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DEPARTMENT OF DEVELOPMENT STUDIES

"An analysis of the effects of climate change and adaptation strategies by men and women in Zimbabwe" A case study of Dambakurima ward in Muzarabani District.

Presented by

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MODE OF ENTRY : CONVENTITIONAL

Submitted in partial fulfillment of the requirements of the Bachelor of Arts Honors Degree in Development Studies offered by the Midlands State University

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APPROVAL FORM

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DEDICATIONS

I dedicate the entire success of this research project to my beloved mother, Mrs. Cecilia Muchoza for all she had done.

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ABSTRACT

The study seeks to explore the gendered differentiated effects of climate change on men and women in the Dambakurima ward of Muzarabani District in Mashonaland Central Province in Zimbabwe. The study further examines the gendered adaptation measures adopted by men and women in order to cope and survive in the context of climate change. The study is largely grounded in qualitative research methodology and it utilizes a triangulation of data collection instruments that included interviews, questionnaires, observations and desktop research. Thirty respondents participated in this study and were selected using purposive sampling. The study is premised on the eco-feminists theory which is based on the thinking that gender and environment are fundamentally-linked. The study concludes that, though climate change has compounded the vulnerability of both men and women, the catastrophic effects are felt disproportionately by women due to their biological weaknesses, sensitivity to disasters and burden responsibilities they undertake within the households in the face of climate change. It emerged from the study that adaptation strategies for both men and women in Dambakurima are homogeneous in nature. The study recommends on some of the ways that can be adopted to improve the adaptation strategies for men and women to climate change.

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INTRODUCTION

LIST OF ABBREVIATIONS AND ACRONMYMS

HIV/AIDS……Human Immune Virus/Acquired Immune Deficiency Syndrome

UN……United Nations

MDG…….Millennium Development Goal

ZIMVAC……Zimbabwe Vulnerability Assessment Committee

UNFCCC…….United Nations Framework Convention on Climate Change

IPCC……..Intergovernmental Panel on Climate Change

NGOS…….Non- Governmental Organizations

WB……World Bank

UNEP……United Nations Environment Programme

MWAGD…….. Ministry of Women Affairs, Gender and Community Development

NOAA……New Oceanic and Atmospheric Administration

UNDP…….United Nations Development Programme

UNICEF……..United Nations Children' s Fund

UNDP…….United Nations Environment Programme

INTRODUCTION

Climate change is taking place within the context of a plethora of global activities and challenges such as population increase, urbanization, and desertification, loss of wetland, rural-urban migration and biodiversity extinction. Petrie (2012) cited in Gwimbi (2013) concurs with Bird and Busse (2005) that global climate change generates major problems for non-industrialized countries such as Zimbabwe. The research therefore, seeks to examine the gendered differentiated effects of climate change on men and women in the rural community. The main objective of the study is to analyse the vulnerability of men and women to climate change.

The research also seeks to avail information on the gendered adaptation strategies adopted by men and women in the Dambakurima ward of Muzarabani District in Mashonaland Central Province. The research has been prompted by the evidence of limited literature on the gendered differentiated effects of climate change on men and women. This introduction focuses on the background to the study, statement of the problem, delimitations and limitations, research methodology, literature review, sampling techniques research instruments, significance of the study, ethical considerations and research questions and objectives.

BACKGROUND TO THE STUDY

The Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report of 2007 indicates that like cancer and Hiv/Aids, climate change is the biggest challenge facing men and women today in less developed countries and the global village as a whole. In Asia, there is scientific evidence of prominent increase in the intensity and frequency of many extreme events such as tropical cyclones, heat waves, intense rainfall, prolonged dry spells,

thunderstorms and severe dust storms in the region. According to the United Nations Environment Programme (UNEP) (2009), it is estimated that Asia/Pacific accounted for 90% of the world's total damage and 48% of the world's total damage due to natural disasters in the 20th century.

America is the most populous continent affected with climate change. As of 2012, the thirteen warmest years for the entire planet have transpired since 1997, transcending those from 1880. According to a 2009 statement by the New Oceanic and Atmospheric Administration (NOAA), trends include Lake and river ice melting earlier in the spring, plants blooming earlier, multiple animal species shifting their habitat ranges northwards and reductions in the size of glaciers.

In Europe, scientific evidence of decrease in rainfall and an increase in precipitation, melting of ice sheet, higher average temperature, heat waves, severe droughts, incessant floods, hurricane intensity and rise in sea levels was identified in the Northern, Central and Southern regions as from the 1960s to date (Chomike, 2010). The 2012 European Environment Agency Report indicates that various projections show that Europe could be 2, 5-4° warmer in the later part of the 21st century, compared to the 1961-1990 average.

In Africa, the IPCC Fourth Assessment report of 2007 indicates strong evidence of temperature rise of 0, 7° c over the 20th century for Africa and precipitation for East Africa. The report further indicate scientific evidence of sporadic and erratic rainfall exacerbating desertification in Mali, Chad, Uganda, Equatorial Guinea, Somalia and Burkinafaso in 2005 and 2006. Research has shown that the annual flow reductions of 6-9% have been recorded in the river Pangani and 10% in the Ruvu in Tanzania. According to Funk et al (2005), warm sea surface temperatures are leading to increased droughts in Equatorial and Subtropical Eastern Africa.

These formidable outcomes have further threatened and jeopardized the peace, security and gender relations of many African states and these have dismally devastated mostly rural settlements which mainly depend on agriculture for survival.

In Zimbabwe, the climate change scenario is more intense and harsh. According to Zimbabwe Handbook of Climate (2007), the climate change phenomenon is being further accelerated by Zimbabwe's dependence on major climate sensitive sectors such as agriculture. This concurs with Todaro (2007) who articulate that 70% of people in developing countries such as Zimbabwe rely on agriculture in order to meet their basic needs such as food, hence their vulnerability to climate change due to rain –fed agriculture.

The disastrous situation is at highest level in the locality of Muzarabani District which is premised on the northern edge of the Zimbabwean plateau near Mozambique lowlands (Dande-Chidima valley). It is the biggest district in Mashonaland Central province, comprising of 29 wards. According to the 2013 census conducted by Muzarabani Zim Statistics Agency, the district has a total population of about 100 000 people and the population is expected to increase by 20% by 2022. The district is also divided into two geographical locations, notably the Upper Valley and Lower Valley. The upper valley is a conducive environment with favorable temperatures and good climatic conditions. The valley receives a rainfall of more than 650mm each and every year and it is good at agriculture, especially tobacco farming and maize production. The cases in point are agro-based areas such as Centenary, Drumada, Gee Jay and Chinyani.

According to the Government of Zimbabwe (2007), the lower valley is a low lying area, characterized with climate change problems such as incessant floods, especially in areas like

Chadereka and Dambakurima. They are also affected by severe droughts leading to food insecurity and poor yields due to sporadic and erratic rainfall. During the pre-colonial time the valley was infested with tsetse flies, which cause a lot of cattle diseases such as Nagana and sleeping sickness diseases to people.

Madamombe (2004) in Chagutah (2010) and Mugabe (2012) wrote that the valley is not suitable for human habitation because temperatures are always high both day and night and every season. This increases the risk of diseases escalation, food insecurity and water scarcity and stresses, which threatens gender relations in the district. It is thus against this background that the researcher observed paucity on the research that focuses on the impact of climate change on men and women in Dambakurima ward of Muzarabani and the adaptation strategies that these rural poor devise in order to cope and survive in the context of climate change.

. STATEMENT OF THE PROBLEM

Climate change raises common dilemmas for less developed countries such as Zimbabwe. It causes water scarcities as a result of severe and frequent droughts and this affects the lives of men and women in Zimbabwe. It creates enormous development challenges for fragile and poorest communities such as those of Muzarabani. In Muzarabani District, climate change impacts such as incessant floods and erratic rainfall have increased the vulnerability of men and women due to their chronic dependence on climate sensitive sectors such as rain-fed agriculture. According to Muzarabani Ministry of Women Affairs, Gender and Community Development (MMWAGD), climate change has further jeopardized the lives of men and women who were already in the vicious cycle of poverty. For this reason, the research project was conducted in the Dambakurima ward of Muzarabani District in Mashonaland Central Province.

CONCEPTUAL FRAMEWORK

This section seeks to conceptualize the definitions of four key terms in the research. These include; climate change, gender, vulnerability and adaptation.

GENDER

Miller (1999) and Riddiman (2003) cited in Coope and Diggles (2005) concur with Bondo (2010) that gender refers to the condition of being a male or female based on social and cultural differences rather than biological ones. According to Haralambos and Holborn (2004), the differences are passed from one generation to another through culture intrusion and they determine how we think of ourselves, how we interact with others , the social opportunities, limitations, expectations, occupations, family roles and prestige allowed males and females. Gender concerns men and women, including conceptions of both feminity and masculinity. Gender as a concept is important in this study because the acquisition of gender equality is actually a millennium development goal, thus underscoring the importance of examining the gendered differentiated effects of climate change on men and women in Dambakurima.

CLIMATE CHANGE

Kopp (2005) concurs with Tyler (2008) that climate change is a change in the state of the climate that can be identified (eg by using statistical tests) by changes in the mean and/ or the variability of properties, and that persists for an extended period, typically decades or longer. According to UNEP (2009), global warming, green house effect and environmental change or variability are components of climate change. The United Nations Department of Economic and Social Affairs (2009) documented that factors that cause climate change can be divided into two categories-those related to natural processes (natural factors) and those related to

human activity (anthropogenic factors). Climate change as a concept is relevant in this study because it has devastated the lives of men and women in Dambakurima ward of Muzarabani.

