AN ASSESSMENT ON THE KNOWLEDGE, ATTITUDES AND PRACTICES AMONG COMMUNITIES ON CLIMATE CHANGE

(A case of Kasiya, Lilongwe; Maseya in Chikwawa; Chingale in Zomba and Mayani in Dedza)

Climate Change Research Report

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May the Lord Jesus Christ, the author of everything, in heaven and on earth bless you all.

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ABSTRACT

This survey was conducted in 8 villages, namely, Kadzumba and Nenenji from GVH Kadzumba in TA Maseya, Chikhwawa district, Mtchera, Chiunda and Laudoni villages from GVH Masaula in TA Mlumbe, Zomba district, Kamgunda and Kalulu villages in TA Tambala, Dedza district and Kasiya and Chateka villages in GVH Kasiya in TA Khongoni in Lilongwe district. This survey was done in the month of September 2011. These are the areas here Centre for Social Concern, a Faith Based Organization conducts rural Basic Needs Basket case studies involving selected households and communities on a monthly and quarterly basis.

The survey was conducted to assess knowledge, attitudes and practices among communities on issues of climate change that would inform policy makers on climate change as well as come up with IEC materials which will be important to stakeholders including communities themselves. The results are also intended to provide baseline data to stakeholders who may wish to start similar activities in these areas.

Data was collected using structured questionnaires with open ended questions, administered to 89 individuals who were randomly selected.

Research Findings

The results show that 96.6% of respondents (59) had heard of climate change as opposed to 3.4% who have not ever heard of climate change. It was found out that 71% heard it from radio, 18.6% from extension staff (forestry and agriculture) while 10% from other sources.

The survey reveals that to 79.7% of the respondents, climate change mean change in rainfall pattern, 5% of the respondents said climate change mean change in temperatures while 15.3% of the respondents said they had no idea.

The results further show that 80% of respondents mentioned cutting down of trees as the cause of climate change while 5% mentioned green house gases and 15% had no idea on what causes climate change.

On the effects of climate change, 46% mentioned unreliable rainfall, 8% of the respondents mentioned reduced water levels, 4% mentioned floods, 20% mentioned drought while 22% had no idea on what the effects of climate change are.

The study also reveals that 73% of the respondents stated that they know measures put in place by government with a purpose of mitigating the impacts of climate change while 27% said they do not know these measures. On the measures put in place, 74% mentioned planting of trees, 15% mentioned irrigation, 2% mentioned crop diversification, another

2% stated manure making, and 2% mentioned conservation agriculture and 5% had no idea on the measures.

On the availability of extension services pertaining to environmental issues, 83% of the respondents acknowledged the presence of extension workers while 17% said that extension workers do not visit them. It was shown that 36% said the extension workers visit them more that twice a month, 44% said they are visited less than twice a month while 16% said the extension people do not visit them and 4% had no idea as to whether these extension worker pay them a visit or not. On the same, 69% of the respondents mentioned that they are taught mitigation measures by extension staff while 31% dismissed this.

On the existence of VNRMCs in their communities, 47% reported that they do have them, 50% said these committees do not exist while 3% had no idea about their existence.

The results show that decision making during community or committee meetings is male dominated , 64% stated men have the upper hand in decision making, 11% mentioned that women lead in decision making, 21% said both have an equal power in decision making while 4% said had no idea.

The results also show that 76% of respondents depend on casual labor (*ganyu*) as a coping mechanism during hunger periods which droughts, 22% do small scale businesses while 2% mentioned that they depend on small scale irrigation. On the same, 49% said that these mechanisms are effective while 51% said they are not effective.

On the access to education with regard to boys and girls, 54% of the respondents said that families give priority to boys to have an access to education as compared to 28% who said girls are given priority. Only 18% said that both girls and boys are given equal opportunity with regard to education. The survey also revealed that 59% stated that men have an easy access to land while 19% said that women have an easy access to land and 22% said that both men and women have an equal access to land. The survey also shows that 74% of respondents stated that men have more control over land than women. 19% of respondents stated that women have more control over land than men while 7% said that men and women have equal control over land. Another issue was access to information to land rights. 41% of the respondents said that they do have an access to information on land rights while 59% said that they do not have an access to information on land rights. On the source of information, 64% mentioned they get information on land rights from the radio, 18% from NGOs, 9% from extension staff and another 9% from local leaders.

