

UNIVERSITY OF GHANA



**MAINSTREAMING CLIMATE CHANGE ADAPTATION INTO NATIONAL
DEVELOPMENT PROCESS: THE ROLE OF THE LEGISLATURE.**

BY

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**THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON
IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF
MASTER OF PHILOSOPHY IN CLIMATE CHANGE AND SUSTAINABLE
DEVELOPMENT DEGREE**

JULY, 2019

DECLARATION

I, Faustina Sakyiwaah Sekyere hereby pronounce that apart from the references made to other works from people which have been duly acknowledged, this work is the result of my own research work done under supervision and that, this work has neither in whole nor part been presented to the University or elsewhere for another degree.

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DEDICATION

I dedicate this work to...my mum, Madam Comfort Effah and my siblings for their unfailing support for my education. I love you all and really appreciate all that you do for me.

ACKNOWLEDGEMENT

I am very grateful to the Lord Almighty for the grace and mercies he has bestow on me. My sincerest thanks go to Dr. Albert Ahenkan for his guidance and support during this Study, I say God richly bless you. Special thanks to my Co Supervisor Dr. Robert Manteaw for his support during this study. I also wish to thank Dr. Kodzo Gbewonyo, Hon. Benjamin Sekyere, Maxwell Owusu and Prince Ankoma for their contribution towards this study. Lastly, I wish to acknowledge clerks of the various committees I worked with, Hon. Members I interviewed, Mr. Kofi Menka and all the Staff of Center for Climate Change and Sustainability in University of Ghana. I cannot thank you enough for your warm reception and support. I say God bless you all

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LIST OF ABBREVIATIONS

CC	-	Climate Change
CCA	-	Climate Change Adaptation
CCAM	-	Climate change adaptation Mainstreaming
IPU	-	Inter Parliamentary Union
IIED	-	International institute for environment and development
UNDP	-	United nations development program
UNFCC	-	United nations framework convention on climate change
MP	-	Member of Parliament

ABSTRACT

Climate change mainstreaming undoubtedly remains the most cost effective and surest way of adapting and building resilience to climate change. Knowledge of Parliamentarians as a stakeholder and one of the highest initiators of laws and policies on climate change cannot be ignored in the climate change discourse. Inadequate knowledge and information among parliamentarians on climate change mainstreaming has a negative influence on political will and support for climate change activities, which is one among several barriers to climate change mainstreaming. This research sought to understand the knowledge and roles of the legislature in integrating climate change into development processes.

The study adopted a mixed method methodology that is, the use of qualitative and quantitative through concurrent triangulation approaches. Quantitative data was collected from 34 parliamentarians. A simple random and systematic probability sampling methods were used to select the participants. Semi structured questionnaires that included respondent's knowledge levels on climate change and their roles were administered to the parliamentarians. A qualitative data was collected through an in-depth interview using an interview guide.

A total of 34 parliamentarians participated in this study. Findings of this study show that about 92% of the participants affirm the changes in the weather pattern but 7.4% of the 92% could not identify any causes of climate change. About 80% participants demonstrated some knowledge on climate change but could not relate it to their roles and how they could represent them in their various core mandates as MPs. Again, about 70% disclosed that not much is been done by the legislature around climate change and is mostly centered on two committees which leave others unconcerned about it.

In conclusion to promote climate friendly policies, legislative approaches are required. Thus, the work of the legislature is a critical step for tackling CC as it binds actors and non-actors to demonstrate commitment and ambition to reduce the anthropogenic cause of climate change and to create an enabling environment for adaptation .Again parliamentarians have official (constitutional) mandate to formulate laws and this makes them pivotal for mainstreaming CC legislation for sustainable development. On the contrary, inadequate knowledge and information among parliamentarians on climate change mainstreaming has a negative influence on political will and support for climate change activities. Capacity building and collective engagement is necessary for achieving a climate resilient economy.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

Climate change has become one of the major issues threatening sustainable development in the world. Changes in weather patterns and the impacts of extreme events, now place unprecedented pressures on economic development which calls for immediate attention. This chapter presents the background of the study, the problem under study, objectives through to research questions to importance of study and how the chapters will be organized.

1.1 Background of the study

Climate change is an enemy to all economic sectors and is effectively taken into account when mainstreamed into development planning. To ensure hard-won development benefits are not destabilized and that interventions for future developments plans are resilient to climate change, the concept of climate change mainstreaming cannot be overlooked (Mimura et al, 2014).

There is more than enough evidence now; that anthropogenic climate change poses a serious threat to development (IPCC, 2007).

Despite the international agreement reached by the UNFCCC (1992) that, human meddling in the climate system should be reduced, laws and policies to support this course still face many challenges (Barrett, 1998, Victor, 2001). Both mitigation and adaptation to climate change require action in many sectors of society, but climate change concerns have so far been poorly mainstreamed into decision-making processes (Jann et al., 2007). The concept of mitigation was essential for informing climate change policies and strategies in the early nineties (Aakre &

Rübelke, 2010), until the preface of adaptation, due to slow mitigation efforts to climate change and growing awareness. As a result, the concept of adaptation has been gradually mainstream into development planning (Bulkeley & Tuts, 2013), as well as the adaptation measures proposed by the Intergovernmental Panel on Climate Change (IPCC);to help people cope with the impacts of climate change (IPCC, 2007).

Mainstreaming climate change adaptation into development planning is principal underscored by the fact that Ghana is already suffering the adverse effects of climate change, recurrent drought, floods and climate-related diseases, such as malaria and cerebrospinal meningitis in most parts of the country, consequent loss of property and lives can all be ascribed to climate change (IPCC 2007).

According to Nelson (2017), "mainstreaming climate change transforms climate change into a" normal thing" in national development planning processes, thus taking into account and incorporating climate change as an essential component of all decision-making processes. Tackling climate change is a complex and arduous task, but parliaments and parliamentarians are well positioned to take action and achieve the necessary and lasting results. In addition, it is well known that Parliament's basic function is law making and again perform a number of other functions, among others are: financial, (Backed by the chapter 13 of the 1992 constitution) oversight of the executive and representational duties. Their key role in ratifying climate change policies at the international front cannot be overlooked (Parliament 2016).

While developing countries are in urgent need for climate change adaptation policies and strategies, the focus of most research has been on the barriers to climate change mainstreaming in municipalities and the local government with less focus on the legislature, meanwhile, the

legislature is an important instrument to aid climate change mainstreaming. This thesis focuses on the knowledge levels and role of the legislature in Climate change mainstreaming into national developmental processes and laws through the various select committees in parliament.

1.2 Research Problem

Sustainable development and climate change are inseparably connected (Denton et al, 2014); they are essential to each other's effectiveness and are recognized as co-dependent strategies in both climate and development arenas (Ayers et al, 2014), in other words, climate change mainstreaming have a need of sustainable development interventions and on the other hand sustainable development policy making must as well take into account climate change mainstreaming to be successful (McGray, 2007: 1).

In addition, an effective way of integrating climate change and sustainable development programs into laws, policies and practices is through mainstreaming. (Ayers et al, 2014: 38, Mimura et al, 2014). For example, governments can achieve greater macroeconomic stability by integrating climate issues into national economic and fiscal planning processes and thus fund tight and progressive adaptation activities (Sperling, 2003). Institutions (legislature) play a key role in mainstreaming climate change, it is therefore essential to understand the institutional dimensions of climate change and how it influence the role of Parliament in mainstreaming climate change (Cuevas, 2018); and again how it influences the achievement of sustainable development while adapting to the impacts of climate change and mitigating the effects of further warming, in accordance to Paris Agreement and the Sustainable Development Goals

(SDGs). It has therefore become necessary to integrate climate issues into all government sectors and institutions / bodies (England et al., 2018).

There's a notion that, climate change mainstreaming is doable as the concept of mainstreaming is not new, given that it has been used to address other global issues such as inequalities in gender issues, alleviation of object poverty , millennium development goals, and HIV/AIDS (Kabeer, 2003; Lebel et al., 2012).

Despite the availability of the above information, guides to informing implementation, policymakers and legislatures as law makers have received little attention (Mimura et al, 2014); however, in order to combat climate change and achieve the goals set in the 2015 Paris Agreement, strong political support at the national level is needed. In 2015, a parliamentary action plan on climate change was adopted at COP 21, a medium to long-term vision with objectives and priorities in the area of climate change and related areas of sustainable development. Lovenduski 2012 (UK Climate Change Committee) states that the responsibility for achieving the goals adopted at COP 21 rests with parliament as an institution.

But Willis (2017) states that, there is inadequate knowledge and understanding on how parliamentarians as influential individuals in the political system understand and react to climate change issues.

In addition, a study by IIED 2010 (International Institute for Environment and Development) which was undertaken in five southern African countries i.e. Botswana, Lesotho, Namibia, South Africa and Swaziland parliaments identified about 70% of the interviewees lack adequate knowledge and clearer understanding of climate change concepts and impacts which is

imperative for parliamentarians to become more actively involved in various initiatives of climate change.

In 2012, Ghana's Minister of Environment, Science and Technology, with agreement from parliamentarians, asked IIED (International Institute for Environment and Development) for support in building awareness and engagement programs on climate change. Despite the capacity building, little effort has been seen within the Ghanaian parliament on climate change issues. This research presents research exploring how parliamentarians understand and act on issues of climate change mainstreaming as part of their legislative role.

The result of this research can have positive influence on practice, through helping scientists, policymakers and third-sector advocates understand the political sphere, and join forces with parliamentarians to develop workable strategies and also contribute to literature.

OBJECTIVES

1.3 General Objectives

The key research objective is to assess the knowledge levels of the legislature and their roles in mainstreaming climate change adaptation into developmental processes.

1.4 Specific Objectives.

1. To evaluate the knowledge levels of the legislature on climate change.
2. To examine the processes of mainstreaming climate change into development plan.
3. To evaluate the role of the legislature in climate change mainstreaming.

1.5 Research Questions

1. What is the level of understanding and knowledge of parliamentarians on climate change?
2. What are the processes of mainstreaming climate change into development plans

3. What is the role of the legislature in mainstreaming climate change adaptation into development processes

1.6 Importance of the study

Climate change mainstreaming is a new policy area and its successful implementation will be dependent among other things the ability of government to increase coordination across sectors and different groups of stakeholders. Involving all stakeholders is as important as it will minimize trade-offs and increase effectiveness in mainstreaming climate change.

This research provides comprehensive and most recent information on the Ghanaian government's Climate change adaptation actions and an overview of the Ghanaian parliament.

Again Members of parliament have the mandate to break the international stalemate on climate change action by 'domesticating' global decisions, using national legislation. This study may point out some useful findings of what is expected of parliament using COP 21 and international parliamentary union as a lens and make some useful recommendation to improve action.

1.7 Scope of the study

This research focuses on assessing the roles and knowledge levels of the legislature in climate change adaptation in development planning processes. Within this scope, the study will assess the knowledge levels of the legislature on climate change adaptation. It will also explore climate change adaptation as a policy instrument and also examine how issues of climate change are built-in into the mandate of the legislature.

1.8 Study Population

The study will purposefully be centered on members of parliament from all the sixteen select committees and from various geographical areas in Ghana. Since all these members of parliament represent the 275 districts in Ghana, they represent the districts and are responsible for ratification, reviewing and amending of existing legislation.

1.9 Study Setting

The current seventh Parliament under the fourth Republic is a unicameral legislature made up of 275 seats (MPs) elected for a four-year term and serve as the legislature, which carries out primary legislative functions. Execution of the legislative function is presided over by the Speaker, who is nominated by the majority, who chairs a five-member Parliamentary Service Board. The functions performed are extended to finance, oversight of the executive, representation and deliberation (Ayensu et al 1999; Ninsin 2009). To effectively execute these extended functions, Parliamentary seats have been reconstituted into eleven (16) select committees with members ranging from 5 to 25 people. Also, adhoc committees are set up when necessary to investigate issues of interest and standing committees. (Ayensu et al 1999).

Ghana Parliament was selected because, parliamentarians play instrumental role in building climate resilient economy by bringing constituents' concerns into national forums, scrutinizing how governments are responding to domestic and global climate change issues, and ensuring policy continuity. More importantly, Parliament was the fulcrum of the ratification of the UNFCCC and the preparation and design of the National Climate Change Policy (NCCP) by Ghana (Ministry of Environment, Science, Technology and Innovation, 2013).

1.10 Chapter Organization

The first chapter presents the complete research, starting with a broad context, levels of knowledge and the role of the legislature in mainstreaming climate change. The background, problem statement, objectives and research questions are all covered in this chapter. It also discusses the importance of the research and provisions of the sections of the research.

The chapter two of the research is devoted to discussing theories of climate change mainstreaming and the roles of the legislature. This section also presents an analysis of significant empirical. The review of the literature was conducted on the basis of the study's objectives, which allowed it to be based on empirical evidence in order to obtain convincing conclusions and conclusions from the positions of the existing literature.

In the third chapter, the focus is on the research methodology of the whole work. This chapter of the research also explains and justifies the research model under which the methods of the work had been selected from. In addition, the data sources, sampling techniques and instrumentation, population studied and the scope of the research are explained together with the data collection procedure and ethical considerations.

In the chapter four of the study, analysis was made together with the discussions. For this would enhance easy coordination and understanding of the reader, this also allow readers to follow the link between the study's objectives and the research questions, the literature review and theoretical framework, and the respondents' responses.

The final chapter of the research summarizes and concludes the entire work, necessary recommendations have been made to inform policy action and guidelines to ensure the integration of climate change adaptation into all government policies and projects.

Conclusion

In conclusion to promote climate friendly policies, legislative approaches are required. Thus, the work of the legislature is a critical step for tackling CC as it binds actors and non-actors to demonstrate commitment and ambition to reduce the anthropogenic cause of climate change and to create an enabling environment for adaptation. At the end of this research, there will be a comprehensive and most recent information on the Ghanaian government's Climate change adaptation actions and an overview of the Ghanaian parliament

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Scholarly and industrial works on climate change and its elements are increasing sporadically as years go by. This chapter reviews in detail the reported findings of such works and realigns them to offer more in-depth discussion to the problem being investigated. The chapter presents the theoretical and empirical background information in relation to the study area. The presentation of the reviews is in sections, with the first section offering a discussion on the concept of climate change and its impacts, followed by its sub concepts mitigation and adaptation. Other sections entail the linkage between climate change and adaptation, climate change mainstreaming, ways to mainstream, its importance's, and associated issues. It is then followed by climate change governance and the parliamentary role and their knowledge level on climate change. The chapter ends with the conceptual framework that depicts the inter-relationships between the various concepts of climate change.

2.2 Climate Change and Its Impacts

The concept of climate change has attracted varied definitions from different scholars, researches, scientists and organizations. Technically, Mushi and Makaukl (2017) define it as “regional or global-scale changes in historical climate pattern arising from natural and/or human-made causes”. This comprises meteorological statistics such as humidity, rainfall, wind, atmospheric pressure, temperature and others (Mushi & Makaukl, 2017). In a like manner, Jaap, Aron, Netatua, Taito... & Anne (2014) refers CC as a long-term changes or variabilities in climatic and weather properties and conditions—precipitation, wind force, temperature—and that persists for an extended duration mostly a decade or longer. They added that, as climate

changes, its associated disaster risks also change in scope, intensity and frequency (Jaap et al., 2014). In general, the Intergovernmental Panel on Climate Change (IPCC 2007) uses the term to refer to as any change in the climatic condition over a period of time, attributable to human activity. In spite of the multiplicity of definitions for CC, one very constant thing across all is the fact that CC has brought adverse consequences to both human and natural systems, and this is termed as CC impacts. These impacts can be categorized into potential and residual impacts. According to Skinner and Brody (2011), potential impacts collectively are all impacts that could occur given a projected change in climatic conditions, whilst residual impacts are the occurrence of CC impacts after adaptation.

Generally, CC is regarded one of the greatest threats to global development and prosperity (The Parliament, 2016). Both residual and potential impacts of CC are already observed continually worldwide. In fact, there is a global agreement by the international scientific community that CC has significant impacts on the human population worldwide and failure to address it; it could deepen vulnerabilities at different levels in different parts of the world. (Adger, 2006; Bauer & Steurer, 2014; Bell & Park, 2006; Horvath, & Kull, 2012'; Rahman, 2017). This view has further been affirmed in, The Parliament (2016) reported that, CC affects all aspects of human life, which Jaap et al. (2014) claim the effects vary in frequency, intensity, and scope.

Several studies including the works of Adger et al. (2006), Amundsen, Berglund and Westskog (2010), Dupont (2011), Lasco, Pulhin, Jaranilla-Sanchez, Delfino, Gerpacio and Garcia (2009), and 'The Lancet Commission' (2018), have demonstrated that the effects of CC are inextricably intertwined with: 1) socioeconomic status ranging from poverty to abject poverty, 2) health comprising WHO estimation of 7 million deaths from inhaling polluted air, 3) natural disasters due to poor weather, and 4) food insecurity due to CC adverse effects on crop production.

Other devastating effects scientifically projected across the globe include intensifying droughts causing scarcity of natural resources, wildfires, high temperatures, extreme precipitation events, increment in severity and incidence of heat waves, coastal flooding, and storm surges (Adger et al., 2006; Amundsen, et al., 2010; Bauer & Steurer, 2014; Bell & Park, 2006; Horvath, & Kull, 2012'; Rahman, 2017). In 2006, devastating weather such as the tropical storm Milenyo (internationally called Xangsane) caused 184 deaths, injured 536 people and got 47 people missing in Philippine only (Lasco et al., 2009) .The Parliament (2016) reported that the United Nations General in June 2009 unanimously reached a resolution that CC is a challenge of international security.

