

# Transformative Engagement Network (TEN)

Building resilience against hunger and climate change in smallholder farming communities through transformative engagement

## Masters in Transformative Community Development

### *Cover sheet for final research paper submission*

**Title of Research Paper:** Climate Change and Culture: The Influence of Traditional Cultural Beliefs and Modern Religious Values on Adaptive Capacity to Climate Change in Bolero, Malawi.

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*I, .....Chikondi Butao Banda....., certify that the research paper is my own work and I have not obtained a Degree in this University or elsewhere on the basis of this Research.*

## **Dedication**

I still remember my academic journey since 1989 when Jesus, through a neighbor, compelled me to start primary education, a thing that was almost unthinkable especially in our lineage. Notwithstanding your presence in my education, the journey wasn't without challenges. Out of your love rather than my faithfulness, you stood with me in my academic endeavors up to the University of Malawi, Bunda College where I acquired a Bachelor of Science Degree in Agriculture with a bias in Agricultural Extension.

Although I still had the thirst for further education, the means weren't available up until, through your very love and grace, I got my studentship with Mzuzu University to do this International Master's Degree in Transformative Community Development under the sponsorship of Irish Aid and Higher Education Authority of Ireland. For that reason, my God and Saviour, Jesus Christ, I would like to wholeheartedly dedicate this entire work to you. May the knowledge constructed herein bear the fruit of its own kind in this mother Malawi and places beyond!

## **Acknowledgement**

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## **Acronyms**

DADO	District Agriculture Development Office
EPA	Extension Planning Area
HEA	Higher Education Authority
FBO	Faith Based Organizations
FGD	Focus Group Discussions
IPCC	Intergovernmental Panel on Climate Change
NGO	Nongovernmental Organizations
TEK	Traditional Ecological Knowledge

## **Abstract**

The study aimed at determining the influence of traditional cultural beliefs and modern religious values on adaptive capacity to climate change in Bolero. Specifically, the study mapped out traditional cultural practices and modern religious values and demonstrated their influence on adaptive capacity to climate change. The research drew on participant observation, focus group discussions, in-depth interviews, survey questionnaire, document reviews and key informant interviews to collect data where key themes emerged inductively and open coding was employed to analyzing the data.

The results revealed that in adapting to climate variability and change, the respondents applied both modern religious values and traditional cultural beliefs and practices though with varied magnitude. However, traditional cultural practices and beliefs regarding wife inheritance, production and consumption, hygiene, birth and death rituals and taboos were found to have negative influence on entitlement rights, livelihood decisions and moral capital of particularly women and widows in Bolero. Conspicuously noted also was intergenerational gaps between the elderly and the youths, which created tensions in validating, accepting and applying modern religious values and traditional cultural belief systems.

The researcher strongly suggests transformative community engagements between the elders, traditional and religious leaders, witch doctors on the one hand and, development partners on the other hand as an alternative approach in promoting both structural and attitudinal changes necessary to uproot the locally perceived bad traditional cultural beliefs, practices, taboos and modern religious values in the area.

With the extra layer of burden exerted by climate variability and change on livelihoods and socio-economic systems in the area, continued persistence and future relevance of traditional cultural practices will so much depend on one, how much structural and attitudinal transformation is achieved, two how useful the traditional cultural practices and modern religious values will continue to be in enhancing adaptive capacity to climate change and three, how intergenerational frictions in value placement, perception and application of the traditional cultural beliefs and religious values will actually be negotiated.

**Key words:** Traditional knowledge, cultural practices, religious values and adaptive capacity

## **1.0. Introduction**

### **1.1. Climate Variability and Change**

Both researchers and policy makers across the entire globe agree that climate change is real and will continue to impact on future adaptation strategies (Bagamba et al., 2012; Bryan et al., 2009; Etwire et al., 2013; Pareek & Trivedi, 2010; Sofoluwe et al., 2011; Swai et al., 2012). The Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) highlighted Africa as being particularly vulnerable to climate variability and change (IPCC, 2007). Climate change is therefore, the most important threat to sustainable development in the African Continent (Kpadonou et al., 2012). And for most communities in African countries like Malawi climate change has just added an extra layer of burden on top of the already existing socio-economic challenges such as high levels of poverty and inequality, rapid population growth rates, undeveloped markets, poor infrastructures and service provision and frail governance systems (DDRN Report, 2009).

The main impact of climate change is predicted to be an unprecedented increase in global temperature beyond manageable levels (IPCC, 2007). The temperature records for a period of over the recent 100 years denote a warming of surface temperature, with the most obvious increases observed between 1983 to 2012 period (Macchi et al., 2008). As far as temperature is concerned, it is expected to continue to rise. However, decisions that people make now and in the years to come will determine by how much the Earth's average temperature will actually rise. For Malawi, particularly Bolero, higher temperatures have effects on droughts, changing rainfall patterns and availability of surface water whose consequences range from less food supply to general fewer water supplies. Research shows that although the average global trend indicates an increase in temperature, there are localized places that have not become warmer yet (Macchi et al., 2008).

### **1.2. Peoples' Response to Climate Change**

People are not mere victims of climate variability and change. In reaction to the changes in their environment, people are modifying their livelihoods, traditional cultural practices and modern religious

values in order to adapt. Livelihood adaptations to environmental change are not a novel or special but have taken place throughout history (Macchi et al., 2008). Natural-resource-dependent communities like Bolero have been continuously adapting in their livelihoods to a wide variety of external disturbances and stresses in order to survive. The only challenge now, however, is that climate change has created additional risks to which these vulnerable communities are already exposed and the intensity of future climate change impacts may likely lie outside the range of risks that the communities might have experienced or adapted to in the past (Macchi et al., 2008). It is against this challenge that this research finds relevance in mapping out traditional beliefs and modern religious values and further establishing their influence on adaptive capacity to climate change in Bolero Community.

