Will my participation be kept confidential?

The information you provide during the course of the interviews with the researcher, as well as any information made accessible in the form of documents during the course of the research study, will be transcribed/recorded by the researcher and stored in an anonymous format on the University secure network. All storage and data usage will comply with the University's strict Data Protection Policy. Access to these items will be restricted to the researcher and project supervisors only. The information you provide will be used for this research study and may also be used in future research projects conducted by the researcher (Adedamola Aderiye). In both instances, data will remain anonymised and confidential. Personal details (name, address, telephone number, e-mail address) will be stored securely for the period of the research study to allow correspondence with research participants. However, information provided will be anonymised and stored in a secure manner for up to three years from the date of data collection. You are entitled to withdraw any information you provide. However, it is important that you understand and agree that once you check and submit your data to the researcher it will become anonymised and you will therefore no longer be able to withdraw the data.

8. What will happen to the results of the study?

The results of the study will primarily be made available in the public domain through the publication of a dissertation (PhD thesis). This will be available to read on the University of Liverpool's website for free. The results will also be used in conference papers and presentations, and information provided may be used in future research studies in an anonymised format. Participants will not be identifiable from the results.

9. What will happen if I want to stop taking part?

You can withdraw at any time, without explanation. Results up to the period of withdrawal may be used, if you are happy for this to be done. Otherwise you may request that they are destroyed, and no further use is made of them. Results are anonymised once you have agreed with the information provided and at this point, results cannot be withdrawn.

10. Who can I contact if I have further questions?

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