Again the scientific consensus is that, owing to the expanding anthropogenic activities particularly in areas of land use practices and greenhouse gas emission, the effects of CC has taken a new global pattern where the greatest adversities are felt by the population located in developing and least developed countries (Bauer & Steurer, 2014; Bell & Park, 2006; Dupont, 2011; Field et al., 2014; Mushi & Makaukl, 2017). Agreeably, The Parliament (2016) confirms the claim that, the immediate effect of CC would be on the vulnerable and the poor; specifically, in Africa, Latin America, and South Asia (Mushi & Makaukl, 2017); and the African continent is considered the most vulnerable to climate change impacts (Carabine et al., 2014). Already, evidence from most African continent, ranging from Eritrea down through Tanzania to South Africa has been severely rocked by series of devastating droughts attributed to global warming (Mushi, & Makaukl, 2017). Water and food systems, public health, and agricultural livelihoods have already come under the disruptive influence of CC impacts and are projected to get worse (Amundsen et al., 2010; Dupont, 2011).

Droughts, floods and ongoing changes in the prevalence of vector-borne diseases combine with reduced yields in food and non-food crops to paint a gloomy future for Africa's development processes (World Bank, 2010). These effects adversely affect both men and women but women experience more owing to their increased workload in household and communities (Mushi, & Makaukl, 2017). These projected changes are expected to exacerbate with already high levels of food and water insecurity, poverty, poor health, and are expected to undermine economic development (Dasgupta et al., 2014, Murray & Ebi, 2012).

Given the current implications of CC realities, which are not fairly distributed among groups of people, emerged the concepts of mitigation and adaptation as prime components in mainstreaming CC policies into present development processes.

2.3 Climate Change Mitigation and Adaptation

The impacts of CC can be immediate and prolong, which are all severe. To address them requires two key actions: first mitigation of the sources or causes of CC and secondly by adaptation of strategies to cope with the impacts in both present and future changes of CC (Aakre & Rübhelke, 2010). Upon this, Ayers and Dodman (2010) articulated that CC requires both adaptation and mitigation.

2.3.1 Mitigation

Mitigation of CC has attracted lots of diverse scholarly views. According to Parry (2007), it is the anthropogenic dominant measures meant to minimize the anthropogenic activities forcing the climatic system, which encompasses strategies to minimize greenhouse gases (GHGs) sources and its emissions and foster GHG sinks. Ayers and Dodman (2010) defines the term as the

approach of minimizing the emission or production of GHGs—methane and carbon dioxide (CO₂) to prevent further human (anthropogenic)-induced CC.

Moreover, mitigation approaches are through institutional arrangements at the international level such as the signatories to the Kyoto Protocol to reduce GHG emission through financially supporting technological innovation and development (Biesbroek et al., 2009). And these global protocols have resulted in diverse mitigation methods, approaches and measures, all purposely to reach the top-down GHG emission (Biesbroek et al., 2009).

Mitigation has become the major concern of the wealthier and industrialized countries, as they have historically played major and crucial roles in both GHGs emission and CC mitigation (Aakre & Rübhelke, 2010). Globally, they have been classified as GHG emitters and this include United State of America and Canada in North-America, Russia, Germany, United Kingdom (UK), France, and Scandinavia countries all in Europe, China, Japan, India, Iran, Malaysia, South Korea, and North Korea in Asia (Aakre & Rübhelke, 2010; Biesbroek et al., 2009). The UK for instance, acknowledging its significant emission rate, in 1996 proposed a CC bill to lower its emission rate from 60 per cent to 80 per cent by 2050 (Townshend & Mathews, 2013). But Africa, South Africa and Nigeria emission rate are considered the most significant (Ayers & Dodman, 2010; Biesbroek et al., 2009).

2.3.2 Adaptation

Historically, adaptation was considered an emerging approach to CC (Füssel, 2007; IPCC, 2007; Rahman, 2017). The concept gained attention in literature in the mid-1990s when scholars broadened their mitigation researches, policies and practices to include it (Aakre & Rübhelke, 2010). Initially, both mitigation and adaptation were erroneously recognized as two

fundamentally distinct mechanisms to redress same problem—CC (Biesbroek et al., 2009). With this, there have been several reasons to the swift shift from mitigation to adaptation. Scholars like Biesbroek et al. (2009) reported that the shift from mitigation to adaptation was the general recognition that mitigation strategies solely will not be sufficient to prevent the repercussions of CC; not only that, it was partly because of the slow progress of mitigation practices (Bulkeley & Tuts, 2013). In spite of that, there was still an urgent need to assess and derive policies that could support and strengthen peoples' livelihoods in the changed climate conditions (Biesbroek et al., 2009; Rahman, 2017).

After the inception, the Intergovernmental Panel on Climate Change (IPCC) considered it as a more serious firsthand measure to CC and first offered its definition (Aakre & Rübhelke, 2010; Ayers & Forsyth, 2009; IPCC, 2007), as “adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects which moderates harm or exploits beneficial opportunities” (IPCC, 2007). Measham, Preston, Smith, Brooke, Morrison (2011) defines it as a mainstream strategy to address climate vulnerability. Considering the countless definitions of adaptation, Smit, Burton, Klein, and Wandel (2000) were of the view that any definition of adaptation can be seen from three different elements, namely the subject (inquiries about who or what adapts), the object (what to adapt to), and the way adaptation is practiced (a description of how they adapt). Having identified these three components, Smit et al. (2000) explained that the ‘subject of adaptation’ relates to who is adapting to CC effects or the operator of actions. In supporting this, Eisenack and Stecker (2012) claimed it constitutes individuals, organizations, communities and structures of a system.

2.3.3 Mitigation and Adaptation Distinctions

In spite of the closed relationships, the various perspectives all point to one thing; mitigation actions/approaches seek to eradicate GHGs emitters/causes whereas adaptation measures seek to redress the impacts of CC. Scholars have therefore outlined clearly such distinctive features between mitigation and adaptation. Füssel (2007) offered such distinctions in Table 1 and explains that mitigation actions are more a permanent solution whereas the adaptation actions are temporal. Thus, by nature adaptation is temporal whereas mitigation is permanent. For instance, if CO₂ is abated it cannot cause any future harm but adaptation measure requires continual modified actions to both presence and future CC effects. Secondly, in terms of benefits, mitigation potentials are achieved in long term whereas adaptation potentials materialize in short terms (Füssel, 2007; Rahman, 2017). That is to say, where mitigation interventions produce effects that are felt or achieved in future, adaptative actions have immediate effects. Thirdly, mitigation measures are global whereas adaptation actions are local. Implying that, mitigation approaches or actions occur at the international level with worldwide benefits whilst adaptation strategies are carried out at the local or grass root level with location specific benefits (Biesbroek, Swart & van der Knaap, 2009; Füssel, 2007). Supporting this, Ayers and Dodman (2010) explained that mitigation is applied in the industrialized and developed economies whereas adaptation is most necessary for low- and middle-income countries whose vulnerability is worsened with scarce resources, inadequate infrastructure, and ineffective or weak governance system.

In respect to this distinctiveness, the acceptance that a combination of short-term actions is needed to support long-term strategies encourages policymakers to integrate mitigation and adaptation policies into existing and new strategies to make more effective use of financial resources instead of formulating the climate policies of each sector (Biesbroek et al., 2009). In addition, experts collectively recognize that for adaptation to be effective, the concept of CC adaptation needs to be mainstreamed.

2.3.4 Mainstreaming; Adaptation Measures into Development Policies and Programs

The application of the concept ‘mainstreaming’ was first applied and has been prevalent in health, gender, and sustainable development studies and policies (Geyer & Lightfoot, 2010); thus, it is a borrowed concept in CC literature. Nevertheless, it has attracted wide perspectives and definitions owing its broad usage. The general definition irrespective of the context is given by the United Nations Development Project (2017) that it is the “process of integrating developmental issue into national development planning, budgeting, implementation, monitoring and evaluation processes”. Similarly, as a scholarly concept, Ayers, Huq, Wright, Faisal and Hussain (2014) defines it as an “integration of an issue into existing, mostly development institutions and decision-making process”. The unique aspect in the context of CC studies is that, ‘mainstreaming’ in CC adaptation relates more to the environment. As Dalal-Clayton and Bass (2009) articulated, it is the inclusion of relevant environmental concerns into the decisions of institutions that drive national, local and sectoral development policy, rules, plans, investment and action. Since the term “integration or incorporation” is the central theme of mainstreaming, these scholars (Agrawala 2006; Ayers & Dodman 2010; Olhoff & Schaer 2010) agreed that the application of the term in context of CC adaptation is the incorporation of CC issues,

information, concerns, activities, actions, and policies into all the various or any aspect of decision-making, planning, practices, and processes relating to development. In same manner, Cuevas (2015) supports with his view that it is the integration of CC information, concerns and considerations into prevailing development policy, planning and decision making. Thus, mainstreaming should lead to development.

Again, mainstreaming involves the integration of information, policies and actions in development planning and an ongoing decision-making to address climate change (Lebel et al., 2012; Ayers et al. ., 2014). Such integration reduces duplication and leads to more efficient allocation of resources (Uy and Shaw, 2010), which attracts political support (Mitchell et al., 2006). Political will is one of the most important support mainstreaming needs in every country, because if the direction of government does not capture climate change in their agenda,s climate change mainstreaming will be difficult to get space to operate

2.4 Climate Change and Development Linkage

Whilst most literature on CC pays attention to adaptation, this section looks at its relationship with development and associated issues. Although, literature on CC linkage with development remains scanty however the few reveals a strong significant relationship existing between CC and development (Ayers & Dodman, 2010; The Parliament, 2016). In fact, many development scientists declare CC as a significant barrier to sustainable development (Ayers and Dodman (2010). There is therefore no doubt that CC is linked to development efforts (The Parliamentarian 2016).

According to the United Nations Development Programme (UNDP) (2017b) and The Parliamentarian (2016), such development efforts including sustainable development goals (SDGs) of the United Nations (UN) can only be attainable when there is resilience to CC impacts. Jaap et al. (2014) further supported that, the output of the mainstreaming exercises are the actual development outcomes or goals; and that, when CC measures are considered as an integral part of the development process, mainstreaming CC adaptation will no more be emphasized as a separate issue. Thus, there is a significant linkage between CC and development goals of every country because CC impacts affects all and sundry (UNDP, 2017b; The Parliamentarian, 2016).

Elaborating on development and CC adaptation linkage, literature explains that, the effects of CC affects all the driving sectors of development in its entirety—human, agriculture, manufacturing, health, environment, technology, cultural, socioeconomic and others (Castells-Quintana, Lopez-Uribe, & McDermott, 2018; Gilfillan, 2018; UNDP, 2017b; The Parliamentarian, 2016). Key development driving sectors such as finance, economy, manufacturing, service, education, health, agriculture, and environment are all affected by CC. Meaning, these sectors are bound to function adversely if CC impacts them negatively and vice. Typical studies that reveal this includes the works of Castells-Quintana et al. (2018), Gilfillan (2018), Lasco et al. (2009) and Ayers and Dodman (2010).

Concerning health, Gilfillan (2018) investigated the health sector's role in CC adaptation in Myanmar and discovered that, CC undermines the health sector's capacity to assist citizens to enjoy full lives and longevity. Also, the extreme weather conditions affect directly and indirectly the health of the population (Gilfillan, 2018).

Again, there is also strong linkage with industrialization. That CC also affects the industrial sector, which is vital to development and its sustainability. These scholars Castells-Quintana et al. (2018) disclosed in their study that, industrialization enhances development; hence, any CC impact on industrialization directly and indirectly affects development. In this case, they claimed that, industrialization and development meant that, the population in developed economies depend minimally on climate-contingent production activities and that enables them utilize more resources to secure protection for themselves against both direct and indirect consequences of adverse CC (Castells-Quintana et al., 2018).

The agricultural sector is not exclusive, after discovering that CC prolongs wet and dry seasons (Lasco et al., 2009; Castells-Quintana et al., 2018; The Parliamentarian, 2016). Lasco et al. (2009) reported that CC impact cost agricultural damage worth US\$83 million to Philippines only in 2006. In Myanmar, Gilfillan (2018) reported that, the extreme high temperature and erratic rainfall alter the agricultural practices of the farmers.

Moreover, literature discloses that, CC directly affects the financial sector. This it was revealed CC increases the budget of a nation that seeks to embark on adaptation and mitigation projects (Gilfillan, 2018). The overall repercussion of CC on the various development sectors directly and indirectly affects the gross domestic product of countries developing and developed worldwide (Ayers, J., & Dodman, 2010; Lasco et al., 2009).

This was explained that, severe and undue weather events such as prolonged storms, drought, and rainfall, and devastating bushfires and disasters led to low productivity in the agricultural, economic, manufacturing, health, and service sectors, which minimize the overall productivity of

a nation (Ayers & Dodman, 2010; Castells-Quintana et al., 2018; Gilfillan, 2018; Lasco et al., 2009).

The worrying aspect, according to Lasco et al. (2009), is CC continually affects these aforementioned sectors, which are the pivot of mankind survival and development and these Consequentially creates more vulnerability. Upon that, mainstreaming adaptive measures to CC are typical to encourage the vulnerable people to cope and exploit potentials and opportunities that make them more resilient to threats of CC (Gilfillan, 2018). Thus, all CCA strategies should aim at making the vulnerable population resilient.

Lesson of this section of review is that the impact of CC is cross-cutting as the impact of development is cross-cutting, hence all adaptive measures to CC should be holistic, cross-cutting, and cross-sectorial coordinated.

2.4.1 Successful Ways of Mainstreaming Climate Change in Development Plan

In recent years, many CC scholars and scientists have explored how to incorporate CCAM into existing development policies and planning (Agrawala 2006; Ayers et al., 2014; Ayers & Dodman 2010; Olhoff & Schaer 2010; Jaap et al., 2014). Their findings have brought more diversity in strategies for integrating CC, particularly adaptation, into development processes. Moreover, Jaap et al. (2014) outlined key approaches advocated to CC mainstreaming and the first principle is the ‘Take a whole-country Approach’. This principle is considered an effective national management system for mainstreaming CC adaptation, which requires multi-actors including government and non-government, private sectors, community-based organizations, and research bodies. Alternatively, Biesbroek et al. (2009) proposed what they termed “dedicated approach”. This approach is viewed more from a conceptual lens and is based on direct and

absolute political commitment to CCAM, which suggest political agenda setting, direct allocation of resource, and strong policy goals that are expected to foster rapid execution due to political pressure and new structures. Emphasizing more on the diversities of approaches, Biesbroek et al. (2009) detailed a clear differentiation of the approaches of mainstreaming CC, specifically for adaptation and mitigation; to them, the strategy for mainstreaming CC mitigation is mono-disciplinary approach, thus, there is onerous approach for mainstreaming CC mitigation in development plans and is derived from international policy agreement such as the European Union emission trading scheme, UNFCCC, Kyoto Protocol, and Paris Agreement by governments, nations, and institutions. Thus, mitigation strategies are international CC architecture from the participation of all countries signatory to the convention.

On the contrary, CC adaptation approach is more trans-disciplinary in nature and demand tailored-made policy strategies that are perfectly tuned within the context of its application so to effectively minimize CC impact (Biesbroek et al., 2009). Thus, is locally designed to fit each individual context or situation of CC impact. This multitudinous strategy for adaptive measures in development policies is highly attributed to the diversity of stakeholders and their interplays (i.e. flow back and forth) in adaptation process. As a result to that, adaptive strategies are therefore viewed and applied within a broad complex context (vulnerability, ecosystem, adaptive capacity, and human dimension) of development process (Biesbroek et al., 2009). They concluded that, this chasm between the mitigation and adaptation approaches of mainstreaming CC is framed by policy makers and scientist (Biesbroek et al., 2009).

Supporting the above views, for several decades, mitigation measures such as CO₂ reduction regulations for industrial emitters, and practice of environmentally friendly behaviours including afforestation, avoidance of old cars, reduction of long miles vehicle travels, and adherence to

green building technology, have been the prime focus of worthwhile policies to CC due to its impacts at the global level (Füssel, 2007; Rahman, 2017). However, such policies have more recently advanced adaptation strategies and mechanisms (Füssel, 2007; IPCC, 2007; Rahman, 2017).

In same manner, Biesbroek et al. (2009) reported that policy makers are in urgent need for a mix of short-term strategies to complement long-term strategies to mainstream adaptation and mitigation into existing and renewed policy strategies that will strengthen more the efficiency and effectiveness usage of human and financial resources than framing separate climate policies for each sector (Biesbroek et al., 2009). Other identified strategy to effectively mainstream CC is stakeholder analysis (Biesbroek et al., 2009). This involves in-depth analysis of the interactions among varying sectors and stakeholders of CC to understand their interdependencies (i.e., strength of associations and causal linkages) are crucial. This analytical technique extracts sets of information that contribute to the assessment of how the barriers of mainstreaming arise and continue to exist (Ayers & Dodman, 2010; Jaap et al., 2014).

2.4.2 Importance of Mainstreaming CC in Development Plan

In general, scholars have agreed to the justification for the integration of CC in development plans has been that it is intended to capture the potentials in the various development policy areas and sectors for implementing climate-friendly and climate-safe development (Munasinghe, 2002). This would help enhance the CC regime by advancing policy coherence, minimizing redundant and contradictory policies, dealing with tradeoffs and capturing the opportunities for synergistic results in terms of increased adaptive capacity and lower emissions (Davidson et al., 2003).