ADAPTATION

According to UNFCCC (2009), adaptation is the process through which societies increase their ability to cope with an uncertain future, which involves taking appropriate action and making the adjustments and changes to reduce the negative impacts of climate change. The IPCC synthesis report (2007) states that adaptation mechanisms may be structural, technological and behavioral changes; short or localized or widespread. According to the World Bank (2008), adaptation calls for more resilient infrastructure, broader disaster relief and preparedness measures, and new agricultural technologies to counter the increased climatic risks. Quinch (1999) specifies that adaptation differs from mitigation in that: mitigation aims at avoiding or lessening the impacts of the unmanageable, where as the overall goal of adaptation is to manage the unavoidable. Adaptation is very important for men and women in Dambakurima to adjust to the insurmountable challenges brought by climate change.

VULNERABILITY

Twigg (1999) concurs with Hegre and Sandler (2002) cited in Reid and Whelon (2010) in Reign and Sirleaf (2013) that vulnerability is the degree to which a system susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude and rate of climate change and variation to which a system is exposed, its sensitivity and its adaptive capacity. It is vulnerability plus hazard minus capacity leading to the graduation of a risk into a disaster as shown in an equation below:

H X V- C = R = D (Hazard x Vulnerability –Capacity = Risk = Disaster)

It was generally observed that vulnerability in disastrous situations is mainly influenced by poverty. According to the biological theories of gender, the vulnerability of women, children and people living with developmental disabilities is heightened by their biological and physical weaknesses. Vulnerability has a number of variations such as physical vulnerability, social vulnerability, economic vulnerability, political vulnerability and environmental vulnerability. To this end, vulnerability of men and women in Dambakurima to climate change means their potential to be harmed by climate change.

THEORETICAL FRAMEWORK

The theoretical framework deployed by the researcher to guide the current research project is Eco-feminism. Sale (1987) in Jerado (2010) concurs with Gelder (1989) that the co-relationship between gender and climate change is based on the theory of Eco-feminism. According to King (1990), the theory is based on the thinking that the oppression of women and oppression of nature are fundamentally linked. Clauser (1990) concurs that eco-feminism is the belief that environmentalism and feminism are intrinsically connected. According to Jerado (2010), another definition suggests that discrimination and oppression based on gender, race and class are directly linked to the exploitation and destruction of the environment. Some eco-feminist writers unabashedly believe that such oppression is patriarchal. The theory blatantly asserts that women are closer to the nature because of their perilous positions as mothers and homemakers (Eisel, 1990).

The theory states that women are more aware of environmental issues than men. With this in mind, this research seeks to examine the different effects of climate change on men and women in Dambakurima. In addition, the theory asserts that women tend to suffer more as a result of climate

change. To this end, women are pre-occupied with the preservation of the environment, whilst men are pre-occupied with the looting of environmental resources and with also gaining financial benefit from the environment at the expense of preservation. It is based on such assumptions of this theory that the researcher sought to undertake an examination of the vulnerability of men and women to climate change. The primary objective was to identify who are the most vulnerable group to climate change if women are closer to the nature.

MAIN OBJECTIVE

To gain a broader and deeper understanding of the effects of climate change and the adaptation strategies devised by men and women in Dambakurima ward of Muzarabani.

GENERAL OBJECTIVE

The research is centred on the acquisition of the following objectives:

- To examine the gendered differentiated vulnerability levels of men and women to climate change in Dambakurima ward.
- To explore the gendered adaptation strategies adopted by men and women in Dambakurima ward.
- To recommend ways for men and women to improve their adaptation strategies to climate change in Dambakurima and Zimbabwe as a whole.

RESEARCH QUESTIONS

The research seeks to answer the following questions:

- What are the effects of climate change and what are the adaptation strategies devised by men and women in Dambakurima ward of Muzarabani?

Sub-questions

- What are the gendered differentiated vulnerability levels of men and women to climate change in Dambakurima ward?
- What are some of the gendered adaptation strategies adopted by men and women in Dambakurima ward?
- What are some of the ways that can be recommended to improve the adaptation of men and women to climate change in Dambakurima ward?

SIGNIFICANCE OF THE STUDY

The research is of paramount importance as seeks to bring new ideas and insight into the intellectual world by exploring the gendered differentiated vulnerability levels of men and women to climate change and their gendered adaptation strategies adopted to deal with the vagaries of climate change in Dambakurima ward. With this in mind, lessons and findings arising from this research are very important for future policy. While its primary relevance is for policy-makers in Zimbabwe, it is anticipated that the general lessons are relevant for a broader set of countries that are dealing with similar environmental challenges, particularly in Sub-Saharan Africa. To this end, the research findings will be a source of useful information for policy makers and other potential stakeholders to incorporate a gender equality perspective into policy-making, decision making bodies and adaptation programmes to ensure that the vulnerability of both men and women are accounted for.

Equally important is that the study will assist future researchers to undertake gender-differentiated researches with solid concentration on the vulnerabilities of men and women to climate change. This will assist in the recognition of gender-disaggregated data in climate response planning in order to show dichotomies among women and men as well as other disadvantaged groups such as elderly, children and even people living with HIV/AIDS and

developmental disabilities. Lastly, but not least, the research will highlight and address knowledge gaps within the existing literature of climate change.

LITERATURE REVIEW

This section offers a review of literature surrounding the concept of climate change and adaptation, with the particular attention of revealing knowledge gaps that justify the focus of this research. The review of literature seeks to locate this research within relevant literature.

Scholars have explored the effects of climate change and adaptation mechanisms adopted in different nations and regions of the world. According to Houghton (1999), the reliance of the general populace on rain-fed agriculture and other major climate sensitive sectors make Zimbabwe, particularly vulnerable to climate change and variability. It is paradoxical that while there is voluminous literature on climate change and variability, very little systematic research has been done to provide a broader understanding on the gendered differentiated effects of climate change on women and men, especially in marginalised communities of Zimbabwe like Muzarabani. Although previous studies have yielded a lot of important information on sectoral vulnerability to climate change and variability in Zimbabwe and Southern Africa, there is multiplicity of data relating to vulnerability at community and household levels. Available knowledge about sectoral vulnerability is not matched with the effects of climate change on gender and very little has been said on the effects of climate change on women and men. Research has shown that while different communities have developed many ways of coping with the perennial droughts, very few studies have systematically recorded these coping mechanisms so as to explore the differentiated effects of climate change on men and women.

According to Padare (2010), data on the effects of climate change on men and women are scarce and only available from isolated studies which lack clarity on the differentiated effects of climate change on men and women in Zimbabwe. The Padare (2010) added that media practitioners in Zimbabwe do not make necessary arrangements to analyse the gendered effects of climate change on men and women. Studies have shown that their researches on climate change focused very much on urban areas, thereby ignoring specific effects of climate change on men and women in rural communities of Zimbabwe that often proffer more complex and different realities of the phenomenon of climate change and variability. This study, however takes a paradigm shift by looking at the vulnerability of men and women to climate change in rural Zimbabwe. The fundamental endeavour of this study is to conceal this knowledge gap through an in-depth exploration of the impact of climate change on men and women as well as the various adaptation strategies that are adopted by rural people in response to climatic transformations in Zimbabwe.

Research has shown that a number of previous researches conducted were biased towards women. For instance, Chagutah (2010) carried out an analysis of the effects of climate change on women in the peripheral regions of Zimbabwe (Limpopo and Zambezi Valley), but did not acknowledge the vulnerability of men. The researcher focused on the vulnerability of women alone on the premises that they are most vulnerable group as they are physically weak. According to Skinner (2004:102) cited in Hulmel and Mtisi (2009), ‘‘in whatever we do, there is need to mainstreaming gender as the backbone for the sustainability and durability of development initiatives’’. In this case, the gendered effects of climate change on men and women are under researched. This research, therefore, sought to fill this gap by focusing on

the impact of climate change on men and women and their gendered adaptation strategies in Dambakurima ward of Muzarabani.

Ochola (2009) in his study in Kenya focussed on the impacts of climate change. The researcher was gender biased. Throughout his research Ochola focused on women alone. He stated that disadvantaged position of women means more difficulties and their inability to cope with climatic disasters and environmental change. The research therefore, seeks to interrogate this silence on men's experiences of the impact of climate change alongside women in Dambakurima ward of Muzarabani.

The Intergovernmental Panel on Climate Change (IPCC) 4^{TH} assessment report of 2007 focused on the impacts, scenarios, trends, projections and adaptation in Zimbabwe. The research identified some of the impacts of climate change include; rainfall variability, turbulent weather and climatic disasters. The primary focus was on the frequency and intensity of catastrophic weather events on the natural resource-based sectors of the economy such as agriculture, health, energy and tourism. The assessment did not look at the effects of climate change from a gender perspective. It is to address this silence that this current research has been undertaken to examine the gendered differentiated impacts of climate change and the gendered adaptation strategies adopted in Dambakurima ward of Muzarabani.

Research has shown that much has been written about the new phenomenon of climate change as a danger and threat to security. Puckie (2006) wrote that climate change led to the demise of dynasties and civilization such as the Harappa, Hittles and other small communities such as Danish settlements. However, the researcher did not allude to the gender specific effects of climate change on men and women, which constitute the subject of this dissertation.

Chikomo (2011) studied the adaptation and mitigation strategies in relation to climate change in Gutu, but was not concerned in gendered experiences. While he focused on adaptation mechanisms in the face of environment and climate change, his angle of vision precluded gender and environment. As such it is still imperative to examine the effects of climate change on men and women in Dambakurima ward of Muzarabani.

More so, at the regional level Professor Sasi of Botswana (2011) carried out an analysis of adaptation and mitigation measures in disaster management, but he did not acknowledge gender. In Southern Africa therefore, more still needs to be done on the impact of climate change on men and women and their adaptation mechanisms in the context of climate change and variability. It is against this backdrop that the researcher examines the vulnerability of men and women to climate change in Dambakurima ward of Muzarabani.