ACRONYMS

AIDS	Acquired Immuno Deficiency Syndrome
CA	Conservation Agriculture
CEPA	Centre for Environmental Policy and Advocacy
CfSC	Center for Social Concern
CHH	Child Headed Households
CO_2	Carbon Dioxide
FAO	Food and Agricultural Organization
FHH	Female Headed Households
GDP	Gross Domestic Production
GVH	Group Village Headman
IEC	Information Education and Communication
KAP	Knowledge, Attitudes and Practices
LEISA	Low External Input for Sustainable Agriculture
MHH	Male Headed Households
NGO	Non Governmental Organization
NO	Nitrogen Oxygen
RBNB	Rural Basic Needs Basket
SPSS	Statistical Package for Social Scientists
UNDP	United Nations Development Programme

Contents

CHAPTER 1

1.0 Introduction

Malawi continues to suffer from the adverse effects of environmental degradation and climate change. In recent past the country has been experiencing adverse drought, high and unbearable temperatures, excessive rainfalls resulting into flash floods and crop failure. The trends, if unchecked, are likely to create a tough economic terrain for the country that is highly dependent on rain fed agriculture and natural resources for its livelihoods. According to WB, Malawi's GDP was estimated at US43.5 billion in 2007, equivalent to US4230 per capita income thereby qualifying its being ranked 160th of 182 countries on the UNDP's Human Development Index 2010. The environment plays a very significant role in influencing social and ec0n0mic development in Malawi where about 80% of the population depends on renewable natural resources for their subsistence and household income. According to a Malawi Poverty Initiative Program survey commissioned in 2010, Malawi is paying highly for unsustainable utilization of its natural resources which translates into giving up 5.3% of the GDP each year. Malawi would have been richer by MK26.5 billion each year if soil, forest, fishery and wildlife resources were sustainably used. Malawi is a signatory to the Kyoto Protocol that aims at addressing the challenges of environmental degradation and climate change.

Climate change has adverse impact on agriculture, infrastructural systems, energy, human health, fisheries, and forestry, water, sanitation and wildlife and gender sectors. Agriculture, the mainstay of Malawi's economy, is heavily dependent on weather especially natural rainfall. Droughts have resulted in poor crop yields or total crop failure, leading to serious food shortages, hunger and malnutrition. Flooding has also severely disrupted food production in several districts in the country. The most vulnerable groups are women, children, female-headed households, the elderly and the HIV/AIDS infected and affected families. There is a direct linkage between climate change and health, especially linked to infant malnutrition and chronic ailments associated with malaria, cholera and diarrhea as a result of droughts and floods. (MALAWI NEWS November 2011)

CHAPTER 2

2.0 Background

2.1 Literature Review

The Norwegian University made a fair prediction in the early 1980s that the planet could undergo significant climate change. The general opinion is now that this is indeed taking place, and is significantly a result of human activity. Global climate change studies indicate

that some countries, including Malawi, may expect increases in weather uncertainties, thus making decision-taking more difficult, and possibly even requiring coping mechanisms that are currently not known to local communities, too expensive to implement even if known, or mechanisms that are currently under development in research environments not easily accessed by poor rural people. It further states that Malawi's contribution to global emissions of green house gasses that are regarded as main drivers of climate change, is small and was estimated at 29 metric tons in 1990, of which 5% was attributed to agriculture(but 68% to land use changes, including deforestation).In a global context and being a largely agriculture country, with small components of livestock ruminants and rice production(known emitters of methane), limited burning of rain forests and crop residues, and small industrial and transport components (all CO2 and NOx- emitters),the global impact of any Malawian efforts to mitigate climate change will probably be small. However, they could not necessarily be discouraged, indeed adaptation practices to climate change may result in mitigation e.g. reduced burning of crop residues. But similarly increased reliance of ruminants as a coping mechanism for farmers may cause increased emission of green house gasses.

The current Development Program has scant reference to climate change as a feature to be considered in Malawian agricultural development. However, the government of Malawi has undertaken several activities and projects in relation to climate change. It signed the United Nations Framework Convention on climate change (UNFCC) during the United Nations Conference on Environment and Development (UNCED) in 1992.It is also a signatory to the Convention of Biological Diversity (CBD) and developed the National Environmental Action Plan in 1994 after recognizing the threats caused by climate change especially the adverse impacts of droughts and floods.

According to Oxfam International, 2009, in Malawi the winds shape the lives and livelihoods of farmers and fisher folk. They know each wind by name, when it comes, how it behaves, its effects, and therefore, what they should do in response. But now, they say that the winds that once brought rains to make crops grow and fish for their nets no longer blow as and when they should. Instead there is muddle of contradictory currents, both in the air and in waters of Lake Malawi. Sometimes the winds ~~s~~trong and rains so heavy, that they destroy houses, crops and boats. Furthermore, people report that the main rainy season is becoming ever more unpredictable. In general over the last 40 years, they say temperatures are hotter and the rains are arriving later and becoming more intense and concentrated, which reduces the length of the growing season and triggers both more droughts and more floods.

It further reveals that climate change interacts with environmental degradation notably deforestation, and it is women who suffer most. Women have multiple roles as farmers and bringers of water and firewood and so depend very directly on natural resources. At the

same time their position in society means that generally they have less access to income and credit and little or no voice in decision making.