Nonetheless, there are also wide array of benefits that have been identified to be derived from mainstreaming CC adaptation policies into development plans. Alam and Bahauddin (2014) summarized theirs as general importance which includes: cost effectiveness, technological innovation advancement and improvement in quality decision. Similarly, Ayers, Huq, Wright, Faisal and Hussain (2014) outlined several benefits such as: increasing and strengthening coherence and synergies across different sectors to attain CCAM goals, reducing duplication and cost of adaptation implementation measures, reducing the degree to which adaptation policies contradict each other and increasing CC knowledge among stakeholders. From a public policy point of view, concerning redundancy, Gilfillan (2018) disclosed that, mainstreaming eliminates internal inconsistencies and contradictions between policies as well as, realizing mutual benefits and making policies mutually supportive”. Agreeing to Gilfillan, Ayers et al. (2014) concluded that, the importance that countries typically attach to certain development elements like health and air quality can result in addressing CC indirectly, but only if these policy activities are well aligned but the distinguishing aspect of mainstreaming CC is that it modifies how development occurs; it facilitates integrated approaches to the policy and programmatic responses (Lasco et al., 2009). Also, Gilfillan (2018) revealed that mainstreaming CC in developmental policies and plans enable **develop climate resilient systems** that would minimize adverse effects of CC on the various sectors of development. Jaap et al. (2014) also supported that CC mainstreaming will contribute to more sustainable development and more resilient communities.

According to Ayers and Dodman (2010), without integrating CCA into developmental plans and policies, **vulnerability will increase.**

They hold that, sustainable development minimizes vulnerability to CC, in that; vulnerability is directly dependent on the state of the various factors (i.e. access ecological, social, and economic

and human resources, institutions, infrastructure, and governance) of development (Ayers & Dodman, 2010). Adding to this, Jaap et al. (2014) explained that when climate risks are explicitly considered, the policy or project will not only be more effective at meeting its original development objectives, but also should not inadvertently create or increase vulnerability to CC, and indeed should alleviate vulnerability.

Lastly, literature reports that, the effects of CC can **retard development** and as well threatens the efficacy and sustainability investments for development (Ayers & Dodman, 2010).

2.4.3 Issues (Challenges) in mainstreaming climate change into Development Strategies

The past decades have witnessed increment in the number of studies and reports on CC, and their findings demonstrate that mainstreaming CC into developmental policies and planning has never been simplistic, thus, mainstreaming also has its critics. This section presents their views on the important issues (i.e. concerns and challenges) that impede the effective operationalization of CC mainstreaming.

Mainstreaming opponents warn of challenges such as poor coordination among actors of CC. Coordination is very challenging. Literature supports that the effects of CC is cross-cutting, which affects all aspects of human life. In such case, it is recommended that any adaptive strategy should also be cross-cutting to integrate all the sectors of human population and development (Gilfillan, 2018). According to Gilfillan (2018), cross-sectoral coordination is a strong problem to adaptive measures in dealing with CC impacts. He claimed, such poor coordination across sectors and scales impedes effective CCA and disaster risk minimization (Gilfillan, 2018). Ayers et al. (2014) added that, ‘mainstreaming overload’, poor coordination and cooperation, lack of communication and misunderstanding, and mismatches between CC and

sectorial concerns. The general idea of mainstreaming is integrating climate change information in development process but there has been some hurdles in achieving this, due to (Huq & Ayer 2008; Persson & Klein 2008, Mimura et al. 2014) “people’s knowledge, understanding, beliefs and attitudes regarding CC and the environment and their willingness to adapt” (Persson & Klein 2008). Based on empirical evidence from Ayers et al. (2014), cognition influences people’s failure to adapt.

Particularly, Measham et al. (2011) attributes these barriers to institutional or governance issues; attitudes, values, and motivations of the actors involved; and leadership, among others. However, in the context of mainstreaming, the lack of knowledge and awareness on CC issues by some stakeholders can be the major hurdle to climate change mainstreaming (Gilfillan, 2018; Measham et al., 2011). Moreover, the capacity of government organisations in terms of human, financial, and technical knowledge to respond to CC problems are key determinants of what actions are taken (Ayers & Dodman, 2010). Stuart-Hill (2015) disclosed that in contexts where governance is already a challenge, the capacity to effectively adapt to CC is particularly limited.

In addition another drawback of mainstreaming is that “implementation of climate-adaptation responses is erratic because climate adaptation has to be continuously reframed in order to link to the existing policy objectives” (Measham et al., 2011). In practice, the operationalization of CC mainstreaming has been slow and, in some cases, it has not been implemented effectively (Ayers et al. 2014; UNDP, 2017b), this was attributed to inadequate data on how mainstreaming CC can be applied on-ground, which consequently highlights a knowledge deficit regarding the mainstreaming process. (Ayers et al. 2014; UNDP, 2017b).

In general, all the factors that hinder CCAM point to instructional barriers (Islam & Nursey-Bray, 2017). Blythe, Murray, and Flaherty (2014) describe the challenges as a "wicked" problem, that is "difficult to define, vary depending on perspective, and cannot be solved absolutely the way a math problem can be solved but rather tends to reappear". Nonetheless, such debates and warnings are widely accepted that mainstreaming is an essential component for CC-related activities (Persson & Klein 2008) with a close relationship between adaptation and development articulated across the literature (Ayers et al., 2014). This concept of 'mainstreaming' adaptation to CC within development is well established, but the governance dimension of its process is often side-lined in practice.

2.5 The Role of Parliamentarians in Climate Change Mainstreaming

Stakeholder analysis of CC demonstrates that parliamentarians are one of the highest and key initiators and influencers of policies and laws. This review section points out some roles of the legislature.

2.5.1 Enactment of Legislation. The first reported role of parliamentarians in CCA is domestic CC legislation enactment.

The primary obligatory function of the legislature is to scrutinize, develop, pass, and amend laws. These stages are required and applied in the making and mainstreaming of any successful CC legislation into developmental agenda and issues. The United Nations Framework Convention on Climate Change (UNFCCC) executive (Christiana Figueres) commented that, *"Nothing is going to be agreed internationally until enough is legislated domestically"* (Townshend & Mathews, 2013).

Thus, the legislative processes of enacting domestic CC legislation are key for informing and designing a country's stance at the international negotiations (Townshend & Mathews, 2013).

This implies that, parliamentarians' domestic legislative functions on CC policies is the ground pillar for reaching international resolution on climate change adaptation and mitigation (CCAM) systems. The Parliamentarian (2016) was of similar views that, parliamentarians can only engage in CCA measures through their scrutiny and legislative processes (The Inter-Parliamentary Union (IPU) 2016). According to Townshend and Mathews (2013), parliament's robust scrutiny of domestic CC legislation increases national ambition for CCAM, which ensures better international negotiation position because it produces positive influence, again this makes them hinge of every successful strategy in handling CC (Townshend & Mathews, 2013).

Table 2.2: National legislation on climate change in Ghana

	Legislation	Year
1.	Control and Prevention of Bushfires Act	1990
2.	Environmental Protection Agency Act	1994
3.	Forest Plantation Development Fund	2000
4.	Management of Ozone Depleting substances and products r	2005
5.	Minerals and Mining Act	2006
6.	Revised Forest and Wildlife Policy	2012
7.	Industrial Policy	2011

Source: Ghana National Climate Change Policy

2.5.2 Leadership functionalities.

Parliamentarians exercise leading role in development and implementation of policies and laws relating to CCAM domestically. These leadership functionalities extend to managing and maximizing government’s capacity to efficiently use financial resources, control externalities or external influences, ensure the provision of public goods, and put security measures in place. These functional areas are all affected by CC. (Townshend & Mathews, 2013; The Parliament, 2016).As part of the leadership role, they also lead in promoting green policies in their various constituents (The Parliament, 2016). Such green fiscal policies can incorporate laws that require some tax rates on CO₂ and energy to generate revenue from the auctioning of emissions permits for social protection programmes (The Parliament, 2016).

That notwithstanding, their leadership role changes public behaviour towards CCAM. Parliamentarians not just represent the interest of the public but also lead the public in changing behaviours towards CC (The Parliament, 2016).

2.5.3 Representation of public interest.

Representation of public short- and long-term interests at the highest level of governance makes parliamentarians play an essential role in mainstreaming CC in development processes. It is revealed in literature that parliamentarians represent the interest of the public. It is argued that CC is a unique issue; hence, its adaptation and mitigation measures and reformations require public consent to make it successful.

Thus, the power of mitigating and adapting to CC ultimately lie with the public, whom parliamentarians represent at the highest decision-making authority of state; and that, any adaptation policy that is not of the public interest but approved by the representatives will ultimately be rescinded by the public (The Parliament, 2016).

2.5.4 Public benefit education.

One of the resilient approaches to decreasing vulnerabilities to CC is the education that the vulnerable receives. Educating citizens, in particular CC victims on the potential benefits of adapting to CC has become a fundamental addition to parliamentary job. The Parliament (2016) reported that, parliamentarians are in the position not only to represent the interest of their community or public but as well to educate them on the benefits derived from CCA. By this, parliamentarians should strive wholeheartedly to add the co-benefits of CC related policies to the entire society as well reassure the people of confidence of the consequences of their engagement (The Parliament, 2016).

2.5.5 Accountability (scrutiny) and budgetary approval functions.

Generally, parliamentarians hold governments accountable and according to The Parliament (2016) they can also hold their executives to account over their actions, or lack thereof. With regards to CC, it is the mandate of parliamentarians to scrutinize and audit every governmental dealings and investments relating to CC for appropriate decisions concerning state funds, policies and projects meant for CCAM (Townshend & Mathews, 2013). This accountability function eliminates the observed bottlenecks to CC interventions and it extends to all stakeholders of CC including state actors, governmental agencies and institutions, CC investors, and other key stakeholders of CC policies and intervening measures (The Parliament, 2016). Supporting this, Townshend and Mathews (2013) added that parliamentarians also hold climate negotiators accountable.

As part of the accountability functions, parliamentarians are also responsible for overseeing government's budgetary allocation for CC-related activities through robust scrutiny and approval as they relate to efficient and effective use of CC-related aid. According to Townshend and Mathews (2013) undergoing such robust scrutiny of financial allocations and expenditures eliminate bottlenecks such as corrupt or fraudulent practices and misappropriation of CC funds, which could hinder any mitigation and adaptation efforts particularly at the implementation level. Moreover, not just accountability, parliament has the oversight responsibility of scrutinizing effectively and stringently how government or the state is responding to and handling both national and international CC issues (Townshend & Mathews, 2013). Additionally, it is also their scrutiny mandate to well examine whether CC resources are being used efficiently, effectively, and in accordance with approved standards, regulations and laws (Townshend & Mathews, 2013). According to Townshend and Mathews (2013), parliament

executes these functions through the ‘principal methods’ of interrogating state officials including ministers, debating and delving into committees’ works and in return, the government can publicly respond to, explain and justify policies and decisions. In respect of this that the IPU (2016) put it, a number of factors taken in combination make parliamentary scrutiny distinctive. It is ‘undertaken by politicians, so is sensitive to the political ideologies and practicalities that shape government actions, in contrast to other forms of scrutiny, which are sometimes criticized for producing worthy but politically unworkable solutions (IPU, 2016; The Parliament, 2016).

2.5.6 Setting up policy targets and objectives.

Studies have shown that, parliamentarians do not just influence policies but also inscribe policy goals and targets that are either ambitious or realistic. According to The Parliament (2016), the legislative process permits members of parliament to have significant influence on climate-related policies, by inscribing targets and objectives into law (The Parliament, 2016). A typical case is what Townshend and Mathews (2013) cited in their report on *National climate change legislation* that the British, acknowledging the significant emission rate of the developed countries, has been very instrumental and at the forefront in reducing the emission rate by legislating an ambitious rate target from 20 per cent to 30 per cent among the Europeans by 2020 (Townshend & Mathews, 2013).

Directly linked to the above, The Parliament (2016) claim parliamentarians ensure the development of insurance policies and schemes that seek to improve disaster preparedness in times of extreme weather condition.

2.7 Why Engagement with Parliament

The importance of engaging the legislature in various aspects of CC, particularly mainstreaming CCAM into developmental agendas cannot be overemphasized. This section outlines some of the scholarly findings in explaining why in recent decades there has been much recognition and attention on the engagement of parliamentarians in efforts to advance mainstreaming CCAM into development policies.

2.7.1 Legislation Enactment and Supervision.

To promote climate friendly policies, legislative approaches are required (Peeters, 2010). Thus, the work of the legislature is the critical step for tackling CC as it binds actors and non-actors to demonstrate commitment and ambition to eradicate the production of GHGs (Townshend & Mathews, 2013; The Parliament, 2016; UNDP, 2017a). Parliamentarians have official (constitutional) mandate to formulate every law of their country and this makes them fulcrum of the development of and mainstreaming CC legislation for sustainable development (Townshend & Mathews, 2013). According to the IPU (2016), for CCA policies and actions to be effective, credible, and legally enforceable, the international resolution for CC must be transposed into the national legislation, assisted by appropriate budget allocation and robust government oversight; and this put the legislature at the heart of every CCAM actions. Adding to this, if a government has signed an international CC agreement including the UNFCCC, Kyoto Protocol, and Paris Agreement, parliament can ensure signatories comply with the commitments and targets whether they regard reporting, mitigation, adaptation, technology, or funding and research (IPU, 2016; Peter, 2010; Townshend & Mathews, 2013).

2.7.2 People Representation.

Being elected representatives of their constituents and people, legislatures have obligatory functionalities, which are very critical, to execute in driving forward people-centred development that is reflective of and responsive to the needs of their constituents (UNDP, 2017a). As already established, CC has significant adverse effect on developmental projects meant for improving peoples' lives particularly the poor. To mitigate such effects, the international considered CCA as an immediate treatment. However, the acceptance of such adaptive measures can only be successful with the engagement of the true representatives of the people (Townshend & Mathews, 2013; The Parliament, 2016; UNDP, 2017a).

2.7.3 Role in domestic legislation.

According to Townshend and Mathews (2013), domestic legislation is significantly important to reach international agreement. In today's governance system, the legislature is the second highest decision organ of all the arms of government, and virtually every country has a legislative body. According to The Parliament (2016), parliament has become quintessential institute in CC matters and policies because the legislative process permits them to possess significant influence on CC related policies, especially smart development policies by setting objectives and targets into law. Besides, domestic legislation on CC is conventionally viewed as a tool for a government to develop, pass, and support CC international agreements and its implementation (IPU, 2016). Upon this that, the Executive Secretary of the UNFCCC (Christiana Figueres) asserted that, *“Domestic legislation on climate is the absolutely critical, essential linchpin between action at the national level and international agreements. It is absolutely at the centre”* (Townshend & Mathews, 2013). Thus, the domestic CC legislation role is the basic reason for the engagement of parliamentarians in CCAM.

2.7.4 Domestic CC legislation advancement.

Aside being the key players in making domestic laws, parliamentarians also advance domestic CC laws. International and local climate scientists have realized that advancing domestic CC policies and laws facilitates the creation of conditions that enable international climate deals to be reached harmoniously and swiftly (Townshend & Mathews, 2013). Parliamentarians can help break the international stalemate on CC action by ‘domesticating’ global decisions, using national legislation (IPU, 2016).