### **1.3. Problem Statement**

Bolero community, like most rural communities in Sub-Saharan Africa, is very vulnerable to climate variability because of its reliance on local biological diversity, ecosystem services, cultural and religious landscapes as source of sustenance and well-being (IPCC, 2007). Kpadonou et al., (2012) argue that enhancing adaptive capacity requires understanding processes of social and biophysical change and their interactions within socio-ecological systems. While Traditional Ecological Knowledge (TEK) is undeniably valuable in informing adaptation strategies to climate change (Gomez-Baggethun et al., 2012; Mangistu, 2011), less understood, however, was the influence of traditional cultural practices and beliefs, and modern religious values on adaptive capacity to climate variability in Bolero.

### **1.4. Significance of the Study**

According to Adger et al., (2013) and Haluza-DeLay, (2014) there is increased need to understand the role of traditional cultural values and beliefs in climate change. Kpadonou et al., (2012) and Nielsen & Reenberg, (2010) argue that the knowledge on the role of and understanding of how cultural practices, traditional beliefs and religious values influence communities' ability to successfully respond to climate change is fundamentally important in designing and implementing community based adaptation strategies that are relevant, participatory in nature and sustainable at household level.

Therefore, by determining the traditional cultural practices, beliefs, taboos and modern religious values that prevailed and demonstrating their multi-faceted influence on people's ability to adapt to climate change, the research helped agencies (policy makers, practitioners, participants) working in Bolero to understand issues of adaptive capacity better and curb bringing interventions that might compromise the already existing adaptive capacity in the area.

### **1.5. Overall objective**

To determine traditional cultural practices, beliefs and modern religious values and their influence on Bolero Community's ability to respond successfully to Climate Change

### **1.6. Specific objectives**

To map out traditional cultural practices, beliefs and modern religious values prevalent in Bolero Community

To demonstrate the influence of the traditional cultural practices, beliefs and modern religious values on adaptive capacity to climate variability

## **2.0. Literature Review**

### **2.1. Climate Variability and Change**

IPCC Fourth Assessment Report for 2007 confirms that global climate change is already happening. The report further stresses that societies that live in marginal lands and whose lives are highly dependent on natural resources will suffer the worst brunt of climate change. This is basically as a result of their reliance on local biological diversity, ecosystem services, cultural and religious



landscapes as source of sustenance and well-being. For instance, by merely altering the productivity of natural resources, climate change exerts far reaching implications on the people in Bolero who usually depend on the climate sensitive natural resources for their livelihoods (Traerup & Mertz, 2011). No wonder that the majority of people in the area, and developing nations in general look severely exposed to the impacts of climate variability and change (IPCC, 2014; Marshall et al., 2012; Goulden et al., 2012).

## **2.2. Traditional Cultural Practices and Modern Religious Values**

People are not mere victims of climate variability and change (Macchi et al., 2008). In response to the changes in their environment, people adjust their livelihoods, traditional practices and religious values in order to cope (Nhemachena & Hassan, 2007; Chikozho, 2010). Scholarly work has confirmed that science alone is insufficient in defining prescriptions about how people go about modifying their behaviors in response to changes in their environments suggesting that certain reactions are beyond the scope of science. Nielsen and Reenberg (2010) strongly support that vulnerability to climate change should also be understood from traditional cultural as well as modern religious standpoints. Arguably, the presupposition is that through traditional cultural viewpoints to issues of climate change, practitioners and policy makers should be able to understand how and why communities react to changes in their environments the way they do. The understanding on how people react (make decisions) in a variety of situations is fundamentally important in enhancing adaptive capacity to climate change particularly at the local level. Studies have shown that community-based approach to development enhances vulnerable people's adaptive capacity to cope with climate variability in Malawi (Mangistu, 2011). The approach has proven successful in responding to climate change in most vulnerable countries of the world (Chinsinga et al., 2012) regardless of their over-dependence on rain-fed agricultural production for livelihoods (Claudia et al., 2010; Zhou et al., 2010; Dionne & Horowitz, 2013).

With collective know-how of the land, sky and water, the local communities are excellent observers and interpreters of the changes in their environments. Since communities have been naturally exposed to a wide variety of environmental changes, including climate change, they have developed strategies for coping with these phenomena using their traditional ecological knowledge (TEK) (Nhemachena & Hassan, 2007; Chikozho, 2010).

Tradition (traditional ecological knowledge) represents the sum total of all behaviors that are learned, shared by a group of people and transmitted from generation to generation. It includes language, religion, types of food eaten and methods of preparation, childbearing practices and other values that hold people together and give them a sense of identity and distinguish them from other groups (Assefa et al., 2005:1).

Berkes et al. (2000) also define Traditional Ecological Knowledge (traditional knowledge) or simply tradition as a cumulative body of knowledge, practices and beliefs gathered over generations by observers whose lives depended on the information and its use, evolved by adaptive processes and transferred to other generations by oral means. It includes cultural traditions, values, beliefs, and worldviews of the local people as distinguished from Western scientific knowledge. It is the product of indigenous peoples' direct experiences of the workings of nature and its relationship with the social world. It is a holistic and inclusive form of knowledge (Dei, 1993: 105). As a result traditional knowledge, beliefs and cultural practices are extremely resistant to change (Assefa et al., 2005).