RESEARCH METHODOLOGY

The feasibility of each and every research is determined by the viability, credibility and applicability of the research methods deployed. Reed (1999) concurs with Sur and Furgo (2004) that a research methodology refers to an orderly and systematic data collection for the essential goal of gathering information in order to address research questions, objectives and purpose. According to Bell (1993), it refers to methods used to obtain data. The research was undertaken using the qualitative approach which is directed at obtaining the views and opinions of individuals and groups. Qualitative methodology examines people's feeling, emotions and behaviour towards the phenomenon under study. The researcher observed that this approach may enable participants to dramatise the way they think and feel in relation to the phenomenon under study.

The qualitative helped the researcher in revealing and unearthing attitudes, beliefs and opinions on the effects of climate change on men and women. Bocco (1999) cited in Barrera (2004) propounded that qualitative research methodologies in the discipline of social sciences are usually associated with inductive approaches that are firmly based on empirical evidence. The researcher used this method to gather data that is directly accessible and prone to some vivid explanations as it is subjective, systematic and interactive approach plausible and applicable for narrating life experiences as well as attaching meaning to them. To this end, the research was largely qualitative. The qualitative research method was used together with the deployment of qualitative data collection instruments such as interviews and questionnaires in order to get full explanations. Other data research instruments such as desktop research and observations were also used during data gathering.

DATA COLLECTION INSTRUMENTS

They can be defined as instruments used for collecting data in the research. There many data research instruments to consider, but in soliciting information the most important used in this research were interviews, questionnaires, observations and desktop research. The researcher used a triangulation of data collection instruments in order to facilitate the validation of data. Interviews and questionnaires were used by the researcher because they allow respondents to provide qualitative data rich in detailed information in form of descriptions, elaborations and explanations.

INTERVIEWS

Interviews are very common research tool in social sciences as they attract a great deal of commentary and discussion. Bowen (1978) is of the view that an interview is conservation between two or more people where questions are asked by the interviewer to elicit facts or statements from

the interviewee. Interviews can be formal, or informal, structured, semi-structured and unstructured. The researcher used interviews to examine the effects of climate change on men and women. Structured interviews were designed to allow homogeneous questions to be asked to the respondents to get different views and first hand information. Through interviews the researcher could observe the feelings and emotions of participants through facial expressions, gestures and other body language. Key informant interviews were conducted with agritex officers and traditional leaders in order to find out more about climate change in Dambakurima.

QUESTIONNAIRES

The researcher also used questionnaires to acquire primary data. Goudie et al (2000) define questionnaires as set of written questions with a choice of answers, designed for the fundamental purposes of a research. Bakaro (2004) repeated that a questionnaire is a research instrument containing a number of questions and other prompts for the purpose of gathering information from the respondents. In short, questionnaires can be defined as the methods of gathering data through written questions, where respondents provide answers to the questions. The questions can be closed or open-ended. Closed-ended questions require an answer (yes or no), where as open-ended questions need elaboration and detailed explanation. Questionnaires were employed to gather information which was rather standardized from considerably larger population. They were personally administered by the researcher in order to increase response rate and to increase contact with respondents. Where necessary, each question was explained or translated into shona before participants responded. The questions covered vulnerabilities and adaptations. Homogenous open-ended questions were asked to given their merit as data collection tools under qualitative research. Closed-ended questions were also used to assess literacy levels of the participants as well as to generate short answers. To this end, questionnaires used to corroborate interviews.

DESKTOP RESEARCH

Quinch (1999) stresses that desktop research refers to the collection of secondary data, that which has already been collected. It means gathering and analyzing information, already available in print or published on the internet such as published reports and statistics. The researcher therefore, gathered some of the important information from the library, books, journals, documents and the internet. Desktop was useful to the researcher in that it enabled him to find broader statistics and knowledge gaps which helped in shaping the current research and its objectives.

OBSERVATIONS

Observations represent another method of collecting primary data. According to Patton (2002), an observation is a primary data collection method used to gather detailed information about a situation or event. The researcher used observations to validate and supplement the data collected from both questionnaires and interviews.

SAMPLING

Bird and Busse (2005) argued that a sample is a subdivision of larger population used where it is not feasible to include everyone in the research. A sample should be a representative group of the entire population and should resemble the main characteristics of the entire population. According to O' Brein (1994:203 line 52-54), "the term sampling can be understood as the process of selecting units (eg people, organizations) from a population of interest so that by studying the sample we may fairly generate our results back to the population from which they were chosen". The research was undertaken using purposive sampling. This is a non-probabilistic approach used in qualitative researches. This non-probability sampling technique is also known as judgemental, selective or subjective sampling.

The selection of respondents in Dambakurima was done on the basis of researcher's assumptions. For example, women and men from different households were to be selected on the basis of their willingness to participate in the research. The households were carefully chosen on the premises that men and women from those households have shown commitment to participate in the research. The researcher used a population sample of thirty (30) individuals, with fifteen of them being women and the other fifteen being men. This selection was done to allow the researcher to specialise on specific information to meet the purpose and objectives of the research.

The research targeted a variety of key informants such as traditional leaders and agritex officers. These were selected given that they had ample as well as intensive knowledge on the subject of research. For example, the researcher found that participation of traditional leaders is necessary because are the primary custodians of the environment. These are experts in the issues under research. The researcher adopted purposive sampling because it deals with the information that is subjective, explanatory and exploratory. To this end, purposive sampling was preferably used by the researcher in order to carefully and purposively selects those respondents who were dismally and directly affected with the phenomenon of climate change in Dambakurima ward of Muzarabani.

DELIMITATIONS

- Selection of respondents in Dambakurima ward in Muzarabani District was done on the basis of their knowledge, flexibility, availability and convenience.
- The targeted population was comprised of men and women, especially those who formulate the majority of the most vulnerable population to climate change within the locality of Dambakurima.

- The researcher was geographically confined to Dambakurima ward only. This assisted the researcher to undertake a full analysis of the vulnerability of men and women to climate change on a specified and manageable study area.
- Information collected was only on the gendered differentiated effects of climate change on men and women so as to allow the researcher to concentrate on specific information rather than too much generalized data.
- The researcher had a secured accommodation from his sibling in Dambakurima ward, thus was able to undertake the research comfortably.

LIMITATIONS

There are considerable setbacks and constraints during the course of the study. Such setbacks impacted on the objectivity and dependability of the results as follows:

- The researcher suffered from inadequate access to reading material and to counter this dilemma, the researcher utilised and manipulated the full use of internet sources.
- Some of the participants refused to divulge their personal information based on the premises of confidentiality. The researcher respected their decisions and did not interfere with their privacy.
- Some questionnaires were not returned back by the target groups, however the researcher deployed a thorough follow up policy and also personally administered the questionnaires to ensure returns that losses.
- Limited financial resources have constrained the researcher who relied on his relatives in order to undertake the study without financial constraints.

- The researcher faced problems of language barriers as the area is ridden with different languages spoken by different social groups (Tonga, Tavara and Chewa). To solve this, the researcher decided to work in proximity location with the civilised local interpreters who were part of the target population. This was done on volunteer basis in order to economize the additional expenses of hiring interpreters.
- Some areas are still primitive, and remote and the researcher encountered difficulties in transport to collect the expected data. However, as a development practitioner the researcher made use of foot transport on short distances.

RESEARCH ETHICS

Roy (2002) cited in Tooley (2007) and Ollier (2008) states that ethics refer to the rules and principles of right and wrong that are accepted by an individual or a social group with respect to certain actions and to the badness or goodness of the motives and ends of such actions. Therefore, while conducting the research, the researcher adhered to various principles such as permission, informed consent, the right to privacy and anonymity and adherence to local traditional cultures. These ethics have assisted the researcher to make sure that the research was carried out smoothly in a peaceful manner.

PERMISSION

The researcher adopted what we call the "ethic of entry" as sought permission for undertaking the research from the D.A and was permitted to do so at willy-nilly without fearing undesirable consequences. The D.A endorsed his signature on the approval form, thus allowing the researcher to use Dambakurima ward as his case study. Furthermore, the researcher also took some bureaucratic steps by visiting other–related local authorities like Ministry of Women

Affairs, Gender and Community Development, Muzarabani Presidence's Office, Ministry of National Housing, Ministry of land and Muzarabani Rural District Council. Permission to engage married women in research interviews was sought from their husbands. The idea was to familiarize them of what the research was about, its purpose, the intended results and directed benefits of the research to various offices and community members in all the 29 wards of Muzarabani. The local authorities and offices signed an acknowledgement form which gave the researcher the mandate to undertake his research activities.

INFORMED CONSENT

The researcher designed a consent form for all respondents. He made sure that they were fully aware of what the research was about and the projected benefits the research would bring out. No accrued benefits were promised to the respondents. Respondents were not propelled, bribed and hoodwinked to participate in the research. The researcher made sure that their participation in the research is based on their willingness to do so in a democratic manner. On other words, participation in the study was entirely voluntary. An agreement between the researcher and the respondent was required before embarking on an interview process.

PRIVACY AND ANONYMITY

The researcher made sure that all the participants have enjoyed their inherent right to privacy and anonymity in order to avoid unnecessary encroachment into their private life as well as to allow them to freely disclose relevant information on the subject. Information received from the respondents would be used by the researcher alone for his academic endeavors and nothing more. As such was kept secretly and not divulged to other people.

ADHERENCE TO TRADITIONAL CULTURES

Since the district is ridden with traditional cultures, the researcher adhered to the existence of traditional norms and values. He took heed of the prevalence of the Sabbath culture. The culture states that no one has the right to undertake work on Wednesday as sign of paying allegiance to their ancestors (vadzimu) and religious leaders or spirit mediums (mhondoro). To this end, the researcher adhered to this tradition as did not assemble the respondents, thus averting fatal clashes with traditional leaders.

THE STRUCTURE OF THE DISSERTATION

The dissertation is divided into four main broad themes which are as follows:

Chapter One: An overview of climate change in Zimbabwe and Muzarabani.

Chapter Two: Effects of climate change on men and women in Dambakurima ward of Muzarabani.

Chapter Three: The adaptation strategies by men and women in Dambakurima ward.