People's observation of winds, rain and temperatures are consistent with what scientists say are the likely climatic changes resulting from manmade global warming, caused primarily by the emissions of CO2 and others referred as 'green houses' meaning industrial powers that are reliant on burning of coal, oil and gas. In Malawi, however people connect these alterations in winds and rainfall patterns not to pollution from industry in global north, but to environmental change closer to home notably deforestation. Now there is a big drive to plant more trees but as one village woman asked Oxfam researchers, *'if we plant all these trees, will that solve the problem?*" Planting trees in Malawi will not stop global warming which is primarily due to CO2 emissions from industry and transporters. But up to a point, and as part of a suite of adaptation practices, it will certainly help people to cope with climate change impacts by shading the soil, acting as wind breaks, cutting soil erosion and smoothing water flows thereby reducing sudden flooding. Other essential adaptation measures must be to boost agricultural productivity and diversify crops.

According to CEPA 2009, climate change is attributed directly or indirectly to human activity that alter the composition of the atmospheric gases. Climate change is altering temperature and rainfall regimes. These changes are causing shifts in rainfall patterns and increased incidences of pests and diseases. Some studies have shown that with climate change, crop production/ha will decline, cropping patterns will change, the length of growing seasons will shorten and that the onset of rains is expected to delay hence affecting planting dates. With climate change, including periodical occurrences of El nino, Malawi is at high risk of declining economic growth and this will affect the livelihoods of its large rural population. Other experts have suggested that by the year 2100, climate change will reduce about 40% of agricultural contribution to GDP with limited adaptation or by 2% with implementation of climate adaptation measures, such as conservation agriculture. Conservation Agriculture (CA) is not a new concept in Malawi. However there is a need to deliberately increase the awareness and build conservation capacity amongst farmers of the basic principles under conservation agriculture. It offers a number of benefits which help farmers to achieve food security. These include: moisture retention in the soil; reduced soil and soil nutrient loss through runoff; improves soil structure and fertility; eventual decrease in weeds, greater farmer profitability and food security; reliable yields in dry years; reduced labor, animal traction or fuel costs. One of the major benefits of CA to our country is being an option for adaptation to the impacts of climate change as well as being a way of mitigating it. CA as an adaptation method is achieved through the improved land management practices. CA also offers mitigation option as it is a carbon sequestration method and stores carbon in crop residues and soil. The main challenge to implementation of CA has been the inadequate capacity amongst staff members which is a result of

insufficient packaging of CA technologies. Other major constraints and challenges impacting on the implementation of CA include: (a) Resource limitation and (b) dependency on provision of inputs for adoption of CA. On resource limitation, farmers are not willing to implement CA when they do not have enough land on which to practice this. On dependency on provision of inputs, they would rather want to be given seed to plant on the land CA is to be done.

According to the Malawi Red Cross, 2002, an analysis of the trend shows that over the years, there has been noticeable increase in diseases such as malaria, cholera and dysentery associated with changes in rainfall patterns and this has created health challenges that are particularly affecting women. Recurrent drought coupled with deforestation and progressive land degradation and desertification result in incalculable human, crop, livestock and environmental losses, which are not easily measured by conventional disaster-loss tracking system. Changing rainfall patterns and high temperatures have forced farmers to shorten the growing season and switch to more expensive hybrid crops. Frequent droughts and floods are eroding assets and knowledge, leaving people more vulnerable to disaster. For instance, 2001/2002 drought undermined coping strategies. People were forced not just to cut back on meals, withdraw children from school, sell household goods and increase casual labor, but also to eat seed that would have been planted and exchange productive assets for food. As a result, many farmers had no seed to plant in 2002.In 2005 the country was again in the grip of a crisis caused by drought, with more that 4.7 million people out of population of 13 million experienced food shortages. Changes in rainfall have resulted in changes in the growing seasons as well as in crops grown. Clearly farmers are now uncertain of when to plant. Farmers now opt for a short season hybrid maize varieties which are expensive, non disease resistant and need seed every year. Rainfall patterns have hindered the growing of long season local indigenous maize verities which are resistant to diseases and do not need buying seed every year. In general, countries with 'human capital' or availability of knowledge have greater adaptive capacity on the other hand illiteracy is contributing to less adaptive capacity in the nation. Lack of functional structures and institutions which would provide advice on adaptive measures to farmers and the general population is also exacerbating the situation. For instance, there is a general collapse of the agriculture extension system on both crop and animal husbandry. This has left a big gap on agriculture-related early warning information flow to farmers. In addition, general community and every community-based agricultural institution are not functional resulting in enhanced vulnerability of communities to climate change health-related effects.

