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Gender Dynamics of Climate Change in Ghana: An Intersectional Perspective

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List of Acronyms

CCV	Climate Change and Variability
CEDAW	Commission on the Elimination of All Forms of Discrimination Against Women
DFID	Department for International Development-UK
EPA	Environmental Protection Agency
FGD	Focus Group Discussion
GECCA	Ghana Environmental Conventions Coordinating Agency
GMA	Ghana Meteorological Agency
GSGDA	Ghana Shared Growth and Development Agenda
IPCC	Inter-governmental Panel on Climate Change
MDGs	Millennium Development Goals
MEST	Ministry of Environment, Science and Technology
MLGRD	Ministry of Local Government and Rural Development
MMDA	Metropolitan, Municipal and District Assemblies
MOFEP	Ministry of Finance and Economic Planning
MOWAC	Ministry of Women and Children's Affair
NCCAS	National Climate Change Adaptation Strategy
NCCC	National Climate Change Committee
NCCPF	National Climate Change Policy Framework
REDD	Reducing Emission Deforestation and Forest Degradation
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WEDO	Women, Environment and Development Organisation

Abstract

The study examines one strand in the debate on climate change, notably climate change and variability will cause calamities that will likely hurt many people, especially those already placed in a disadvantaged position such as women. Calamities are expected to lead to changes in their livelihoods and increase their poverty. Taking the agricultural sector in Ghana as one example, this study challenges the interchangeable use of the concepts 'women' and 'gender' and an exclusive focus on 'gender difference'. It argues that analyses of vulnerabilities and the subsequent design and implementation of adaptation measures in the context of climate change and variability that are based on a simplistic understanding of gender tend to cloud the real effect of the disaster and obscure accurate understanding of the situation, and therefore measures taken to care for all stakeholders will likely omit many aspects of intersecting social inequalities. An analysis that brings into the discussion the intersection of social relation and identities such as ethnicity, religion, descent, age or disability could present a more nuanced understanding of adaptive behaviour in a particular context. Such understanding offers researchers and policy makers the opportunity to capture the realities of diverse people in order respond appropriately to their different needs, expectations and concerns.

Relevance to Development Studies

Agriculture is a major source of livelihood and the backbone of most economy in Sub-Saharan countries. This sector is invariably associated with the most vulnerable and disadvantaged groups of citizens who will have to deal with the crises of climate stress. In recent times, international, regional and national level discussion among development practitioners, policy makers and government have focus on measures to improve the condition of those most vulnerable to climate change impact. This paper, reflecting on experiences and perception of diverse small scale farmers' vulnerability and adaptation measures, argues for a conceptualization of gender in climate change policies which takes into consideration the interaction of people multiple social identities and relationship within which they are embedded. Such a perspective could advance comprehensive adaptation strategies for dealing not only with climate change impact but poverty reduction strategies generally.

Keywords

Climate change and variability, Agricultural livelihoods, Vulnerability, Adaptation, Gender and Intersectionality

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Chapter 1 Introduction

1.1 Statement of the Research Problem

The debate on climate change has recognized that while the phenomenon is global its effects are diverse and vary, its impact on livelihood systems is critical for the survival of the most exposed human populations, whose vulnerability can be exacerbated by existing social inequalities. Women and men are expected to experience the impact of climate change differently due to existing gender inequalities in access and control of resources and decision-making (Brody et. al. 2008). Gender issues in the policy debate on climate change and adaptation were first raised at the United Nation's 2005 World Conference on Disaster which produced the Hyogo Framework for Action, recommending that "a gender perspective should be integrated into all disaster risk management policies, plans and decision-making processes, including those related to risk assessment, early warning, information management, and education and training" (ISDR, 2005: 4). Since this intervention, the language of climate change suggests that governments are now encouraged to incorporate gender and human security issues into their development policies and programs on climate change adaptation.

Following Enarson (1998) and Blaikie (1994) the point of departure of this research is the recognition that relations of institutional power in which gender identity intersects with other identities can shape people's vulnerability to systemic change in contextually specific ways. Therefore, vulnerability of, and adaptation mechanisms to, Climate Change and Variability (CCV) by farmers need to be analysed from the perspective of their specific social location. Social location refers to a person's position based on class, ethnicity, and gender and their intersectional dynamics (Steckley, 2006). Understanding people vulnerability and adaptation from such a perspective could be useful in expanding understandings about the complexities and constructions of the relationship between gender and climate change. This in turn could inform policy making on climate change from a more nuanced perspective.

Ghana is among many other sub-Saharan African countries where the negative impact of climate change poses a crucial challenge to development. The economy relies heavily on sectors such as agriculture, forestry and energy which are susceptible to climatic changes; yet the country lacks the needed resources to address the emerging challenges (MEST, 2010). The national vulnerability assessment carried out by the Environmental Protection Agency identified some negative impact of climate change in areas such as land degradation and soil erosion, water resources, biodiversity and wildlife, forest reserve, human health and national revenue. Other areas noted are tourism, energy/hydro power production and security and women's livelihood (Praz, 2010). Land degradation and soil erosion is of a particular concern to the agricultural sector which is main source of livelihood for about 56% of the estimated 11.5 million Ghanaian labour force (YEN/IYF, 2009:18) is threatened as a result of climate change effects

As the backbone of the economy, the agriculture sector has attracted attention in both the academia and policy arena for issues related to food security, livelihood adaptation and its implication for poverty reduction and sustainable development has been raised. Many of these will have gendered implications, therefore WEDO (2008) call for gender dimension to incorporate a climate change policy environments cannot be underestimated.

As a signatory to the Beijing Declaration and Platform for Action in 1995, CEDAW in 1998 and more recently the Millennium Development Goals (MDGs), the government of Ghana is mandated to mainstream gender in all development programmes and policies to promote gender equality. Despite formal commitment, the government's achievements in mainstreaming gender in development policies have not been encouraging (Apusigah 2007, Tsikata 2009). Rodenberg (2001) study of Ghana's Poverty Reduction Strategy notes that gender mainstreaming in Ghana

is at the basic level. She argues that women are still considered as recipients of development hence in comparison with men, women's interests are less prioritised in government policies. Gender mainstreaming therefore appears not to have been effectively institutionalised in the country development planning process.

Government ministries and agencies are now finding ways of mainstreaming gender into sector policies. One of such commitment in recent time is the assessment of women's livelihood vulnerabilities in the agriculture sector, undertaken among other vulnerability studies commissioned to inform the development of Ghana's climate change policies. As the mainstay of the Ghanaian economy, the agriculture sector engages about 60% of the total population. Approximately half of the 52% female population in Ghana derived their livelihood from this sector (MOFA, 2007:6). Women are considered vital to this sector because of their predominant role in food production, an area which is likely to be affected by climatic changes.

Whilst this may be considered as a positive step, focusing solely on women as a homogenous group in the agriculture sector fails to address the diverse challenges different women may be facing, based on their social location (Okali, 2011). Additionally, the term 'gender' is used in policy documents as a synonym of the term 'women', missing its significant analytical meanings which refers to power a set relations between men and women, their socially constructed roles and responsibilities. Therefore attempts to address climate change issues from a perspective which view all women as sharing the same vulnerability will not sufficiently address their differential needs. Furthermore such an approach not only misses out on the intersectional gender dynamics influencing the agency and coping mechanisms of women in particular ways, but also makes the vulnerability of particular groups of men invisible to the policy makers. Understanding intersectional dynamics of gender and how they manifest in climate change is important to respond to contextually specific inequalities and vulnerabilities. Such knowledge will be crucial to advocate for climate change policies that are sensitive to intersectional dynamics of gender and therefore may help in foster an alliance across different sectors.

1.2 Objectives and Justification

The objective of the study is to explore the situation and experiences of diverse women and men farmers in relation to climate variability and change with a view to analyse policy discourses on the subject and the extent to which they address or capture the gender complexities and dynamics involved in farmers experiences of vulnerability and adaptation to climate change. The specific objectives of the study are:

- to contribute to the debate in Ghana on measures to enhance gender equity in climate change policies, with a focus on policy research and action on adaptation
- to provide empirical evidence on intersectional gender dynamics that shape farmers' experience of vulnerabilities and adaptation to the effects of CCV.

The recognition of climate change as a developmental issue is a recent phenomenon as such research on the social dimension of climate change is still in the budding stages. Given the dynamism associated with the phenomenon especially in relation to agriculture in sub Saharan Africa, context specific research is needed to inform policy discussions aimed at addressing both perceived and observed challenges of the majority of the population who derived their livelihood from the sector.

This study thus contributes to policy and theory on intersectional vulnerability and adaptation to CCV. It explores the connection between the realities of the people experiencing climate risk and how they are framed by policy makers. In doing this, the study seek to bring to fore the complexities of farmers problems so that the policy measures proposed to address the plight of vulnerable groups will be responsive to their peculiar needs.

Another critical issue which makes this study relevant is with reference to the analytical use of gender in research and policy making. A number of feminist empirical and theoretical researches have largely underscored the importance of an intersectional perspective in gender studies (Rodriques 2010). However such knowledge has not yet been fully recognised in policy spaces (Manuel, 2008). The paper suggests that climate change research and policy making could take advantage of intersectionality analysis. We argue that a gender analysis from the lens of intersectionality could provide a more nuanced understanding on how difference in age, ethnicity, and educational level amongst others interact to influence people's vulnerability and adaptation strategies. Such perspective could be helpful not only to policy makers who have long marginalized gender issues in the climate change framework but also gender advocates and activists who use essentialist argument in the climate change discourse.

1.3 Research Question

The main research question is "How are 'gender', and 'gender equality' defined in climate change policies in Ghana and to what extent does this reflect the perceptions and intersectional experience of male and female farmers in the Agona East District"

The sub-questions which the research attempts to answer are:

- What are the main gender-based dimensions of 'vulnerability' and 'adaptation' identified by Ghana's climate change adaptation policies (generally and in relation to rainfall variability)
- Is there awareness about the influences of power relations (other than gender) and if so how is this translated in policy?
- How do male and female farmers perceive and experience vulnerability to CCV, and how do they adapt their livelihoods to adverse effects in their specific social location?
- What are farmers expectations from the government to help their plight

1.4 Methodology

In an attempt to move beyond an understanding of 'gender' as a binary construct (male versus female), and to capture the experiences of peoples' specific identities which are frequently concealed in policy discourses, the study uses a combination of methodology. To discern the idea of gender as a binary construct that informed policy prescriptions, the study uses a simplified method of frame analysis (Verloo, 2007) to scrutinize key policy texts on climate change. To study how people actually adapt to CCV, a case study approach was adopted to explore how the livelihoods strategies of people in the context of climate change, and how differences of social identities and inequalities intersect to produce unique vulnerabilities and adaptive strategies.

Case study techniques of this nature, provides profound and valuable insights that help in understanding the phenomenon under study. It helps in collecting sufficient detailed information about the phenomenon being studied (Yin, 2003). A mixed methodological approach was adopted in the case study: quantitative tools were used to basically contextualise the composition of the community in terms of gender and age differentiation, ethnic groupings and family size among others. On the other hand, the qualitative method was used to "study meaning, social processes, and group variations" (NSF, 2005:4) through the narratives of the farmers. Both approaches were useful for the analysis of the intersectional differences in vulnerability and capacity of adaptation among rural farmers.

Research tools such as survey, semi-structured in-depth interviews, Focus Group Discussions (FGD) and informal discussion were used to generate information on the research

questions from various categories of people. In addition to the above, personal narratives and direct observation were employed. The survey was used to collect information on farmers' household composition, demographic features, types of crops cultivated, and resource endowments and allocations practices. Farmers' perceptions and experiences of climate risks, vulnerabilities, adaptation strategies and institutional accessibilities were also gathered. The FGD was employed to collect first-hand information on concepts, terms, perceptions and thoughts of the groups about climate related vulnerabilities, livelihoods impacts and the adaptation strategies of the diverse farmers.

The field data collection was carried out over a period of six weeks from July, 12 to August 23, 2011 in Ghana. The researcher singularly conducted the interviews, life histories and FGD. All of the discussions were conducted in Twi, a local language spoken and understood by the researcher and the interviewees (Coutin, 2005). The recorded text was later transcribed into English for analysis. Some government and civil society institutions were also contacted in order to find out what they are doing for farmers, in readiness to combat the emerging climatic impacts. Additionally, relevant published and unpublished policy documents on climate change, agriculture and gender were gathered from government ministries and were reviewed to foster a critical analysis of the issues.

1.4.1 Selection of Research Site

The Agona East District situated in the Central region of Ghana was purposively selected for the study. It follows up on the study by Damptey and Mensah (2005), whose work on 'Women's Livelihoods and Vulnerability to Climate Change' a contribution to the national vulnerability and adaptation assessment study, was conducted in the current study area. The selection of the district for this study was based on its agricultural contribution to the national economy, physical and demographic characteristics of the area as well as the low levels of socio-economic development. A key physical consideration relate to the fact that the area falls within the semi-humid ecological zone where rainfall levels has decreased in relation to other ecological zones (Owusu and Waylen, 2009). In term of demography, the high migrant population involved in farming in the area had some has implication for land tenure arrangement whilst the final reason bordered on rural poverty.