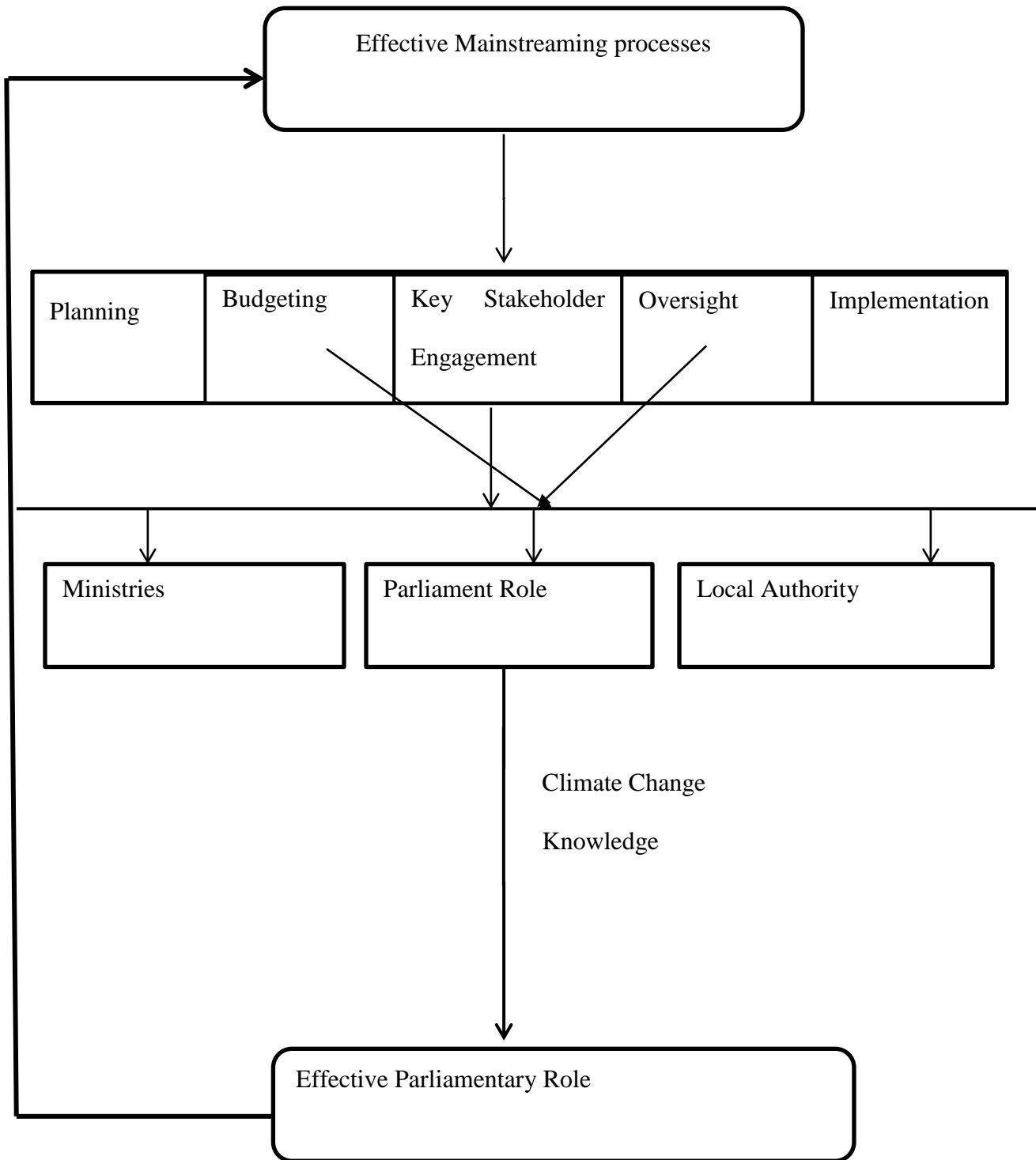
2.8 Knowledge Level of Parliamentarians on Climate Change

It is revealed in CC literature that, knowledge on CC and its associated impacts is one of the key factors that accounts for positive influence of strong and effective domestic CC legislation (Townshend & Mathews, 2013). A country’s negotiation position and national legislation is strengthened when it develops understandings of the costs of actions and inactions towards CC (IPU, 2016; The Parliament, 2016). Such knowledge level enables the country to examine the available options and opportunities of CCAM as well as the long-term potentials for embarking on low carbon investment and resilience strengthening. It is of this view that, the importance of identifying the knowledge and understanding of parliaments about CC and its mitigation and adaption measures cannot be overemphasized. According to Townshend and Mathews (2013), the knowledge of parliamentarians about CC in turn, informs the country’s negotiating position. Furthermore, studies have shown that building parliamentarians’ knowledge and capacity to be involved in CC agenda is the first step towards developing and mainstreaming appropriate CCAM responses into development process (The Parliament, 2016). It further explained that, it strengthens the interest and grows the role of parliamentarians in CC to investigate and develop more CC case studies and guidelines.

Again, when parliamentarians are well-informed, they bring well-informed climate legislation that promote significant technology within these spectra of national and local co-benefits: low emission cars, strengthened energy security through investment in clean and domestic energy sources, reduced disaster risk, improved health, increased access to sustainable energy, better air quality and creation of high-quality jobs (The Parliament, 2016).

Unfortunately, studies on knowledge level of parliamentarians remain very scanty. Few studies in the works of Peeter (2010) Townshend and Mathews (2013) and Willis (2018). In particular, Townshend and Mathews (2013) argued that the knowledge of CC possessed by parliamentarians can be both positive and negative; and that, it influences them have positive or negative impact on both international and domestic climate ambition. On the positive side, they cited cases including the Mexican legislators, through GLOBE Mexico, that proposed, built political assistance for and passed the General Law on Climate Change in 2012; and the UK's parliamentary proposed Government's Climate Change Bill that aimed at reducing GHGs emission rate from 60% to 80% from 1990 to 2050. Moreover, it is the UK's legislators pushing to strengthen the low-carbon elements of the Energy Bill currently going through the UK Parliament. On the other side, the United State of America's legislators have been dragging on their commitment to both the Kyoto Protocol and the Paris Agreement; and making blatant denouncement to support any international treaty that place emission cut-off benchmark obligation on the nation with placing same on other peers. (Townshend & Mathews, 2013). Thus, the stance of parliamentarians in both local and international meetings and negotiations on CC is highly influenced by their state of mind on.

Conceptual Framework (fig 2.1) of Mainstreaming Climate Change Adaptation into Development



This conceptual framework (Figure 2.1) depicts the interrelationships between the various concepts and themes, which form the basics and guidance of understanding the broad or whole concept of mainstreaming CC in development plans and suggest approaches on how to conduct the study.

Literature has demonstrated that CC has adverse effects, called CC impact, on all the various sectors and processes of development, whereas development plans and policies have direct effect on CC and its impact. Thus, as literature supports, there exist a significant interrelationship between development and CC impact; meaning that, any adverse effect of CC directly retards or slows development, for instance, severe droughts retard agricultural growth as it reduces crop harvest and this also reduces GDP of countries that heavily rely on agricultural sector for revenue or livelihood. On the contrary, developing or improving the various development sectors such as health, education, agriculture, and technology invariably suffer CC impacts. Policies are the inputs and outcomes of the perspectives and conventions of all the various CC stakeholders both local and international actors, influencers, vulnerable, and beneficiaries of CC. These constitutes what is called CC Governance and it includes high level actors like states, governments, parliaments, private and public multinational industries, CC scientists, intergovernmental organizations, non-governmental organizations, and think tanks, whereas at the local levels, communities and their heads such as Chiefs, District Chief Executives, Assemblymen and women, and civil society organizations.

CONCLUSION

In conclusion, knowledge levels of parliamentarians have great influence on effective climate change mainstreaming, and as policies are being mainstreamed in all development sectors, over a long period of time; it creates a well stable development system, generally termed as sustainable development.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents the methodology that guided the study. Specifically, it discusses the fundamental research design and methods adopted to secure data to address the research questions. The study approach, design, the sampling and sampling technique, sample size, study site, data collection instrument and procedure, data type sources, management, and procedure for data analysis are all presented in this section.

3.2 Research Approach

Research scholars like Boateng (2014), Connaway and Powell (2010), Polit et al. (2001), Saunders et al. (2009), and Yin (2017) have defined research approach in various ways but all point to the techniques used for conducting a study. Nonetheless, selection of any of such technique is based on the nature of data required (Boateng, 2014; Connaway & Powell, 2010; Polit et al., 2001; Saunders et al., 2009; Yin, 2017). According to them, research methods are grouped into three categories:

- 1) Those that focus on data collection,
- 2) Those for data analysis, and
- 3) Those to assess reliability and validity of results (Boateng, 2014; Connaway & Powell, 2010; Polit et al., 2001; Saunders et al., 2009; Yin, 2017).

These three categories operate under the umbrella of three broad methods, namely qualitative, quantitative, and mixed methods (Boateng, 2014; Connaway & Powell, 2010; Polit et al., 2001; Saunders et al., 2009; Yin, 2017).

According to Boateng (2014), qualitative method is a research technique that seeks to explore the phenomenon so to establish a clear understanding than to test to aid or disprove a relationship. To Teddlie and Tashakkori (2012), it is a technique that emphasizes on how people or entities comprehend and interpret their experiences of the world around them. That is, the method investigates the meanings, values, attitudes, and beliefs that people ascribe to a phenomenon (Boateng, 2014). The strengths of this method are that:

- 1) it can be described or offer meaningful explanations, perspectives or experiences to situations or phenomenon with the use of systematic subjective approach (Connaway & Powell, 2010);
- 2) It is effective and suitable for all the various forms of qualitative research designs including case studies, and ethnographies (Yin, 2017);
- 3) It allows for in-depth knowledge acquisition (Boateng, 2014); and
- 4) It contributes to a deeper knowledge in areas difficult to evaluate with quantitative methods.

However, the method is weak in studies that require statistical analytical techniques (Boateng, 2014; Connaway & Powell, 2010).

Also, the method lacks the ability to test the reliability and validity of findings due to its over reliance on unstructured approaches particularly in its sampling techniques and data collating (Saunders et al., 2009; Yin, 2017). This makes the procedures of data collection and analysis under this method of no reiteration (Boateng, 2014; Connaway & Powell, 2010). Moreover, it does not support the use of questionnaires that ensures standardization of data. (Polit et al., 2001; Yin, 2017).

On the other hand, the quantitative method is described to be a research technique for establishing correlations between entities of a phenomenon or to determine the extent of a

problem or an issue (Boateng, 2014). Adding to this, Teddlie and Tashakkori (2012) claimed the method is very effective for investigating research question or a specific hypothesis that offers figures and adopts application of statistical techniques to generate statistics for inferences inferential and descriptive in nature. It therefore allows for the use of questionnaires and statistical tools. Boateng (2014) also claimed it is also a structured method with capability to test for reliability and validity of outcomes. According to Saunders et al. (2009), it is good for collecting, analyzing, and reporting numerical data. This means that, the method is not effective for undertaking studies that requires non-numerical data (Yin, 2017). It is also deficient in exploring issues that requires broad information for clearer understanding (Yin, 2017). That is, it does not offer much details.

Mixed method, also called triangulation method, is a research technique that combines both qualitative and quantitative techniques to conduct research (Boateng, 2014; Yin, 2017). This method presents broad opportunity for researching a problem or a phenomenon owing to its varied approaches and techniques available to the researcher (Saunders et al., 2009; Yin, 2017). Moreover, the method is a complementation of the strengths and weakness of the combined approaches (Yin, 2017).

After critical consideration of all the methods, a mixed method was adopted for conducting the study. The researcher saw the mixed method as more appropriate owing to its ability to produce triangulated findings that is more reliable and can be validated. Also, the nature of the data required for the study was a critical factor considered for the choice of the method. The study relied vastly on semi structured data; hence supported the use of statistical tools for its analysis, and an in-depth interview was conducted for the qualitative analysis. Through this method, the researcher was able to use questionnaires for the collection of the primary data. Again, the

method befits the study's designs, in particular, exploratory design, which sought to unveil policy makers' perspectives on CCAM.

3.3 Research Design

Research design has gained several definitions and typologies, owing to the diversities of research. By definition, Polit, Beck, and Hungler (2001) define it as the overall picture that gives clues as to how the researcher intends to test the hypothesis or to answer the research questions identified. Similar to Parahoo (1997), it is the blueprint that outlines and explains when, where and how data are to be collated and analyzed. Thus, the framework for conducting a research study. Concerning types, Boateng (2014), Polit et al. (2001) and Yin (2017) outline varieties of research designs such as grounded theory, phenomenology, interpretative, exploratory, causality, quasi-experimental, cohort, cross-sectional, descriptive, case studies, ethnographies, and narrative research, as the various designs for conducting research of this nature. However, the selection of any of these types according to Yin (2017) is based on three criteria:

- 1) The type of research question,
 - 2) The extent of the researcher's influence or control over the unit of analysis, and
 - 3) The degree of focus on the issue at hand. This study used exploratory and descriptive design.
- Exploratory research design, according to Boateng (2014), involves the collection of data in order to test a hypothesis or answer research questions concerning the current status of the subject under investigation. The University of Southern California Libraries (2016) also explains it as a design adopted to study and address a research problem that is first of its kind or few or no earlier studies make reference to.

The focus of the design is to gain a firsthand insight and familiarity into what is being investigated for further or deeper stages of investigation (University of Southern California

Libraries, 2016). Thus, it helps to identify, establish and understand the state of a problem or an issue of concern so to know how best or effective to tackle it in future (University of Southern California Libraries, 2016). Similarly, Creswell (2007) explained that, the exploratory design enables researchers to gain familiarity with a phenomenon and obtain new and clearer insights into it so to formulate appropriate problem solution or develop a more precise hypothesis. That notwithstanding, the design is flexible, can address all possible research questions particularly in form of ‘why’, ‘what’ and ‘how’, and allows for the use of multiple research methods (i.e. qualitative and quantitative approaches) (Saunders, Lewis & Thornhill, 2009; University of Southern California Libraries, 2016). The researcher agrees to these scholars’ stance unreservedly as the study’s area of investigation is rarely researched hence left wide gap in literature on CC adaptation and mitigation. It is therefore a groundbreaking as it sought to draw more insights into the role and perspective of top officials in CC adaptation and mainstreaming. Upon these reasons the study adopted exploratory design.

In addition, the study employed the descriptive design as part of its designed framework to collect, analyze and report data on the issue investigated. According to Yin (2017), a descriptive research design is an empirical investigation into a contemporary phenomenon within its real-life context, especially when the characteristic boundaries between context and the phenomenon are not well defined.

Similar to exploratory, descriptive design is explained to be very useful when less is known or discovered about a phenomenon or an issue under investigation (Saunders et al., 2009; University of Southern California Libraries, 2016). Thus, it seeks to uncover deeper understanding of a complex issue (University of Southern California Libraries, 2016).

Moreover, the design supports the use of varieties of methods (University of Southern California Libraries, 2016). These were some of the strengths that influenced the researcher to add descriptive study design.

The researcher combined the two designs in the study because both designs seek to answer ‘why’ and ‘how’ research questions. Hence, allowed for the application of varieties of methodologies. Besides, both designs seek to draw detailed information or evidence from an issue to reach a precise understanding and conclusion. Specifically, the focus on the Ghana Parliament was the major influence of the choice of descriptive study so to gain much and clearer understanding of the parliamentary processes of mainstreaming CCA into development, aside its strengths stated above. Whereas, the need for offering statistical evidence formed the basis for the selection of the exploratory design.

3.4 Study Setting

The execution of the designed study took place at Parliament of Ghana in Accra the capital of Ghana. Accra, with a land surface area of approximately 231km², has a total population of 1,848,614, population density of 69.3 persons per hectare and growth rate of 3.36% (Ghana Statistical Service, 2010). Accra since the declaration of the independence of Ghana on March 6, 1957 hosts the Parliament of Ghana.

Historically, the existence and establishment of Parliament of Ghana date colonial era when the first semblance of a Parliament was established in 1850 by the British colonial government. This was then a Legislative Council composed of the appointees and the British Governor. Similar to present Parliament, the Legislative Council was mandated to make laws and ordinances of governance for the Gold Coast.

In reality, the Legislative Council was publicly seen as a merely an advisory institution and had no oversight power over the rulership of the colonial government. Indeed, it was not a true representation of citizens of the then Gold Coast until independence. (Draman, Titriku, Lampo, Hayter & Holden, 2017; Ayensu et al 1999)

After independence in 1957, led by the first president Dr. Kwame Nkrumah, the then Republic of Ghana witnessed a fully fledged Parliament with legislatures that truly represent its citizens and constituents. This gave hope that the country will have stable and permanent Parliament but was interrupted severally by incessant military coups in 1966, 1972, and 1981. It was these militant periods the Parliament became an unstable governance institution until democracy was restored in the fourth Republic. Since then, six parliaments have been completed with the seventh gradually approaching to expiration (Ninsin2009).

The current seventh Parliament under the fourth Republic is a unicameral legislature made up of 275 seats (MPs) elected for a four-year term and serve as the legislature, which carries out primary legislative functions. Execution of the legislative function is presided over by the Speaker, who is nominated by the majority, who chairs a five-member Parliamentary Service Board. The functions performed are extended to finance, oversight of the executive, representation and deliberation. It also includes the provision of technical, professional, and administrative support services to Parliament and its Committees. To effectively execute these extended functions, Parliamentary seats have been reconstituted into eleven (16) select committees with members ranging from 5 to 25 people. Also, adhoc committees are set up when necessary to investigate issues of interest and standing committees. (Ninsin 2009).

Ghana Parliament was selected because, parliamentarians play instrumental role in building climate resilience by bringing constituents' concerns into national forums, scrutinizing how governments are responding to domestic and global climate change issues, and ensuring policy continuity. More importantly, Parliament was the fulcrum of the ratification of the UNFCCC and the preparation and design of the National Climate Change Policy (NCCP) by Ghana (Ministry of Environment, Science, Technology and Innovation, 2013).

3.5 Population

The study population is all the parliamentarians of the Parliament of Ghana. That is, the population is the third arm of government represented by the Members of Parliament (MPs) from the 275 electoral constituencies and grouped under the umbrella of all the sixteen select committees and from Ghana. Since all MPs represent the two hundred and seventy-five (275) districts in Ghana, they are responsible for ratification, reviewing and amending of existing CC legislation. Their various views therefore represented not only them but the nation and their constituents as well.

3.6 Sample and Sampling Technique

Sample is explained by Boateng (2014) as the process of choosing from a population to become the subject of investigation in order to obtain data to address research problems. Similarly, Bhattacharjee (2012) termed the strategy for sampling as sampling strategy. In this study, probability and non-probability sampling strategies were deployed. Specifically, stratified, convenient and purposive sampling techniques were used to sample thirty-two (32) MPs.

The sample size was a ten (10) per cent representation of the total MPs in Ghana. This was based on United Nations' (2005) assertion that with critical consideration on budget, 5% or 10% of a homogenous population is appropriate as a sample size.

Stratified sampling is a randomized technique for selecting probabilistically a sample according to strata (Boateng, 2014; Bhattacharjee, 2012). This sample technique was used to divide the 275 MPs that formed the sample frame into sixteen (16) homogenous strata, called clusters. These 16 clusters were already created by the Ghana parliament called committees as follows: 1. Mines and energy, 2. Food and Agric and cocoa affairs, 3. Labour and employment, 4. Local Government, 5. Gender and social protection, 6. Finance, 7. Lands and Natural resources, 8. Environment, 9. Foreign affairs, 10. Public Accounts, and 11. Health. 12. Communications 13. Defense and Interior 14. Constitutional, Legal and Parliamentary Affairs 15. Roads and transport 16. Youth and sports.