Chapter Four: The recommendations on the ways to improve the adaptation strategies for both men and women to climate change.

CHAPTER ONE: An Overview of Climate Change in Zimbabwe.

1:0 Introduction

Climate change is the biggest challenge facing mankind today. It has raised common human security dilemmas for developing countries such as Zimbabwe for a number of years. Chagutah (2010) and Hellmuth et al (2007) concurs with Mugabe (2012) that it is widely and regionally recognized that Zimbabwe is particularly vulnerable due to its dependence on rain-fed agriculture and resources. Madzamuswe (2014) supported that agriculture's sensitivity to climate change is likely to worsen the prevailing challenges of declining agricultural outputs, declining economic productivity, poverty and food insecurity with small holder farmers particularly affected. This chapter reviews evidence and impacts of climate change in Zimbabwe, with the intention of providing a broad overview of the key issues related to this

phenomenon. The chapter seeks to examine the climate trends, projections and scenarios for Zimbabwe based upon a variety of case studies in order to allow comparability of findings in the scale of investigation.

1:1 Evidence and impacts of climate change in Zimbabwe

Zimbabwe is a land locked African country in Southern Africa with subtropical climate that has been affected by climate change. Madzamuswe (2014) wrote that Zimbabwe has experienced a warming trend towards the end of the twentieth century compared to the beginning. Consequently, the country is now experiencing more hot days and fewer cold days than before due to the devastating impacts of climate change and variability. The IPCC (2007) generally observed that Zimbabwe will warm more rapidly in future than the global average apparently because of its continental interior. According to the Metrological Service Department (2002), the country's annual mean surface temperature has warmed by about 0, 4°c from 1900 to 2000. The 1990s decade has been the warmest and driest during the last century (20^{th} century). This warming has been harshest and greatest during the dry season, September, October and November with day-time temperatures that have warmed more than night-time temperatures during the wet season. Quinch (1999) wrote that there has been an increase in both the minimum and maximum temperatures over Zimbabwe represented by a reduction in the number of days with minimum temperature of 12°c and a maximum temperature of 32°c.

Sheard (1999) supported that the highest daily temperatures have increased by about 3°c per century, while the number of cold days is declining at a rate of about 16 days per century. Unganai (2002) concurs with Hulmel et al (2009) that the country's mean surface air temperature is expected to increase by over 3% across the interior plateau of Southern Central

Africa due to a rise in dry seasons. According to IPCC Synthesis Report (2007), the rise of temperature will increase transpiration and evaporation of water from beneath the ground by 4-20% across in the SADC region, which includes Zimbabwe.

Bojo (2010) states that the period from 1980 to date was the driest and harshest in Zimbabwe since the country started recording its temperature. Machingauta (2013) concurs that the last 3 decades after Zimbabwe acquired its independence in 1980 show a trend towards reduced rainfall, thus causing a decrease in water resources. This was a period of frequent droughts as seen in the years 1982, 1992, 2000, 2002, 2004, 2008 and 2011 in areas such as Binga, Muzarabani, Gokwe, Mwenezi, Mberengwa, Matebeleland and some parts of Manicaland such as Buhera. According to IPCC (2007), the frequency and length of dry spells during the rainy season have increased and doubled, while the frequency of rainy days has declined. As a result of little rainfall experienced over the years between 1990 to date, water scarcity is now the perennial problem in Zimbabwe in peripheral areas such as those mentioned above, among many others.

The Ministry of Environment and Tourism (2002) supported that Zimbabwe's rainfall is characterised by high annual variability with recurrent droughts and floods with an average of 1-4 droughts every ten years. According to Zimbabwe Handbook to climate (2007), Zimbabwe experienced an overall decrease of nearly 5% in rainfall across during the 20th century with the early 1990s witnessing probably the hottest and driest period so far. According to IPCC Fourth Assessment Report (2007), there are substantial periods- for example the 1920s, 1950s and 1970s that have been much wetter than average as a result of tropical cyclones. A pertinent example is that of the 1999/2000 season cyclone Eline which impacted negatively on the SADC region caused excessive flooding in low lying areas of Muzarabani, Midlands,

Matebeleland South, Masvingo and Manicaland where more than 200mm of rainfall were recorded in 24 hours at many stations. A recent example of flooding in Zimbabwe is that of the 2014 Tokwe- Mukosi Disaster in Masvingo that has resulted in the massive loss of human lives as more than 200 people have perished and it displaced 3 500 families that are still housed in Chingwizi camp.

Research has shown that severe storms, though rare, have dismally affected the country with huge negative implications on human population. The Government of Zimbabwe (2013b) supported that the 2012/13 rainy season was characterised by heavy storms coupled with heavy rainfall, especially in Muzarabani, Guruve, Mbire, Mt Darwin, Chivi, Mberengwa, Shamva and Mwenezi districts. According to decadal climate change predictions, by the 2050s annual rainfall averages are projected to be between 5% and 18% less than the 1961-1990 average. For comparison, IPCC (2007) points out that the decade between 1986 and 1995 in Zimbabwe was about 15% warmer and drier than average. This concurs with Agarwal (2010) who believe that river flow rates will decrease by 70% by the year 2050. Machingauta (2013) projects that this would exacerbate the seasonal periodic water shortages and drought.

Mugabe(2012) states that the United Nations Office for the Co-ordination of Human Affairs in 2012 found that climate change has shifted Zimbabwe's five main agro-ecological zones, sometimes known as five natural farming regions of Zimbabwe.(region I, II , III, IV and V). Unganai (2002) supported that rainfall patterns and crop production progressively deteriorate from region I to IV. According to Murwira (2010), Chinhoyi and Chibero and their surroundings have gradually shifted from natural region II to natural region III, Kwekwe and its surrounding have dramatically shifted from natural region III to natural region IV. Chagutah (2010) concurs with Hullmuth et al (2010) and Madzamuswe (2014) that natural region I has

reduced in size, natural region III has drastically shifted to the North. United Nations Framework Convention on Climate Change (UNFCCC) (2007) concludes that overall, climate in Zimbabwe is regionally and globally differentiated, but is generally becoming warmer with more sporadic and erratic rainfall patterns.

1: 2 Conclusion

From the above discussion, we can deduce that climate change is not a recent phenomenon, and is the biggest threat in Zimbabwe. Climate change in Zimbabwe is a serious problem which has got a wide range of impacts. These include: frequent droughts and reduced agricultural productivity, declining water resources, change in rainfall patterns and agro-ecological zones, depletion of biodiversity, increase in heat waves and climatic disasters. According to Machingauta (2013), such a scenario has negative impacts on the country's economy which is primarily agro-based with over 70% of the population residing in rural areas and dependant on climate sensitive livelihoods such as arable farming and livestock production, among others. This explains why the government of Zimbabwe regards climate change a major challenge. Climate change has the probability to jeopardize many of the positive developments attained in meeting the country's development goals. Madzamuswe (2010) concurs with Chagutah (2010) that recent reports produced by Intergovernmental Panel on Climate change (IPCC) (2001, 2007,2012) conclude that extreme weather events, notably drought, floods and tropical storms are likely to jeopardise development gains across different sectors and accelerates the existing natural hazard burdens for risk populations in rural and urban areas.

CHAPTER TWO: Effects of Climate Change in Muzarabani and the Vulnerability of Men and Women.

2:0 Introduction

The chapter seeks to give the evidence and effects of climate change in Muzarabani focusing especially on the vulnerability of men and women to this phenomenon. In Muzarabani, climate change has some of the most profound impacts on water, ecosystems, agriculture, health and energy. Major adverse impacts of climate change in Muzarabani include: perennial droughts and decline of agriculture, transmission of vector borne and water related diseases, declining of water resources, changes in populations and distribution of biodiversity, and turbulent weather and climatic disasters such as floods. These have severe, irreversible impacts and enormous developmental challenges on the lives of men and women in Dambakurima.

Evidence of climate change and its effects on men and women

2:1 Perennial Droughts and Reduced Agricultural Productivity

Drought is a severe and perennial problem in Muzarabani. The drought phenomenon is as a result of sporadic and erratic rainfall. Research has shown that rains have been confined to three months a year, resulting in severe thunderstorms. After this it gets dry, leaving crops to wither because of the lack of water (Madamombe, 2004). The change in the climate has given men and women in Dambakurima village a short, unreliable and unpredictable rainy season, which impacted negatively on agriculture and resulting in food shortages, unavailability and insecurity. A 25 year, recently married men reported that:

"As a result of droughts, food is now scarce in Dambakurima ward. We cannot feed children and families are lacking food which is the first priority to survive. This is a burden to men because we are the heads of the households and we are responsible for carrying all the problems of the family on our shoulders".

A certain man reported that droughts have affected both men and women. This can be supported by his words:

"When there is no food at home, it is non-feasible for couple communication to take place.....".

It was generally observed in the study that although droughts affected both men and women, the harshest effects of droughts are on women because of their duties as mothers and home makers who are responsible for finding and preparing food for men and children. Drought also affected women most because they are central agricultural producers. This finding is in consistent with stipulations made by Todaro (2007) who states that 70% of agriculture labour force in rural areas is primarily provided by women.

2:2 **Climate Induced Floods**

Peek (2008) concurs with UN Centre for Regional Development (2009) that Muzarabani in Zimbabwe's shona language means 'flood plain' or an area that is frequently flooded and it is the worst affected district in Zimbabwe by natural disasters. Climate change has worsened floods in Muzarabani affecting the communities, especially in Dambakurima ward which is the lowest lying area. Property and houses were destroyed; fields and land were eroded as a result of incessant floods in Muzarabani in 2001. In this year, 100 people died due to floods. In 2007, just over 50 deaths were recorded. It is estimated that nearly 65% of the people died due to floods as for 2001 and 2007 were women. It was reported that floods are now an annual crises in Muzarabani, leaving men and women in an almost perpetual cycle of disaster, displacement and recovery. The respondents reported that in recent years, climate induced floods pushed rivers in Chiwenga, Chimoyo and Kairezi villages near the border with Mozambique towards maximum capacity.