Data collection for this study was located in the Agona Kwanyako town. First, I saw this as an opportunity to access baseline data, to compare and contracts findings from the previous study, which fed into the development of the national climate change policies. The choice of Kwanyako also rested on practical reasons of having established contact with some key personalities within the community. Through the use of this contact, the researcher sought to maximise her time given the extensive work that had to be carried out within the short duration of the field work.

1.5 Challenges

The research process was very stimulating, intriguing and thought provoking. I set off not knowing how the process will unfold. Very few challenges were envisaged but I had to deal with others I least anticipated. One of such challenges was to know that the period of the research was within the major farming as such getting farmers could be difficult. Usually, the farmers set off to their respective farms before 6am and return about 6pm. I adjusted myself into the farmer daily schedule instead of using the established rapport to demand unnecessary favours. Apart from meeting them in their house I also had access to them during their Tuesday meeting sessions.

In spite of their busy schedule, the farmers demonstrated so much interest in the research to the extent that some of them especially the men who were not part of the survey persistently

requested to be interviews. Some viewed it as an opportunity to make their concern known to government as they perceived me as a government official. I made time to listen to some of them. There was also a challenge in meeting some of the requirement of the FGD. The number of male farmers who participated in the FGD was fifteen instead of ten as planned. This problem came up because the FGD was held immediately after the farmers' association meeting and some of the members were adamant to leave the meeting place. On the contrary, the FGD with the women which followed a week later had only five women farmers. The women could not turn up due to a funeral in the town.

1.6 Limitation of the Study

This study adopted a mixed method approach using both quantitative and qualitative methodologies. The analysis however draws heavily on the qualitative data because of usefulness to unravel meanings, social processes and changes taking place within a given context (NSF, 2005). The extensive use of the qualitative data in this study implies the findings cannot be generalized and transferred to other context. Additionally, given that gender relations and its intersections with age, ethnicity and marital status are diverse in different geographic locations of the country, further studies in different context would be needed to inform policies and programmes aimed at increasing the resilience of different vulnerable farmers.

1.7 Structure of Paper

This paper is divided into five sections. After this introduction, the next chapter discusses the concepts which employed in the analytical framework. Chapter three gives an overview of Ghana's climate change institutional framework, followed by an analysis of how gender has been framed in climate change policy documents. The fourth chapter provides a detailed analysis of how diverse farmers in the study area perceive and experience climate change vulnerability and adapt their livelihood. In the final and concluding chapter, there is a discussion on the implications of the study findings for policy.

Chapter 2
Climate Variability and Livelihood Strategies from a Gender Perspective

This chapter discusses the main concepts that will serve as the framework to analyse how different farmers experience vulnerability and adapt their livelihoods to climatic impacts. The concepts employed in this study are climate change and variability, livelihoods, vulnerability, adaptation strategies gender and intersectionality. The chapter highlights how climate change and variability can create different experiences of vulnerability for diverse farmers based on how gendered institutions operate within a given context.

2.1 Climate Change And Variability From The Perspective Of Agriculture

As pointed out earlier, this study concerns, an exploration of climate change impact on the livelihoods of diversity of rural farmers, beyond the usual gendered dichotomy. According to the IPCC (2007a), natural changes in the climate are not a new phenomenon. Its linkage to anthropogenic gases emissions from fossil fuel is however a recent occurrence, evolving from the industrial revolution period. Climate change manifest in multifaceted ways that demand dramatic actions (ibid). This commonly includes increases in sea level, temperature, heat and cold waves, extreme weather events, storm, desertification, drought and flooding.

According to IPCC (2001a) the impact of climate change is going to be stronger in many developing countries, particularly SSA and agro-based economies such as Ghana, where over 50% of the labour force entirely rely on agriculture and related activities (TYEN/TIYF, 2009:18). This has been corroborated by WEDO (2008) which claims that since sub Saharan Africa countries predominately rely on rain-fed agriculture, the livelihood of the majority of the people or population are at risks. Changes in rainfall variability, regarding the duration, amount and season affects yield and thereby harvested and marketed quantities particularly that of small-scale farmers who depend solely on rainfall for their farm work and women involved in food crop distribution and processing. This study will examine the effect of climate change being experienced by farmers in the study area and how it impact on agricultural production.

2.2 Climate Change Variability And Livelihood Adaptation

According to Niehof and Price (2001), livelihood systems refers to the interrelated complex of activities that people carry out, usually within the household or family unit, to meet their socially defined and biological needs, achievement of this objective will depend on the availability of certain resources. These include physical resources such as land, financial capital, livestock, agricultural equipment, and other farm resources, and human resources (labour, skills, knowledge, education and other support networks). Agriculture, as already indicated is a major source of livelihood in SSA, including Ghana. Farming, trading, food processing, livestock production are just a few of the activities people engage in order to make a living. Farm activities, in particular happen to be the preoccupation of the poor and vulnerable populations. As climate change impact increases, people will need different resources/assets to fall back on in the event of climate disasters. To gain an understanding of the livelihood mechanisms and the asset/resources base of the farmers in the study area, the sustainable livelihood framework will guide the analysis of farmers' endowments'. Most livelihood research adopts the "sustainable livelihoods" framework to analyse the relationship between people, their environment and the economy (Leach et al 1999, Pretty and Ward 2001). The sustainable livelihood approach identifies different sources of capitals that people use to preserve their livelihood. The different

components of capitals include but not limited to physical, human, social, natural and financial (Leach et al 1999). Using the sustainable livelihood framework allows the researcher to look beyond just production and expenditure outcome and to interrogate how different institutions influence people's livelihoods.

2.3 Farmers Experience With Climate Change: Vulnerability Adaptation And Intersectionality

Since the effect of climate change is expected to differ across geographic, economic and social and ecological systems, farmers are likely to expose to different forms of climate change vulnerabilities, mainly ecological and social vulnerability. Social vulnerability constitutes the socio-economic, cultural and institutional aspect of vulnerability. This study focuses on an understanding of vulnerability as exposure and sensitivity to risk and adaptive capacity (IPCC, 2007b). Exposure refers to the extent to which individual or groups could be susceptible to climate disasters such as flooding, drought and lower agricultural productivity. A system or population on the other hand is said to be highly sensitive when it is unable to resist climatic effect.

Adger et al (2004) defines adaptive capacity as "the ability or capacity of a system to modify or change its characteristics or behaviour so as to cope better with existing or anticipated external stresses". Adaptive capacity in the broadest sense also refers to the resilience of a population or system (Westerhoff and Smit, 2009). The adaptive capacity of a group can be enhanced by reducing social inequalities, discrimination and putting in place effective system to help people adjust. The understanding of the reality of these terms in practice and policy will help initiatives targeted at climate change adaptation hence this study attempt to highlight some of the risk factors in the study area and the strategies different farmers adopt to enhance their resilience in the light of climate change impact.

This research will analyse vulnerability from a similar perspective as Westerhoff and Smit (2009) in their study titled *The rains are disappointing us: dynamic vulnerability and adaptation to multiple stressors in the Afram Plains*, *Ghana.* They used a model of vulnerability that draws on the vulnerability frameworks of Turner et al. (2003), Adger (2006) and Smit and Wandel (2006). Combining the three different approaches helps us to view the vulnerability of farmers in the study area as a an interplay of biophysical and socioeconomic conditions which unfolds at different levels from the local to the global (Westerhoff and Smit, 2008)

As climate change stresses distorts agricultural livelihoods, individual farmers and collectives will identify ways to reduce their vulnerability to the climatic threat. The measures different farmers will adopt to minimise the impact of climate change and other stimuli is generally refers to as adaptation. According to IPCC (2001) adaptation to climate change is defined 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. Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation (IPCC TAR, 2001). Smit and Skinner (2002) also classified adaptation based on the intent, timing, duration, spatial extent and responsibility. The responsibility of adaptation depends not only on individuals but also government and other institutions operating in a particular area. Government efforts at building the adaptive capacity of farmer as well as the farmers' own initiatives are explored in this study. Some of the farm level strategies pointed out in the climate change adaptation literature are crop diversification, changing planting period, improving soil management practices and farm enterprise diversification (Bradshaw et al, 2004). Similar to the socially differentiated nature of vulnerability, the adaptation practices will be analysed from the perspective of intersectionality.

2.4 Gender As Intersectionality: Issues In The Agriculture Sector

Gender is used as a planning tool examine the "social relations and power structures underlying women's subordination" Wieringa (1998:349). Scott (1989)

…conceptualizes gender as functioning in a dual way, as a constitutive element of social relationships and as a primary way of signifying a relationship of power (ibid.: p. 94). She stresses the need to study the interrelationship among four elements which together make up a gender system, and the way they change. These elements are the symbols in which gender differences are couched, the normative concepts used, which often operate in systems of binary oppositions, the political and social institutions in which a gender system is embedded, such as kinship and the economy, and lastly the formation of a subjective identity. Scott's [...] view of gender as operating in the whole field between sexuality […], language, the economy and the political makes her theory on gender highly comprehensive. Wieringa 1998:355)

As an organizing principle of social life, gender is embedded in institutions and it shapes values, division of labour, access to resources, command over labour and decision making.

The agriculture sector is invariably one of the sectors where gender analysis has focused historically. Ester Boserup's study on *Women's Role in Economic Development* in the 1970 highlighted model of agriculture change and gave prominence to women's role in development (Turner and Fischer-Kowlski:nd). In SSA and other developing countries, the gender division of labour in the agriculture sector is pronounced. Women and men engage in different farm activities. While male farmers are mostly involved in cash crop production, women are into food crop production. Women generally lack of access to the factor of production and this is informed by gender and cultural norms, gendered institutions and practices which previledges men. While not all men enjoy the same gender privileges, not all women are subordinated, in the sense this research moves away from the perspective which view all women are disadvantaged. We employed the concept of intersectionality to interrogate how different women and men farmer will experience vulnerable as a result of climatic changes.

The term 'intersectionality' was coined by Kimberle Crenshaw in 1989. It is a feminist theory and an analytical tool that stresses complexities; its use as an analytical tool goes beyond a look at differences between men and women to understand how the intersections of social identities such as age, ethnicity, class, nationality, sexuality and others that are usually not physically observed between and among women and men produce differential results. Originally, it was coined to make visible the marginalization of and power struggles among black and third world women (minorities) in feminist scholarship. Implicit in this is the objective to deconstruct the generally presumed homogeneity of womanhood. In spite of the challenge of not been able to take into consideration all aspects of human differences, intersectional analysis helps unravel the nuances and differences that the fixative dichotomous gender analysis will miss out or take for granted. Given that it aids scholars to explain exclusion, marginalization and inequality in a much broader perspective, it is employed in this study to examine how different farmers experience vulnerability and adapt their livelihood to climate change. Additionally, it is employed in the analysis of how gender is framed in climate change policy and impact in Ghana. The complexity of experiences and expectations shared through this analysis can assist government to plan context specific adaptation strategies for these farmers.

Chapter 3
Situating Gender Issues in Climate Change Policies in Ghana

This chapter examines how the concepts of 'gender', 'vulnerability' and 'adaptation' are used in policy discourse on climate change in Ghana. It focuses on the framing of gender in the climate change policy with specific attention to the definition of vulnerable groups and how it influence the adaptation strategies proposed. This is significant because it helps to assess how policy discourse aligns with farmers' experience of vulnerability and adaptation. Additionally such analysis reveal policy makers understanding and awareness of gender and also the categories of people considered, ignored or privileged by the policy (Lambordo and Rolandsen Augustin, 2011).

An overview of the climate change institutional and policy frameworks is provided followed by a review of two key climate change documents; the National Climate Change Adaptation Strategy (NCCAS) and the draft National Climate Change Policy Framework (NCCPF).

3.1 Climate Change Institutional Framework in Ghana

Ghana ratified the United Nations Framework Convention on Climate Change (UNFCCC) in September, 1992. The framework has a goal of addressing human interference with the climate system. After almost a decade the government signed unto the Kyoto Protocol, a legally binding treaty which entered into force on 16 September 2005. The endorsement of the two international agreements mandates the government to take action to address the challenges of climate change.

In the past two decades, successive governments have initiated different measures to combat the impact of climate change in the country. Such efforts include the establishment of policy and regulatory institutions with oversight responsibilities for environmental issues generally as well as those specifically related to climate change. The Ministry of Environment, Science and Technology (MEST) is the main institution responsible for the formulation of climate change policies in Ghana. As part of its mandate, the Ministry collaborates with the National Development Planning Commission, (NDPC) Ministry of Finance and Economic Planning (MOFEP) and the Ministry of Local Government and Rural Development (MLGRD) to ensure that climate change is mainstreaming in all government's development programmes as outlined in the National Medium Term Development Framework, 2010-2013 (GSGDA, 2010). Some of the agencies operating under MEST are the Ghana Environmental Conventions Coordinating Agency (GECCA) and the Environmental Protection Agency (EPA). EPA is the National Focal Point on climate change whilst GECCA is specifically responsible for the three Rio Conventions on Biodiversity, Climate Change and the Convention to Combat Desertification.