However, in this paper, traditional knowledge and beliefs designate all cultural related practices and beliefs associated with rural life encompassing but not limited to ethnic loyalty, worship of ancestral spirits (traditional religion), observation of customs on gender roles, marriages, production and consumption patterns, conventional forms of enterprising, healing and medicine (Wafula, 2011). In essence, TEK involves the practices of the elders and is based on the customary law. TEK can facilitate development processes in cost effective, participatory and sustainable ways.

Researchers' interest in TEK dated back to as early as 1980s (Berkes et al., 2000). Presently, enormous literature on traditional knowledge and belief systems exists, which portrays the knowledge and beliefs as irreplaceable in informing climate change adaptation strategies (Gomez-Baggethun et al., 2012; Mangistu, 2011). Kpadonou et al. (2012) and Mkomwa et al. (2013) clearly depict how traditional knowledge about the behavior of certain flora and fauna is used by indigenous agrarian communities in seasonal forecasting. Traditional knowledge is also useful in predicting and designing climate change adaptation strategies (Ajani et al., 2012). Also, through use of traditional knowledge and beliefs, indigenous agrarian communities have always coped with and survived the impacts of climate variability and change regardless of their low adaptive capacity (Nhemachena & Hassan, 2007; Chikozho, 2010). Berkes et al. (2000) argue that indigenous communities with their traditional

knowledge offer really alternative knowledge and pathways to climate change based on their locally developed practices and resources.

The obvious challenge though is that with the current rate of environmental changes, the locally developed knowledge and adaptation strategies have the risk of being redundant and extraneous (Macchi et al., 2008). And again, while some traditional knowledge practices are beneficial to certain categories of people in a society, they are harmful to other individuals within the same society. Worthy noting is that modern religious beliefs are not static; religious landscape is rapidly changing in the World particularly in Africa. Sub-Saharan Africa has witnessed increased number of Christians (70-fold), Muslims (20 fold), whilst affiliations with traditional belief systems have gone down dramatically (PEW, 2010). While this proliferation of religion signifies positive development, there are a number of conflicting values hidden in the concept of culture and religion. For instance, there are observed differences within the same religious denomination because of cultural differences signifying that culture is an integral part of modern religion. Catholic liturgy varies from country to country because of enculturation (Wafula, 2011). There are also differences in values regarding entitlements and asset controls, governance and decision making, and modern religious restrictions on foodstuffs, nature of enterprises and tastes, which restrict certain individuals within communities from having diversified livelihood options. Such traditional cultural beliefs and religious values render communities vulnerable and incapable to adapt to changes in their environments, including climate change (Macchi et al., 2008).

Despite their harmful nature, these traditional cultural beliefs and modern religious values persist mainly because they are not questioned besides being an aura of morality in the eyes of those that benefit (Macchi et al., 2008). The bleak reality about many of these traditional cultural values and beliefs is that they have been performed for the benefit of specific groups of people in societies. For example, economic and political subordination of women to men perpetrate the inferiority statuses of women and inhibit structural and attitudinal changes necessary for the elimination of gender inequalities that characterize the majority of the communities particularly in Africa (Assefa et al., 2005). Traditional beliefs, cultural practices and modern religious values that perpetrate any form of violence, discrimination and general inequality within a societal group of people should be perceived as harm and capable of reducing adaptive capacity to climate change by facilitating entitlement failure.

Lack of awareness on the part of marginalized groups about their human rights has been blamed for so long as the main cause of the perpetration of general inequalities and human rights violations in many societies today. However, as argued by (Assefa et al., 2005) even when women acquire some degree of economic and political awareness, they still feel powerless to bring about the change necessary to eliminate the gender inequality because of deep rooted belief systems in the communities. Ter Haar and Ellis (2006) argue further that it is a requirement that indigenous communities' full range of traditional ecological knowledge and, spiritual resources should form part and parcel of a foundation for any development strategy. The point at issue is that if indigenous communities are to develop, it is not so much about new policy instruments that are lacking, but rather a new vision of what development means, and how it should be approached. Funicane (2009) contends that meaningful development can only occur at local level when policy makers learn to modify their policies based on discoveries about what works, when and where; that is culture.

For instance, research shows that vulnerable indigenous communities adapt to climate variability and change when the impeccable modern religious value systems particularly character virtues such as, equity, hard-working, commitment, participatory decision making, love, honesty, and trust are instilled in them and applied as part of their lifestyle (Acqual, 2011; Agang, 2007). The advocates of modern religion argue that although a substantial number of development partners (local and international organizations) and various government departments sacrifice a lot of resources (money, human & physical) towards the development of structures, systems, methods, models, tools and, the testing of theories as harbinger for both economic development and transformation, the actual transformation is never a reality without moral values engendered by modern religion (Acqual, 2011; Agang, 2007). Modern religion has been largely associated with adaptive capacity through enhancement of social capital (Schipper 2010; Gomez-Baggethun et al. 2012).

Many researchers have defined the term modern religion in various ways. Schipper (2010) broadly looks at religion as beliefs and practices individuals and wider groups hold based on spirituality, mysticism, and faith in divinity, enshrined in formal institutions in organized religions, in informal institutions in traditional belief systems and expressed in devolved form through superstitions, mythology and folktales. However, in this paper the term insinuates the belief in and reaction of individuals to the established concept of the Supernatural Being (God, Deity) as well as how the belief affects actions, practices and day to day lives (Ter Haar & Ellis, 2006; Acqual, 2011).