Bhattacharjee (2012) advised that when choosing sampling strategy care must be taken to prevent biased sample. Upon that, stratified sampling technique was used at the initial stage. Besides, using the stratified sampling procedure for the first phase was very effective due to the stratification of the already existing select committees in parliament. The technique also ensured a uniform representativeness of all the sectors in the committees in parliament.

Convenience sampling as defined by the Bhattacharjee (2012) as the technique used to select a sample from a population this is close to hand, convenient or readily available. He called it an opportunity sampling technique (Bhattacharjee, 2012). This is because, the technique is one of the easiest non-probability techniques to draw a sample. Thus, it is easy to apply and cost effective as compared to others like stratified, and simple random (Boateng, 2014). This positive aspect of the technique enabled the researcher to select all the 32-sample size of which two represented each cluster (committee). Though it did not offer a randomized selection but it enabled the researcher got access to the MPs that were easily accessible, hence met the total target for the study.

Moreover, purposive sampling method was used to sample the qualitative data, the researcher purposively choose MPs on the Environment, Agric and MPs offering the climate change and sustainability programme.

3.7 Research Instrument

In this study, the research instrument used to collect the primary data was questionnaire and interview guides. The questionnaire was a well semi-structured instrument divided into sections to solicit the perspectives of the selected MPs. Per its structure; the first section was to solicit the background profile of the MPs whereas the subsequent sections were organized according to the research questions and objectives. In this case, the followed section contained interrogative statements that sought answers to the process of mainstreaming CC into development processes. The third section focused on the MPs' knowledge levels of CC, whereas the last section collated perspectives on the role of the MPs in CC mainstreaming. That is, each of the followed sections was to collect data that sought to address a single research question.

The questions were mixture of closed and open-ended. This is because of the nature of the data needed and the qualitative and quantitative method approach that required semi structured questionnaire.

There were several reasons that justified the use of the semi-structured questionnaire. Most importantly, it helped the researcher to access vital information about the knowledge levels of the parliamentarians on CC adaptation. Additionally, it was the sole instrument predominantly used for quantitative surveys. It also assisted the researcher to grasp the perspectives of the participants in numerical data that made it possible to apply the statistical techniques. Lastly, it standardized the data collected from the participants as it ensures reliability. For the qualitative

data, in-depth interviews were conducted on the knowledge and role of parliamentarians in climate change mainstreaming, interviews lasted for a maximum of 15mins.

3.8 Data Sources and Type

The study relied on a qualitative and quantitative data from the primary sources. The primary source of data acquired through the use of administration of semi structured questionnaire to the MPs to express their views on the issue at hand and an in-depth interview to give more meaning to the quantitative data collected. However, the researcher collated secondary information from the literature materials on CCAM. These materials included CC journals, articles, books, and institutional reports from library, institutions, and the internet.

3.9 Data Collection Procedure

The process for sampling participants and collating the primary data were of three stages as follows. The action taken during the first stage by the researcher was a meeting plan. With this, the researcher submitted an official letter to pre-inform the House of MPs of the pending study. This was a stage the researcher used to sought permission from and briefed the House about the nature of the study and the need for the MPs' participation. After permission was granted from the House, the researcher sought a copy of the list of all MPs and their assigned committees. This list of the 275 MPs formed the sample frame for the stratified sampling.

The next action was the sampling stage whereby the researcher executed both stratified and convenient sampling techniques to get the sample size. In actuality, the stratified sampling strategy was used to divide the acquired list into 16 homogeneous clusters in accordance with the Ghana parliamentary committee structure and composition. These clusters formed the 16 strata.

After grouping the MPs into sub-groups (strata), the researcher anticipated meeting at most five (5) MPs in each committee during the day of data collection.

The convenient sampling technique was used to select the MPs and as well bring to their notice their consent and involvement. The action taken by the researcher during this stage was purely to identify the individual MPs who will be available during the scheduled data collection duration and regular at the parliament house.

The last stage was the data collection stage. With the anticipation of meeting at most five members from each committee, the researcher informed the various MPs who expressed their consent of participation before arrival at the House of MPs. This helped the researcher know those who were available and those who were not there. At the Parliament House, the researcher sampled 2 out of the expected 5 MPs from single committee with the aid of the convenient sampling technique. This process of selection was done through a period of one month until all the targeted 32 MPs were met. Each MP was given a questionnaire to fill manually and at their convenience until all distributed questionnaires were retrieved.

3.10 Selection Criteria

There were no strict selection criteria due to the homogeneous nature of the population. The selection was basically based on the fact that the participant was an active MP and available during the data collection period. Also, the participant has expressed consent and willingness of participation.

3.11 Ethical Consideration

According to Saunders et al. (2009), to ensure strong adherence to research moral ethics, a researcher must abide by three principles, namely respect for human dignity, justice, and

beneficence. The moral ethical principles that the researcher considered and abided by it throughout the stages of the study's framework were as follows.

- Obtaining permission from the parliament House.
- Obtaining consent from each participant before their engagement in the research. This consent form detailed and informed the participants their freedom to participate, as well as their risks and benefits of participation.
- Participants who meet the inclusion criteria and agree on their participation were given the consent forms a week before the actual days of interviews to allow them ample time to reflect on the study and consider participating in the study before appending their signature. Consent form to append their signature signifying their willingness.
- Confidentiality and anonymity were ensured with the use of Pseudonyms. As part of secrecy agreement, participants were informed that the raw data to be collected will solely be for academic purposes and never be accessible to the principal investigator, supervisors, translator and independent coder.
- Privacy was assured during the interview. The interview was conducted at place and time convenient for all the participants.
- Participants were informed that they could withdraw from the study at any point and such withdrawal will not in any way affect them.

3.12 Data entry and Processing

Validity of the questionnaire was assessed by double entry of the questionnaire. Data were then transferred to Stata version 13 for analysis.

3.13 Data Analysis Technique

The analytical procedure for the primary data was a mixed method. The nature of the data demands that, quantitative statistical technique and qualitative be applied to decipher the acquired data to provide answers to research questions. Specifically, the quantitative data was coded into Stata version 13 and descriptive and inferential analyses were performed. The findings were presented in graphics and diagrams. For qualitative analysis, the qualitative survey using in-depth interviews were tape recorded and transcribed and analyzed.

CONCLUSION

In conclusion, the study adopted a mixed method methodology that is, the use of qualitative and quantitative through concurrent triangulation approaches. Quantitative data was collected from 34 parliamentarians. A simple random and systematic probability sampling methods were used to select the participants. Semi structured questionnaires that included respondent's knowledge levels on climate change and their roles were administered to the parliamentarians. A qualitative data was collected through an in-depth interview using an interview guide which is appropriate to achieve the set objectives.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

To make an empirically based assessment about climate change mainstreaming and adaptation to enable the researcher make inferences and conclusion about the subject matter, there was a need to collect, collate and analyze primary data. It is in this chapter of the study that the results of the analyzed primary data collated from the field through questionnaire administration are presented. That notwithstanding, the researcher adds to the various results interpretations and meanings as well as literature findings, all as a form of discussion.

The results and discussions are intertwined and presented in accordance with the study's objectives. With this, the socio-demographic profile of the respondents is presented first then followed in subsections with the objectives of the study being the titles of each. It is very important to bear in mind that, the use of CC signifies Climate Change whereas CCAM is an acronym of climate change adaptation and mitigation. These terms are used variously in their short form. Also, participants and respondents are used interchangeably to represent the selected MPs of the study.

4.2 Socio-Demographics of Participants

The background characteristics of the participants of the study were analyzed. The demographic results demonstrated that, in all, 34 MPs expressed their perspectives relating to the CCAM including MPs' knowledge level and role in the subject matter. The figures below present the demographic variables including gender, age range, educational status, and committees of participants.

- **Gender**

The figure below demonstrates the dominance of males in the participants interviewed on the issues of climate change. The Figure 1 revealed that males (78%) were more than the females (22%).

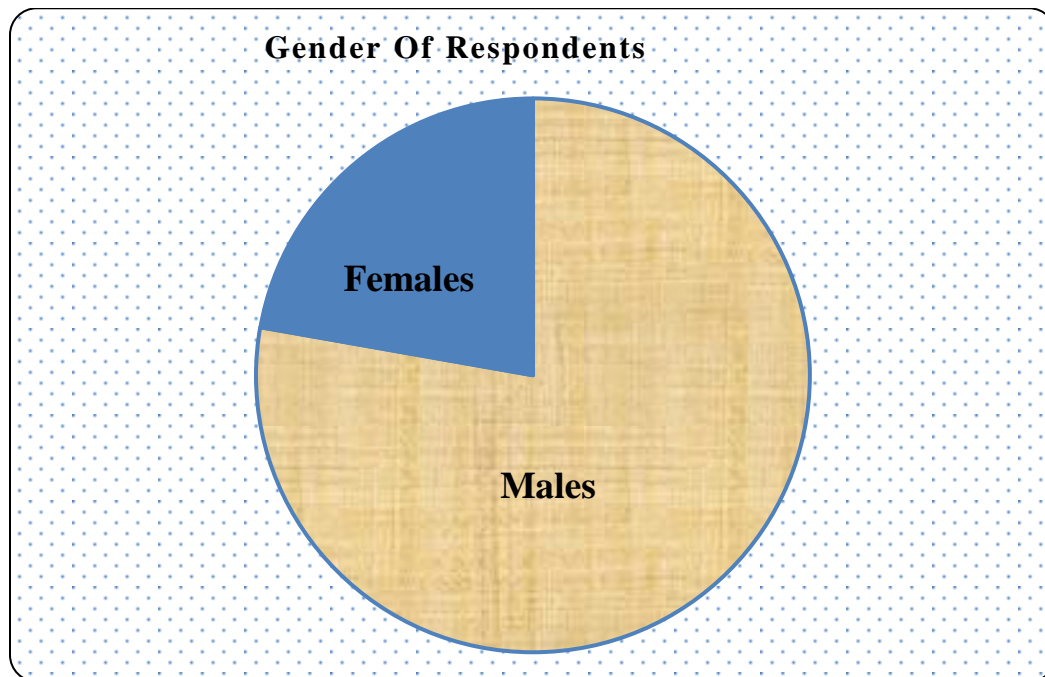


Figure 4.1: Gender of Respondents

Source: Author's Construction, 2019

- **Age Ranges**

Concerning age, there were three categories of ages of the participants were identified from the data results (see Figure 2).

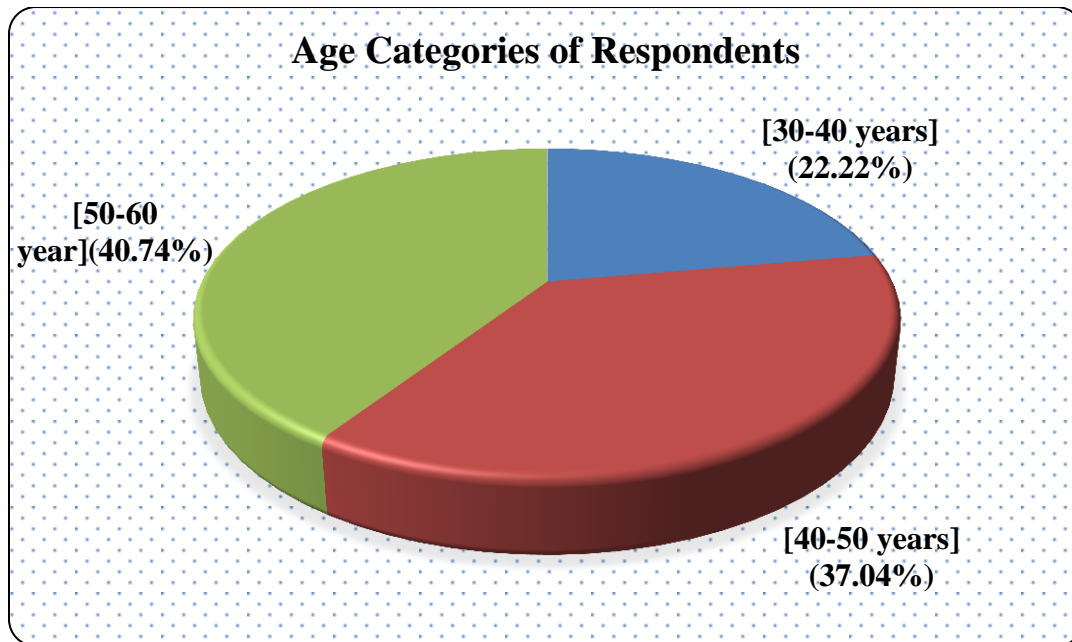


Figure 4.2: Ages of Respondents

Source: Author's Construction, 2019

In the Figure 2, it is seen that, most (40.74%) of the interviewed participants were with ages within 50 to 60 years, whereas (22.22%) were the young ones with ages between 30 and 40 years.

- **Education**

The results (see Figure 3) on the education of the respondents demonstrate high qualification level.

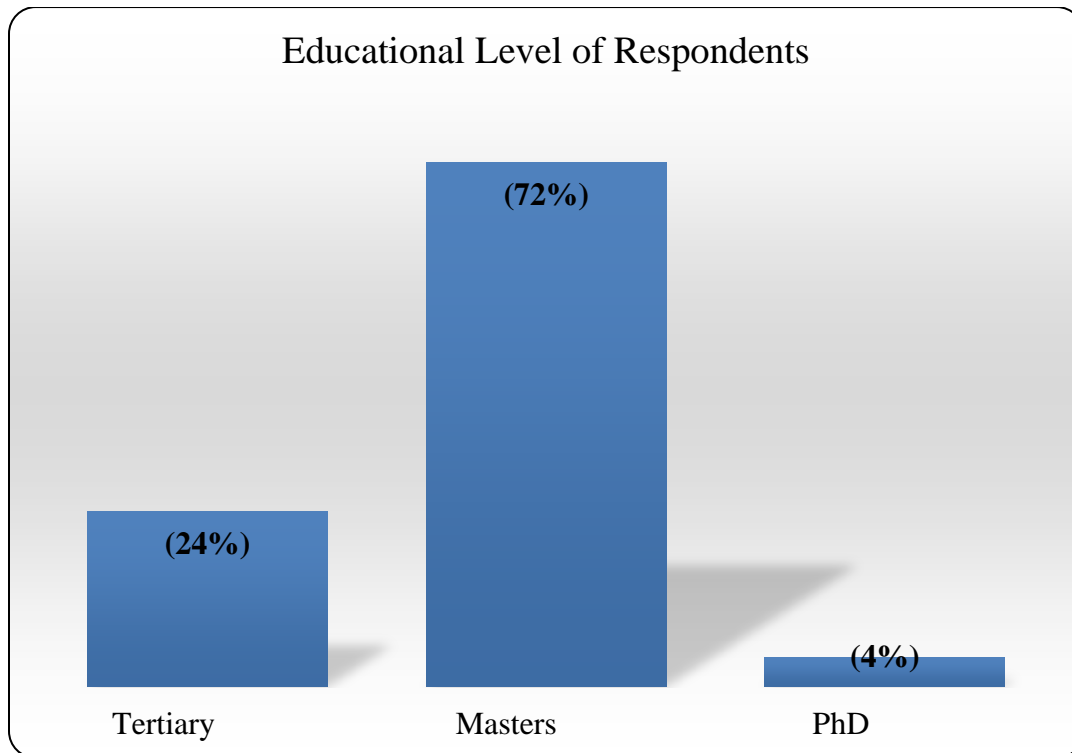


Figure 4.3: Education Level of Respondents

Source: Author's Construction, 2019

It is seen in the Figure 3 that greater proportions (72%) of the participants were with Master's qualification. In all, MPs interviewed have had tertiary education.

- **Committees**

The Figure 4.4 outlines the various committees of the respondents interviewed. The results also reveal the dominant MPs in a particular committee.