In addition to these agencies there is the National Climate Change Committee (NCCC) represented by government ministries, Parliamentarians, research and academic institutions and civil society organisations. This committee is responsible for the developing of the National Climate Change Policy Framework (NCCPF) whilst the EPA has also been responsible for the development of the National Climate Change Adaptation Strategy (NCCAS).

3.2 Climate Change Policy Framework

As of now, Ghana has not completed its policy framework on climate change, however, a draft policy document, referred to as the National Climate Change Policy Framework (NCCPF)

and a National Climate Change Adaptation Strategy (NCCAS) are available. These two documents are selected and reviewed on the grounds that they are the two main government documents closely linked to and detailing Government's intentions and policies on climate change.

3.2.1 Brief Analysis of the Draft Policy Framework

Ghana's initiatives on climate change started over a decade ago with the adaptation and vulnerability assessment carried out by a group of national experts under the *Netherlands Climate Change Study Assistance Programme* (ECN, 2011). The outcome of the study feed into the preparation of the NCCAS which started in 2006. The goal of the Adaptation Strategy among others is to increase the resilience of vulnerable groups and protect property. This document is currently being finalized with support from UNDP CC DARE Programme and Danish Ministry (ibid). The ten year strategy document upon completion is expected to receive Parliamentary endorsement as a statutory document.

As a follow-up to the NCCAS, the government constituted the National Climate Change Committee (NCCC) to develop strategies and outline a comprehensive national plan to promote effective adaptation to climatic changes. One of the tasks of the committee was to develop and oversee the implementation of a National Climate Change Policy Framework which is currently in the draft stages. The composition of the team developing the NCCPF is provided below.

3.2.2 Composition of NCCC

The NCCC is made up of about 24-members represented by two parliamentarians, four Civil Society Organizations and two research institutions. There are twelve representatives from government ministries and agencies as well as two donor agencies (DFID and Dutch Embassy) working on the NCCPF document. The ministries and agencies include health, agriculture, foreign affairs, environment and science and finance. Whilst all these ministries are strategic to this national policy document, the Ministry of Women and Children's Affairs (MOWAC) responsible for gender mainstreaming is not represented on the committee. The absence of this ministry on the committee raises a lot questions about the government's commitment to gender equality especially when it has been acknowledged for its gender sensitivity in international climate change negotiation[1]. It also contradicts the idea that sector climate change polices are to be approval by MOWAC to ensure gender sensitivity (Mensah, 2009) when they have not been involved in the national planning process.

Even though there is a gender based civil society represented on the committee their presence however does not nullify the gap noted. Although these civil society groups bring gender into the policy discussions, the broader goal of mainstreaming gender is compromised without MOWAC. This does not negate the fact that providing spaces for gender based CSO's is vital for the creation of gender awareness aspect of climate change. This is a significant aspect of the climate change policy as pointed out in the mandate of NCCC (ECN, 2011).

The NCCAS document as pointed out earlier is under the coordination of the EPA. Apart from indicating that a broad range of stakeholders were consult to produce the document, we could not get an idea of the member working on the document as in the case of the NCCPF

3.2.3 Framing Of Concepts in Climate Change Policies

The draft NCCPF titled *Ghana Goes for Green Growth* currently exists as a discussion paper. In the NCCPF, climate change is described both as a challenge and an opportunity for development. In the forewords of policy document, the Vice President notes that climate change is an impediment to the achievement of the country's economic growth as well as international

[1] In the UNFCCC COP15 at Copenhagen, the Gender Constituency awarded Ghana as the second country promoting gender sensitivity in their negotiation

commitment such as the MDGs. Though it presents opportunities, the inadequacy of resources to manage the crises makes climate warrant attention and urgency (MEST, 2008). The government therefore seeks to design and implement policies that protect the environment, forestry and other natural resources but their main aim is geared towards the achievement of a middle income status country by 2020.

In the document, the economy and poor people are seen as the most vulnerable to climate change impacts. The vulnerability of the economy is linked to its dependence on water resources agriculture and coastal zones. Among the poor the main forms of vulnerability noted were spatially and socio-economically differentiated. Within these broad categories, gender is recognised as a factor that will influence people's vulnerability. Gender is framed through a combination of narratives related to issues of women as poor, vulnerable and those who lack the essential resources to ascent out of poverty among others. A number of assumptions on the framing of gender suggest that both gender and women are mutable. Such assumptions in the Ghana's NCCPF document include;

- Women are responsible for household provision of fuel, food and water
- Women depend on natural resources for household survival
- Women have difficulty to gain access to land, credit and collateral

In addition to gender, age difference is recognised as a factor that will influence women's vulnerability. Here reference is made to young women migrating from poor regions to urban centres as a vulnerable group. While the policy document argues for the incorporation of gender issues in the climate change policies, the focus is mainly on women, suggesting that gender is equated to women The NCCPF therefore advocate for a higher recognition of the particular vulnerability of women meanwhile men are generally absent from the discussion. The strict categorisation of vulnerable groups as women does not fit with the views expressed by farmers in this study. Other factors influencing vulnerability such as social identities, relationship and institutions which gives privileges to some women and men even within poor groups were not given prominence in the policy text.

Plans to address the nation's vulnerability as indicated in the policy text hinges on three pillars namely; low carbon growth, adaptation and social development. Adaptation is viewed as critical however that section of the document mainly alerts us about how some key sectors like agriculture, forestry will be impacted by climate change. With reference to agriculture, for instance, improving land management practices and REDD are said to hold promise for adaptation.

3.2.4 National Climate Change Adaptation Strategy

As earlier indicated, the NCCAS is also in the finalisation processes and it aim at protecting vulnerable groups. This study could not look at the constituents of the committee working on the NCCAS because unlike the NCCPF, it was not spelt out in the document.

The NCCAS has prioritised ten adaptation programmes to be implemented following the final endorsement of the document. Agricultural livelihoods, the main focus of this study, are among the prioritised areas in the NCCAS document. The adaptation programmes outline mainly focuses on agricultural diversification, provision of alternative source of livelihood to the poor and vulnerable and fisheries management for those in coastal areas.

Similar to the NCCPF, the adaptation document frame gender and vulnerability in close linkage to women. The same categories of vulnerable women are also implied in this document without broadening the scope to include men and other social identities. Since the framing of beneficiaries informs types of policies and programmes to empower vulnerable groups, the lack of consideration of diversity in this document, will miss out on some vulnerable groups and

individuals. In view of the fact the beneficiaries are not properly targeted, the adaptation programmes are like to miss out on some vulnerable groups.

Conclusion

This chapter examined how gender was framed in two climate change policy text albeit in the draft stages. In both policy documents, gender was equated to some particular groups of women specifically those in rural areas and in less profitable farming and trading venture. The proposal for adaptation dictates specific kinds of strategies. Arguably both the gender frames and adaptation strategies outline in the documents do not differ significantly from those already being used under government poverty reduction programmes yet gender inequality is widespread. The analysis indicates that framing gender narrowly based on just one identity without considering the multiple social identities of women and men as well as the gender institutions within which they are embedded will lead to policy failures. In order to enhance gender equity and sustainable development, policy measures will have to be based on detailed analysis of the social realities of different actors. This will ensure that policy strategies developed are multifaceted, dynamic and responsive to the needs of the beneficiaries.

Chapter 4
Erratic Rainfall, Gender Relations and Adaptive Farm Practices: A Case Study of Agona East District

This chapter focuses on gender relations in the study community with reference to rainfall variability and temperature changes. Farmers' responses to the emerging climatic change is explored to understand the adaptation options available and practiced as well as the differential access to formal and informal institutions and agricultural resources.

4.1 Physical and Demographic Characteristics

The Agona East district was created in 2008 out of the former Agona District it covers a land area of 667 square kilometres. The area previously known for its cocoa production has Agona Nsaba as its capital. Among the prominent towns in the district interms of population and agricultural production are Agona Kwanyako, Dunkwa, Asafo and Mankrong.

The district has about 166,750 heatares of the land under cultivation and about 207,350 hectares as a land bank. It also has a forest reserve of 50,200Hectares (MOFA, 2010:6). The relief system is diverse with an altitude ranging between 75-150metres above sea level. It has a sloppy and undulating topography which peaks at 350m (AEDA, 2010). The district is endowed with rivers of which the major ones include river Akora and Ayensu. In terms of ecological zones, the area lies within the semi-deciduous rain- forest which is characterised by bi-modal system of rainfall which usually peaks in May/June and September /October. The amount of rainfall recorded ranges between 1000mm-1400mm annually whilst mean temperature estimates are 33.8°C in March/April and 29.4°C in August representing the highest and lowest limits respectively (ibid:13).

There are about 85,339 people in the district out of which 51.3% are females and 48.7% males (DWSP Report, 2009 cited in AEDA, 2010). The population of this area is ethnically diverse with both indigenous and migrants population. The *Agonas'* are the indigenous ethnic group and they constitute about 45.3% of the population. The prominent minority migrants groups are the *Gomoa, Ewes, Krobos, Ashantis,* and *Akwapims*. Over a half (55.7%) of the district population are within the working age of 20-59years. The remaining population is composed of 24.8% young people aged below 20 years and 19.5% people aged 60 and above. The dependency ratio is estimated at 1:0.8 implying that every working individual take care of one dependent (AEDA, 2010).

About 58.5% of the population are engaged in small-scale crop farming (ibid, 2010) with a few of them engage in relatively small scale commercial livestock production. This also applies to fishing which is carried out in the Ayensu and Okore rivers. The rest of the population however, is engaged in artisanal activities, which includes dressmaking and masonry. There are also a few formal sector employees. Other trading activities were observed.

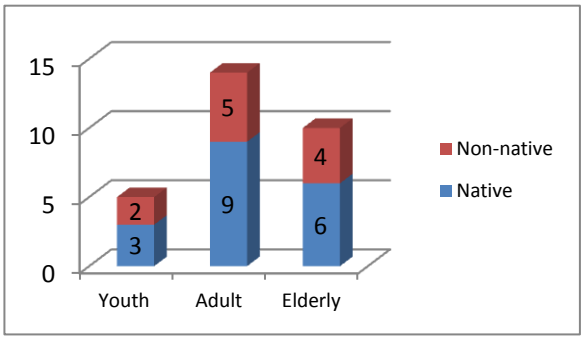
According to the district data about 45.7% of the district population earn a monthly income between Ghc¢50-GH¢100[2]. Another 20.1% of them earn below GH¢50. This income profile encompasses all occupations in the district including farming (ibid).

[2] The amount is equivalent to US$33.3-66.7

4.3 Socio-Economic Characteristics of Farmers Interviewed

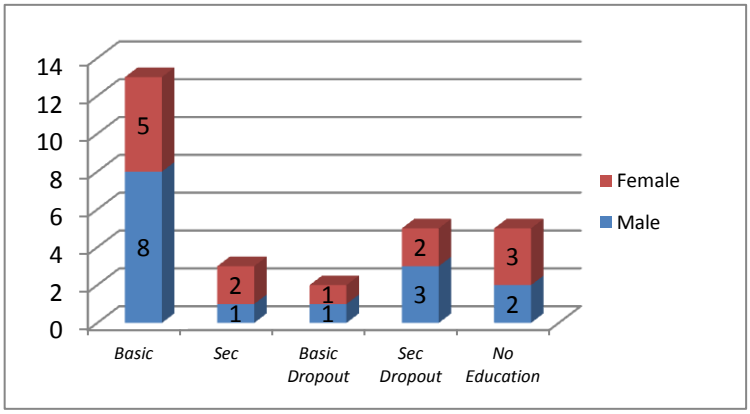
This section looks at some relevant socio-economic factors of respondents in the current study. This includes, age[3], gender and ethnicity of respondents.

Figure 4.1: Ethnicity and Age



Age and ethnicity are significant social factors in the case study community. They influence the extent of access to land, the most important economic and natural resource on which survival of most households depends. Figure 4.1 shows a majority middle aged natives and a low number of youth farmers. The elderly farmers constitute about 34.5% of the total number of respondents (29) interviewed.