Journalists Association Against AIDS 2009,reported that the International Food Policy Research Institute had concluded that, on present patterns, the number of malnourished children in Sub-Saharan Africa would jump from 33 million in 2000 to 52 million in 2050

with more than half of the increase caused by climate change in Malawi. Relative to other countries there is low awareness of climate change in Malawi. Nearly half of the local participants at Worldwide view on Global Warming day held in 46 countries worldwide-said they knew 'little' or 'nothing' about climate change and its consequences before the event.

Nelson Gerald et al, (2010) points out that climate change exacerbate the challenge of improving food security under any income/population scenario. Compared with perfect mitigation, climate change increases the number of malnourished children in all developing countries in 2050 by 8.5% in the optimistic scenario and 10.3% in the pessimistic scenario. This analysis recommends that the most important way to help poor people adapt to climate change is to address poverty. Policy actions to achieve broad based economic growth that reaches the poor, improve productivity in crops that are important to farmers and consumers, and strengthened trade to cope with regional disparities in the agricultural effects of climate change, will help increase poor people's resilience to climate change. Investments and policy reforms that will increase agricultural productivity are specific actions that governments need to begin immediately. The results from this study show that the more the world can mitigate the effects of climate change to 2050, the greater the potential improvements in food security.

According to LEISA (2008), farmers in Malawi are already experiencing climate change. Just as Emmanuel Luhanga, a farmer in the northern district of Rumphi put 'The rains these days are unpredictable….one year they start in November, another year in December, and then we have dry spells at critical stages of crop growth'. Most reports and analysis are of a similar view that countries in the tropics will be more affected by climate change than other regions. This seems to be especially true for Malawi, where a large population people works in agriculture; more than half of all farm families cultivates less than 1 hectare of land, and the national economy relies largely on agriculture. It is not surprising then that both the government and NGOs are working hard to promote strategies for adapting to climate change.

CHAPTER 3

3.0 Methodology

3.1 Research Objective

The research was carried out to assess the level of knowledge, attitudes and practices (KAP) of communities on issues of climate change and land.

3.2 Population and Sampling

The population for this study is identified as farming families living in villages where Centre for Social Concern con ducts its monthly Rural Basic Needs studies i.e. in Lilongwe rural, Dedza, Zomba and Chikwawa. Simple random sampling was used to have a good representation of the population. This type of sampling was used because each element would have a known and equal chance of being selected.

3.3 Sample size

The optimum sample size (n) was found by using population prevalence

$$(\%)\ n=Z^2 \frac{(1-p)}{e^2} p$$

When n=sample size

Z=desired degree of confidence

e=Sampling error

p= estimate of percentage

Assuming p=0.3

e= 10%

Z=1.96

By using the above formula, the optimum sample size was found to be 80 but we managed to reach as much as 59.

3.4 Measuring tool

A structure questionnaire with open ended questions was administered to 59 individuals.

3.5 Procedure and Timeframe

The survey was carried out from 19th-23rd September 2011. Before starting, local leaders were contacted and briefed on the purpose of the research so that they could be aware of what would be happening in their area. Sampling of people to be interviewed was done with their participation. Before each interview, the interviewees were told why the research was being conducted and that everything would be treated as confidential.

3.6 Analytical Technique

Descriptive statistics to find means, frequencies and percentages was utilized to analyze data. This was by using SPSS.

CHAPTER 4

4.0 Results and Discussions

4.1 Demographic Characteristics

The target of this research was households or farmers who take part in Centre for Social Concern activities in 9 villages namely Kadzumba and Nenenji of GVH Kadzumba in TA Maseya, Chikhwawa district, Mtchera, Chiunda and Laudoni villages in GVH Masaula in TA Mlumbe, Zomba district, Kamgunda and Kalulu villages in TA Tambala, Dedza district and Kasiya and Chateka villages in GVH Kasiya in TA Khongoni in Lilongwe district. In these villages, there are 100 households participating in the organization's research activities. The number of respondents who were interviewed was 59, 34 males and 25 females.

Centre for Social Concern (CFSC) conducts Rural Basic Needs Basket (RBNB) project in the areas the research was conducted. Rural BNB depicts various facets of the rural household livelihoods with emphasis on aspects such as food security and consumption patterns. The RBNB further looks into household's ability to meet the cost of essential non-food items (soap, sources of energy) and available social amenities that could enable them increase household income such as access to markets, roads, education and health. It has been generally observed that more than half of households in our study areas experience household food shortages soon after harvesting their food crops due to low yields as a result of, mainly, droughts, pests and diseases which attack their crops. It is a common fact that droughts and dry spells are the effects of climate change. This is why CFSC conducted the research in order to have information on how many rural communities know as climate change issues considering that they are the ones who bear the blunt of the effects of climate change. In response the research aimed at bringing forth mitigation recommendation that would be informed by the experiences of the grassroots.

4.2 Research Results

The following tables show the findings of the study.