### **2.3. The adaptive capacity**

The word adaptive capacity is understood and defined differently by different people. For example, Marshall et al., (2012), Jones et al., (2012) and Nielsen & Reenberg, (2010) look at it as the ability of an individual / system to respond successfully to or modify (sometimes) even change its characteristics in order to moderate potential damage caused by climate variability and change. Levine et al., (2011) define adaptive capacity as the ability of an individual to anticipate, deal with and respond successfully to change while maintaining or improving its well-being. Folke et al. (2003) consider four aspects in adaptive capacity such as learning to live with uncertainty by permitting small scale disturbances in avoiding large scale calamities, supporting biological and institutional diversity in facilitating reorganization and renewal after a crisis, applying a variety of knowledge for learning and creating opportunities for self-organization. At a local set up, adaptive capacity focuses on at least five key dimensions such as asset base, institutions and entitlements, knowledge and information, innovation and flexible forward looking decision making (Marshall et al., 2012; Jones et al., 2012).

### **3.0. Methodological Approach**

#### **3.1. Description of the study area**

##### **3.1.1. Geographical, Cultural and Climate Change Contexts**

The research was conducted in Bolero Extension Planning Area (EPA) in the administrative district of Rumphi in the northern region of Malawi. The EPA had 12 functional sections with about 58,550 people living in 112 villages with 11,710 farm families holding a mean land size of 2.7 hectares per household of 5 persons. The area presented itself suitable for this nature of study mainly because of its vulnerability to climate variability and change besides being deeply rich in both culture and modern religion (Given, Ed., 2008; Tongco, 2007).

As the home of the Tumbuka Paramount Chief Chikulamayembe (Themba la ma Themba, which means King of kings), Bolero was predominantly a Tumbuka community. Livelihood options such as

production practices and decisions including food choices and tastes were largely shaped by the Tumbuka culture. A good number of taboos and religious values existed, which prohibited people from consuming certain foodstuffs and cutting down medicinal trees for either firewood or sale. And as a patrilineal society and male dominated area, construction of gender roles, rights and responsibilities within family institutions were influenced by cultural values that placed males as superiors to females. While realistic numbers of Christians and Muslims for Bolero were not available, the trends in the recent decades showed proliferation of modern religious denominations such as Roman Catholics (RC), Church of Central African Presbyterians (CCAP), Assemblies of God (AOG), Seventh Day Adventists (SDA), Deeper Life (DL), Living Waters (LW), Church of Christ (COC), Bible Believers (BB), Jehovah Witnesses (JW) just to mention but a few (PEW, 2010; MALGO, 2008).

The EPA was highly exposed to climate variability and change because of over dependence on tobacco production; there was wanton cutting down of trees. Trees were also cut for firewood, charcoal selling as a coping strategy and for medicinal purposes. Traditional healers and traditional knowledge carriers used a lot of traditional medicine. Consequently, rising temperatures, dry spells and erratic rains resulting in failure of various crops characterized. Average annual rainfall ranged from 175mm in bad seasons to 800mm in good ones. With the majority of the inhabitants being rain fed agrarians, the area looked more vulnerable to climate variability and change.

### **3.2. Data Collection Methods and Analytical Techniques**

The research drew on participant observations the researcher made in Bolero EPA from February to November 2014. In-depth Interviews, Survey questionnaire, Focus Group Discussions and Key Informant Interviews were also used to collect the primary data.

Participant observation data collection method was chosen to obtain a rapport with the respondents and gather sensitive data such as insights about their real life, daily activities and perceptions about climate change (Nielsen & Reenberg, 2010). The insights that were gathered through participant observation were explored further by the way of in-depth interviews. The respondents for the interviews were purposively sampled from the household list of traditional and religious knowledge carriers in four sections. At least 25 households from each section were interviewed (Edriss, 2006). The respondents

comprised indigenous agrarian households who adopted and rejected proactive adaptive capacity building interventions delivered to them by external agencies (Government staff & Nongovernmental Organizations) working in the sections.

The data collected included: Traditional cultural practices and beliefs, coping mechanisms, and perception on climate change, productions and consumption practices. Out of the 25 households that were interviewed from each section, at least 15 were female headed households while 10 were male headed households because regarding traditional knowledge and belief systems as well as climate change issues, women are more affected than men (Etwire et al., 2013).