Figure 4.2: Educational Levels of Respondents

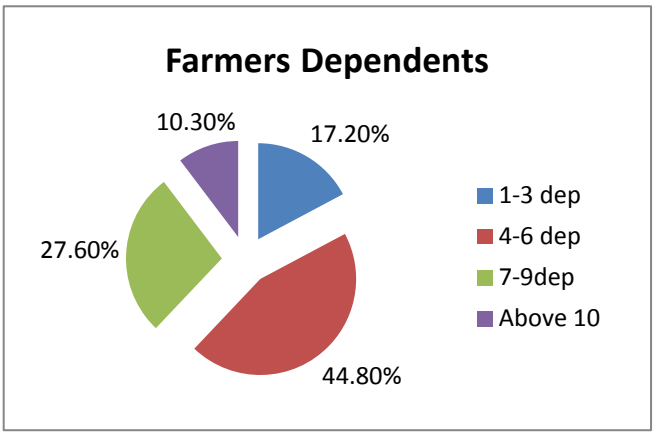


Education is important in determining people's vulnerability. The sample data indicates that majority of the respondents had at least basic education[4] even though some dropped out at certain stages. Generally, farmers with long years of education as presumed to understand better changes in weather conditions and are able to work out positive measures in readiness of climate change impacts. Figure 4.2 shows a distinction between the education level of men and women farmers. Whilst one-third of the women respondents had basic education, for men the ratio was 1:2. In general more men as opposed to women farmers were able to complete basic education. What was revealing about the sample was that two women as compared to one man had secondary education. In addition to this, three men dropped out at the secondary school but that of women dropout was two. This finding shows that while there are less women enrolling at the basic level, they have higher tendency than men to stay in school at the higher level.

[3] The farmers are categorised into three age groups. Those below 34years are referred to as youth whilst those between 35-60years are termed adult and those above 60year are referred as elderly

[4]Basic education refers to both the Junior Secondary School which covers 9years of schooling and Middle School Leaving Certificate which takes 10 years to complete.

Figure 4.3: Size of Households



The size and composition of a house are critical in rural settings as they determine the capacities, strategies and livelihood choices of households. The structure of the household could also indicate the responsibilities towards members of a household as well as their efforts to adapt to climate change impacts should it be a concern. Figure 4:3 above shows that almost half of the respondents have 4-6 dependants within their households. Farmers with about 7-10 children were almost 40% of the population. In times of disasters emerging from climate change, households with larger sizes but poor will be hard hit as compared with those in the same poverty category but of smaller sizes. In another vain, households with larger sizes stands a better chance to expand their farms, given that access to land is not restricted.

Assets

Access to farm resources, particularly land is critical in a rural community. It determines the extent of power an individual can exercise. In view of this the survey sought to know the asset portfolio of respondents and how that relates to their vulnerability and adaptation to crises. The study revealed that while land is important to the farmers, the value of land was based on the tree crops (cocoa, citrus, coconut, oil palm) farm one has cultivated. When asked what farmers considered as property, most of them pointed to their cocoa farms. Some also pointed to their buildings as their property while a few others claimed owning shops. Since these assets are related to land and subjected to the vagaries of climate, farmers in this community, even the wealthy are likely to be affected by the impact of the changes in climate. Even though the farmers in their expression attach more value to cocoa farm than land per se, they also recognised the susceptibility of the crop to disease and adverse weather conditions. In spite of this, cocoa remains their best adaption strategy in the context of climate change impact.

4.4 Farmers Perception and Experiences of Climate Change and Variability

The discussion with farmers and key officials shows a common view on CCV as well as diversity of experience of its impact. Generally, they indicated that rainfall, in particular is unreliable, irregular and the pattern of change is real. According to the farmers, the cycle of rain and dry seasons are changing and unpredictable. In recent years the major rains comes in April/May instead of the usual February/March. This changes the planting patterns and also influences the duration of the rain. This delayed rainfall, amount and duration reduces crop yield and therefore renders farmers poor and food insufficient.

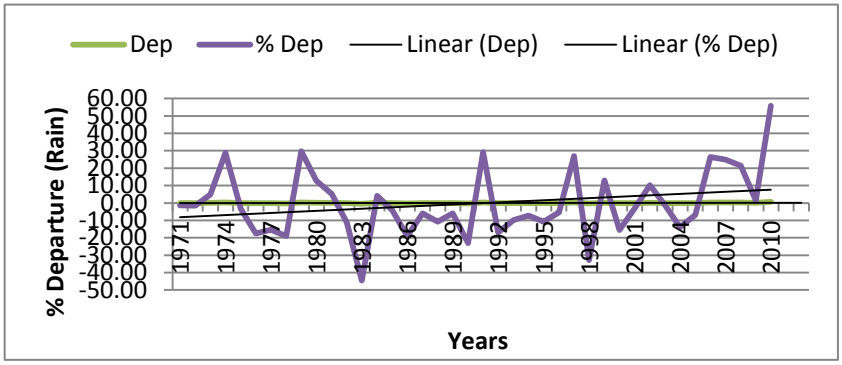
Two women, Kwakyewaa and Serwa, disclosed to me during the FGD (26/7/2011) that, the rain these days, ends earlier than expected. Implying that the duration of the rain has shortened, prolonging the dry season. About the intensity of rain, Kwame Poku notes that *instead of the rain*

showers which are usually experienced in July, he observed that there have been three (3) strong rains. This depicts that the rainfall pattern is changing and becoming irregular. (19/7/2011)

Some male farmers who work along the banks of the Ayensu River mentioned that they usually experience about four overflows of the river in their farm during the major season, but in recent years they have been experiencing only one or two. The erratic rainfall sometimes leads to flooding when the rainfall intensity is high and drought when the rainfall delays. During the FGD, it was revealed that the flooding is more severe in geographically low areas especially areas close to river bodies whereas the drought is more pronounced at high altitude areas. This means that depending on the geographical location of a farmer's land, he or she may be affected by flood or drought. An interview with the chief farmer, suggest that last year when the rain was torrential, some farm were flooded destroying some crops particularly cassava and maize. The chief farmer's assertions were further collaborated by Extension officers from Kenyanko, Duakwa and Nkwanta operational areas who reported that heavy rains caused extensive damage to some farms. The DMTDP reported that about 117acres of maize farms cultivated through the district's Youth in Agriculture Programme was destroyed by torrential rain in 2010 (AEDA 2010: 14).

Figure 4.4 shows a general trend of variable annual rainfall in the district over the years with a greater percentage of the period under study indicating higher negative deviations in the annual rainfall.

Figure 4.4: Annual Rainfall for 1971-2010.



Source: Ghana Meteorological Agency.

This suggest that rainfall is unpredictable, sometimes leading to damage and makes planning difficult for farmers. The crops most affected by the floods are root crops like cassava and yam. Depending on the intensity of the flood, a farmer may lose the entire crop or its quality may deteriorate[5]. Figure 4.5 below shows a section of a building and farm plot destroy by the *Nkumkum* River in Kwanyako after a heavy downpour.

Figure 4.5: Section of Farmland and House Affected by Flood

[5] In the case of cassava, when the quality is not good for *fufu*, it is processed into *gari* or cassava flour (*kokonte*) which commands a lower price and hence reduce farm income" (Extension officer 20/9/2011).

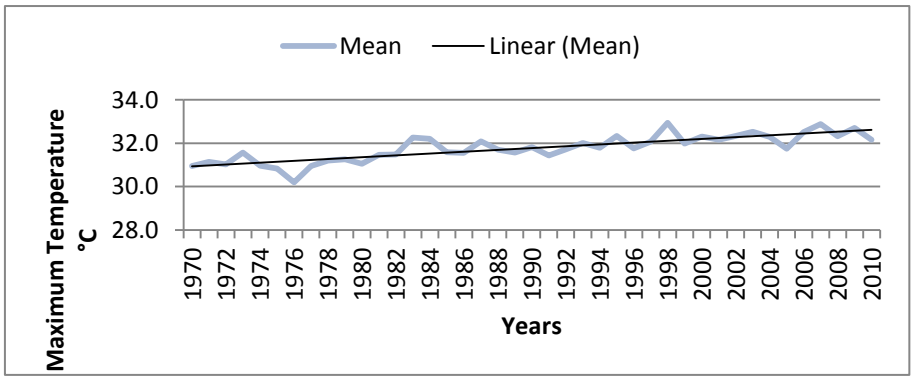
It was also observed that, the drainage system and some of the building in the community could create serious problems during disaster. Apart from a few gutters constructed by the major roads, there is no proper drainage system in the town. Again, the foundation of most houses has been exposed through erosion. This situation could create disaster during heavy rainfall or storm. The pictures below show the foundation of a house that has been eroded due to poor drainage and a house destroyed by rain storm.

Figure 4.6: An Erosion Exposed Building And A Farmer's House Under Renovation After A Storm

Source: Author's fieldwork, 2011

Temperature is another element of climate that affects agricultural production. Both men and women farmers within the community said they have noted some changes in temperature. Whilst some said temperature has been rising, there were others who also claimed temperature has been low. Data from the Ghana Meteorological Agency (GMA) on the district shows an increasing mean temperature for the past four decades (1970-2010) as shown in Figure 4.7 below.

Figure 4.7 Mean Annual Temperatures (1970-2010)



Source: Ghana Meteorological Agency

The temperature graph shows an increasing trend in the annual mean minimum daily temperature for the district over the period. Figures 4.4 and 4.7 clearly show that the district has generally been experiencing increasing annual mean temperature, rainfall variability and a general decline in precipitation (MEST, 2010). These signs of CCV indicate that some people are already experiencing the impact of climate change.

4.5 Gender Relations and Farmers Vulnerability

While natural disaster such as CCV may have broad impact on humans, people's vulnerability, responses and resilience vary depending on their gender roles, needs and preferences (Enarson, 2000). In the case of Ghana, unequal power relation exists between and among women and men which generally create disadvantages for certain groups of men and women within a particular context. This unequal gender relation is reflected in the division of labour in the household and

community, access and control of resources, and ability to participate in decision-making among other social factors.

4.5.1 Gendered Division of Labour and Livelihood Option

The main occupation in the community is farming and involves both men and women, working on relatively small plots of land. From the sample population, the farm size ranges between 144 sqm to about 42,000sqm. Crops cultivated include both tree crops such as citrus, cocoa, oil palm and food crops like maize, cassava, cocoyam, plantain and vegetables. These food crops are mainly cultivated for home consumption as well as markets. Some amount of the crops is sold outside the district.

Even though, almost everyone in the community cultivates a piece of land, men constituted majority of the farmers whilst women were predominately traders engaged in food distribution, food processing and petty trading[6].

Figure 4.8: Some Women's Livelihoods

Mansa busily preparing kenkey

Adoma processing palm kernel for oil

It was also observed that the middle-aged and young women were mostly involved in trading the while the elderly women dominate in farming.

It is the elderly women who farm. The young ones like my type don't farm. They were not train from the beginning with it. My friend for instance has a vast family land but they are always at home. If her husband does not go to the farm she will not go even when they need food. (Akua Owusua, 47year old woman trader and farmer)

The men farmers on the other hand were engaged in food crop and tree crop cultivation. Most of them had other artisanal skills like masonry, driving, basket weaving, which they practice hand in hand with their farming work depending on their financial needs and physical strength. A greater proportion of the middle-aged and elderly men farmers had worked in formal and informal sectors and such people were mostly farming without getting involved in any secondary occupation except for past times. Two middle-aged farmers in the survey had drinking bars as an additional livelihood. This gives an indication that men farmers are involved in a different kind of trading, usually requiring more capital, compared to women. The involvement of men in more than one livelihood reveals how they meet their social roles are provider for their household.

4.5.2 Access to Land

There are different types of land holdings in the community. Land is acquire through inheritance, rent, shared cropping[7] and to some extent outright purchase. Since, land is

[6] The women involved in food distribution usually rotate in market centres in and around the district. The food processing activities were mainly palm oil and palm kernel oil production, cassava dough and *gari* processing. Food processing is a major initiative of the Women in Agriculture Directorate of the Ministry of Food and Agriculture to empower women economically and promote food security (MOFA, 2001).

[7] It is a system whereby people gain access to land and share produce or output from farm in many developing countries. The common types include Abunu, where the cultivated land is divided into two equal parts between

communally owned, and sale is forbidden, sale of such lands is usually done under economic difficulties to cater for the entire family need. Generally there is no difference between the mode of access to land by men and women. Both men and women could use the same system of arrangement to acquire land within the community. However it was observed that in most cases men had better access to land than women. The men also had larger acreages of land as opposed to women. The difference in size of land and the ease of access to land by men was also explained by the fact that men had diverse ways of securing funds for their farm work as well as the physical strength to which the women generally lacked. Ama Durowaa, during the FGD shared this insight.

The men have larger farms. The work that a man will be able to do, the woman will not be able to do same. There are some women who can really work but the men have bigger farms. A woman who is able to cultivate large farm probably has labourers. Once you have the money to hire labourer, you can cultivate about 4acres. For example, I went in for a 2 acres land to grow maize, because I hired labourers I was able to do it. I couldn't have done 2 acres on my own, maybe for 1acre I can manage. (Ama Durowaa, 46yrs FGD, 22/07/2011)

While there is no restriction in land access on the basis of gender, according to the farmers, it was observed that most of the women interviewed gained access to their farm land through their male relatives such as husbands, uncles and brothers (UNECA, 2004). Some men, natives as well as non-natives were also found to have gained access to the lands they cultivate through their spouses families. Another reason for the size difference noted is that the women, particularly married ones have other responsibilities like helping husbands on their farm as well as going about their household chores. This clearly shows that women's time to work on their own farms is limited as these activities are necessary to keep their relationship with their spouses. This also connotes forms of power embedded in social relations which privileges' men's right to family land and ownership as compared to women. Allocation of such lands is done by men who are mostly the heads of the land holding families. Both women and men in FGD asserted that some women owned lands much bigger than some men. Such lands are usually family or rented lands depending on their financial ability.