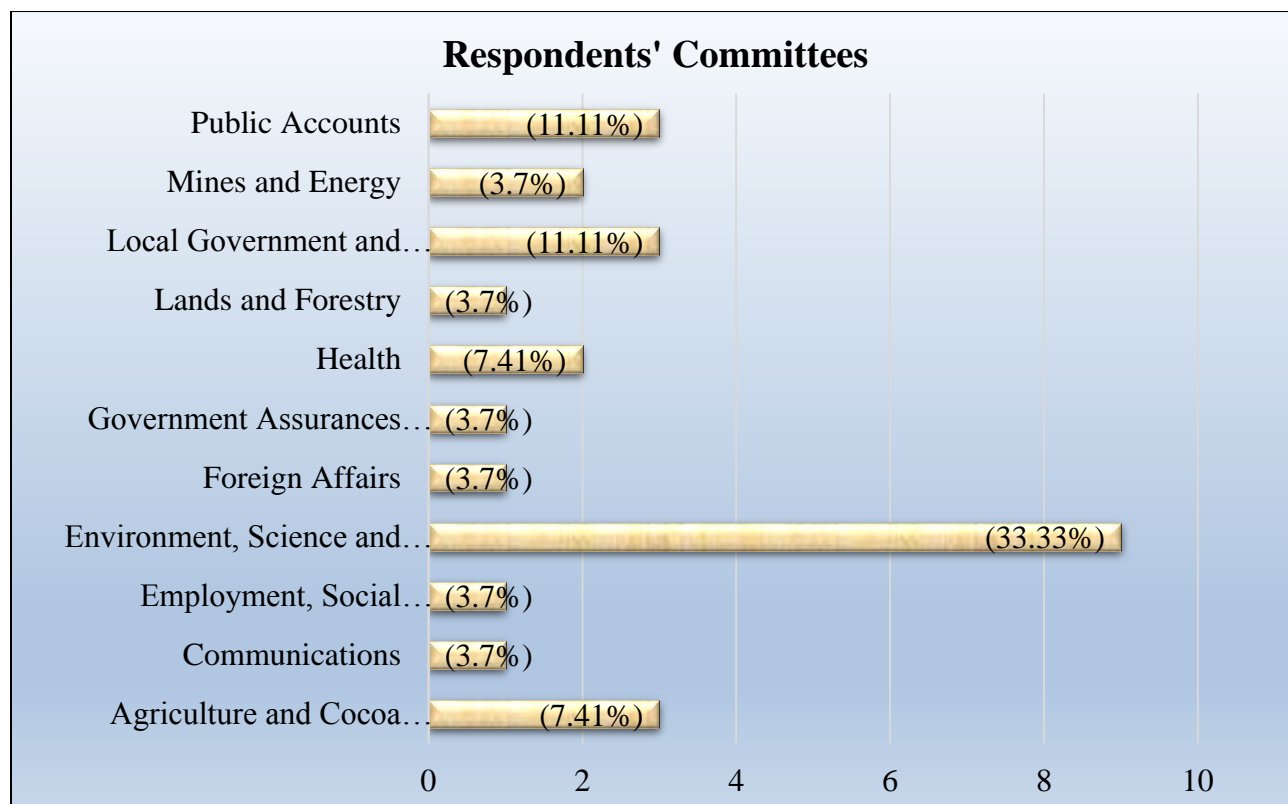


Figure 4.4: Respondents' Various Committees

Source: Author's Construction, 2019

In the Figure 4.4, the committee with the most participants was the Environmental, Science and Technology with nine (33.3%) respondents. Considering the study focus, this result meant that, most of the participants were those in committee that is directly associated with climate change, which was very suitable for the study. It was then followed by those in the Public Accounts and Local Government and Rural Development committees (11.1%), and agriculture and cocoa affairs (7.41) respectively.

4.3 The knowledge levels of the legislature on climate change

Climate change literature has it that, CC knowledge and its associated impacts is among the key factors that accounts for positive influence of strong and effective domestic CC legislation (Townshend & Mathews, 2013). Also, Townshend and Mathews (2013) asserted that the knowledge of parliamentarians about CC go round to inform the country's negotiating position. Upon this, the first specific objective of the study was to assess the level of understanding and knowledge of parliamentarians on climate change. To achieve this objective series of interrelated questions were posed to the selected MPs to offer their responses. The results of the various questions posed to them have been outlined in the figures and tables below.

First, respondents were asked if they do feel the pattern of weather is generally changing. As disclosed in the Figure 4.5, most (92%) claimed affirmative.

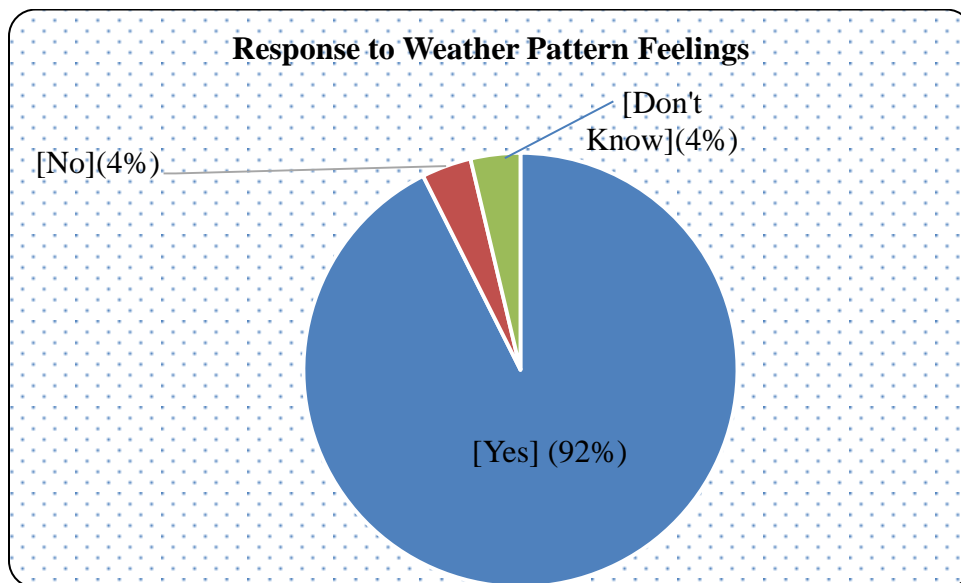


Figure 4:5 Respondents' Response to Weather Pattern

Source: Author's Construction, 2019

The response of the majority testifies that the effects of CC is obvious and felt around us. This is not surprising as most of the respondents attributed the changes in the pattern of the weather to climate change, as others ascribed to normal climate variation but not climate change.

Moreover, most of the respondents claimed they have heard about climate change, as to where they heard such CC News, the Figure 4.6 outlines all.

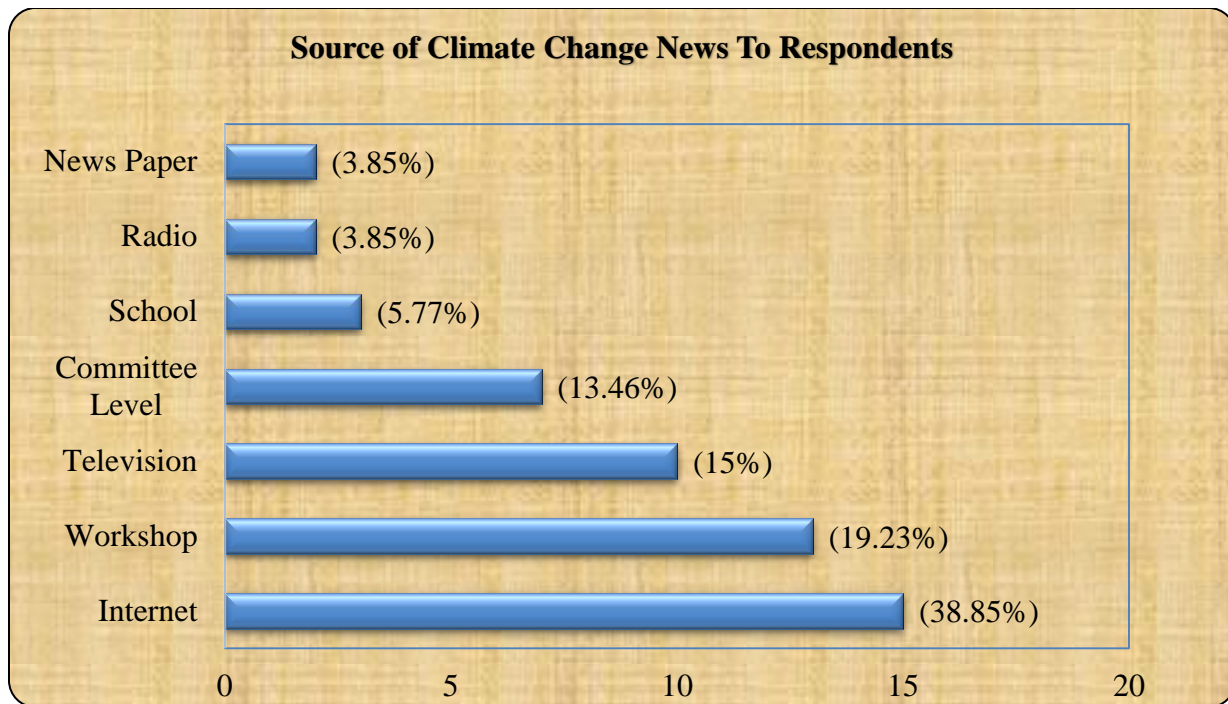


Figure 4.4: Respondents' Sources of Climate Change News

Source: Author's Construction, 2019

The Figure 4.6 7 results demonstrate that, there were various sources of CC news and matters available to the participants. These sources, internet was what most (38.9%) participants rely on for CC news.

Having identified their feelings about weather pattern and the various CC news sources, they were asked to share their idea or perspectives about CC. The Table 1 below outline the various interpretations respondents ascribed to CC.

Table 4.1: Respondents' ideas about Climate Change

Various Ideas	Freq.	Percent
Change or rise in average atmospheric temperatures	7	28
Depletion of Ozone layer	4	16
Human induced/Cause	3	12
Change in Ecosystem	2	8
Shifting wildlife population and habitat	2	8
It is getting warmer	2	8
Is the variation in weather pattern	1	4
Sea level rise	1	4
Don't know much	3	12
Total	25	100

Source: Author's Construction, 2019

In the table 4.1, it is shown that respondents have diverse ideas about CC. As most (28%) used rise or changes in atmospheric temperature, some (16%) used the depletion of the ozone layer to ascribe CC whereas others used changes in ecosystem (8%), changes in wildlife population

(8%), and warmness of the weather (8%). Nonetheless, (12%) were of the view that, CC was natural climate variations. The Table 1 outlines further ideas that participants have about CC.

All the ideas about CC revealed by the Table 1 demonstrated that, indeed most the participants had an idea(s) about CC and its issues. This was good because according to Townshend and Mathews (2013), the knowledge of parliamentarians about CC, informs the country’s negotiating position. Respondents were also able to exemplify some of the causes of CC, as displayed in the Figure 4.7.

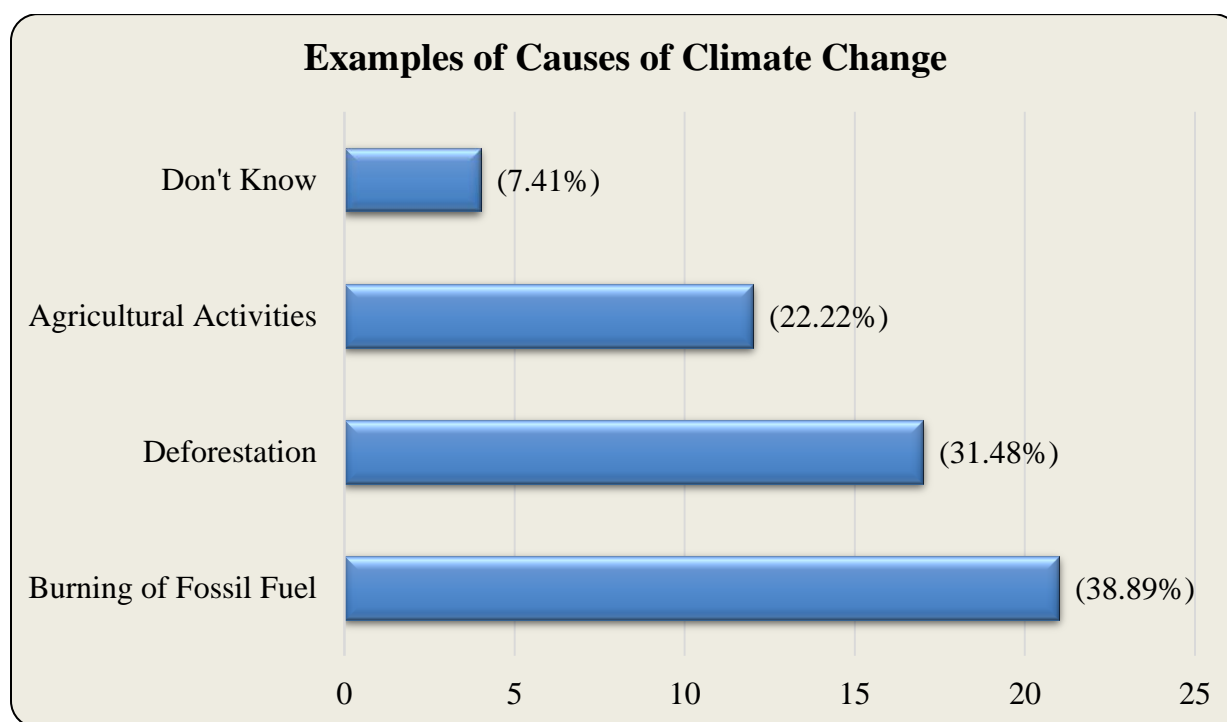


Figure 4.5: Respondents’ views on Causes of Climate Change

Source: Author’s Construction, 2019

As seen in the Figure 7, most (38.9%) of the respondents mentioned ‘*burning of fossil fuel*’ as the cause of CC whereas the others attributed it to deforestation (31.4%) and agricultural activities (22.2%), and others (7.4%) could not identify the causes of CC. This informs us that,

most of the participants do not just have an idea about CC but are also aware of the causes of CC.

Aside knowing the causes of CC, majority (85.2%) of the respondents admitted that CC has impacts (see Figure 8).

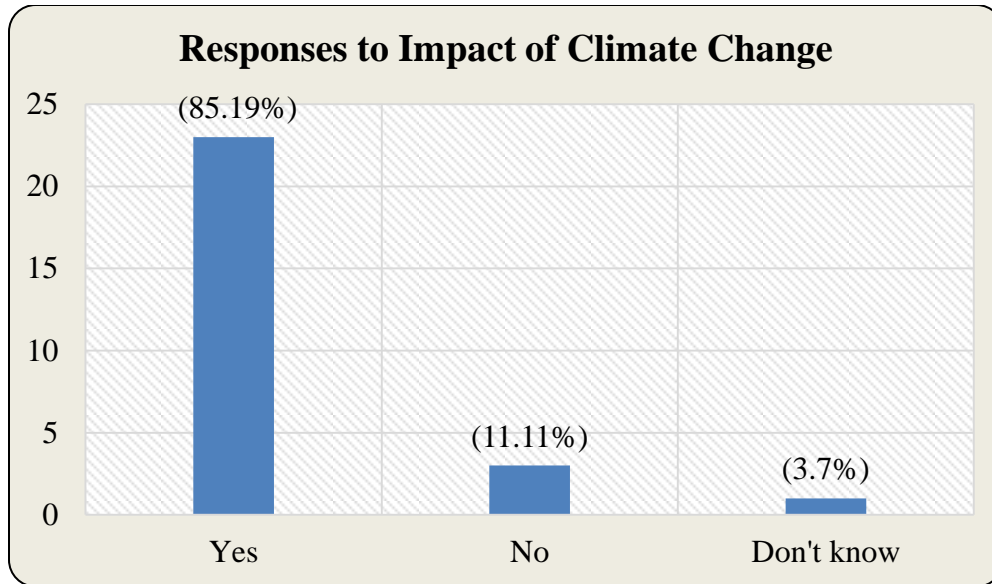


Figure 4.6: Respondents' views on Climate Change Impact

Source: Author's Construction, 2019

Directly linked to the above, about 68.2 per cent of the respondents admitted that there were CC issues in their various constituencies (see Figure 4. 9).

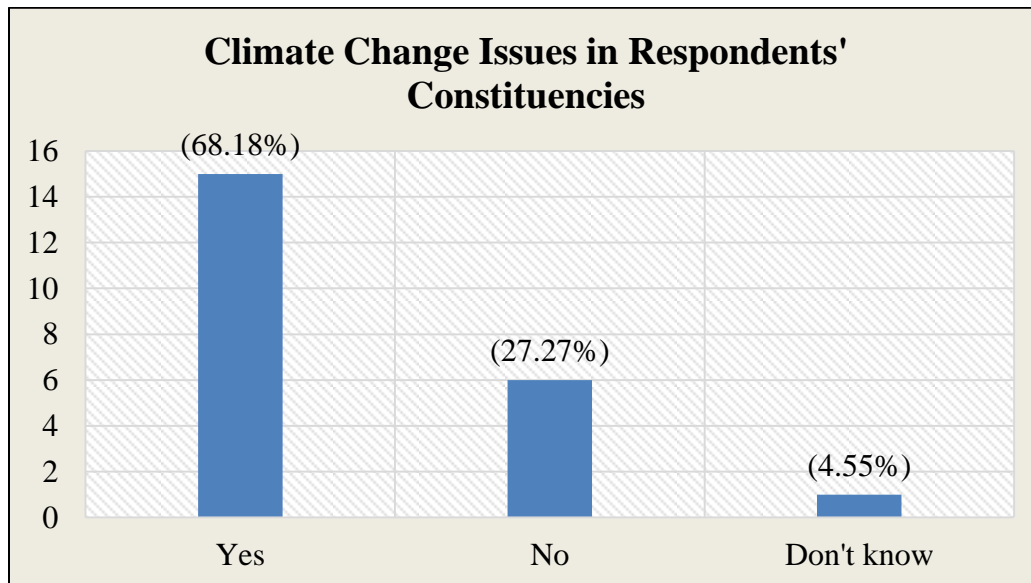


Figure 4.7: Respondents' Views on Issues of Climate Change in their Constituencies

Source: Author's Construction, 2019

Thus, the values in the Figure 9 are illustration of increasing CC impacts on most constituencies of the interviewed MPs. The study identified some of the impacts of CC on the constituencies and the results are presented in the Table 4. 2.