These extreme climatic conditions have destroyed the development prospects of the area making the men and women more vulnerable in the context of this area's poor economic, political and institutional capabilities. The catastrophic effects greatly increased family burdens for men and forced them to move to the nearby growth points such as Muzarabani in the Lower Valley and Centenary in the Upper Valley in search of livelihoods in a bid to rescue their families. At the same time, this has ripple effects on women as this left them with the dual burden of having to undertake both productive and reproductive roles within the household. For instance, they have to search for food, to cultivate the land, to source for school fees and household income in order to meet other needs and to take care of children every day. This

forced some to participate in anti-social behaviours such as prostitution. Indeed, this made them more vulnerable to sexual exploitation.

The researcher found that the impacts of climate induced floods are more intense and harsh on women in comparison to men. One of the female respondents revealed that women were mostly affected with floods as they are biologically weak to run due to lack of physical strength and issues like pregnancy. Men were reported to have the mobility to do so during floods eras. Another female respondent said that in 2007 she gave birth in a baobab tree after her village (Dambakurima) was submerged with water. Now her daughter, Judith is eight years old. The same scenario was reported by the respondents to be the same in other flood stricken wards such as Chadereka, Muringazuva and Kairezi.

2:3 The Spread of Vector and Water Borne Diseases

Climate change related problems such as floods and water scarcity have increased the occurrence of water borne diseases such as malaria, bilhazia, diarrhoea, typhoid and cholera within the locality of Muzarabani. Key informants interviews conducted with traditional leaders in Dambakurima revealed that in 2007, the water-related diseases were due to incessant floods that damaged healthy friendly centres such as Dambakurima clinic. This eroded the sanitation and hygiene system in the district. Respondents reported that large bodies of standing water become breeding grounds for mosquitoes that spread malaria and that malaria is a major health related challenge in Dambakurima in particular and Muzarabani as a whole. The contaminated water has provided avenues for other water related diseases such as cholera which were further accelerated by periodic water scarcities.

Apparently, rising temperatures in Muzarabani have accelerated the life cycle of the malaria parasite and facilitated the spread of malaria to new areas. Warmth increases the biting of anopheles mosquitoes and speeds up the maturation process of the parasites they carry. A 22 year married women reported that both men and women in Dambakurima suffered from water borne diseases. However, as she explained women were dismally affected as compared to men as they are biologically, and physically weak and highly sensitive to diseases. To substantiate this view one elderly woman echoed the statement that:

"My body is now dismally devastated by mosquitoes. The biting of anopheles mosquitoes is worse to us women because of two reasons. The first one is that our culture does not permit us to wear trousers for preventive measures. The second one is that our skins are preferably wanted by mosquitoes because of their smoothness and softness".

Mrs Masiiwa, one of the female respondents directly reported that already the area is overburdened with Hiv/Aids and tuberculosis. Water borne diseases pressurised the area in to a begging district with women relying mainly on donor organisations such as Zimbabwe Redcross Society and World Vision.

2:4 Water Scarcity and Stresses

Water scarcity is a severe problem as a result of climate change and variability. It came into being as a result of frequent droughts necessitated by erratic and sporadic rainfall. This contributed to the decline of water tables and reduced water availability in Muzarabani. This deteriorated the annual flow rates of Dande, Musengezi, Kadzi, Hoya, Ruya and Nzoumvunda rivers, which flow into Lake Cahora Bassa in Mozambique about 30 kilometres away. The situation was further accelerated by shifts in rainfall patterns which made it difficult for men

and women to plan on which crops to grow in their fields and home gardens. These have irreversible impacts on both men and women. A certain men reported that:

"*In our culture, it is a bad omen for a man to carry 25 litre container of water each and every day on his head, but is now feasible in Dambakurima village because of the vagaries of climate change".*

The researcher generally observed that though water scarcity has deep impacts on men, but it presents another variable of oppression to Muzarabani women as women are those responsible for water management at household level. This is possible because in the absence of water women will be more psychologically stressed as they need water daily to bath, cook, wash cloth, and plates and water for their gardens. These roles will not be shared with men as it is culturally rooted that women are responsible for that. This finding is in tandem with Rosen and Vincent (1999) who observe that the average women in Sub- Sahara Africa spends 134 minutes per day fetching water and this is likely to increase by 70% by the year 2080. One of the female respondents said that:

"This is detrimental to the health of women who bear on their shoulders the burden responsibility of fetching water for their families and significant amounts of time daily hauling water from distance sources that is walking more than 20km to and from the Musengezi River. What is disappointing and embarrassing is that water from distant sources is rarely enough to meet the needs of the households and is often contaminated, thus becoming double tragedy for us here in Dambakurima".

It emerged from interviews conducted with key informants that there are possibilities that women can be assaulted and sexually exploited by other men on their way to and from fetching

water. A recent issue of a young married woman, Tambudzai Gaga who was raped when she was on his way from Musengezi River was given as evidence by the traditional leaders to the researcher.

The researcher also observed that water scarcity has generated serious health problems on women. These include: the hardening of skins, lesions and dark spots on the hands and feet. One of the female respondents revealed that this has social repercussions on the ability of single women to get married and for married women to enjoy happy marriages. It also emerged from the study that other water related challenges faced by women when collecting water from boreholes are the time factor and the stiff competition over fetching water, generating hostilities. A certain women at a Dambakurima borehole remarked that:

".....we spend the whole day here waiting to fill our containers with water. After filling two 25 litre containers there would be no water coming out. This is distressing to us women with the duty to manage water and other aspects at our households".

Water scarcity was reported by 94% of female respondents to be the greatest challenge facing men and women in Dambakurima ward.

2:5 Heat Waves and Stresses

A number of respondents pointed out Muzarabani as one of the warmest districts in Zimbabwe in the 21st century and the warming trend started in the 1990s. Temperatures are always high both day and night and every season. Research found that the district is no longer suitable for human habitation as the sun is always hot, whether is summer or winter. One of the male respondents specifies that:

"Things have changed in Muzarabani. We are having more warm nights. During the winter you can see the heat waves rising as if we are in the middle of summer.....".

The researcher observed that heat waves have attacked both men and women, but women are those associated with heat stresses and are more vulnerable to heat waves as they spend most of the time walking in search of water, food and firewood. Heat stresses were reported by 98% of the female respondents to be the greatest problem facing women in Dambakurima ward.

2:5 Loss of Biodiversity

According to Rao (2009:29), "biodiversity is sum total of species richness of an area. It is the totality of genes, species and ecosystem in a region. Biodiversity is a term given to the variety of life on earth and natural pattern it forms". Loss of biodiversity in Muzarabani came into being as a result of the combination of many climatic factors such as frequent droughts, floods, water scarcity, heat waves and transmission of water borne diseases. A number of respondents reported that depletion of biodiversity transpired in form of the extinction of wetlands, trees, grass, wild animals, rivers and soil organisms. This left the area prone to desertification and environmental degradation as gulley erosion is a chronic problem in Muzarabani. The dried of rivers such as Musengezi affected men as they are responsible for economic activities such as fishing. It was reported that a number of wild animals in Mavhuradonha Range have perished and others have migrated as a result of the harshest effects of perennial droughts. These include: hares, kudus, hyenas, impalas, elephant, bucks and warthogs. This actually resulted in ecosystem imbalance.

The vegetation type is now characterised with sparse thorn trees and these are no longer turgid, dense and green due to shift in rainfall patterns and rising temperatures. This actually contributed

to the severe shortage of firewood and the depletion of forests, and greener pastures for domestic animals such as cattle, goats and sheeps. From a gender perspective, this is a disaster to the Dambakurima women who are responsible for sourcing fuel wood every day. One of the female respondents reported that climate change has increased the burden for accessing energy sources on women and this is hazardous to their health. The problem was exacerbated by the low availability of water and destruction of forests led to a decrease in the availability of energy. The severity of energy deficit was further accelerated by lack of electricity. The extinction of forests is a disaster mostly on the side women as women depend on forests for their livelihoods as well as to meet their nutritional, dietary, cultural and medicinal needs. This research finding is in tandem with the conclusion made by Busse and Bird (2005) who argued that 80% of women in forest-reliant communities of Africa depend primarily on forests for survival.

Key informant interviews conducted with traditional leaders revealed that the unavailability of grazing lands and depletion of forests also dismally affected men as they are traditionally responsible for the keeping of livestock. With unavailability of greener pastures, men are forced to drive their cattle, goats and sheeps to neighbouring districts (Guruve, Mbire) that have not been totally affected by climate change in search of water and grass for their livestock. One elderly man had this to say:

> *"I do not know what happened to Dambakurima. This region is cursed i tell you. People are now engaging in sinful activities and God is punishing us for our wicked behaviour. We used to go out fishing, swimming and hunting back in our days and everything was just good, but the whole situation has changed. One would be lucky to see a hare around and our forests used to be abundant of fruits such as tsambatsi, tsombori, tsubvu, nyii, shumha, nhengeni, nhunguru and maroro, but now the trees are no longer available".*

Loss of biodiversity was reported to be the major formidable threat facing men and women in Dambakurima.

2:6 Climate - Induced Poverty

Poverty is the wide spread problem in Muzarabani. Poverty has different causes, but climate change has generated what we call "deep-rooted poverty" among the men and women of Muzarabani. The poverty phenomenon was spearheaded by a number of climatic factors such as frequent droughts, floods, shift in rainfall patterns and rising temperatures leading to extinction of wetlands, domestic animals and the natural vegetation. According to Muzarabani Zimstatic Agency (2014), it is estimated that more than 90% of residents in Muzarabani are extremely poor and are sustaining their lives below the poverty datum line. A number of female respondents have openly reported that climate change has further impoverished Muzarabani women who were already in a vicious cycle of poverty before the phenomenon. According to Sen (2009), this is what we call the "feminization of poverty". According to the 2011 Poverty Assessment Survey undertaken by ZIMVAC, among 90% of the poor residents in Muzarabani, 60% are women.