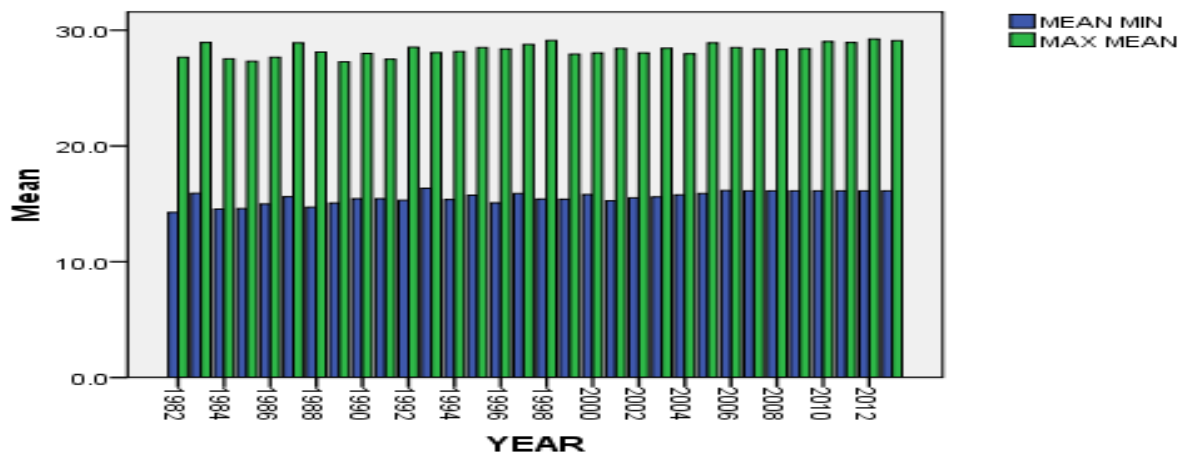
Eight Focus Group Discussions (FGDs), two from each section differentiated by age, gender, ethnicity and social standing (power differentials) were also conducted. Respondents were organized into groups of at least 8-10. The FGD method was chosen because it was quite useful in bringing together several participants to discuss perceptions about climate change, traditional knowledge and modern religious values and adaptive responses to climate change (Delyser et al., 2010). Through the FGDs, insights that were potentially less accessible without interactions found in a group were easily gathered. The outputs from the FGDs were a range of experiences about climate change, adaptive responses on consumption and production practices, traditional cultural practices and beliefs and, adaptation interventions exposed to them by externalists.

Key informant interviews with traditional (chiefs) and religious leaders, witch doctors, representatives of Nongovernmental Organizations, Area Development Committees and government staff at both district and Extension Planning Area were also conducted. The key informants were identified using both purposive sampling and snowball sampling techniques (Bernard, 2005; Johnson & Sabin, 2010). Snowball sampling which is respondent-driven was ideal to access the hard-to reach respondents such as witchdoctors, traditional and religious leaders. Witchdoctors and traditional leaders were very important informants in this study because they were regarded to as highly influential in ensuring continuance of beliefs, taboos and social norms. With respondents' consent, all in-depth interviews and FGDs were digitally recorded. Video recorders and cameras were also used while all critical observations and conversations during participant observations were jotted down in a field notebook. Key themes emerged inductively and open coding was employed in analyzing the data (Silverman, 2004).

## 4.0. Results

### 4.1. Respondents' Perceptions about Climate Change

Although it was vividly clear that the respondents could not comprehend the concept of global warming as the case with many similar local communities in Africa, (Gyampoh et al., 2009), the majority of the respondents pointed to the alterations in seasonality such as decline in rainfall amount, changes in the onset, cut off and duration of rainfall as evidences of climate change. They also pointed to the greater variability and the general rising in temperatures, prolonged dry spells and increased photoperiod. Most of the respondents felt that the stresses caused by climate variability had soared while their ability to respond successfully to the changes had decimated. The observations by the respondents were collaborated by the experiences shared by District Agriculture Development Office Personnel (DADO) and the temperature data collected by the DADO for a period of at least 32 years from 1982 to 2013 as presented in Figure 1.



**Figure 1:** Temperature variability for the period of 31 years (1982-2013)

### 4.2. Persistence of Traditional Beliefs and Modern Religious Values

Even though many of the respondents indicated their deep-seated commitment to the practice of Christianity and Islam, (regularly attending sermons, paying tithes, giving arms to the less privileged) elements of traditional beliefs were deep-seated and clearly visible in their day-to-day life. The



respondents believed that sacrifices to ancestral spirits could either protect them from their enemies or cure them from an illness. They also believed in the protective power of certain medicinal trees and shrubs when concocted and bound as a charm. The respondents trusted in the prophetic power of traditional healers in diagnosing the cause of an illness or misfortune. Contrasted with Christianity, the respondents felt that traditional healers and ancestral powers provided instant solutions to their day to day challenges while Christianity believed in future salvation, especially after death. The feeling by those believing in Christianity and Islam was that it would not be possible to be morally sound without the belief in and fear of God. Christianity to them was responsible for morality, optimism, progressive thinking and provided the foundation for respect for humanity. Again, the respondents argued that aspiration for justice even at community level and special attention for the less privileged such as the widows, widowers, orphans, the disabled and the aged was founded on the love of God for humanity. What was so unusual was that even them who confessed Christianity were still consulting witch doctors when hit with calamities such as diseases and hunger. Again, some witch doctors revealed during in-depth interviews that they were able to combine dual- responsibilities as witch doctors in their communities and also as Christians.

#### **4.3. Key Cultural Practices and Traditional Beliefs and readiness to cope with climate change**

Like any other traditional society in the world, Bolero community demonstrated a culture whose beliefs, values, customs and a host of social norms bore a powerful multi-faceted influence on the society's life style. Women were subjected to a variety of degrading treatments (Tembo, 2013). In particular, widows were the prime suspects responsible for the deaths of their husbands and on that premise were duty-bound to go through fetish rituals to absolve themselves from complicity in their husbands' deaths (Chika et al., 2014). Below were some of the key cultural practices, beliefs and taboos shared by the respondents.

#### **4.3.1. Birth Cultural Practice and Beliefs**

When women gave birth to twin babies, they were traditionally not allowed to stay at their homes with the rest of the other people; instead they were forcefully taken out of the village to a bush together with their husbands where they stayed for a period of at least four weeks. During this time, the husbands would be cooking or preparing meals, although culturally, married men were not permitted to cook. Generally the couples were deprived of comfort because they slept in huts and if they had other children before the twins, they would leave them in the hands of caretakers. The respondents felt that these beliefs had no meaning because there was no proven evidence about the dangers of breaking them. It was revealed during FGDs that, although the extent to which the beliefs were practiced had reduced over the years due to the influence of church teachings, (modern religion) some families particularly, those characterized as purely traditional were still observing the beliefs. This, according to the majority of the respondents, was as a result of the resistance by the family elders to navigate away from their forefathers' beliefs and taboos.