Table 4.2: Some of the impacts of CC on Constituencies

Examples of Impacts CC	Freq.	Percent
1. Drought	3	17.65
2. Coastal Erosion and Extreme Temperature	2	11.76
3. Temperature rise	6	35.28
4. Wildlife population reduces due to dangers our forest encounters.	2	11.76
5.Desertification and Rise in temperature	1	5.88
6. Flood	1	5.88
7. Extreme temperature and Reduced Rainfall	1	5.88
8. Temperature level rising at rapid rate.	1	5.88
Total	17	100

Source: Author’s Construction, 2019. According to the results in the Table 4.2, some of the impacts of CC mentioned by the respondents are drought, coastal erosion, extreme temperature, reduction in wildlife population, temperature level rising, reduced rainfall, and deforestation. In explaining the above impacts of CC, some of the respondents offered reasons as to why they claimed the above impacts were associated with CC (see Table 3).

Table 4.3: Reasons

Reasons	Freq.	Percent
A. It is obvious some species are in extinction (e.g. fishes) in water bodies are reducing by the day per the information from community folks (fishermen).	2	22.22
B. CFC contributes to the depletion of the ozone layer health level in some areas contributes to fast rate of spreading certain kind of disease.	2	22.22
C. Due to the high emission rate of CO ₂ in the atmosphere which may be as a result of deforestation processes it is seen that the normal temperature level of the affected areas keeps rising.	1	11.11
D. Evidence of climate change	1	11.11
E. From my observation the observed climatic conditions now have occurred decades before and not any special.	1	11.11
F. Increase in temperature without rainfall causes drought.	1	11.11
G. Forest cover has been replaced by grass and shrubs and the weather is very hot and dry.	1	11.11
Total	9	100

Source: Author's Construction, 2019

From the table above, some of the respondents explained that (i) some species in the water bodies are reducing in everyday according to their community folks (fishermen) (22.2%), and (ii) there has been increase in temperature without rainfall causes drought (11.1%). The rest are listed in the Table 4.3.

As part of the knowledge assessment measures, the respondents were asked to rate the importance of CC issues on scale of 1 to 4 whereby 1 represents *not at all important*, and 4 represents *very important*. The results are presented in the Figure 4.10 below.

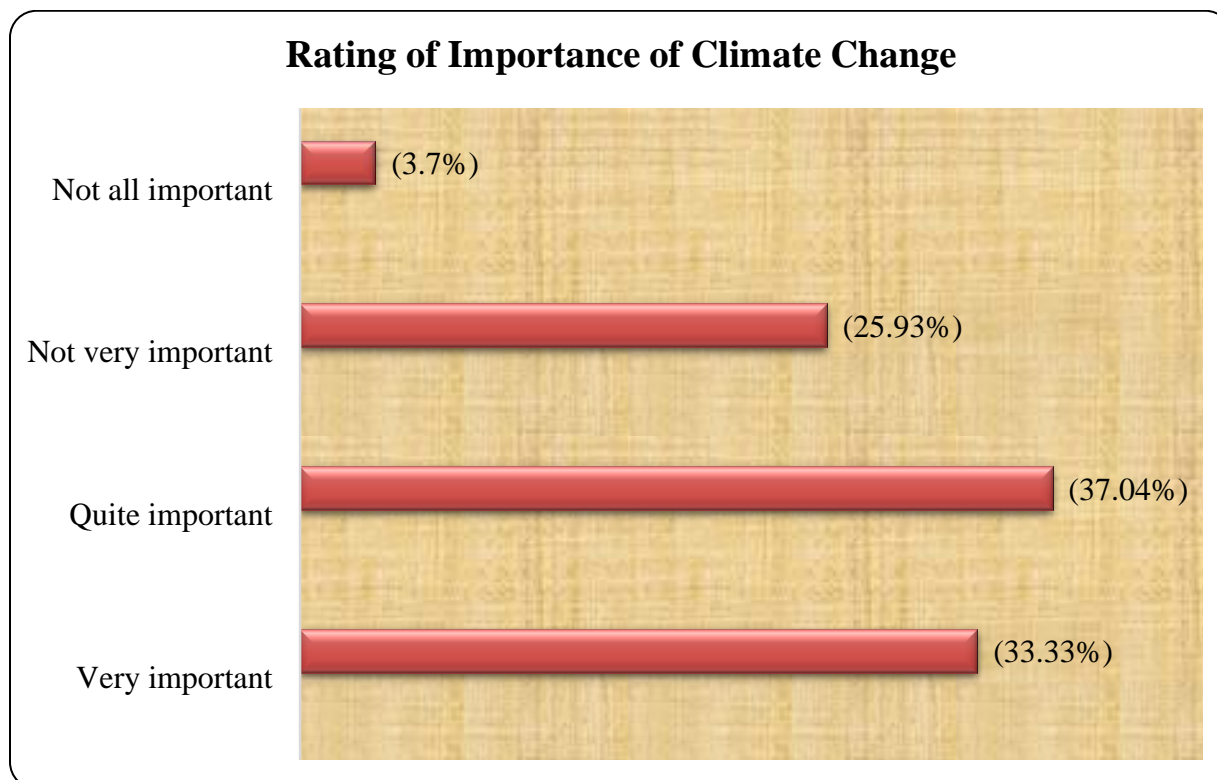


Figure 4.8: Respondents' Rating of Importance of Climate Change

Source: Author's Construction, 2019

As Townshend and Mathews (2013) argued that the knowledge of CC possessed by parliamentarians can be both positive and negative and that influences the MPs to have positive or negative impact on both international and domestic climate ambition, the same result was obtained here. From the results in the Figure 10, it is revealed that, a greater number (19, representing 70.3%) admit the issues associated with CC are important to be focused on. As high as 37 per cent claimed it is quite important but to 33.3 per cent of the respondents, it is very important. This could mean that, CC is an issue of importance to matter at the heart of

parliamentarians. Respondents offered reasons for their ratings and have displayed in the Table 4 below.

Table 4.4: Reasons Rating of Importance

Reasons for Ratings	Very important	Quite Important	Not very important	Not at all important	Total
1. Climate change issues are beginning to be matter of concern since the effects are currently a global topic	2	-	-	-	2
2. It is real	2	-	-	-	2
3. Natural phenomenon that needs attention	1	-	-	-	1
4. It is real and happening too quick	1	-	-	-	1
5. It has serious impacts	1	-	-	-	1
6. Don't affect us that much.	-	2	-	-	2
7. Has so many impacts	-	2	-	-	2
8. Because its effects are evident	-	2	-	-	2
9. Climate is affected	-	1	-	-	1
10. Need to understand the postulation and functions	-	1	-	-	1
11. It affects agricultural activities and health	-	1	-	-	1
12. It seems its effects are not very problematic	-	-	2	-	2
13. The topic is exaggerated	-	-	1	-	1
14. Barely experience the consequences of.	-	-	1	-	1
15. Because I don't see much of its effects and I don't feel (realized)	-	-	1	-	1
16. It is a native phenomenon	-	-	1	-	1
17. Education on the issue us not detailed	-	-	-	1	1
Total	7	9	6	1	23

Source: Author's Construction, 2019

In the Table 4.4, it is demonstrated that respondents who claimed the issues of CC are very important, some explained that (I) Climate change issues are beginning to be matter of concern since the effects are currently a global topic (2) and (ii) It is real (2).

Whereas those who claimed it is quite important, some explained that CC issues: (i) do not affect them that much, and (ii) its effects are not really evident. Thus, several reasons were given with regards to the importance of CC issues (see Table 4). This bipolar stance of respondents is not surprising as Townshend and Mathews (2013) explained that that the knowledge of CC possessed by parliamentarians can be both positive and negative;

Studies have demonstrated that building parliamentarians' knowledge and capacity base to be involved in CC agenda is the first step towards developing and mainstreaming appropriate CCAM responses into development process (The Parliament, 2016). In this section, it is established that the respondents have heard CC from various CC news sources, expressed some feelings about weather pattern, articulated some idea(s) about CC and its issues, knew some causes of CC, and demonstrated the importance of CC issues but majority were unclear about climate change impacts and its effects. Upon these findings elaborated in this section the study accomplished its first specific objective.

4.4 The process of mainstreaming climate change into development processes

The second specific objective of the study was to examine the processes that are followed by the MPs to channel CC matters into the national development strategies and plans of the country. To achieve this objective, participants were asked to disclose if CC affects their committee sectors.

As high as 56 per cent claimed it does (see Figure 4.5).

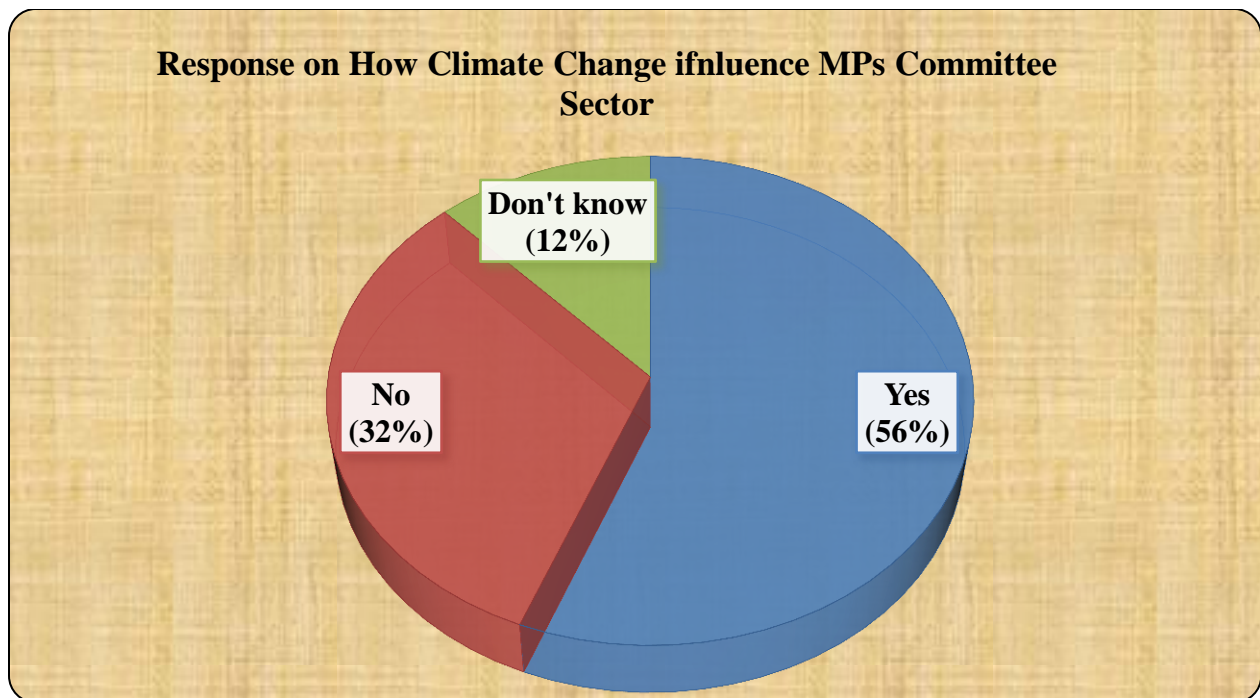


Figure 4.9: Respondents' Views on Impact of Climate Change on Committee Sector

Source: Author's Construction, 2019

They were therefore asked how they process CC issues that affect or influence their committees' activities. Unfortunately, it was discovered that no systematic process is adhered to in times of mainstreaming CC matters or concerns into the various activities of the committees. Evidence from the qualitative data outlines the following unstructured stages MPs use to process CC concerns.

The first was committee meeting process. According to one respondent, such committee meetings were meant to collate and share information on CC matter(s) that is at hand. This was his statement, "*We don't really do much on climate change it is only when the need be*"

Aside committee meetings, it was revealed that local government engagement is factored into the process. According to two respondents, this was a direct engagement with the district assemblies

who get first hand information from people who directly depend on the weather for their living to solicit their experiences and strategies with the effects of the CC. This finding corroborates with what Jaap et al. (2014) disclosed as the ‘Take a whole-country Approach’. This approach, according to Jaap et al. (2014), is considered an effective national management system for mainstreaming CC adaptation, which requires multi-actors including government and non-government, private sectors, community-based organizations, and research bodies.

The finding meant that the multitudinous strategies for adaptive measures in development policies is highly attributed to the diversity of stakeholders and their interplays (i.e. flow back and forth) in adaptation process (Biesbroek et al., 2009). Also, it is in line with Jaap et al.’s (2014) first principle ‘Take a whole-country Approach’. According to Biesbroek et al. (2009), expert consultation which is mostly done by the departments and agencies involves in-depth analysis of the interactions among varying sectors and stakeholders of CC to understand their interdependencies (i.e., strength of associations and causal linkages) are crucial.

At the bottom of the stages of mainstreaming process is awareness creation. It was acknowledged that creation of awareness is not effective in that in most cases, the message to be communicated is with complicated words. This is what one said,

Yes, but it is not very effective. Awareness is underprovided and the message is communicated with complicated words.

Though, there remains scarcity of data on the processes through which parliamentarians, owing to non-existence of formal structure for process of mainstreaming CC matters at the Parliament. However, from this section, it is also known that three key series of activities, namely: 1) regular committee meetings, 2) local government engagement, 3) consultation process, are the various

prime processes that MPs follow regularly to mainstream CC. These processes outlined give clear evidence that in the case of Ghana, there is no single approach to mainstreaming CCAM in development plans as Biesbroek et al. (2009) claimed that the strategy for mainstreaming CC mitigation is mono-disciplinary approach. Rather, it is a more trans-disciplinary in nature and demand tailored-made policy strategies that are perfectly tuned within the context of its application so to effectively minimize CC impact (Biesbroek et al., 2009).

4.5 The role of the legislature in climate change mainstreaming

The third specific objective was to examine the role of the legislature in mainstreaming climate change adaptation into development processes. To achieve this objective, the researcher posed couple of questions that assisted to retrieve information that enabled the researcher achieve the objective.

First, respondents were asked if they were aware that MPs have any role in CC issues and arising matters. The quantitative data results have shown that Parliament as a body has obligatory role to play in CC policy and laws. With this, majority of the respondents unanimously agreed to that, with results displayed in the Figure 4.12.

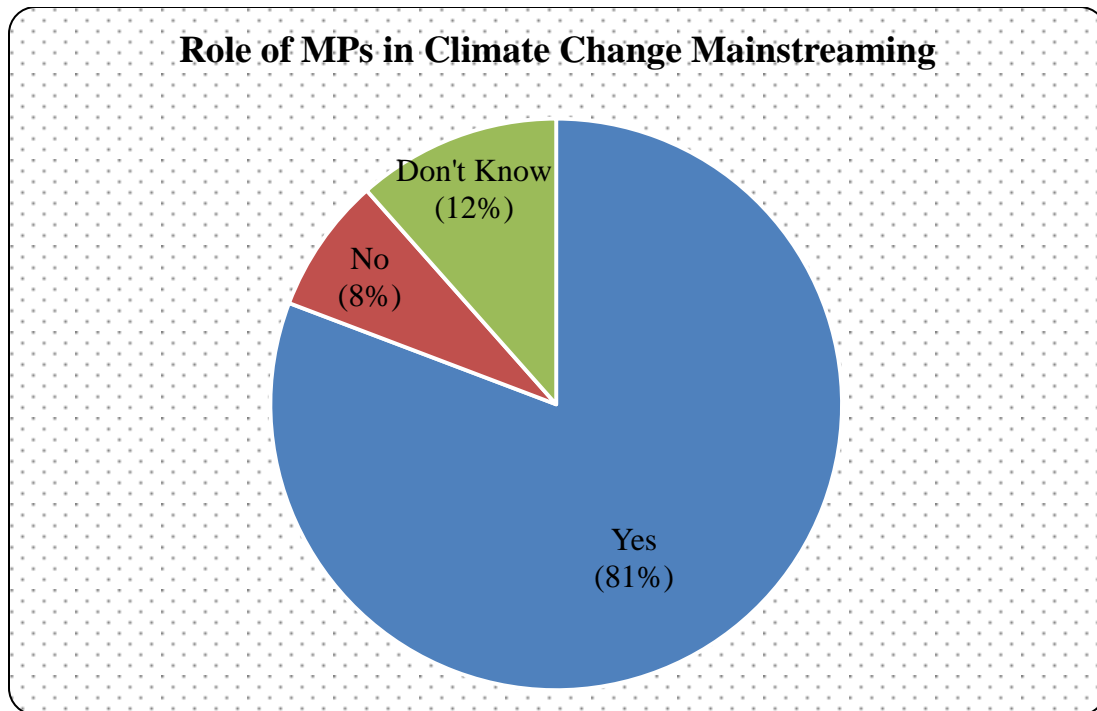


Figure 4.10: Respondents' Views on Role of Climate Change Management

Source: Author's Construction, 2019

As displayed in the Figure 12, as high as 81 per cent of the respondents held the notion that, MPs have responsibilities in policy and law formulation to address the issues surrounding CC. Only (8%) were of contrary views. For those who claimed it is the mandate of MPs to formulate CC laws to tackle the various issues associated with it in Ghana, some of them offered their various roles relating to that. These roles have been articulated in the Table 5.