With respect to age, the general trend noted in land access was that the elderly men had more acreages of land than their counterpart women and also the young men. Land allocation is usually done on age basis giving the elderly more preference than the young ones. Since non-natives do not have access to inheritance rights in the community, their main mode of access to farm land is through the share cropping system. This could be both long term for tree crops and short term for food crops. While the long term arrangements are done through the *abunu* system of sharecropping, *abusa* sharing of crops comes under the short term land arrangement. This does not suggest that the natives do not rent or enter into share cropping arrangements. Since the opportunity to gain access to land from a different family other than one's own family exist, some natives were also found to have entered into sharecropping and renting arrangements with other families, in addition to lands acquired from their own families.

4.5.3 Access To Institutional Support: Credit And Farm Inputs

Some agriculture related institutions were observed operating within the community and its catchment area. These include both public and private institutions such as the District Directorate of Agriculture, rural banks, microfinance institutions and agricultural input shops as well as Farmers' Association which was involved in this study. A major policy of the Ghana government is to increase cocoa production through reducing cocoa diseases. In view of this government' sprays cocoa farms free of charge to farmers. In the study area the mass spraying of cocoa farmers was not discriminatory but had some few challenges; most farms were sprayed without selecting particular farmers within this area.

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the land owner and farmer. In Abusa, the farm produce is divided into 3 parts and land owner takes one-part of the farm produce.

Access to credit is one of the major factors that enhance agricultural production, in the absence of farmer's own finance. Majority of these farmers, both women and men claim that even though they have the opportunity to access credit from the rural banks, the high interest rates and long and cumbersome procedure for accessing the credit were major challenges to them. These and others factors like their lack of collateral and previous experience of how some loan defaulters were handled deter them from borrowing money from the financial institutions. In the face of these restrictions, they suggested that government should provide those facilities as those once tend to be reasonable compared to those of the private sector.

It was also observed that about half of the farmers had some form of savings, both formal and informal whilst the other half had no savings. More men (37%) than women (24%) were involved in a savings scheme. The farmers who were not involved in savings asserted that their expenditure level was high that nothing remains to be saved. The women mainly accessed money for trading, farming and payment of school fees. Obenewaa, a divorcee female farmer during the FGD pointed out how she gets credit to support her children and farm work.

I'm taking care of my children single-handedly. This made me join a bank on the hill. when I realize that there isn't money for school fees, I go to see them and get a little loan. I pay everything little by little on my own. Then I went to take a loan with which I started the cocoa. I will share the cocoa with the land owner (26/07/2011)

Fertilizers, weedicides, cutlass and seeds, spraying machines are the common farm inputs used by farmers in the area. The farmers expressed worry at the increasing prices of these commodities.

Actually if you are a serious farmer eager to make profit out of your farm work then you should apply fertilizer but today we are not able to buy the fertilizer. One bag of fertilizer cost GHC50, how much can you afford to buy and use on your farm. Farmers are suffering; we work tirelessly but don't gain anything out of the farming. (Poku, 40yrs, 19th July 2011)

It is not always that you can afford to buy fertilizer. You will realised that fertilizer gives good yield but the quality of the food may not be the same as those grown naturally (Ampofo, 43yrs)

There are two agricultural input shops in the community that sell these products but the extents to which farmers patronise the goods differ. Apart from weedicide which almost all the farmers irrespective of their gender, age and ethnicity noted have reduced their cost of labour, the use of fertilizer was almost non-existent among women farmers of all ages. Among the men, those who use fertilizer were mostly the vegetable growers and a few cocoa farmers.

With the advent of the zero tillage being promoted by government, spraying machines are very integral in land preparation as well as fertilizer and pesticides application. With the exception of two elderly men aged 50yrs and above almost all the other famers hired the machine. None of the women nor the youth had a spraying machine. Middle-aged farmers engaged in all year round vegetable farming had water pump they use during the dry season to irrigate their farms. In terms of seed usage, it was observed that the farmers used both their own local seeds and certified ones. They used their own seeds especially in the case of maize to lower their production cost.[8] The executives of farmers' association have linked up with some agro-based companies to supply the produce to the farmers at a reduced rate.

4.6 Vulnerable Groups Of Farmers

Without the rain you are not a farmer. Asabea, 63year old woman farmer

[8]Even though the hybrid has higher nutritional value gives more yield per unit area, the farmers said, they preferred the local maize variety in that, it can be stored for a long period without treatment. Other reasons relates to the taste and texture of the local variety and its demand in the market.

Male and female farmers during the FGD and the interviews indicated that farmers in general are vulnerable to the climatic changes because they depend on the rain to make a living. Having made this remark, they further identified some groups of farmers whom they considered more vulnerable to CCV.

Aged male and female farmers were the first they referred to. They attributed this to their less mobility as compared to the others who can always leave the community when disaster strikes. Women farmers especially single mothers, widow or divorced women were also classified as vulnerable. It was said that such people are vulnerable since they do not have husbands who will assist them during hard times. For instance they mentioned that sometimes labourers hired by women deceive them and run away with the money without doing the work, an act they will never attempt on male farmers. According to some women farmers, the men labourers sometimes demand sexual favours from them before they will go and work on their farm.

Some married women, were also categorised as being vulnerable to the emerging disaster because of their responsibility to feed the family. Some women noted that while some husbands cannot be bothered about whether their children have been fed or not, the mothers will go every length to make sure that their children are fed before going to bed. In situations when food is not available at home, these women will go and borrow food or buy on credit in order to feed their children. Women's household reproductive responsibilities and care work makes them immobile especially when the children are young. Thus they are not able to migrate and seek for new opportunities as some men will do during hard times. Additionally, the reproductive responsibilities of women pose a challenge to the productive work they can engage in and hence explain why they are unable to cultivate large farm size because of their multiple roles.

Male middle-aged farmers perceive that they will be more vulnerable to climatic variability because they have young children, some of them in secondary schools that they have to cater for their education and feeding. Other farmers who were considered vulnerable within the communities were those engaged solely in mono-cropping or cultivated maize and cassava without tree crops.

4.7 Some Impact Of The Changing Weather Conditions On Farmers' Work And Division Of Labour

Intensification of Work

Farmers alerted that the delayed and sometimes heavy rainfall increase the cost of production. This weakens the financial base of these poor farmers, plunging some of the poorest ones, into perpetual debts. The high cost of production resulting from the delayed rains was confirmed by Amoako, a 45 year old male farmer at the FGD.

'we weeded our farms in early March in preparation to plant maize in early April. However, the farm laid fallow for over six weeks since the rain did not come. The weeds began to grow and hence when the rain finally set in, we had to weed or spray the farms again before we could plant. This comes as an extra cost to the poor farmer (19/07/2011).

Loss Of Crop And/Or Low Yield

The farmers reported experiences of low yield and sometimes total crop destruction in the advent of heavy flooding or drought even though the occurrence is not frequent. In most cases, cassava and vegetable farmers were said to have suffered such climate disaster. Whiles the vegetables experience fruit absorption, cassava and other roots crops rot as they are unable to sustain the excess water in the soil. In the event of such disasters, some vegetable farmers claimed they had to apply more fertilizer in order to boost the growth of crops. Apart from these food crops farmers, some cocoa farmers also complained about the effects of heavily rains on

the tree crop. They observe that flooding increases the incidence of black pod disease when the cocoa pods get submerged.

Geographical location and relief were others factors of the physical environment that affected yield or loss of crops within the communities. A farmer at the FGD claims;

My farm is along a river so whether or not the Harmattan (dry season) comes the crops do well. However, last year I planted about 100 cocoa seedlings in one of my farms on the hills, but only 10 seedlings could survive since the sun was high and the rains could not come when it was expected. I lost those seedlings because it was on the hills (Manuh, 19/07/2011)

Limited Options

The resources of farmers determine the extent to which they can adjust or expand their farm work. In case of any disaster such as floods and drought farmers will fall on available resources for their survival. In this vain those with limited options are likely to suffer the brunt of the hardship during disaster. In the case of the farmers in the communities, where the extent of crop damage is severe, some farmers have to clear the farm of old (destroyed) crops, obtain new seeds or seedlings and then replant the farm after flooding. Those without strong financial and physical abilities often suffer. In situations where the damage is huge, the farmers especially those with larger farm sizes or several plots of land usually move to new areas to grow their crops. However, in the case where the extent of damage is not that extensive, farmers would only have to replace the few damaged crop areas with new plants or seedlings.

Precariousness

According to the farmers, the delayed rainfall prolongs the expected harvesting season and as such increases "poverty" (precarious situation) as farmers do not have food readily available and money for their daily expenses. Two women at the FGD had this to share;

In some particular years, it doesn't rain well. Since we started farming this year, it hasn't rained well. If it had rained well, we will have had maize. As for the rain, it usually start around February but this year, as at April-May, there still wasn't any rain. It was in May that it rained a little bit. If it had started around March, there would be more maize by this time. (Owusua 26/07/2011).

Last year for instance, I really worked hard but ended up in hunger. All my cassava got spoilt because of the heavy rain. (Fatima, 26/07/2011)

Maize, cassava and plantain are the major staple crops in the area. Usually farmers are expected to harvest maize in May/June but because of the delayed rainfall, some started harvesting the fresh maize in July and the dried ones in August. This according to the middle-aged and elderly women and men creates food scarcity and increases food prices as the old stocks usually get finished while the new maize is still not matured[9].

4.8 Adaptation Strategies of Farmers

Adaptation is often referred to as measures put in place by individuals or collectives to minimise their vulnerability to adverse impact or risk. In view of the ongoing changes and variability in weather conditions, the farmers in the study communities, were using strategies, some which can be classified more under coping mechanisms than adaptation strategies. Among the various strategies and mechanisms adopted by these farmers in order to survive the emerging impacts on climate change are crop diversification, changing planting dates, mixed farming (crop and animal rearing), building network and migration.

[9] The price of old maize was astronomically high at GHc6 per rubber of 6kg. In a normal season, the price of the new maize would have been as low as GHc1.5 for the same quantity.

Crop Diversification

Crop diversification simply refers to the ability to broaden farm enterprises and spread risks within a certain area in order to avoid a complete crop failure or loss of income to a farmer (Bradshaw, 2004). Crop diversification is one of the strategies the farmers employed in adapting to or coping with the predicaments of the rain and temperature changes within the communities. While, almost all the farmers were found to be diversifying their crops, the practice is more utilised by the elderly farmers. They intersperse their tree crops with two or more food crops on the same piece of land. The middle age and young farmers interviewed claimed they are also learning this practice in order to secure their livelihoods.

our elders whom we are learning from used cocoa or oil palm as their backbone so when the maize and cassava fails, you can go to your oil palm farm and if for nothing all at you can get one or two bunches which you can sell, even if they sell at 50pesewas or 1Ghc you will get something to support yourself. In the same way, if you have some cocoa or coconut, you can get some to sell to support yourself. In this case you will not be in so much difficulty as someone who does not have any of these crops (Kweku Panyi, 19/07/2011).

Figure 4.9: An Intercropped Farm of Cocoa, Coconut and Plantain

Both male and female farmers are cultivating or expanding their cocoa farms because it attracts relatively better prices from the government. Even though they mentioned that cocoa is also susceptible to the changing climate, it is an interim adaptation measure for the farmers.

Combining farm work and non-farm activities:

As pointed out early on, male farmers usually have alternative skills which they do intermittently with their farm work. The young male farmers most especially and sometimes the middle-aged male farmers utilised such skills to acquire additional income in order to be able to support themselves and their families' expenditure. A majority of the women farmers on the other hand intensify their trading activities to raise money for the upkeep of the home. The young and unmarried women who do not have any trade claim they sometimes fetch water for the young men during the construction of a building in order to earn some income for their spending. Others were of the view that they save such money so they could travel to the nearby towns to learn dressmaking and hairdressing.

Animal Rearing

Even though not a new practice, animal rearing was found to be another strategy which some farmers have adopted or planning to engage in as a measure to adjust to the hardships of the weather condition. An elderly male farmer, Kwame Nti, noted that he started rearing glasscutters' last year as a means to gain some additional income should his crops fails. Two other elderly male farmers also had plans to start pig farming and fish farming respectively. Raising livestock is considered both a means to supplement farm income as well as nutritional needs of the household.

Reliance on Remittance

Another important strategy which seems to becoming a general norm, even though not new, is the reliance on remittances from children and relatives living in the cities and abroad. Those who rely on such a strategy are mostly the elderly. They use such money to hire labour and purchase inputs for their farm work.