*Our own ancestors taught us these beliefs and taboos and we followed them, so what is wrong with this generation,* one of the elders who was also a witch doctor lamented

The argument by the elders was that the modern religious teachings by the majority of the modern denominations that contradicted their traditional beliefs and taboos were based on Eurocentric theories and perspectives of African culture. By displacing the couple for at least a month, the cultural belief denied them of an opportunity to engage in any productive activity, which should have enhanced their adaptive capacity to climate change. Premised on that understanding and perceived from the adaptive capacity viewpoint, the birth cultural practice didn't provide any pathways to increasing adaptive capacity but rather weakened even the already existing capacity to cope at household levels.

#### **4.3.2. Funeral Cultural Practices and Beliefs**

When husbands died, widows were not allowed to cook for a month. The widows were not allowed even to change clothes for a week to allow for a rite traditionally known as *kumeta* (shave her hair) to take place. The widows were given special but as a rule old plates and cups to use during the mourning

period. Again, the widows were offered men to sleep with, a tradition that was locally called *chimbwe* (hyena). The actual mourning period was usually determined by the family elders. The widows were not allowed to touch or use any of the late husbands' attires for fear that a misfortune might befall their entire families.

Although, the widows could not be allowed to touch or use the clothes of their late husbands, respondents wondered as to why the same clothes were being given to the elders of the deceased to use without anything bad happening to them. In this way the funeral cultural practice perpetrated self-pity and reduced the widows' intellectual capacity resulting into poor forward looking decision making, weakened adaptive capacity. By not allowing the widows to cook, change clothes and use clean utensils, the health of the widows was being exposed to various opportunistic infections posing even higher vulnerability to environmental changes including climate change. The respondents lamented that the practice of forcing the widows to sleep with other men was not only a violation of human rights but also a health and moral risk.

*Who knows that your man didn't die of the deadly disease or that the man you are given to sleep with is HIV and AIDS negative?* one of the respondents wondered.

The FGDs revealed that families that were living with their elders were forced to observe all rites concerning death. However, some modifications to the observance period were being clandestinely made by different families. Although, the desire to modify and change certain taboos was expressed during the discussions, the participants pointed to the influence of particularly the elders and the traditional healers to be the major limiting factor to transformative change.

*If the elders observe that you don't comply, they will bewitch you so that you should rush to them for help!* One of the women said.

This resistance to change by the elders and witch doctors was despite the fact that several churches, which they (elders and traditional healers) were attending, were condemning the belief as bad and outrageous. The general feeling by the majority of the participants was that there was no any realism in the observance of the most of the traditional beliefs and taboos because they were founded on superstition. Due to that the traditional beliefs and taboos were gradually and secretly being modified, although there was high resistance from the elders of the families. During the FGDs, the respondents mentioned that they were acquiring new knowledge from their churches that restrained them from

observing such beliefs and taboos. Roman Catholics, Seventh-day Adventists, Presbyterians, Jehovah Witnesses and Muslims did not allow their members to follow the traditional beliefs and taboos as such even them that were practicing the beliefs were doing so secretly for fear of being excommunicated from their churches.

### **4.3.3. Wife Inheritance Practice**

Wife inheritance was a type of marriage practiced in Bolero and many parts of the country whereby a widow married a kinsman of her late usually a younger brother. It was locally called *Kuhara* among the Tumbuka in the Northern Region of Malawi and *kulowa chokolo* among the Sena in the Southern Region of the country. Historically, the practice aimed at providing physical, social and economic protection to the widow and her children (Maleche et al., 2011) and the initial intent or basis of the inheritance was never a sexual relationship. Understood and viewed from social protection perspective, the practice seemed to provide adaptive capacity to the bereaved family.

However, in Bolero today, the practice changed over the years into a sexual relationship with the inheritor. The widow was forced to accept a man put forward before her by her late husband's family with no real prospects of turning the man down especially if her birth family didn't accept her back into their home. The manner in which wife inheritance practice was being done under the Tumbuka of Rumphu, Bolero gave credence to the unpalatable impression or it signified that women were chattels that could be inherited. Women were treated as objects which could be transferred from one hand into another without necessarily minding about their rights to choice and consent. This, in my view was an extreme case of deprivation and discrimination because naturally women had the capacity to and reserved the rights to make their own decisions regarding their lives and livelihoods. The FGDs revealed that many inheritors, which were normally tutored by the husbands' families, went for wife inheritance to take over ownership and control over assets and property left by their relatives. By taking over the assets left by the late husband, the wife inheritance system brought about maladaptation and compromised the widows' ability to cope with changes in their environments.

*I have hands on experience about this practice. At first he (inheritor) behaved as our savior following the death of my husband. But just 18 months later, he left us and that was when all the cattle about 6 in number left by my late husband had been sold, one of the widows testified.*

In this case the chief beneficiaries were the inheritors other than the widows and their children. The results were supported by the findings by White et al. (2002) and Tembo (2013) who argued that social norms and cultural values regarding wife inheritance, at household level benefitted specific categories of people other than the widows and the children. Although a large number of respondents, particularly women were not in support of this practice, the complexity of the issue of wife inheritance in the area lay in the fact that certain women strongly believed that they couldn't live without a man because of culturally embedded beliefs that certain household activities could be done by men only other than women. Additional dilemma was in the cognizance that widows who refused to accept a man given by their husbands' families were usually (flushed out of their homes) forced to go back to their parents' home without any assets.