Table 4.5: Role of MPs in Mainstreaming CC Adaptation and Mitigation

Roles of MPs in Mainstreaming CCAM	Frequency	Percent
1. Law making and implementation of CC matters	8	41.11
2. MPs represent their constituencies' climate change matters in the House	2	10.53
3. Parliament help in adaptation policies with risk analysis and communications.	2	10.53
4. MPs learn more about it and make laws concerning that	2	10.53
5. Lobby for climate change budget allocations	2	10.53
6. Parliament inquires to understand and be convinced about CC and it measures	1	5.26
7. We exercise oversight responsibilities on climate change agencies	1	5.26
8. Empower MPs to be advocates	1	5.26
Total	19	100

Source: Author's Construction, 2019

As literature reported that the first role of parliamentarians in CCA is domestic CC legislation enactment. Akin to the quantitative results, it is seen in the results in the Table 4.5 that the key role of MPs in CCAM is found to be legislation and implementation of CC laws. This was disclosed by the vast number (41.11%) of respondents who asserted that MPs make CC laws. Unfortunately, they could not express out the manner in which they make CC laws. This disclosure supports the claim by Townshend and Mathews (2013) that the legislative processes

of enacting domestic CC legislation is quintessential for informing and designing a country's stance at the international negotiations.

Again, representation of public short- and long-term interests at the highest level of governance makes parliamentarians play an essential role in mainstreaming CC in development processes. The responses, as displayed in Table 5, offered by some (2, representing 10.53%) respondents indicate that MPs' role in CCAM is not limited to law-making and policy formulation but also representation of constituents on CC matters at Parliament, which corroborates with the qualitative result that revealed that MPs represent their constituencies at parliament and at official ceremonies when it comes to CC issues that affect their constituencies. This is what two said, *"It is our mandate to present climate change cases in my constituency to parliament as I represent my constituency in the House"* and *"When it comes our role, to me, I record the events that are caused by climate change in my constituency and present them to Parliament and represent the interest of the constituency on that'.* This means that, MPs present cases of CC that occurs in their respective constituencies to parliament when CC issues are put before the House of MPs to deliberate on to deduce the necessary intervention(s). This representation role might not be limited to just parliament, as The Parliament (2016) acclaimed that the role of public representation extends beyond both constituency and national to the international level. However, it explains that the power of CCAM ultimately lie with the public, whom parliamentarians represent at the highest decision-making authority of state; and that, any approved CCAM policy that does not suit the public interest might ultimately be rescinded by the public (The Parliament, 2016).

Moreover, **Lobbying for Budget Allocations.** According to The Parliament (2016), parliamentarians hold their executives to account over their actions, which Townshend and

Mathews (2013) explained further that it is done by scrutinizing and auditing every governmental dealings and investments relating to CC for appropriate decisions concerning state funds, policies and projects meant for CCAM. Similar role action was identified when some (10.5%) respondent mentioned that MPs lobby for budget allocations sectors that relate to CC matters. This finding corroborates with the qualitative data that MPs offer budgetary role. This is what one said, *“We do interrogate budget”*. In this case, one can infer that MPs ensure accountability of CC budgets, which is in agreement with Townshend and Mathews’ (2013) disclosure that as part of the accountability functions, parliamentarians are also responsible for overseeing government’s budgetary allocation for CC-related activities through robust scrutiny and approval as they relate to efficient and effective use of CC-related aid. This budgetary allocation role is considered very significant as according to Townshend and Mathews (2013), undergoing such robust scrutiny of financial allocations and expenditures eliminate bottlenecks such as corrupt or fraudulent practices and misappropriation of CC funds, which could hinder any mitigation and adaptation efforts particularly at the implementation level.

4.6 Advocacy is considered as among MPs’ roles in mainstreaming CC agenda. Some (5.3%) respondents claimed they advocate CCAM (see Table 5). This meant that, parliamentarians are in the position not only to represent the interest of their community or public but as well to educate them on the benefits derived from CCA (The Parliament, 2016). This corroborated with the qualitative findings were one respondent asserted, *“Having a forestation and reforestation activities and MPs environment award in the constituencies like what I’m doing”*. Thus, MPs publicly demonstrate the effects of CC and the measures put in place to address the implications of CC. This agrees with Townshend and Mathews’ (2013) assertion that MPs not only do they create public awareness about the benefits of mitigating and adapting to CC but as well ensures

its realization and that those benefits goes to the public but little is been done as it stands. Explaining this further, The Parliament (2016) supported that, parliamentarians through their influence and mandates could facilitate short-term CC policies yield public benefits such as employments, and improved healthcare.

4.7 Oversight responsibility was mentioned during the interview section. The qualitative results also revealed that MPs exercise oversight responsibility on CC matters. This is what two respondents disclosed it as one said, *“We offer oversight duties in bringing climate impacts in constituencies to parliament”*. The other disclosed this, *“We make sure the Agencies and institutions do the right thing as Article 268 – 269 states that Parliament is responsible for Rectification of total natural resources of the country. That is why Exxon-bond was sent back to parliament to look through”*. This finding is in corroboration with Townshend and Mathews’ (2013) views that parliament has the oversight responsibility of scrutinizing effectively and stringently how government or the state is responding to and handling both national and international CC issues; and as well examine whether CC resources are being used efficiently, effectively, and in accordance with approved standards, regulations and laws. According to literature, this oversight responsibility is done either by ex-ante or ex-post through parliamentary select or standing committees, particularly PACs, enquiries requiring a government response, question periods, debates, and hearings (IPU, 2016; Townshend & Mathews, 2013; The Parliament, 2016). But not much is done because of *‘watch your shoulder syndrome’*. This is where it becomes difficult to execute your oversight role on someone who comes from your government or political party.

4.8 Lastly, collaboration with Institutions and Agencies.

Teaming with other institutions and agencies that directly and indirectly engaged in CC matters was considered a fundamental role of MPs on CCAM in Ghana. This is from the qualitative results, which brought to light that MPs collaborate with institutions like Ministry of Food and Agriculture, Cocoa board, Environmental Protection Agency and Agricultural agencies etc. to deliberate on CC and how to tackle it holistically. The statement below attest to that.

Collaboration with the Church of Pentecost in tree planting, and have MPs' environmental awards. That is in the form of creating awareness of the challenge.

There are collaborative actions between Ghana National Fire Service, Forestry Commission, METHASP, and FASDEP, on Ghana National Climate Change.

Undeniably, Townshend and Mathews (2013) revealed that as part of the accountability functions, parliamentarians adopt the 'principal methods' of interrogating state officials including ministers, debating and delving into committees' works so that the government can publicly respond and justify policies and decisions.

Knowing the role of MPs in mainstreaming CCAM into national development policies, they asked if anything can be done to tackle CC. This interrogative statement attracted several responses and associated explanations. These responses and associated explanations have been outlined in the Table 6.

Table 4.6: Various Responses and Explanations

Explanations	Response			Total
	Yes	No	Don't know	
Its effects are not experienced yet as said. Hence, we can do more about it.	3	-	-	3
Because the issue of climate change happens to be more human activities and if we can minimize it, we can have a better chance of reducing its effect.	2	-	-	2
It needs urgent attention	2	-	-	2
The issue with climate change is associated with humans. With this, I'm with the view that when we try to move different paths with the causes, climate change can be reduced.	2	-	-	2
It is important to address.	1	-	-	1
Causes are anthropogenic hence can be tackled.	1	-	-	1
To reduce emission.	1	-	-	1
Researchers need to educate the general public on the issues with climate change.	1	-	-	1
When given needed attention matters will not get out of hand.	1	-	-	1
10. Knowledge on the issue is lacking.	-	-	2	2
11. The topic of climate change needs further discussion in my opinion.	-	-	1	1
12. Natural.	-	1	-	1
Total	14(77.8%)	1(5.5%)	3(16.7%)	18(100%)

Source: Author's Construction, 2019

The results in the Table 4.6 illustrate the various responses that came up. With that, most (77.8%) of the respondents claimed something can be done to tackle CC. Concerning their responses, some explained that: (1) *CC effects are not experienced yet as said. Hence, we can do more about it* (16.7%), (2) *the issue of climate change happens to be more human activities and if we can minimize it, we can have a better chance of reducing it effect* (16.7%), (3) *the issue with climate change is associated with humans. With this, I'm with the view that when we try to move different paths with the causes, climate change can be reduced* (16.7%), and (4) *It needs urgent attention* (11.0%). These opinions put forth are clearly in support of Biesbroek et al. (2009) report that policy makers are in urgent need for a mix of short-term strategies to complement long-term strategies in order to mainstream adaptation and mitigation into policies that will improve the efficient and effective usage of human and financial resources than framing separate climate policies for each sector. The Table 6 provides further explanations by those with the view that something can be done about CC.

On the contrary, few respondents claimed nothing can be done about CC in that it is natural but three (16.7%) respondents withheld their stance as they claimed *much knowledge on CC issue is lacking* (11.0%) and *the topic of climate change needs further discussion in my opinion* (5.5%).

CONCLUSION

In conclusion, a total of 34 parliamentarians participated in the study. Findings of this study showed that about 92% of the participants affirm the changes in the weather pattern but 7.4% of the 92% could not identify any causes of climate change. About 80% participants demonstrated some knowledge on climate change but could not relate it to their roles and how they could represent them in their various core mandates as MPs. Again, about 70% disclosed that not much is been done by the legislature around climate change and is mostly centered on two committees which leave others unconcerned about it

CHAPTER FIVE

SUMMARY CONCLUSION AND RECOMMENDATION

5.1 INTRODUCTION

Indeed knowledge and understanding of climate change issues of the legislature is very important, to identifying and executing parliamentary role in climate change mainstreaming.

This chapter of the study presents a summary, conclusions as well as recommendations. Again future research directions have also been presented in this section.

5.2 SUMMARY

In promoting climate friendly policies, legislative approaches are required. Thus, the work of the legislature is a critical step for tackling CC as it binds actors and non-actors to demonstrate commitment and ambition to reduce the anthropogenic cause of climate change and to create an enabling environment for adaptation .Again parliamentarians have official (constitutional) mandate to formulate laws and this makes them pivotal for mainstreaming CC legislation for sustainable development. On the contrary, inadequate knowledge and information among parliamentarians on climate change mainstreaming has a negative influence on political will and support for climate change activities.

In Parliament, climate change remains a fuzzy issue, with only a limited number of MPs knowing what it is and how they can play their role in climate change. Members of Parliament interviewed acknowledged that more needs to be done to institutionalize climate change adaptation within existing government structures and that massive efforts are needed to raise awareness within and among the people of Ghana.

On the basis of the discussions with MPs, it became clear that climate change is a matter of national importance, but MPs themselves remain uninformed about its impact and how the country can adapt effectively to climate change through formulating, approving and implementing legislation and to provide ministries with platforms to address the problem. The MPs interviewed strongly supported the suggestion of training to improve their knowledge and understanding of the issue and the different ways of adapting to climate change. Parliamentarians knew and understood the processes required to enact laws or policies, but remained handicapped by insufficient information on climate change

5.3 CONCLUSION

In conclusion, the role of legislatures in the fight against climate change needs to be reinforced with credible information and options for MPs to mobilize ministerial support for effective action. Parliamentarians need to be properly informed about the options available and the role of legislative intervention in mainstreaming climate change adaptation in all sectors of government. As a country heavily dependent on agriculture for its economic development and livelihoods, the sector is highly threatened and requires a strategic approach to develop sustainably in the face of climate change. In order to strengthen the role of Parliament and its climate change support structures, the following functional and structural recommendations are suggested

5.4 RECOMMENDATION

Based on the findings and discussions of this study, the following are recommended

1. Building the capacity of parliamentarians: the study showed that, the MPs do not have adequate knowledge on how climate change impacts and affect socio- economic structures and how they can perform their role through a climate change lens. The sector ministry in charge of climate change and the Donor agencies in the space of climate change should organize some training session to boost the understanding of the legislature.

2. Increase sectoral coordination: it was recommended by the MPs that coordination that existed between ministries was insufficient to tackle climate change. More could be done so as to be conscious of climate change and its impacts and be effectively mainstreamed in development process. In addition, involvement of all stakeholders will increase effectiveness and minimize tradeoffs.

3. Information must be communicated in simple language: MPs acknowledged that information about climate change and specifically predicted effects in Ghana were not communicated in simple language. Though they are correct to some extent, climate change information should be easy to read and understand information that would help inform the national debate. Intervention priorities must be identified and integrated into government projects and activities.

4. Build committees responsible for climate change in parliament. Committees on Environment and Science, Agriculture, Natural Resources, Energy and Economic Planning needs to strengthen through capacity building on climate change issues so decisions can be made from a climate change perspective.

Research and advocacy remain essential to address the current knowledge gap on the negative effects of climate change on Ghana's economic development.

5.5 Contribution of the study

This study contributes extensively to literature on the knowledge and roles of parliamentarians in climate change mainstreaming in Ghana. The study therefore sought to examine the knowledge level and roles of the legislature in mainstreaming climate change in developmental process. The findings revealed a number of factors as they influence the legislature in executing their role in climate change mainstreaming effectively. Some of the factors were inadequate knowledge and understanding in climate change issues, information been communicated in complex language, “ watch your shoulder syndrome” thus political interference in executing their oversight role effectively, low engagement of parliamentarians, absence of training, inadequate coordination among committees, ministries and agencies handling climate change issues as well as financial constraints. For example respondents spoke about the fact that much has not been seen because of these factors. Some of the factors corroborated literature position on the factors affecting parliamentarians on executing their role in climate change effectively, and how parliamentarians can play their role in climate change mainstreaming effectively.

This study also contributes to literature by providing specific implementation challenges faced by parliamentarians regarding their performance in climate change mainstreaming.

This is because there have not been any study on the knowledge levels and role of parliamentarians in climate change mainstreaming in Ghana, which is supposed to champion the course of climate change for sustainable development. It is pretty clear that an effective performance of parliamentarians on their role in climate change mainstreaming has a lot of implications on socio-economic development and in attainment of the sustainable development goals.

5.6 Future Directions for Research

To begin with, future research should be geared towards the factors that influence the synergies among the legislature, sector ministries and the district assemblies on climate change mainstreaming since it was established in the study collaborations were inadequate and needs to be strengthening.

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APPENDIX

CLIMATE CHANGE AND SUSTAINABILITY STUDIES

UNIVERSITY OF GHANA

M.PHIL CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT

**TOPIC: MAINSTREAMING CLIMATE CHANGE ADAPTATION INTO NATIONAL
DEVELOPMENT PROCESS: THE ROLE OF THE LEGISLATURE**

Introduction: The aim of this questionnaire is to get responses from HON. Members in order to assess knowledge levels and their role in climate change adaptation mainstreaming into development plans. All information is strictly for academic purposes and will be treated with the greatest level of confidentiality.

Date of interview.....

Name

PART A: SOCIO-DEMOGRAPHIC FACTORS

1. Gender
 - a. Male
 - b. Female
 - c. Prefer not to say

2. What is your age range?
 - a. 30-40 years
 - b. 40-50 years
 - c. 50-60 years
 - d. 60-70 years

3. Highest level of education
 - a. Secondary/ A level
 - b. Tertiary
 - c. Masters
 - d. PhD
 - e. No formal education.

4. Which committee do you serve on?
.....

PART B: KNOWLEDGE ON CLIMATE CHANGE

5. Do you feel the pattern of weather is generally changing?
 - a. Yes
 - b. No
 - c. Don't know
6. If yes what do you think this might be?
 - a. Normal climate variations
 - b. Climate change
 - c. End time
 - d. Don't know
7. Have you heard about climate change?
 - a. Yes
 - b. No
8. What do you know about it?
.....

9. Where did you hear about climate change? Tick as many as apply
 - a. Television
 - b. Radio
 - c. News paper
 - d. Internet
 - e. Workshops
 - f. School
 - g. Committee level

- h. Any other
10. How important is the issue of climate change to your committee?
- a. Very important
 - b. Quite important
 - c. Not very important
 - d. Not all important
11. Why for the answer chosen in 11?
-
12. Do you think climate change is
- a. Natural phenomenon
 - b. Human induced
 - c. Don't know
13. Which of these is/ are examples of causes of climate change? Choose as many as may apply
- a. Burning of fossil fuel
 - b. Agricultural activities
 - c. Emissions from industries
 - d. Deforestation
 - e. Don't know
14. Do you think climate change has any impact?
- a. Yes
 - b. No
 - c. Don't know
15. Are there any climate change issues in relation to your committee?
- a. Yes
 - b. No
16. If yes what are some of these issues?
- a.
 - b.
17. Why do you say the above impact is as a result of climate change?
-
-

18. Do you think anything can be done to tackle climate change?
- a. Yes
 - b. No
 - c. Don't know

19. How important do you think is climate change?
- a. Very important
 - b. Important
 - c. Slightly important
 - d. Not important

PART C: CLIMATE CHANGE LAWS & POLICIES& PARLIAMENTARY ROLES.

20. Does climate change affect your committee sector?
- a. Yes
 - b. No
 - c. Don't know

21. In what way?

.....
.....

22. How do you address these impacts?

.....
.....

23. Do you think is important to consider climate change in policy and law making?
- a. Yes
 - b. No
 - c. Don't know

24. Does parliament as a body have a role to play in these policy and law formulation?
- a. Yes
 - b. No
 - c. Don't know

25. If yes, what role does parliament play?

.....
.....

26. Are you aware of any policy that exists in your committee that relates to climate change?

- a. Yes
- b. No
- c. Don't know

27. Have any of these policies been implemented?

- a. Yes
- b. No
- c. Don't know

28. Is there any evidence that implementation has been successful?

- a. Yes
- b. No
- c. Not sure

29. Do you believe that it's now important for policies to address climate change?

- a. Yes
- b. No
- c. Don't know

30. Why yes or No?

.....
.....

31. In your opinion, what are some of the major hurdles of mainstreaming climate change?

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