4.2.1Education level

It was observed that 14% of the respondents did not attend any level of education, 25% only attained junior class level (std 1-5), 68% managed to attain primary senior class level and 14% had reached secondary school level. Comparing women and men, it was observed that 20% of women respondents did not attend primary school education as compared to 8% for men. 44% of women respondents only attended junior class level between std 1-5 while 12% was for males. 32 % of women respondents reached primary senior classes (std 6-8) while 59% of the male counterparts had done so. It is evident that an individual who is educated is able to relate things well and better understand issues; Equally adoption and adaptation to new life skills and technologies is faster and higher among those more educated than their counterparts. A similar survey conducted by FAO in the same district concluded that issues of gender and education are important and crucial to helping communities in adaptation to climate change. However, FAO study revealed that 31% of the households in another area of the same district (Zomba) had never had any formal education as such FAO research adds to the findings of this research that often times rural households members in the areas of study, particularly women have not had a chance to formal education.

Table 1: Education Level

Education Level	Overall n=59 Percent	Men n=34 Percent	Women n=25 Percent
None	14	8	20
Std 1-5 (junior classes)	25	12	44
Std 6-8 (senior classes)	47	59	32
Secondary	14	21	3
Tertiary	0	0	0
Total %	100	100	100

4.2.2 Awareness on climate change issues

Table 2 below shows that 96.6% of respondents had ever heard something on Climate change while only 3.4% indicated that they have not heard of climate change. This means that channels of information are available at grassroots through which rural communities get the information including on climate change as it is shown in table 3.

Table 2: Awareness on Climate Change (n=59)

Responses	Percent
Ever heard	96.6
Not heard	3.4
Total	100

4.2.3 Source of information on Climate Change

Table 3 below shows that 71% of rural communities get the information on climate change from radios, 18.6% from government and NGO field staff and 10% from other different sources. This indicates that at least most of the rural communities do have radios from which they get different information including that of climate change. In similar study FAO concludes that access to information is important and can help communities in adapting to climate change. More as this report concurs with FAO's, it is also of the belief that access to information should be coupled with high literacy level to enable people understand any accessed information including that of climate change because this research revealed that while 96.6% of the interviewees had heard about climate change (Table 2), a large percentage of them did not understand issues of climate change. The interpretation part is what is not clear to them.

Table 3: Source of information on Climate Change (n=59)

Responses	Percent
Radio	71
Extension/Field Staff	18.6
Others	10.0
Total	100

4.2.4 Meaning of climate change

They were also asked what does climate change mean to them. The results show that 79.7% of the respondents said that climate change means a change in rainfall pattern while only 5% mentioned change in temperatures and this adds up to 84.7% for the change in seasonal weather in general. According to Trocaire, 'seasonal change is one of the most commonly experienced features of changing weather patterns reported by our partner organizations. 90% of partners surveyed reported significant changes in seasonal weather patterns'. 15.3% of the respondents said that they did not have any idea. Some communities in Malawi are able to relate climate change with a change in rainfall pattern and changes in temperatures. There are some farmers who have an experience on issues

concerning the climate. According to Oxfam International,2009,it reports that farmers and fisher folk know the winds by name, when it comes, how it behaves, its effects, and therefore, what they should do in response. They say ' sometimes the winds are so strong and rains so heavy, that they destroy houses, crops and boats. Further more, report that the main rainy season is becoming evermore unpredictable. In general, over 40 years they say temperatures are hotter and rains are arriving later and becoming more intense and concentrated, which reduces the length of growing season and triggers both more droughts and more floods.

Table 4: Meaning of Climate Change to them (n=59)

Responses	**Percent**
Change in rainfall pattern	79.7
Change in temperatures	5.0
No idea	15.3
Total	100

4.2.5 Causes of Climate Change

Table 5 below shows that 80% of the respondents mentioned cutting down of trees as a main cause of climate change while only 5% mentioned greenhouse gasses as a main cause of climate change. 7% of respondents do not have any idea as to what is causing climate change. This only indicates that there is inadequate knowledge or awareness on climate change because cutting down of trees is not a direct cause of climate change but greenhouse gasses are; mentioned by only 5% of the respondents yet Malawi contributes very little to climate change through this aspect. Norwegian University states that Malawi's contribution to global emissions of greenhouse gasses that are regarded as *main drivers* of climate change is small and Oxfam International reports that climate change only *interacts* with environmental degradation in Malawi's case it is notably deforestation. There (deforestation) is only an interaction, not a direct cause of climate change. It's equally reported in the aforementioned that changes in wind blowing and rain fall patterns in Malawi are likely climatic changes resulting from man made causes such as CO2 emissions and green house gases. They are not solely a result of deforestation as concluded by most Malawians.