Secure Land Title

Proper documentation of farm land is another means by which farmers (native and non-native) secure their lands. According to the farmers, access to land could be threatened in the face of climate change as farmers seek new areas to cultivate. Therefore they seek new land arrangement beyond the shared cropping systems. They claim they would prefer to purchase the land they are presently cultivating out rightly. Some elderly and middle-aged farmers contend that the current system breeds litigation and conflict over land especially when new family heads threatened their removal from the land. In some cases they mentioned that the second generations of the farmer who acquired the land is sabotaged hence they are unable to continue farming on the land. These issues coupled with the changing climate condition are likely to create more problems in the community.

Investment in Spouse's Business

Some male farmers identified their spouses business as a potential means of safeguarding the family against possible risk. A few wealthy men acquire shops for their wives for trading whilst others claim they gave money as a business capital to support their wife's businesses. This practice has the tendency to burden the women involved, two women claimed that they lost their working capital as they have to pay for school fees, utility bills and household expenses when their men had no money.

Heavenly Sustenance

During the focus group discussion with both male and female farmers, they expressed hope in God's sustenance. When asked "how do you manage in the face of these challenges", almost all the farmers said '*it is God who takes care of us'* this indicates that in addition to their reliance on physical factors, farmers also expressed their hope in a Supreme Being or power to take care of them in adverse situations. To put it bluntly, a middle-aged farmer said *'we put your hope in God knowing that he (God) is also a farmer and would not deny us. He controls the weather and has caused the weather to be what it is. We as humans only need to exercise patience (FGD, 19/09/2011).*

Strengthening Social Networks

One of the key things both women and men surveyed consider as significant for their survival was the need to strength their social network. Farmers in the community were found to have formed a new group, with the intention of access bank credit for their farm operation. Narrating his story to confirm the reason for the formation of the group, a middle aged woman, claimed *'we recently, heard that an agricultural bank has started helping farmers with credit. The only condition attached is for farmers to form a group. So we decided to form the group with the head or chief farmer as our leader. When the chief farmer goes to take the money, he will take it on behalf of the Farmer's Association and this can help us expand our farming activities. (Esi Kwapong, 46yrs, women FGD 27/07/2011)*

Other Adaptation Strategies

Other measures that farmers noted included interspersing planting dates within the farming season; farming on different pieces of lands, seasonal migration and storing of food crops for household use. The later strategy was mentioned by middle-aged and elderly women who claimed they store their food because of price hike after the major season. The other mechanisms were prevalent among men; some elderly and middle-aged farmers claimed they

stagger the planting days within the farming season; some cultivated on different farm plots, sometimes on hilly area when they anticipate flood and in low geographic areas in dry period. The young men on the other hand migrated to nearby cities and towns during the off farming period. While women were more concerned about keeping the home interms of food provision the men focused on raising income to support the family.

4.9 Farmers Expectation of Government to Enhance Adaptation

The farmers noted some measures that can help them effectively adapt to the changing climate and their poverty situation. Their key concern was for government to improve agricultural production. They revealed this could be done through the following measures: provide credit facilities with lower interest rate but not collateral, intensify infrastructure development such as irrigation system, road network, market centres, and storage systems and introduce new technology in the form of seeds and skills alike. Other issues include the need for government to reduce the cost of farm input, regulate prices of farm produce and reduce institutional bottlenecks. In addition to the above they requested for the creation of jobs in alternative employment in the catchment area to engage the youth and also to reduce post-harvest losses. Furthermore they expected government to establish market linkages with neighbouring countries as a means of reducing perennial glut and in turn increase their income levels. They also intimated that alternative employment for the young and middle-aged women and men could help them adjust their livelihoods in the face of climate variability.

4.10 Understanding Intersectionality Through Farmers Narratives

As pointed out by Rodriguez (2010:63), 'women and men do not constitute a homogenous group[...]gender interact with other personal attributes to outline the degree of vulnerability' This chapter uses the testimonies of two farmers, a male and female to demonstrate how gender, age, ethnicity and the marital status of these farmers interact to create advantages and disadvantages at different phases of their life cycle, which in turn influence their level of vulnerability and adaptive capacity to CCV. These narratives also seek to highlight the nuances and differences of how farmers gain or not gain access to land or other farm resources. According to Locker and Llody-Sherlock (2011:1132) life course methodologies in development research "give value to the subjective life account as revealing of wider institutional changes"

Case 1

Edward Asamoah is a 55year old farmer and a native of Agona Kwanyako, the case study community. Asamoah, pointed out that his late father was a driver, who used to transport timber from Takoradi to Accra and some other places. He was engaged in that business until he return to the village at age fifty-five to start farming.

Among four other siblings, Asamoah is the second child of his parents and had his basic education in Kwanyako, and completed his Middle School Leaving Certificate in 1971. With support from his father, he underwent four year Auto Mechanic apprenticeship training in Agona Swedru, a distance of about 5km from his hometown. His elder sister did not attend school but instead supported their mother in her fish mongering business but their last born, also a female was put in dressmaking apprenticeship after completing her basic school.

Upon completing his apprenticeship, Asamoah, migrated to Accra where he worked at the Mechanical Engineering section of the Accra City Council for about five years and then got married to Mercy, a native of Kwanyako and a trader. Their marriage is blessed with four children; three boys and a girl. The first son now aged 27years completed Technical School at Accra, in 2009 and is currently at Kasoa seeking for job. The second son, who was born in 1986, completed a Technical School in Kwanyako in 2010 where he specialized in Masonry. The third

child has completed Senior Secondary School and is awaiting her result whilst the last child is about to complete his basic education.

In 1985, Mr. Asamoah returned to Kwanyako to look after his sick father's cocoa farm. On the question of Asamoah's impressions about life in the village when he first arrived, after many years of staying out, he exclaimed and said, *it was difficult in the beginning. I had to cater for my parents and my own family, we had one child then. I worked on my father's farm. He had two different plots, one at Famayeh which is about 4 acres and the other is a vast family land in Kwanyako. On the family land, he had about 3 acres of cocoa whilst one acre of the Famayeh plot was used for cassava and other food crops. I also started a one acre farm on my father's plot in Famayeh where I cultivated maize, cassava and beans. When my father died, the next of kin who was his nephew took over all his cocoa and the farmland as the matrilineal custom demands and gave about 3 acres of the Famayeh plot with some few citrus plants. In actual fact this land came to us because it was my grandfather who gave the land to my father.*

Following his father's death, Asamoah struggled with his mother's family for farm land since he did not have enough land to farm. He was given about two acres of land which he started cultivating maize and cassava in 1989. He illuminated on his current farm size by saying;

My maternal uncle passed away so I am the next of kin, now my mother family land has come under my control. The land is vast and other members of the family farm on it but what I manage including the one I inherited from my uncle is about ten acres. This farm will also be inherited by my nephew in the event of my death. My children might be considered and given a small portion of that land if I cultivate cocoa, oil palm and citrus. If you cultivate just maize and cassava on the family land then your children will not have any share in that land.

Asamoah told me that previously, farming was difficult as it depended on the use of hoe and cutlass to clear land and weed farm. These days, in addition to hoe and cutlass weeding, the use of weedicide is becoming common among farmers.

On crop yield, he claimed that yield was low during the period he came down to take care of his father's farm. He added that as a parent raising young children, he didn't have enough money to buy fertilizer. Fortunately he said he is able to afford it in recent days. Another reason for the low yield was that, the technology of planting maize in rows was not introduced then so one could one get only 6-8 mini bags[10] of maize per an acre of land but currently they harvest about 12 mini bags from the same size of land.

In the past eight years, Asamoah has been cultivating cocoa. He currently has 6 acres but some are still young as he expands his farm every year; his harvest is about 8bags[11] of cocoa each year. He expressed the hope to reach 10acres in the next three years. He pointed out that even though farming is expensive and takes a lot of money meant for family upkeep, in some years he is able to make substantial profit. In other years he claims he able to suffer lost due to bad weather.

On his experience about climate change or extreme weather condition, he claimed it started in 1983 when the whole of Ghana experienced isolated rainfall and long droughts which led to the national famine. *In recent times, however, what we have observed is a changing rainfall pattern. It rains but it does not rain in the February/March when we normally start planting, now it starts very late like April/May.*

According to Asamoah the changing rainfall pattern was not something he foresaw however the public education programme on radio and television highlighted the fact that continuous deforestation can lead to desertification and rainfall changes. In 2010, the Kwanyako Township experienced heavy rainfalls which flooded farmlands and destroyed some houses. He asserted that the flood destroyed about 8 acres of his farm land although his plot is generally not prone to flood. Asamoah's sugarcane, cassava and plantains were destroyed; his cocoa farm was somehow secured as the water did not submerge the cocoa pods. Immediately the water subsided, he mobilized some labourers to replant the crops he lost. The crop destruction experienced last year

[10] A mini-bag is equivalent to a 45kg

[11] One bag of cocoa is 63.5kg and is priced about 200GHc (133US Dollars)

was not the first of its kind, it also occurs during the minor rainy season (Sept –Dec) where the rain stops abruptly. The changes in both major and minor season rainfalls cause some farmers to lose their harvest he added.

In terms of support, Asamoah enumerated that neither non-profit organizations nor government came to his aid during the crises. As far as he could recall, the only times he had benefited from government intervention was during President Rawlings regime when they were given money to cultivate pepper and also during the Sasakawa project in 2000 where he received some fertilizer and chemicals which gave him a good yield. *That year I planted 3 acres of maize, it was at the right time and the weather was great so the crop became very nice. I harvested some as fresh maize, and the remainder which I harvested as dried maize was about 20 mini bags. The fertilizer was really helpful.*

Concerning his social roles and responsibilities in the community, Asamoah claims he belongs to the Akwamu royal family in Kwanyako. In the absence of the sub-chief, he is the next in command and takes charge of all family matters. Before building his own 5-bed room house in the village, he resided in the family house at Kwanyako. He still spends most of his weekend at the family house because their sub-chief travels most of the time so he has to be around to address any problem that comes up. He says, if there is a case that has to be taken to the police station I have do that. Any case that brings misunderstanding between partners or a female ill treatment will have to be reported to the Domestic Violence and Victim Support Unit (DOVVSU) of the Police or the Commission for Human Right and Administrative Justice (CHRAJ).

In 2010, Asamoah was elected President of the Kwanyako Farmers Association. By virtue of his position, he is a liaison between the farmers and the agricultural based institutions in the area more specifically the District Directorate of Agriculture and the Ghana Cocoa Marketing Board. He asserted that since the formation of the association, they now receive some attention from Extension officers and officials of the COCOBOD. For instance COCOBOD has promised to inaugurate a cocoa shed to facilitate cocoa marketing in the area. In addition to the above roles, Asamoah also caters for her widow sister and her unmarried children.

Asamoah rears poultry, sheep and goats as an additional source of income. He claims the rearing of animals in the village is not sustainable since people steal the animals. He mentioned that he plans to start fishing farming in the village and is hoping that somebody will provide him with some education and training to enable him venture into the his project.

He claims the farmers these days do not do one work but involved in multiple livelihoods including farming. He said '*For instant when you plant maize then you interspersed it with cassava so that in the event of a heavy rain when the cassava gets rotten you can have the maize. We intercrop because one cannot really tell how the weather will be*. We used to do intercropping but then when we plant one for instance cassava here yam there and cocoyam at the other side. But now when we plant the cassava at a particular place then under the cassava we cultivate other plants as well. So when you plant the maize the whole year then you plant at least small cassava. You can also plant plantain within the cocoa farm. I have now shifted to the cultivation of cocoa and have no regrets; I am rather very happy. Those days, when I planted only cassava I used to weep, particularly when after working so hard on the farm to plant the crop and the rains fail and the sun shines so much that I lose the cassava. With the cocoa, it can withstand the sun shine until the rain comes so I do not have problems. Last year I brought some cocoa from Asamankese to plant, in less than one year, it has started fruiting. This year, I planted about thousand two hundred 1,200 cocoa seedlings and all that has been interspersed with plantain. God willing in the next two years to three years if I am able to harvest all I will be very thankful.

Case 2

Akosua Agyeiwaa is a non-native farmer and a widow resides at Makrong Junction a community near Kwanyako. She pointed out that she is a native of Gomoa Kweakrom near Agona Swedru

in the Central region. Her late parent had six children but two of them are deceased. Agyeiwaa said she did not know when she was born and blamed her late father for her lack of formal education. According to her, she was supporting her parents who were food crops farmers before she was married to the late husband as the third wife. As to when she got married to the husband, Agyeiwaa could not tell but she noted having given birth to two of her children during President Kwame Nkrumah's regime[12]. She added that three of her six children are deceased, leaving behind two daughters and a son. She expressed disappointment that apart from her last son who completed secondary school, none of her children had formal education, although they were encouraged to do so. The son who completed secondary school has however not found a job in the past five years.