Climate change was reported to further jeopardize the lives of women and to deepen their economic dependence on husbands for survival. This actually increased their subjection to brutal exploitation by men in a domestic relationship. A certain women reported that poverty is associated with irritability and psychological distresses in a domestic relationship. It is men mostly frustrated with poverty and as a result of frustration, the husband will become bitter and would often seek to get retaliation through ill treatment of the wife. This finding is in tandem with the conclusions made by Khan and Oskido (2004) that poverty can be equally equated with the commoditization of women within a domestic relationship. Nearly 13 of the

female participants reported that climate induced poverty is what nurtures and sustains domestic-based violence. The United Nations Development Programme (UNDP) (2009) concurs that women make up 70% of the worlds' poor and poverty is the underlying cause of vulnerability and inability to cope with shocks resented to a community. This naturally means that women are at the receiving end (more vulnerable) to climate change and the phenomenon has the ability to further impoverish women. To this end, there is no ability to recover.

2:7 Conclusion

It has thus been established that climate change is the biggest challenge and has profound impacts on the lives of men and women in Muzarabani. The major adverse impacts of climate change include: food insecurity and reduced agricultural productivity, heat waves and stresses, changes in populations and biodiversity, transmission of water borne diseases, climate induced poverty, climatic disasters like floods and spread of water related diseases. It emerged from the chapter that climate change has affected both men and women in Dambakurima, but women are the most vulnerable group due to their biological weaknesses, sensitivity to disasters and burden responsibilities they undertake within the households in the face of climate change. This has also been corroborated by Kasawan et al (2013) who posited that the devastating impacts of climate change will be bad for everyone, but severest for marginalised groups such as women, girls and people living with mental and physical disabilities.

CHAPTER THREE: Adaptation Strategies by Men and Women in Dambakurima Ward of Muzarabani.

3:0 Introduction

The chapter availed information on the adaptation strategies adopted by men and women in Muzarabani in a bid to cushion the adverse effects of climate change. It emerged from the study that adaptation strategies for men and women in Dambakurima ward are homogeneous. Some of the adaptation strategies designed by men and women in order to deal with the vagaries of climate change include: migration, adherence to conservation farming, the use of traditional knowledge and indigenous knowledge system, external aid from NGOs, crop, and livelihood diversification and engaging in firewood trading , menial jobs, brick moulding and petty trading. Crop and livelihood diversification as an adaptation strategy in Dambakurima has a number of variations such as switching to drought tolerant crop varieties, intercropping, crop rotation, agro-forestry and domestication of drought resistant animals. These constitute the majority of women's adaptation strategies, thus authenticating the stipulations of the eco-feminist theory that women are closer to the nature. These adaptation mechanisms have assisted communities in Muzarabani to cope and survive in the context of climate change and variability.

3:1 Crop and Livelihood Diversification as an Adaptation Strategy in Dambakurima

Key informant interviews held with local traditional leaders reported that in order to minimise the challenges associated with crop failure and livelihood vulnerability, the people in Dambakurima have resorted to the diversification of crops and their livelihood activities. Crop diversification as a drought coping mechanism means a shift to the growing of other crops that are able to adapt to and survive in the context of climate change and variability. Chenge (1998) concurs with Ellis (2000) that livelihood diversification refers to the process by which households construct a diverse portfolio of activities and social support capabilities for survival and in order to improve their standard of living. Crop and livelihood diversification has a number of variations in Dambakurima ward of Muzarabani:

3.1.1 Switching to Drought Resistant Crops

It emerged that the growing of drought tolerant small grains such as bulrush, sorghum and finger millet and leguminous crops like round nuts, groundnuts and cow peas is on the increase in Muzarabani. The researcher found that the growing of legumes is being done by women as it is traditionally known that such crops are meant for women (women's crops). The growing of bulrush, finger millet and sorghum is being facilitated by men based on the idea that they provide mealie meal which is essential for the day to day running of human lives in Dambakurima. Men are responsible for the monopolisation of these crops because are those with the responsibility to cater that the family has enough food for consumption (men's crops). The rationale has been that they are adaptable to both poor soils and climate change. This finding has been corroborated by Chazovachi et al (2012) who argued that such crops are not only drought resistant , but also tend to be resistant to pests and diseases that may threaten

them. What should be underscored here is that small grains can endure long periods without rainfall and also require less plant food hence they tend to mature early.

These crops are also vital for the people in Dambakurima given their socio-economic significance. Of note is the fact that these aforementioned crops are used to brew traditional beer in Dambakurima locally known as “Ngoto” or “7 days”. This traditional beer provided an alternative source of income for many people who brew it commercially. More so, this traditional beer is also brewed for commemorating traditional rituals such as death rituals (kurova guva), rainmaking ceremonies (mukwerera) and other community projects such as “Nhimbe”, where the community collaborates collectively in their agricultural activities and then later on drinks this traditional beer. A number of respondents reported that beer brewing is done by women on the basis that are those responsible for processing millet using traditional grinders (makuyo) and have deeper knowledge on how to cook traditional beer. The researcher observed that men are only there to support with fuel wood. Crop diversification as a panacea to climate change and variability challenges was proven to be successful in Dambakurima with a number of respondents highlighting that they have moved to new crop varieties that are relatively drought resistant and hence can withstand the long dry spells that are rampant in Dambakurima.

3.1.2 Domestication of Drought Resistant Animals

Livestock production has also been on the increase in Dambakurima as a result of climate change impacts. It was generally observed that animals like goats, sheep, and indigenous poultry birds like chicken (roadrunners) are becoming dominant as a coping strategy. This is a positive move because Dambakurima ward of Muzarabani is in region 4 suitable for the domestication of drought resistant animals (cattle ranching). It emerged from the study that

men are responsible for the keeping of large stock such as cattle, sheep and goats as they are traditionally viewed as for men. Women were reported to keep and monopolise small stock like chickens such as roadrunners as they spend most of the time at home taking care of them. According to Madamombe (2004), these small livestock like small grains are especially adapted to these drier areas, making them ideal for drought prone areas like Muzarabani.

Interviews with key informants indicated that poultry birds such as ducks are being domesticated in flood prone Dambakurima because they are able to swim in the event of climatic disasters like floods. The researcher observed that livestock production is assisting the local inhabitants of Muzarabani to generate household income which can be used to minimise abject poverty as well as to meet their daily food needs. It however emerged that increases in the distress sale of critical human assets such as cattle and goats by men tended to have a backlash. The researcher contends that such strategies are detrimental and not sustainable because they can leave the rural poor without an alternative source of income, thus increasing their vulnerability to food insecurity and absolute poverty. However, in the awake of Muzarabani's climate variability crisis, the researcher found livestock production as the principal means for broad-based adaptation strategy for sustainable livelihoods thereby solving Dambakurima's food security challenges and climate variability catastrophe.

3.1.3 Intercropping

It emerged from the study that mixed or intercropping is another adaptation strategy adopted by men and women in order to cope and survive in the context of climate change in Muzarabani. Intercropping is the practise of growing two or more crops in the same field. The researcher observed such fields comprising of different crops such as sorghum, cow peas and water melons. Nearly 94% of the respondents reported that intercropping is female driven

process because it is women responsible for selecting various crops to be grown in a certain field. The goal of intercropping is to produce a greater yield on a given piece of land by making use of resources that would otherwise not be utilized by a single crop (Mayhew and Penny, 2009).

Information attained through open –ended questionnaires reveals a purposeful ultimate of intercropping as an insurance against the failure of crops in abnormal years. A number of female respondents reported that intercropping with cash crops such as tobacco and cotton is more profitable as it can assist to alleviate poverty among women. Interviews with key informants such as agritex officers revealed that intercropping of different plants also promotes biodiversity by providing a habitat for a number of insects and soil organisms that would be present in a single- crop environment. It minimizes the occurrence of plant pests and diseases by increasing predator biodiversity in the face of climate change and variability (Burke, 2009)

3.1.4 Crop Rotation

Interviews with female participants revealed that diversification of crops in Dambakurima is characterised by deployment of sustainable and environmentally- friendly strategies such as crop rotation. Crop rotation is one of the oldest agricultural methods and is more common in rural Zimbabwe. Bird and Busse (2005) argued that crop rotation refers to the practise of growing a series of dissimilar types of crops in the same area in sequential seasons. Interviews conducted with men and women revealed that by rotating crops, subsistence farmers (men and women) in Dambakurima can use different crops on the same ground to replenish its nutrient value, growing cow peas where sorghum was grown the previous year improves nitrogen in the soil for either sorghum again, or something else the next year.

The researcher generally observed that like intercropping; crop rotation improves soil fertility through nitrogen fixation, especially when it is undertaken with leguminous plants and this can assist to reduce the risk of crop failure in the face of climate change and variability. A number of the female respondents revealed that crop rotation is a female adaptation strategy because it is women responsible for planning on which crops to be rotated in the fields.

3.1.5 Agro-forestry

It emerged from the study that as a result of crop and livelihood diversification, agro-forestry is on the increase in Muzarabani. Shakwe (2010) concurs with Bird and Busse (2005) that agro-forestry is the mixed cultivation of trees and other crops. Ellis (2000) supported that the incorporation of trees into the system generates nutrients for herbaceous crops through a number of pathways, including litter fall and where applicable nitrogen fixation.

Nearly 94% of respondents highlighted that agro-forestry in Dambakurima is practised on small farms as gardens that are premised on wetlands. The researcher observed that the gardens have perennial fruit trees like mango trees which can assist the residents in dealing with the effects of food shortages. Interviews conducted with key informants revealed that the combination of trees with annual and perennial herbaceous crops and in some cases livestock, serves to provide men and women with continuous supply of food or income. Nearly 84% of the female respondents reported that agro-forestry is mainly facilitated by women because are those responsible for tasks such as watering gardens.