Table 5: Causes of Climate Change (n=59)

Responses	Percent
Cutting down of trees/deforestation	80.0
Greenhouse gases	5.0
No idea	7.0
Others	8.0
Total	100

4.2.6 Effect of climate change

On the effects of climate change, the communities were asked to mention the effects of climate change affecting them. The table below shows that 91 % of respondents said the reduction of yields due to reduced water levels is the main effect of climate change which farmers are experiencing. Pest and disease occurrences was also the another response but this was mentioned by only 4% of the total respondents, while 5% do not know the effects of climate change.–CEPA 2009 reports that climate change is attributed directly or indirectly to human activity that alter the composition of the atmospheric gasses. On the reduction of water levels other studies such as the one done by Trocaire, have shown that the most common change reported in this regard across the region is the changing of rainfall patterns. With seasons no longer displaying their traditional format, rainfall patterns have been altered significantly. It further says that 95% of partners surveyed reported significant changes in rainfall pattern. This concurs with the findings of this research which has found that 91% of the people mentioned reduction of yields due to reduced water levels. Climate is altering temperatures and rainfall regimes. These changes are causing shifts in rain fall patterns and increased incidences of pests and diseases.

Table 6: Effect of climate change (n=59)

Responses	Percent
Reduced yields due to reduced water levels	91
Pest and disease incidences	4
Do not know	5
Total	100

4.2.7 Climate Change mitigation measures advocated by government

The government of Malawi and other organizations are urging Malawians to follow some climate change mitigation measures (small scale irrigation, Conservation agriculture etc) through trainings and awareness campaigns more especially to rural communities. The table below shows that 73% know the existence of these mitigation measures while 27%

do not know them. It is sad to see that 27% of the people do not know mitigation measures advocated by government and other organizations. These results tally well with those in table 11 where 31% of the respondents revealed that extension workers responsible for dissemination of this information to the farmer do not teach them climate change mitigation measures.

Table 7: Awareness on Climate Change mitigation measures advocated by government (n=59)

Responses	Percent
Yes	73
No	27
Total	100

4.2.8 Examples of measures to mitigate impacts of climate change(n=59)

The people were asked to give examples of mitigation measures for climate change. This question received multiple responses but the ones which featured high were: in their descending order, planting of trees and small scale irrigation. Those which received least and equal responses were: crop diversification, manure application and conservation agriculture while only 5% of the respondents indicated that they do not know anything on mitigation measures.

4.2.9 Measures put in place by communities to mitigate impacts of climate change

On the measures put in place by communities to mitigate the impacts of climate change, the table 8 below shows that 56% of the respondents mentioned planting of trees, small scale irrigation was mentioned by 13% of the respondents while 13% admitted that they are doing nothing and another 13% said that they do not have any idea.

Table 8: measures put in place by communities to mitigate impacts of climate change (n=59)

Responses	Percent
Planting of trees	56
Irrigation	13
Nothing	13
No idea	13
Others	5
Total	100

4.2.10 Existence of extension/Field workers

The government and other organizations are trying as much as possible to deploy their staff to rural areas with the aim of providing extension services to rural communities on environmental issues. This survey sought to know whether these extension workers existed in these areas. Table 9 below indicates that 83 % of the respondents said the extension workers do exist in their areas while 17% said that they do not exist.

Table 9: Existence of extension/field workers? n=59

Responses	Percent
Yes	83
No	17
Total	100

4.2.11 Frequency of Extension workers visits

Table 10 below show responses concerning the extent to which extension workers visited the communities. It shows that 36% of the respondents mentioned that at least extension workers visit them more than twice a month, 44% indicated that they are visited at least less than twice a month while 16% of the respondents revealed than these extension workers do not visit them at all.

Table 10: Frequency of Extension workers visits n=59

Responses	Percent
> twice a month	36
< twice a month	44
Do not visit	16
Total	100

4.2.12 Do they teach climate change mitigation measures

The previous question was about number of times extension workers visiting communities in a month. Visiting rural communities is one thing and teaching communities is another thing. Table 11 shows that 69% of the respondents indicated that these extension filed staff do teach them climate change mitigation measures while 31% revealed that extension field staff do not teach them climate change mitigation measures.

Table 11: Do they teach climate change mitigation measures? n=59

Responses	Percent
Yes	69
No	31
Total	100

4.2.13 Availability of VNRMCs

In certain areas community-based institutions are established to help implement and manage any community-based developmental project or intervention. In a forestry circle, a Village Natural Resource Management Committee is established to implement and/or oversee environmental-related activities, one of which can be establishment/management of communal woodlots. The table below reveals that in some communities there are no VNRMCs. Table 12 indicates that 47% of the respondents said that VNRMCs do exist in their villages and 50% indicated that these committees do not exist in their villages while 3% of the respondents did not even know whether VNRMCs do exist in their villages or not.