According to her, the husband brought her to the present community in 1974[13]. In her response to the question "how was life when you came to settle here", she remarked;

Life is not the same as it was those days. Things have changed. During that time we were using shillings. We could trade with the shilling but now life is very difficult for us. Even when you mention the old currency, the children don't know it. You could buy fish with just some few shillings and fry till evening and buy some the following day but now we don't use these shillings for anything. During those days the few crops you harvest from your farm may not get a good price but the little money you get from the sale could take you far but these days even when you sell hundreds of things, they will get finish but the money you get out of it will not take you anywhere. All these show that times have changed drastically.

Agyeiwaa noted that the husband acquired land from the Kwanyako stool land on a shared cropping basis where they cultivated cocoa, maize, plantain, cassava and sometimes cocoyam. The land document, she added is with Nana Okuta, one of the subchiefs in Kwanyako. On the size of the land she remarked;

I cannot really tell the farm size because my husband did the entire farm by himself. I was not so much involved as to how he goes about it. As for a woman you do not interfere so much in your husband things

The widow revealed that before her husband died about seven years ago, he allocated portions of his land to his wives, children and relatives. She enumerated that since the distribution was not properly done before the husband passed away, some of his family member wanted to claim the cocoa farm given to her but the problem has somehow been resolved. Every year, she sends some of the cocoa proceeds to the husband's family. Taking about her property, she said since her husband family have not ejected her from the house built by the husband, she can refer to the house and the one pole cocoa farm as her main property.

In relation to her farm work, Agyeiwaa said she cultivates cassava, maize and plantains on different parts of the husband's land in addition to the cocoa. She estimates her annual yield of cocoa at three (3) bags noting that the trees are old. She reported of having started cultivating the new hybrid cocoa variety[14] to increase her income however there is no financial assistance since her husband died.

You would agree with me that as a woman, when you have a man in your life, you may face some hardships but that would not be too much because at times if you need something, he can ask to you go for it and he will later pay but now that he is not there, everything depends on me. If I need something, I will have to wait till my daughter gets some money for me. Just imagine this cocoa farm that we harvest yearly, after the harvesting period I have to stay like that till the next harvesting season. I depend on people benevolence and that of my daughter

Sharing insight on the weather and the timing of cultivation, she said that unlike previously when they could tell the onset of the rain now the rainfall pattern has changed making it unpredictable. She affirmed that the changing weather condition was not something she knew

[12] Dr. Kwame Nkrumah was the first elected President of Ghana after the independence struggle. His regime lasted from 1957-1966

[13] She referred to the year when Ghana changed from driving on the left to the right and this was in 1974

[14] This variety is early yielding and can be harvested 3-4 times in a year

about as that was heavenly things under God's control. According to Agyeiwaa, the changing rainfall pattern in some years causes flooding of their farm lands. One of such experiences was in 2010, where about one acre of cassava and maize farm she cultivated with her daughter was destroyed by floods even though that was a hilly area. Such damage, she lamented creates more hardship for her. In addition to this she further enumerated on some of the changes observed in her farming work;

At first the cocoa had value but now we don't get much. Previously when we harvested our maize, we get a lot of traders coming to buy which gave us some money to buy the things we needed but these days the maize can be stored for a long time without any traders coming to buy. During the period, I worked with my husband the maize variety we cultivated could stay in store for a year but current variety easily go waste. In the past six years, I don't sell my maize; I keep it for my grandchildren and children to feed on. The cassava doesn't yield much so I don't sell it. I just keep it in the farm and we feed on it before we plant new ones. I use to do a lot of work on my farm all by myself but now my strength has gone down. Previously I could cultivate about half an acre of land but these days, I cannot even do a quarter of an acre. My strength has gone down but I don't have the money to pay for labourers to help me so I do the little that I can.

The widow asserts that her two children who could have helped her on the farm are out of the village. She has never applied fertilizer on her cocoa because of her limited financial ability. Occasionally, she manages to apply weedicide when preparing the land for maize and cassava cultivation.

In her estimation, Agyeiwaa contends that the burden of the unreliable rainfall will fall disproportionally on poor farmers like her as they do not have the funds to purchase farm inputs. She enumerated further by saying;

A rich farmer for instance has applied his fertilizer by now and may have started weeding his farm already. If I had money, I could hire some labourer to help me on my cocoa farm. Women suffer a lot. Just like I cannot afford fertilizer for my farm, a man will look for any means to get the fertilizer.

When asked if she has received any support from government. Agyeiwaa pointed to the Mass Cocoa Spraying Programme instituted by government as the main support she has received. She also referred to a government social welfare programme (cash transfer) for widows she was supposed to benefit from last year but could not make it on the day of disbursement due to ill-health. The ruminants and poultry she claimed rearing as a support for bad times have been attacked by disease with only two goats left behind.

Conclusion

This chapter highlights the perception and experiences of diverse farmers in relation to the emerging climate change and variability. The discussion posits that the diversity of farmers in the study area held the same perception about the changing climate however their experience of vulnerability and adaptation differed. Farmers' experiences of vulnerability were linked to factors such as the physical location of their farm, gender and other social identities, type of crops cultivated as well as the operation of social institutions both formal and informal. The farmers' awareness of the changing climate has however led them to deepen existing farming and non-farm strategies to cope with the impact of variable climatic conditions. In order to effectively adapt, both male and female farmers hinted some measures government should be implemented to improve agricultural production generally and deal with climate change impacts specifically.

Chapter 5 Conclusion

This study analysed how gender has been framed in the climate change policy of Ghana, focusing not only on the dichotomy of men and women but also to understand how the diversities and differences among them, influence their perceptions and experiences of vulnerability and adaptation to climate change impacts. This has been done with the objective of contributing to the debate on gender equality in climate change policy and filling the knowledge gap in climate change policy and research in Ghana. The main research question which guided this study was "How are 'gender', and 'gender equality' defined in climate change policies in Ghana and to what extent does this reflect the perceptions and intersectional experience of male and female farmers in the Agona East District". This study argues that the men and women's vulnerability to climate change cannot be limited to only their gender differences, but also other social identities contribute to inform their experiences and perceptions. It will therefore be appropriate for policy makers to consider integrating people multiple social identities in the design and implementation of current climate change policy.

Statistical data from GMA shows that climate change is a reality in the study area. This was also confirmed by the farmers, who claim to have observed changes in weather conditions. The discussions with farmers revealed that while climate change impacts were a reality they were mainly concern about their poverty situation which was worsening as a result of the high cost of living, (WB, 2010) increasing cost of production and low prices of farm produce. Their adaptation strategies were particularly aimed at enhancing their socio-economic status and this reflected in the expectation they raised. Their expectations from government were aligned to initiatives that will increase their income levels and create more employment opportunities. The farmers' aspiration is well informed by the fact that a better socio-economic status will minimize their risk levels. From this discussion, we suggest that measures aimed at reducing poverty in rural communities should be the priority of policy makers even as they strategize to address climate change impacts. By reducing poverty levels, local farmers will be able to adapt to different hazards including climate change impact

A review of the policy document shows such intentions however implementation may be challenging in the light of improper framing of beneficiaries as the study has revealed. The framing of beneficiaries in the policy does not explicitly incorporate the broad array of vulnerable social groups. If policy relies on generalised data without interrogating specificities of different physical and economic geography then certain vulnerable groups are likely be ignored or left behind. This study has shown how climate change policy has not considered all vulnerable people in the policy because the framing of gender only addresses the concern of rural women not the aged male farmer nor the ethnic minority women and men. While this is a reality and an observable practice, it is rarely considered in policy (Okali, 2011:3).

The study also revealed that the adaptation strategies of farmers are informed by a complex dynamics built on social relations and access to institutions. Theoretically, all members of land owning community have rights of access and use of family land. However in practice an also as observed in the community of study, gaining access to land was based on several factors and not necessarily limited to membership of the land owning community. While women have access to land, rights to land are attained through male relations. This does not also suggest that all male in the community has access to land as access is influenced by people's multiple social identities of age, class and wealth among others. Framing gender in the conventional way puts a limitation on how policy should address the challenges of the diverse social realities of different people. In view of this, it is suggested that an alternative perspective be brought into the analysis design and implementation of climate change policies to capture the various diversities and challenges. An intersectional perspective of policy has the added advantage of capturing the complexities,

nuances and diversities of social relations and disadvantages which underlies differences in men and women's vulnerability and ability to adapt to climate stress.

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Appendices

Annex A: Research Methodology Coordination matrix

Question	Methods	Data to be obtained
How is 'gender' and "gender equality" defined in climate change policies in Ghana and how does this reflect the perceptions and intersectional experience of adaptation of male and female farmers in the Agona East District?"	**Review and analysis** of two policy documents: National Climate Change Adaptation Strategy (NCCAS) and Draft National Climate Change Policy Framework (NCCPF)	Definition and meaning of gender and gender equality in climate change polices gender approach informing climate policies Definition of gender and gender equality by female and male farmers. Difference and similarities between policy makers and farmers conception of gender and gender equality Annual Rainfall and Temperature Trends in Agona East District Crop yield data of major food crops
What are the main gender-based dimensions of 'vulnerability' and 'adaptation' identified by Ghana's climate change policies	In-depth semi-structured interview with government officials: Gender focal person, EPA Member of National Climate Change Committee District Director of Food and Agric.	Categories of gender- based vulnerabilities in climate change policies Factors attributed to gendered vulnerabilities Gender difference in adaptation measures in climate change policies
Is there awareness about the influences of power relations (other than gender) and if so how is this translated in policy?	Review and analysis of policy documents In-depth interview with key informants and focus group discussion with farmer and personal narratives	Types of social characteristics identified by farmers, policy makers and civil society expert Nature of the intersections of relationships between the social characteristics. Description and linkage of social characteristics in climate change policy
How do male and female farmers depending on their social location perceive and experience vulnerability to variability and	Face-to-Face survey of male and female farmers FGD with 10 female and 10 male farmers respectively Personal narratives of	Social stratification and demographic data of the farming population Dimension of male and female farmers resource endowment Historical and current trends

changes in climatic conditions and how to they adapt their livelihoods to adverse effects in their specific social location?	4 farmers selected based on their degree of vulnerability and social location	in rainfall, temperature and crop production levels Perception and experiences of CCV among diverse farmers Forms of vulnerabilities and categories of vulnerable farmers Key impact of climatic changes on livelihoods of diverse farmers and different mechanisms for adapting to the changes.
What do farmers expect from the government to help their plight	FGD Personal narratives Survey	Expectation of female and male farmers on measures to address their conditions Existing institutional mechanisms on adaptation
What might explain the discrepancy of perspectives and how can they be bridged?	Semi-structured in-depth interview with 3 Directors of civil society organisations: One gender based NGO One agriculture and environmental based NGO One community-based farmer association or cooperative	CSO opinion on the concept of gender and "gender equality" in climate change policies Possible reasons for difference in categories of vulnerable groups and adaptation measures noted by farmers' and that of the climate change policy Recommendation to enhance gender sensitivity in current and future climate change policies

Annex B: Sampling and Data Collection

Two sampling methods were used in the data collection. These were purposive and random techniques. Using purposive sampling, two male and two female farmers were selected to gather their life histories in relation to their vulnerability and adaptation to CCV. This technique is considered by some authors as the best way possible to collect realisable information from knowledgeable people within the community of study (Harriss 1992, 141).

Two FGDs were organised to ascertain the views of men and women farmers in order to generate general information about the social relations, land tenure system and gender division of labour within the agriculture sector. The information generated from the discussions was subsequently used to select participants for their life history discussions.

In addition to this, a questionnaire was self-administered to twenty-nine (29) male and female farmers. The selection of respondents was carried out using both simple random sampling and purposive sampling technique. All the fourteen (14) registered women members of association out of a total of eighty-eight at the time of the study were included in the survey, while the men farmers on the other hand were randomly selected from the list of registered farmers. As pointed out earlier, the survey was meant to obtain demographic information about the farmers as well as their resource endowments which will be used as a baseline to inform the analysis of the life history discussions.

Even though, the study might not be a representation of the community's view the selected cases may serve as 'exemplifying cases' that allows an exploration of the interaction among social

processes (Bryman 2001). Interviews were held with District Director of Agriculture and Extension officers to find out about the policies, production levels, and climate change issues among other relevant issues within the district. Data on the district's monthly rainfall and temperature variation for a period of forty years (1970-2010) was collected from the Ghana Meteorological Agency to examine the trend of variability in these two important variables and its effect on agriculture. Food crop production figures were collected to examine the performance of the main staples cultivated during the last decade.