3.1.6 Fire wood Trading, Brick Moulding, Menial Jobs and Petty Trading

Key informant interviews conducted with traditional leaders revealed that some energetic men are adapting to the insurmountable challenges brought by climate change by engaging in

livelihood activities such as petty trading, brick moulding, fire wood trading and menial jobs. The researcher observed that it is difficult for women to participate in these actitivities because of their biological weaknesses. For example firewood trading and brick moulding are laborious tasks which require a lot physical power to be undertaken.

3.2 Humanitarian Assistance from NGOS

Interviews held with respondents revealed that there are a number of charity-based organisations that are active and vibrant in the district of Muzarabani in order to assist people to adapt to climate change and variability. The notable examples of these NGOs include: Christian Care, Goal and Care International. They assisted men and women with the provision of food aid rations to offset food shortages due to recurrent poor harvests. A number of female participants reported that boreholes have been drilled and rehabilitated, underground wells were constructed to reduce water scarcity and stresses and nutrition gardens locally known as "Mishandirapamwe" have been revived and are being complemented materially and financially by NGOs in an endeavour to enhance food security and to increase the communities' resilience to climate change and variability in Dambakurima.

The researcher however observed that humanitarian assistance from NGOs is temporary in the form of nutritional projects being imposed on men and women without carrying out vulnerability assessments. It was also generally observed that the provision of food handouts is detrimental to the acquisition of sustainable development in Muzarabani as it tends to create a psychological dependence syndrome. It emerged from the study that some peasant farmers (men and women) in Dambakurima are getting reluctant to grow their own food crops, based on the allegations that they will get food rations from Goal and Christian Care in the subsequent seasons.

3.3 The use of Traditional Knowledge and Indigenous Knowledge System (IKS)

Indigenous knowledge system (iks) can be defined as the knowledge of an indigenous community accumulated over generations of living in a particular environment. It was also observed that in Dambakurima, traditional knowledge and indigenous knowledge system (iks) has also been extremely useful in adaptation strategies devised by men and women. It emerged from the interviews that through the meticulous study of plant and animal life and behaviour such as bird species like (Mafudzamomombe, Furiramudenga, Haya, Nzvirwa, Dendera and Mashohori) people could easily predict the likelihood of a severe drought or low rainfall and thus would be able to adequately prepare in advance for the impending climatic catastrophe. According to Berkes (1998:8-9), "those traditional coping mechanisms are largely based on technologies, knowhow, skills, experiences, practises and beliefs that were proven to be ecologically viable for a number of years and is handed down through generations by cultural transmission".

More so, traditional myths and beliefs were also of paramount significance in Muzarabani in the quest to promote sustainable exploitation and utilisation of critical natural resources like water, wild fruits, greener pastures, among others. Interviews conducted with traditional leaders revealed that in Dambakurima, it is a taboo to harvest fresh trees as well as contaminating natural water sources like geysers and hot springs. Interviews held with men reported that the enforcement of these traditional rules is a male driven process because of the traditional belief that a leader is essentially a male. The study revealed that some traditional leaders have established traditional silos with the intended purpose to rescue the villagers from the harshest effects of perennial droughts that are rampant in Dambakurima. The highly venerated Chief Dambakurima was reported to have the Chief's granary under a system known

as Zunde raMambo where residents produces crops in a communal field known as Zunde and the produce is kept at the central granary located at the chief's home and used to feed his people during the time of "shangwa" or droughts. Zunde was a social protection measure to make sure that the community had enough access to food during the time of food shortages.

3.4 The Dhiga Udye/ Timba Ugute Adaptation Strategy

The researcher observed the emergence of the new cropping system in the name of conservation farming as an adaptation strategy to climate change and variability in Muzarabani. According to Govet et al (2013), conservation farming is much concerned with the construction of ditches, pits and furrows to capture and store rain water. The furrows will be used to cultivate the above areas that become water logged during the rainy season. They will permit minimum soil disturbances when the time comes for tilling and harvesting. The Dhiga Udye strategy encompasses a lot of sustainable technologies such as zero and minimum tillage. The Timba Ugute adaptation strategy was introduced by NGOs such as Christian Care, Care International and Goal in order to enhance food security in drought prone areas such as Dambakurima. It came as a necessary intervention to the agricultural production challenges affecting men and women.

Interviews conducted with key informants revealed that in Dambakurima the Dhiga Udye Conservation Farming is carried out using the environmentally-friendly natural resources such as green and cattle manure and it has promoted the cultivation of indigenous drought tolerant varieties like cow peas, groundnuts, bulrush, finger millet and sorghum. NGOs such as Care International are encouraging men and women to undertake this technology by providing inputs, appropriate modern machineries, adequate draught power and good training.

It emerged from the study that Dhiga Udye strategy's success in dealing with adverse effects brought by climate change in the area is questionable. One group of participants typically depict that the Timba Ugute Conservation Farming helped to restore degraded soils, conserve water, reduce chronic dependence on food aid provided by NGOS such as Goal and Christian Care and promote food security and self-sufficiency. The other group felt that the conservative farming project ended as a miserable failure as it has not shown any meaningful improvement in agricultural productivity. It has however been reported that the number of people practising the Dig and Survive strategy in Dambakurima village is intensifying due to increasing threat brought by climate change. Nearly 60% of the female respondents revealed that the Timba Ugute conservation farming is female driven process because women are those spend most of the time constructing ditches and transporting natural fertilisers such as green manure from Mavhuradonha Mountain.

3.5 Migration as an Adaptation Strategy

The researcher observed that as a result of climate change, migration of men and women within or outside the boundaries of Muzarabani is on the increase. It emerged from the study that there are some instances when men and women will temporarily move with their children, property and livestock from flood prone Dambakurima to upper Muzarabani (that is to areas like Drumada, Chinyani, Gee jay, and Centenary) during the rainy season months of February and March each and every year.

External migration is also rampant in Muzarabani. Key informant interviews conducted with traditional leaders revealed that external migration to cities and towns of Zimbabwe or outside Zimbabwe to countries such Botswana and South Africa is largely associated with men as women will be left caring for children, property and livestock. Nearly 94% of the female

respondents reported that only very few women in Dambakurima are able to migrate to foreign countries like South Africa through cross border trade. Interviews held with men and women reported that migration is assisting people to adapt to climate change as migrants will send back remittances to their families in form of cash, materials and food. One of the female respondents reported that they use remittances to formulate income generating projects, paying school fees, buying agricultural inputs like seeds and as household income to meet other necessities, thus adjusting to the insurmountable challenges brought by climate change.

The researcher however observed that though migration is a positive move to minimize the adverse impacts brought by climate change, it is characterised by chronic problems within a domestic relationship. Women became de-facto household heads in the absence of men. In this case, they are burdened with all responsibilities within the household. These include productive and reproductive roles. A number of female participants reported that migration of men is increasing delinquent behaviours such as prostitution as it is difficult for young women to stay alone. This may result in divorces and transmission of sexually transmitted diseases such as HIV/AIDS which can interrupt the whole process of climate change adaptation. From this understanding, the sustainability and possibility of migration as an adaptation strategy in Dambakurima is questionable.

3.6 Conclusion

In the final analysis of the chapter the researcher found that men and women in Muzarabani are indeed engaging in a plethora of livelihood activities and rely on diversified income portfolios. It was generally observed that a number of people in Dambakurima had resorted to

a diverse livelihood means as they are now depending on a multiplicity of economic activities each year. Diversification of livelihood activities thus offered a platform for people to widen their sources of income and hence improved food availability and livelihoods. It emerged from the study that 84% of people within the locality of Dambakurima are expanding their livelihood strategies to include activities like engaging in menial jobs (maricho), firewood trading (kutema nekutengesa huni), petty trading (kuruka nekutengesa mhasa), commercial brick moulding(kukanya zvidhinha) and beer brewing(kubika ndari), among other activities.

It is reflected in the chapter that most of the adaptation strategies such as crop and livelihood diversification, drought tolerant varieties, intercropping, Timba Ugute conservation farming, crop rotation, migration, agro-forestry, external aid, the use of indigenous knowledge system and keeping of drought resistant animals are being adopted by men and women in Muzarabani. The researcher generally observed that engaging in different livelihood activities assists to share risk and manage uncertainty.

CHAPTER FOUR: Recommendations on the Ways to Improve the Adaptation Strategies for Men and Women to Climate Change

4:0 Introduction

The chapter is going to provide recommendations for the future research and policy, followed by a broad general conclusion that shows the fundamental role that the applied research must

play in development planning, strategic building and policy-formulation. The recommendations are based on the feasible ways that can be put in place by policy makers, feminists, legislators and other environmental stakeholders in order to improve the adaptation strategies for men and women to climate change. Based on the analysis above, the case studies presented and the literature cited, the recommendations provide a way forward for addressing challenges identified and for taking advantages of the opportunities supported by the 1992 UNFCCC. The recommendations and lessons arising from this study are relevant to a broader set of developing countries that are dealing with similar environmental challenges, particularly those within the locality of Sub-Saharan Africa. Some of the opportunities identified by the researcher include the following:

4:1 Increasing Research

The lack of gender-differentiated research and data is an impediment to reducing the vulnerabilities of men and women to climate change. There is a huge gap on the vulnerability of men and women to climate change. As such a deliberate effort to incorporate gender issues into Zimbabwe's response to climate change is necessary. This is in tandem with arguments made by Bird and Busse (2005) who argued that gender disaggregated data on vulnerabilities is required at both macro and micro levels.

4:2 Effective Involvement of Gender Organisations in Climate Change Negotiations

Climate debate in Zimbabwe has largely been elitist in nature. According to Machingauta (2013), this is what we call the "masculinisation of climate governance". As such gender aspects are poorly addressed in climate change debates in the country; there is lack of gender sensitivity in those stakeholders shaping climate debates, leading to a strong technical and

economic bias in the contexts. There is need for meaningful and effective involvement of gender organisations in climate governance for the existence of gender parity. The broader participation of feminists' organisations and the presence of gender perspectives may result in agreements and documents to reduce the vulnerability of women and men. To this end, if gender organisations are not actively involved, gender and women's issues will not be adequately addressed.