Supporters of the wife inheritance practice, the majority of which were elders and traditional leaders, held a viewpoint that wife inheritance prevented widows from indulging into promiscuity thereby saving the entire family from misfortunes. The wife inheritance practice robbed widows of their rights to make decisions. In other words, it brought about maladaptation by reducing widows to objects and properties of their husbands. The practice further denied widows' access to assets and entitlements, which should have amplified their adaptive capacity to change, including climate change. With the continuing future climate threats in Bolero, the continued existence of the wife inheritance practice would mean more vulnerability and reduced adaptive capacity to cope with climate change.

#### **4.3.4. Hygiene and Nutritional Beliefs**

When a woman was on menstrual periods, she was not allowed to put salt in any relish for fear that she might harm the men that would eat the food. The woman was also restricted from visiting a vegetable garden for fear that the vegetables might dry up. During the FGDs, there was no consensus that the vegetables could wither or not as there were opposing experiences on that. Some respondents testified that the vegetables really withered out when they visited the gardens while others sharply opposed

because they had been plucking vegetables while on menstrual periods without observing any drying up of their vegetables. The difficulty associated with identifying a woman who was doing menstruation made it easy for a lot of women to manipulate the belief and taboo. By being restricted from accessing vegetable gardens, women on menstrual periods were denied diversified livelihood options, which would enhance their ability to adapt to climate change.

*Who can tell that I am doing menstruation except for me revealing?* One of the women wondered.

The understanding by the majority of the respondents was that their forefathers were using this belief and taboo to monitor whether their girl children were pregnant or not besides being a hygiene issue. The respondents also cited the restriction of girl children from eating eggs as a matter of behavioral control so that chickens could multiply.

#### **4.4. Production and Consumption Practices**

The major crops grown in the area were tobacco, maize and cassava. Cattle, goats and pigs were also being reared in the area. Tobacco was the main source of income while maize and cassava were grown mainly for consumption. The local maize variety was preferred to hybrid maize varieties for consumption because of storability, good flour and easy to pound. The disadvantage of the local maize variety was low yield productivity compared to hybrid maize varieties. According to the respondents, the main disadvantage of the hybrid maize varieties was high postharvest losses due to weevil attacks. The respondents also cited softness and unappetizing flour taste as other disadvantages. For these reasons, the hybrid maize varieties were mainly grown for sale either to complement or supplement tobacco growing. Although the local maize variety was preferred to hybrid varieties, with the observed rising temperatures, dry spells and erratic rains, the Bolero community would be more vulnerable to crop failures which, should have been mitigated by adopting hybrid varieties with early maturity and high yielding characteristics.

The in-depth interviews revealed that although women were participating in tobacco production, they had no control and full access over sales. It was further learnt that the decision to venture into tobacco growing was usually a husband's decision. Since women were already vulnerable category in the area (Etwire et al., 2013), continued denial of access and control over important economic and intellectual

assets such as decisions and income would only serve to exacerbate their vulnerability and compromise their adaptive capacity to climate change.

It was observed that the majority of the respondents were producing and trading in tobacco contrary to the anti-tobacco growing messages and teachings in SDA, Jehovah Witness and Church of Central Africa Presbyterian (CCAP) to which they were members. Upon asked why they chose to disobey their church teachings on tobacco growing as a business, the respondents said that tobacco growing was one of the lucrative businesses in the area and they could hardly manage their families if they decided to forgo the business of growing and selling tobacco.

*Tobacco is our gold here, so if we stop growing this crop how do they (churches) expect us to earn a living? You even know that tobacco is the mainstay of our economy at national level,* the majority of the respondents said.

Even though respondents praised tobacco as a source of economic empowerment, sooner or later, the business would result into maladaptation. Tobacco growing was highly linked to wanton cutting down of trees. Bolero required that reforestation was done at a rate higher than the rate at which, the trees were being fallen down because of climate variability being experienced.

The maize and cassava produced couldn't last throughout the year and the majority of the respondents confessed that they used to run out of food just 3 to 4 months after harvest. The respondents mentioned two major reasons for failure to produce enough to feed their families throughout the year. The first reason was to do with access to farm inputs such as fertilizers and seeds and the second reason was poor rains received in the area. Although the respondents understood the weaknesses associated with the local maize varieties in coping with the climatic conditions in Bolero, their culturally shaped preferences and tastes of the local varieties influenced their production and consumption decisions. Therefore, the food insecurity was, in essence, worsened by the beliefs and the perceptions which, put preference on the less yielding local maize varieties as good for food to the hybrid maize varieties that adaptable to climate variability.

The interviewed communities realized that food shortages were a major threat to their lives. They had developed strategies to cope with and adapt to this phenomenon. They could engage in food for work schemes, traditional food sharing (*chisewere*), access some credit, venture into firewood and charcoal selling, and reduce their meals in terms of rations and frequency per day in order to cope during the

critical hunger period, which was between January and March every year. In critical moments the communities could reduce to one meal per day while others could eat twice a day. The majority of the respondents mentioned that they could eat lunch and supper or combined lunch and supper, which were usually taken around past three in the afternoon. However, the practice of rationing food was usually aborted or abandoned during times of plenty especially soon after harvesting. The concept of food rationing was basically good and should not have been applied only during times of food scarcity but also be part of the overall behavioral change and food budgeting process. The FGDs revealed that the communities used some minimal irrigation, planting of early maturing and drought resistant varieties, soil and water conservation practices as adaptation strategies.