Table 12: Availability of VNRMCs? n=59

Responses	Percent
Yes	47
No	50
Do not know	3
Total	100

4.2.14 Gender versus Decision making process

Evidence has it that gender disparities are heavily entrenched in most of the communities involved in this study and that most cases women are marginalized in development initiatives. The study, however, revealed a certain number of women that have been elected into some development committees, it was therefore this study's intention to ascertain their effectiveness within these decision-making processes. The people were asked how they viewed women participation in decision making processes. Table 13 shows that 64% of the respondents indicated that men are more involved in decision making while only 11% said women are more involved in decision making and 21% indicated that both men and women have an equal involvement. Issues of gender and youth participation are important and can help the communities in adapting to climate change. As mentioned earlier in the introduction that where environmental degradation occurs women suffer most due to roles that they mostly assumes, such as farming, fetching of water and firewood. At the same time their position in society means that generally they have less

access to income and credit facilities and little or no voice in decision making. Improving their education level will also improve their level of participation at decision making processes in the society. They would confidently contribute towards those ideas and processes that are meant to improve their living standards.

Table 13: who does most of decision making during community meetings? n=59

Responses	Percent
Men	64
Women	11
Both	21
Do not know	4
Total	100

4.2.15. Coping mechanisms during droughts/hunger

One of the effects of climate change is unreliable rainfall which results into household food insecurity. In order to lessen the pangs of hunger, some communities have been forced to look for coping mechanisms. Table 14 has some of them which were mentioned by respondents. The table shows that 76% depends on casual labor (ganyu), 22% depend on small scale businesses while only 2% depend on small scale irrigation.

Table 14: Coping mechanisms during droughts/hunger n=59

Responses	Percent
Casual labour (Ganyu)	76
Small scale business	22
Small scale irrigation	2
Total	100

4.2.16 Effectiveness of coping mechanisms

Having mentioned about different types of coping mechanisms in table 14 above, it was found out that respondents had different opinions on their effectiveness. Table 15, below shows that 49% said that these coping mechanisms are effective while to 51% said they are not effective. The profitable coping mechanisms seem not to known to communities, leaving them with coping mechanisms which are not effective when implemented. This is similar to a report by Norwegian University that indicates that some countries, including Malawi, may expect increases in weather uncertainties, thus making decision-taking more difficult, and possibly even requiring coping mechanisms that are currently not known to local communities, too expensive to implement even if known, or mechanisms that are currently developed in research environments not easily accessed by poor rural people.

This may be the reason that 51% of respondents indicated that the current coping mechanisms are not effective.

Table 15: Effectiveness of coping mechanisms n=59

Responses	Percent
Effective	49
Not effective	51
Total	100

4.2.17 Priority to access to education

Education is vital to all Malawians more especially to a girl child. Culture has a bearing on a low education status of women in Malawi. In areas of this study it is still very much the case that a good number of families prefer boys to girls when it comes to sending them to school. The table below reveals this. Table 21 below shows that 54% of respondents said that most families prefer sending a boy to a girl child to school. 28% said families prioritize girls when sending their children to school while 18% said that there is no preference, both girls and boys are given equal chance. In Malawi, the government and some NGOs are implementing programs targeting the girl child so that she should get higher education without gender discrimination. Literacy levels for women are lower than men's (refer Table 1) and if we want to improve this situation then girls should deliberately be targeted. Education is important and can help communities (and women who are part of the communities and are heavily affected by effects of climate change) in adapting to climate change. Culture is still taking boys as important child than girls.

Table 17: Priority to access to education n=59

Responses	Percent
Boys	54
Girls	28
Both	18
Total	100

CHAPTER 5

5.0 Conclusion and Recommendations

5.1Conclusion

In Malawi, there is high illiteracy level among women than men. It is, however, important to note that it is the same group(women) that is being negatively affected by the effects of climate change such as water scarcity and others. Education is important and can help communities, including women in adapting to climate change and understand well any development issue.

The government and other stakeholders are putting much effort in spreading the information on climate change and that in Malawi the majority have ever heard something about climate change, but the only challenge is understand of issues that can lead and are related to climate change.

The radio is most accessible source of information for the majority of rural people and could be the most essential tool of information and education on issues of climate change to people living in the rural areas as the study revealed most people in the rural areas do own a radio.

The government and other NGOs have a number of extension workers who disseminate development-related information to rural communities. This information includes climate change issues. Though its their duty to serve the rural masses, still some extension do not teach the communities climate change mitigation measures. It could be because that they are ill equipped as it had been partially revealed in the study. This needs to be researched further. Increasing the frequency of visits to communities will help to strengthen climate change information delivery to rural communities.

Less effort in establishing community-based institutions that look after the environmental management issue can be one factor of increasing the bite of climate change effects on rural communities. One of these local institutions is the Village Natural Resource Management Committee(VNRMC), which looks at the management and sustainability of the natural resources at community level.