4:3 Increasing Budgetary Commitments towards Climate Change

At the national level, there is no budget to cater for the insurmountable challenges brought by climate change to men and women. Our national budget only caters for HIV/AIDS and security issues. According to Machingauta (2013), most of the financial resources are being directly channelled to largely dorminant ministries such as Ministry of Defence. There is need to formulate green climate funds or adaptation funds with the intended purpose to cater for the adverse impacts brought by climate change on men and women. The adaptation response funds should be part of the national budget. They should also have contingency funding to cater for income generating projects in order to alleviate climate induced poverty among men and women in Zimbabwe. Kahinda and Taigbenu (2007) argue that the presence of the adaptation response fund may assist diversification to take place within or outside agriculture. The existence of budgetary commitments will increase the capacity of various institutions to implement climate policies, plans and strategies relating to climate change adaptation.

Vital institutions in need of such support include climate change office, institutions involved in early warning such as the National Early Warning Unit (NEWU), ZIMVAC and Metrological Services Department (MSD). Bojo (2013) shares the same feeling that other vital

institutions in need of capacity-related support are ZINWA, the Department of Agricultural Research and Extension and Department of Civil Protection Unit.

4:4 The Need to Formulate Robust and Effective Gender Sensitive Climate Policies

Environmental laws and policies in Zimbabwe are not gender sensitive in orientation. They tend to be gender biased. They do not reflect the interests and adaptation needs of vulnerable groups such as women. Some of these include: Water Act, Land Act, Mines and Minerals Act, Environment Management Act, among others. To make the matter worse, they are not robust and effective in responding to the vulnerabilities of men and women to climate change due to undercapacitation and poor funding. This tallies with Machingauta (2013) who articulate that Zimbabwe is being constrained by its inability to put in place effective gender sensitive climate policies because of lack of human, institutional and financial resources. Dayo and Thiogo (2007) concur with Hug and Reed (2007) that there is need to formulate effective environmental policies. More so, there is need for existing policies in Zimbabwe to be durable and sustainable. Zimbabwe has no official long term development plan, but it has a Medium Term Plan (MTP) covering 2012 to 2015. The MTP was designed to address frequency and intensity of extreme weather events such as droughts and reduced precipitation with much focus on natural resource based sectors of the economy such as agriculture, water, and tourism, forestry and energy. This policy plan is a blueprint, but there is need to revisit some of its sections and redraft it in the presence of gender organisations for it to be gender sensitive.

4:5 Integration of Gender Issues in Policy Making and Adaptation Programmes

There is need to incorporate a gender equality perspective into policy making, decision making bodies and adaptation programmes in order to make sure that vulnerability of women and girls to climate change are accounted for. The climate response planning should consider gender

disaggregated data in order to show dichotomies among women as well as other disadvantaged groups such as elderly, children and people living with HIV/AIDS (PLHIV groups). Satterthwarte (2008) cited in Chagutah (2010) concurs with Ayers (2009) in Bulkeley and Broto (2012) that the recent Draft Guidelines to Mainstreaming Gender in the Development of NAPs by IUCN (2011) provides a useful framework for guiding the process.

4:6 Climate Awareness Raising Campaigns

Birkman (2010) concurs with Dodman and Mitlin (2011) that there is need to develop climate awareness raising campaigns aimed at government (especially legislators), civil society and the general public. To this end, there is need to make sure that institutions involved in raising public awareness and disseminating early warning systems should ensure that men and women in communities are familiarised of the adverse impacts brought by climate change and aware of restorative alternatives.

4:7 General Conclusion

In the final examination, this thesis revealed that climate change has profound impacts on the lives of men and women in Dambakurima ward of Muzarabani. It emerged from the study that though climate change has compounded the vulnerability of both men and women, but the adverse impacts of climate change are heavily felt or experienced by women because of their biological weaknesses, sensitivity to disasters and burden responsibilities they undertake within the households in the face of climate change such as sourcing water, food, tradition fuels (fire wood), among others. The study highlighted that climate change is a serious problem in Dambakurima ward of Muzarabani with devastating impacts on water, energy, ecosystems, agriculture and biodiversity. It emerged from the study that some of the catastrophic effects of

climate change in Dambakurima included; perennial droughts and reduced agricultural productivity, abject poverty, spread of infectious and water borne diseases, water scarcity and stresses, heat waves, and stresses and loss of biodiversity.

The study specified that it is necessarily difficult to overcome or wipe out climate change, but there are opportunities that are apparently in existent in order to minimize the insurmountable challenges brought by climate change on men and women as well as to improve their adaptation strategies in a gender sensitive manner. These initiatives can be done through climate awareness raising campaigns, increasing research, increasing budgetary commitments towards climate change and effective involvement of gender organisations in climate change negotiations. Equally important is for relevant and potential stakeholders like the government and the private sector to amend some of the sections of the existing environmental policies, and laws and redraft them in the presence of women or gender organisations in order to make them gender sensitive and effective in responding to the vagaries of climate change on men and women in Zimbabwe There was a general consensus among men and women in Dambakurima that solutions for dealing with the vagaries of climate change in a gender sensitive manner also lie in the integration of gender issues in planning, strategic building, policy-making, institutional frameworks and adaptation programmes..

Findings in this study however established that men and women in Dambakurima have not been the passive victims of climate change. They have rationally responded to it through the deployment of various adaptation strategies both individually and collectively. In fact, they have responded by adopting short-season crops, drought tolerant varieties, agro-forestry, crop rotation, intercropping, migration, keeping of drought resistant livestock, allowing external aid from NGOs, conservation farming technologies like zero and minimum tillage and the use of

traditional beliefs and myths as well as other indigenous knowledge systems in order to predict for the occurrence of future climatic disasters. It was observed in the study that some of the adaptation strategies devised by men and women in Muzarabani are not sustainable in an endeavour to cope with the catastrophic effects of climate change and variability. For example increases in the distress sale of critical human assets like cattle, goats and sheeps. This however tended to have a backlash and domino effects as it crippled their lives thereby indulging many people in a perpetual and vicious cycle of abject poverty and food scarcity.

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INTERVIEWS

Interview with Masiiwa Jenipher (female respondent)

Interview with Hwata Tedious (traditional leader)

Interview with Tariro Dekeza (female respondent)

Interview with John Maindidze (male respondent)

Interview with Peter Zvidzese (Agritex Officer)

Interview with Tambudzai Gaga (respondent)

Interview with Terry House (Agritex Officer)

Interview with William Mukonya (traditional leader)

APPENDIX A

INTERVIEW GUIDE FOR DAMBAKURIMA RESIDENTS

Good morning everybody. My name is Makuvire Bester. Iam a fourth year student at the Midlands State University .In partial fulfilment of the requirements of Bachelor of Arts in Development Studies (DS) Honours Degree .Iam undertaking an academic research on the effects of climate change and adaptation strategies devised by men and women in Muzarabani. I was authorised by your District Administrator (DA) Mr Gweshe to use Dambakurima Village as my case study. Iam kindly requesting you to participate in this interview without fearing undesirable consequences .You are flexible and free to provide your views and experiences at willy-nilly. Your contributions could be of great value to this research. The process is purely

academic and I shall respect your privacy and ensure confidentiality on the information that you will disclose or divulge to me.

1. What is your understanding on following the terms? (i) Climate change (ii) Vulnerability and (ii) Adaptation?
2. What do you think are the effects of climate change on men and women?
3. Who are the most vulnerable group to climate change in Dambakurima and specify .why?
4. What are the adaptation strategies devised by men and women in order to deal with the vagaries of climate change in Dambakurima?
5. How sustainable are those adaptation strategies in responding to the adverse impacts brought by climate change?

6. In your own opinion what do you think are the ways that should be put in place in order to improve the adaptation of men and women to climate change in Dambakurima?

APPENDIX B

QUESTIONNAIRES DAMBAKURIMA RESIDENTS

My name is Bester Makuvire .Iam an undergraduate student at the Midlands State University. In partial fulfilment of the requirements and expectations of Bachelor of Arts in Development Studies (DS) Honours Degree Iam carrying out an academic research on the impacts of climate change and adaptation strategies adopted by men and women in order to cope and survive in the context of climate change and variability. I was given the permission by your District Administrator (DA) Mr. Gweshe to undertake my research in Dambakurima Village. Iam kindly requesting you to complete this questionnaire by ticking where appropriate. The

information that you will disclose will be treated with extreme confidentiality and high levels of privacy and it shall be used primarily for academic purposes.

NB. DO NOT WRITE YOUR NAME ANYWHERE ON THIS QUESTIONNAIRE

Please tick where applicable to indicate your choice of answer

SECTION A: Demographic information

1. Sex: ( ) **Male** **( ) Female**
2. Age group

   Below 30 ( ) 30-40 ( ) 41-50 ( ) 51+ ( )
3. Level of Education

   Grade 7 ( ) **ZJC ( ) "O" level ( ) "A" level ( )**

   Other (state).....

SECTION B: Interview questions

4. Does climate change have impact on men and women in your area?

   Yes ( ) No ( )
5. Who are the most vulnerable group to climate change in comparison to other?

   Women ( ) men ( )
6. Who are the most affected group with climate change in your area? Justify your answer.

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7. What are the effects of climate change on men and women in Dambakurima?

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8. What are the adaptation strategies adopted by men and women in order to deal with the vagaries of climate change in Dambakurima?

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9. How sustainable or possible are those strategies in dealing with the formidable impacts of climate change in your area?

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10. In your own opinion what should be done to reduce the vulnerability of men and women as well as to increase their adaptation to climate change in a gender sensitive manner in your area and Zimbabwe as a whole?

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Thank you very much for your mutual co-operation. May God grant you prosperous lives.