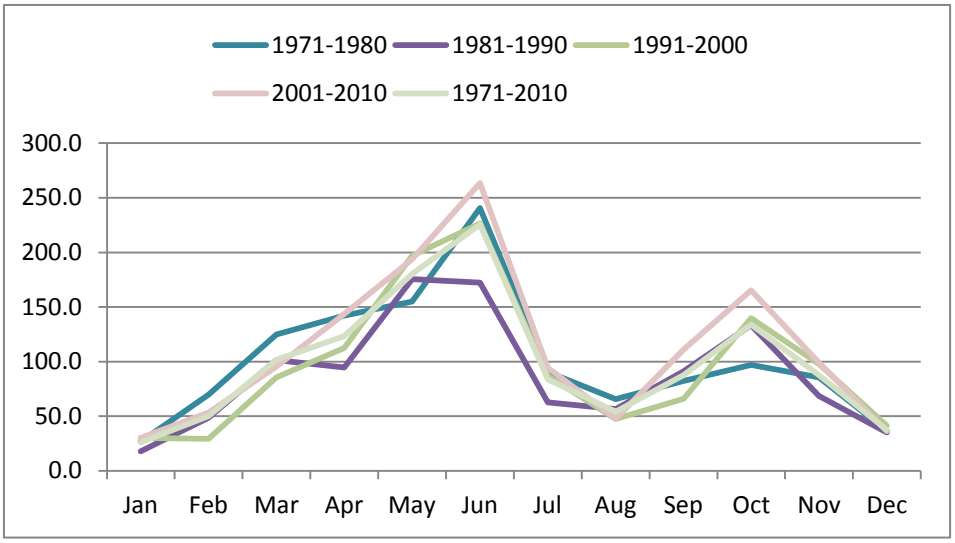
The researcher also participated in five meetings organised by some government agencies and civil society organisations during the field work. These meeting included: the Monthly Technical Review meeting of agriculture officers in the Agona East District, the membership meeting of the Gender Action on Climate Change for Equality and Sustainability (GACCES), a coalition hosted by ABANTU for Development. Other were the validation seminar of the National Development Planning Commission and a consultation Workshop on the draft National Climate Change Policy Framework organised by Ministry of Environment in collaboration with Friends of the Earth and Christian Aid. I also attend five of the weekly meetings of the Farmers' Association. Two Key informant interviews were held with a senior official of Friends of the Earth, (FOE-Ghana) and a member of the civil society coalition known as Gender Action on Climate Change for Equality and Sustainability (GACCES). GACCES is the first gender based coalition working on climate change issues in Ghana. It is hosted by ABANTU for Development. The two officials are also civil society representatives on the National Climate Change Committee

Annex C: Ethical Dilemma

My first dilemma bothered on how to introduce myself and my institutional affiliations. I felt making the farmers aware of my affiliation with a foreign university will raise their expectations. I therefore introduced myself as student in one of the local universities and a staff of an NGO. My intention not to raise their expectation did not work because they linked my affiliation to an NGO as somebody who was in a position to assist them. This was evident in the way they emphasised on their difficulties and challenges. I had to constantly remind them that the research was purely a school project but the outcome could be used by some organisations to lobby government to improve their condition.

Another dilemma I encounter was with taking pictures. I was very uncomfortable taking picture because it easily drew attention to me as a foreigner in the community. Already people had identified me out as a new person in the community. One female trader, for instance, asked if I was a new teacher posted to the town. My fear about taking picture was confirmed one evening (August 1, 2011) when the Assembly Member of the local area confronted me about some pictures taken during a visit to the Kwanyako Water Company. The Assemblyman was sceptical about the use of the pictures because he feared I was a journalist going to use the pictures to attack the government. The issue was brought to the attention of the chief farmer who immediately resolved the problem and apologised for the unruly behaviour of the young man. Apart from the general pictures of the town taken, the researcher sought the consent of most of the people she photographed. Nobody objected to the request' and in some cases other people even requested for them to be photographed. It was only one lady who cautioned some relatives that the picture could end up on the internet.

Annex D: Mean Monthly Rainfall 1971-2010



Source: Ghana Meteorological Agency

Annex E Survey Instrument

Self-Administered Questionnaire For Members Of The Kwanyako Farmers Association

This questionnaire is part of a research work that is investigating the gender dynamics of climate change adaptation among rural farmers in Ghana. The study is being carried out by Mrs Ellen Dzah as part of her Master degree in Development Studies at the Institute of Social Studies in The Hague. Your time and effort in answering the questions is highly appreciated.

Code:

1. Name of farmer 2. Sex
3. Ethnicity 4. Hometown
5. Current location 6. How long have you stayed in this locality
7. Religion 8. Age/DOB
9. Level of Education 10. Marital status
11. Occupation of spouse 12. No. of children/dependants
13. Age of eldest child 14 Highest level of children's educ.
15. Main Occupation
16. Other livelihood activities (if any)
17. How long have you been farming?
18. What was your farm size when you started ---------- Current farm size
19. Are the plots scattered ---------- Total number of plots -------
20. How did you acquire the farmland(s)----------
21. What types of crops do you cultivate and how long have you being been doing that:
Crop length of cultivation acreage yield
22. What kinds of input do you use on your farm (seeds, machinery, chemicals, labour)----------Seeds ----------fertilizers ----------weedicide----------labour
23. How do you obtain these inputs for your farming activities. ----------
24. Do you do both major and minor season farming----------
25. Which crops do you cultivate during the minor season----------
26. Do you own some livestock. -------- List them and the quantity

Poultry____,goats_____,sheep_____,cattle_____,rabbit_____, pigs____

27. What other assets do you have (Residential plots, completed or uncompleted house, stock of grains, farm machinery, shops, refrigerator, cloths)
28. Have you noticed any changes in the weather conditions ----------
29. Have you observed any changes in the rainfall pattern----------since when?
30. What are some of the specific changes have you noticed----------
31. Have you observed any changes in the temperature---------since when----------during which month(s)----------
32. What are the changes in temperature you have noticed----------
33. Have you experience drought on your farm----when did it occur and how long did it last.---
34. Which crops were affected (in order of severity) ----------
35. What was the effect of the drought on those crops_----------
36. Have you experience any flooding on your farm. ----------

37. Which year (s) did it occur and for how long did it last ----------

38. Which crops were affected (in order of severity)----------

39. What was the effect of the flood on the affected crops----------

40. What was the impact of the flood or drought on your

- crop output
- household responsibilities

41. How do you manage the impact of climatic changes you experienced? --

42. What kinds of support did you receive or wished you receive:

	Support received	support expected
family members	----------	----------
friends	----------	----------
associations	----------	----------
government	----------	----------

43. Have you experience flood or strong wind in your community? ----------When did it happen ----------

44. Did you lose any relative, friend and/property through the floods or wind----------

45. What do you think is causing the climatic changes----------

46. Have you receive any information on the changing climate ----------from where----

47. In your opinion which groups of farmers are more vulnerable to the climatic changes?----

48. What factors account for their vulnerability----------

49. What are some of the specific things that should be done to help this group(s) adapt to the changing climate----------

50. Which group of farmers do you consider less vulnerable to climate change ----------

51. What are some of the factors that make them less vulnerable ----------

52. How do you assess your own vulnerability (more or less vulnerable)------

53. What are the household responsibilities expected of you----------

54. What support (assets, skills and knowledge) do you need to effectively adapt your livelihood to the changing climate----------

55. Do you think all farmers should receive the same support from government----------

56. What factors should the government take into consideration when providing support for farmers? ----------

57. Are you a member of a credit union, susu scheme or a bank (underline where appropriate)

How long have you joined the group(s)

58. What other groups or association are you a member of;(eg, farmer cooperative, church, market, political party)

59. Are you a leader in any of these groups, list them

60. Apart from climatic changes, what other factors are affecting farming activities in your area

- social
- economic
- political

- cultural

Thank you for your cooperation

Annex E: Life History Interview Guide

Respondent personal and household characteristics:

- Name, age, marital status, religion, ethnicity, hometown,
- level of education and the phases of education if any
- How long have you been in this community
- Do you speak the language of the local people here (natives)
- What social position(s) do you hold in the community
- How many children do you have and their ages,
- How many still depend on you
- Are there other people you cater for in your household
- Who is the head of your household
- What forms of livelihood activities do you engage in, list them
- How long have you been doing those activities
- How much income do you gain from your farming and other livelihood activities
- How do you spend your income and on what do you spend them
- do you have a bank accounts
- how do you get financial resources for your farming activities
- Have any of your household members migrated in recent years
- Where did they migrate to?
- Why did they migrate
- When are they coming back if you know

Farming activities

- What forms of activities (livelihoods) do farmers engage in this community
- Which of the above livelihoods do you considered most important to you
- Why would you describe that as the most important to you
- How long have you been farming on your own
- What type of farming do u engage in (mix cropping, mixed farming)
- How did u acquire your farmland(s)
- What other farms of land acquisition (land tenure arrangement) do u know off in the community
- Which groups of farmer can own land in the community
- Are there challenges with the land tenure system
- Are your plots scattered or one plot
- What is the size of your farm
- What crops and/ or animals do you produce and why these
- What is the quantity of animal or acreage of crop you have
- What are the reasons for cultivating those crops and animal
- How do you access farm inputs like seeds, fertilizers, pesticides etc.
- what farm equipment or implements do you use (cutlass, hoe, tractors)

- Do you see the need to change the crops you cultivate now and why
- Did you ever change the crops you cultivate in the previous years, why
- Are the crops farmer grow/cultivate today different from the past.
- What are some of the crops which you previously grown and the new ones
- What account for the changes in the crops
- Do you see any changes in the planting seasons
- What are the causes of these changes in planting seasons
- Why do you think the planting season is changes
- Are crops planting earlier, later or irregularly now
- How long did you/have you noticed this changes
- Are these changes in any way related to the weather/climate? Explain
- do you consult any extension officer for your farming activities
- what kinds of support do you receive from MOFA

Perception and experiences of climate hazards

- What do you understand by changes in weather conditions
- What are some of the climatic changes you noticed in the past decade or more (changes in rainfall pattern, amount, freq, increased or decreased temp)
- Which of these changes are more prevalent and which years were they experienced most
- What do you think are the causes of these changes in rainfall pattern and temperature
- Have there been flood or drought in the area, how often does it occur.
- What are the effects of these climatic changes on agricultural production.
- Which crops or animals are more affected by these changes and what impact do they have on the farmer, his/her household and the community
- What are the major weather/ climate related challenges farmers face in this community.
- What challenges that the climatic changes pose on your livelihoods
- How do these changes affect you crops or farming activities
- How different is today's weather/climate different from the past (many years)
- Are you worried about the changes in the weather conditions
- How do you perceive the weather to be in the next (many years)
- On what do you base this assessment of the weather
- Will the changes affect farmers? Which groups of farmers would be more affected how are different farmers adjusting to the climatic changes.
- How are you dealing with the changes
- How long have you been experiencing these changes
- How do you see the prospects of the future of this community in relation to farming activities
- What activity do people do in this community during the dry season
- Have you ever faced crop failure since your life time as a farmer
- How did it affect you and your family
- What did you do in order to cope with the challenge

- what kinds of support do you receive in the event of crop failure (from family, friends, government, NGOs)
- Do you know other people in this community who have ever face crop failure
- How did it affect them their livelihood or income
- How did you cope with that hazard or difficulty
- Did you receive any assistance from any organization or person
- Who are these (name them and the assistance you received from them)
- How would you describe the soil fertility of your land
- Do you use chemicals or fertilizer in your farms
- Why do you use fertilizer in your farm
- Have you always in your life time as a farmer been using fertilizer
- If yes, how does the quantity you use today compare to the past
- Why the differences in the usage of fertilizer in the farm

Vulnerability

- In your view who do you suggest are more vulnerable to the changes
- Why do you suggest such group of people are more vulnerable
- Do you think men and women feel the impact of the hazard the same way
- What could explain the differences if any?
- Who between men and women do you think is more able to cope
- Among women, who are more vulnerable to these changes
- What is being done to alleviate the plight of farmers from this changes
- How did you get to know this? e.g. attended a workshop
- What is the government and other institutions doing to help the vulnerable
- What do you expect the government to do in order to aid other people
- What do you have as an asset apart from the land
- Have you sold any of your assets for money? What did you use the money for
- Have you ever experienced any unfavorable year (s) with less rainfall during the rainy season leading poor harvest
- Have you, experienced any unfavorable year(s) with prolonged drought or extreme temperatures leading to crops failure.
- Have you experienced any unfavorable periods within a year with excess rainfall leading to crop damage and poor harvest

Adaptation strategies

- What are the climate/weather related hazards/difficulties you are currently facing or hope to face in the future
- How long have you noticed this difficulties
- Which adaption strategy will you choose to adopt in relations to the hazards or difficulties you are facing or will be facing
- Why do you choose this form of adaption straggles among the many options available
- How long have you been using this strategy

- What will be the cost of having to switch from your current livelihood strategy to another
- Which institution/person is likely to assist you in this process of changing livelihoods strategies
- What assets, skills, knowledge would you need to adapt
- what kinds of support do you expect government from government
- are there institutions like NGOs, churches that support farming activities
- What are some of the social relations that have changed as a result of the impact of climatic changes

Annex G: Maps showing Ecological Zones and Adminstrative regions of Ghana

Source: **www.lib.utexas.edu.** Adopted from WEDO 2008