Involvement of women in decision-making processes will help them to come up with workable ideas that may eventually help to mitigate the impacts that affect them mostly. Gender disparities are still common among rural areas. Culture and poverty are playing a big role in putting girls

5.2 Recommendations

In order to increase the knowledge, improve the attitudes and practices of communities with regards to climate change issues, the following suggestions needs to be considered:

a) Increasing the number of adult literacy classes to improve literacy levels in Malawi as this will enable women to have an access to information relating to climate change and improve understanding of other development related issues.

b) Increase the awareness on Conservation Agriculture which has proved to be a good mitigation measure to climate change effects on agriculture. There is low Conservation Agriculture adoption by smallholder farmers in Malawi as evidenced by the research findings.

c) Establishment of locally based, community owned institutions with links with researchers to look after issues concerning climate change e.g. research related to climate change and agriculture.

d) The government and policy makers to make sure that they put in place measures and/or policies that ensure inclusiveness of women in decision making for a at any level(community, district, national and international).

e) Reviewing of cultures that contribute to hindrance of a girl child from attending school fully.

f) The government, Civil Society Organizations and other stakeholders to work hand in hand to demand justice from international community to put in place measures to ensure affected communities get enough support by mitigating the impacts of climate change.

5.3 Further Research

Although this research was carried out and some issues have been found, there are still some areas which need to be researched upon further. These areas are as follows:

a. Assessment of knowledge gaps(needs assessment) on climate change issues in extension workers who work directly with the grassroots/communities.

b. To find out the role played by community institutions such churches/mosques, traditional leadership structures in the dissemination of climate change information to their subjects. These institutions are very important to make a change in their communities.

c. Assessment of the strength of the link between the researchers involved in climate change issues with the most affected people in rural areas.

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7.0 APPENDIX

7.1 Questionnaire for individual farmers

CENTER FOR SOCIAL CONCERN

Individual Questionnaire on 'Assessment on Knowledge, Attitude and Practices on Climate Change: A case study of Kasiya in Lilongwe, Kalulu and Mayani in Dedza, Chingale in Zomba and TA Maseya in Chikwawa

A. DEMOGRAPHIC INFORMATION

Name of Respondent……..:

Sex of Respondent: F= M=

Age of Respondent:……

District of Origin:……..

Nationality:……...

Marital Status: 1=married 2=divorced 3=single 4=separated 5=widow
……. ……..

Type of Household: MHH FMM CHH

Education level :1=none

2=std 1-5

3=std 6-8

4=secondary

5=tertiary

:……...

……. ……..

B. CLIMATE CHANGE

1) Have you ever heard anything on climate change? 1=Yes 2=No

2) If yes to question 1 above, from which source?

   1=radio 2=extension workers 3=drama 4=posters 5=others

3) What does climate change mean to you?

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4) Why are the causes of Climate Change?

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5) What do you think are some of the activities you are doing which are contributing to climate change?

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6) Give concrete examples, in your community, of anything which has come about as a result of climate change impacts.

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7) How has climate change affected you?

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8) Do you know any measures which are being done by the government and NGOs to mitigate the impacts of climate change? 1=Yes 2=No

9) ***a.*** If yes to question 6, give examples of these interventions?

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b. if No, how can you ensure that government/NGO are doing their job to raise awareness on climate change?

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10) Which measures are you putting in place as a community to mitigate the impacts of climate change?

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11) Do you have extension workers in your area? 1-Yes 2=No

12) If yes to question 9, how many times do they visit you in a month?

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13) Do they teach you how to mitigate the impacts of climate change? 1=Yes 2=No

14) If yes to question 11, what climate change *interventions* do they facilitate to you?

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15) Do you have Natural Resource Management Committee (NRMC) in your village? 1=Yes 2=No

16) If yes to question 13, how is gender disaggregated in the committee? F= M=

If no, what steps can you take to have one in place?

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17) Who does most of the decision making during community meetings and in committees? F= M=

18) What are the activities done by NRMC?

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19) Which of the following technologies/practices do you practice?

1=compost manure making

2=a forestation

3=agro forestry

4=small-scale irrigation

5=Contour marker ridging

6=fruit tree growing

7=box ridging

8=conservation agriculture

20) Give reasons why you do not practice most of the above activities.

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21) What crop varieties do you grow?

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22) During droughts, what coping mechanisms do you follow in trying to mitigate its impact?

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23) What is the relationship between climate change and food security? Explain

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24) Are these coping mechanisms effective enough to mitigate the impacts of climate change? 1-Yes 2=No

25)If no to question 19, what do you think this is the case?

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26)What activities do you suggest to be implemented to mitigate the impacts of climate change?

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27) What interventions do you suggest to be implemented to preserve the environment?

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28) What constraints do you face in you farming activity?

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29) What risks shall we have in future if environmental degradation is left unchecked?

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30) In general, who is given priority to access to education facilities between a boy and a girl in your society? 1=girl 2=boy

31) Give reasons to the above response.

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