Through Focus Group Discussions, it was further revealed that some notable differences and commonalities in coping between male and female respondents existed. Male respondents preferred going into credit and migration while the females rated petty businesses and reduction of meals highly. The differences in the preferences indicated the gender based responsibilities built based on cultural categorization. The Tumbuka culture perceived men as bread winners and should be the ones indulging into activities that would bring food at home while women should ensure proper management of food once brought in the house.

The researcher noted that the local coping strategies were not sustainable as they could only respond to short term and intermittent hazards. For example, charcoal and firewood selling, food rationing and traditional asset sharing (*chisewere*) could not ably respond to a major drought happening almost every year. Again charcoal burning and firewood selling coping strategies could render themselves into maladaptation strategies through massive deforestation leading to intensification of climate change impacts. Continuous food rationing might lead to malnutrition, increased vulnerability to diseases and decreased human capacity (Riche et al., 2009).

#### **4.5. Traditional Beliefs versus Modern Religious Values**

It was vividly observed that socio-economic and environmental challenges posed by climate change and variability, population growth and low agricultural productivity were making communities to break down the communal nature associated with the purely traditional communities. Traditional beliefs,



values and taboos, such as forbidding girls from eating eggs, cooking while on menstrual periods were losing grip on individual families in the community and the observance of such taboos had gone down mainly due to modernization and heterogeneity. Religion, particularly Christianity caused many individuals in the communities to perceive such traditional beliefs, values and taboos as less useful and superstitious. Traditional beliefs and social norms although potentially useful from traditional perspective, were no longer as valuable at community level. The respondents, however, revealed that the challenge they faced was to apply the modern religious teachings at household level where the elders and the family members preferred their traditional and cultural practices to modern religious values.

*We get taught in our churches that when we give birth to twins we are not supposed to leave for a bush; instead we should stay in our homes. We should make sure that our children are well fed with six groups of food, but it is difficult to follow that because our mother-in-laws have their own values about child growth and development,* lamented one woman who reported to have had hands on experience.

Although inequalities regarding distribution and access to resources was observed in the area, taboos placed particularly on food either for religious or cultural reasons just worsened the inequalities in the community between males and females. It was revealed during the in-depth interviews that the major reasons for the persistence of the food taboos were many but at least all were skewed to superstition.

## **5.0. Discussion and Conclusion**

The research revealed that in adapting to climate variability and change, the respondents applied both modern religious values and traditional cultural beliefs and practices though with wide-ranging degree. Matunhu (2011) asserts that individuals and societies advance to modernity at different paces depending on their adaptive capacity. While culture is generally considered an important dimension to development besides economical, social and environmental dimensions through enhancement of social cohesion (Wafula, 2011), traditional cultural practices regarding wife inheritance, production and consumption, hygiene, birth and death rituals and taboos were found to have negative influence on entitlement rights, livelihood decisions and moral capital of particularly women and widows in Bolero. By denying women and widows of material, social and intellectual assets necessary for enhancing

adaptive capacity, these traditional cultural practices and taboos reduced their adaptive capacity to climate change (Jones et al., 2012; Marshall et al., 2012; Nielsen & Reenberg, 2010).

The research also found out that the majority of the traditional cultural practices were complied with out of trepidation other than rationality. The researcher further observed a greater desire by youths to use counter-teachings regarding wife inheritance, births and hygiene practices as advocated by their churches and other development partners (modernizing institutions) working in the area, however, the extent of application of the counter-teachings at household levels so much depended on the perceptions and acceptance of the household elders on the teachings. There was an eye-catching intergenerational tension between the elderly and the youths in validating, accepting and applying both modern religious values and traditional cultural belief systems.

The youths' perceptions and attitudes towards entitlement rights, production and consumption practices, birth and death beliefs, rituals as well as hygiene and behavioral taboos portrayed an impact of modernization (existence of modernizing institutions with modern values) and heterogeneity (differences in values, beliefs, levels of interactions,). Modernization is about the abandonment of an individual's cultural values in favor of that of the modernizer (Matunhu, 2011). The elders, traditional leaders and witch doctors though selectively used some modern values they persistently followed their long lived traditional cultural practices, beliefs and taboos (Assefa, 2005). To the elders and witch doctors, acceptable modernization needed to provide motivation (convincing reasons for completely letting go the status quo), to go along with the changing social and economic situation (Matunhu, 2011). Since culture is area specific and non static, ignoring the influence of traditional cultural practices and modern religious values in climate change discourses, research and policies has the greater potential to reduce the adaptive capacity of the traditional communities (Gyampoh et al., 2009; Pareek & Trivedi, 2010; Price et al., 2014). Another area that needs further consideration in research is the extent of intergenerational frictions between the elderly and the youths among other tribes in the country and how the frictions threaten the continued existence of TEK.

I, therefore, strongly propose transformative community engagements (participatory process of knowledge construction) between the elders, traditional and religious leaders, witch doctors on the one hand and, development partners (government, NGO, FBO) on the other hand as an essential alternative approach in promoting structural and attitudinal changes necessary to sieve out bad traditional cultural beliefs, practices taboos and modern religious values (Wafula, 2011; Assefa, 2005). The argument

advanced in this paper is that development facilitators and policy makers seeking to empower marginalized groups at local level in Rumphi district will have to participatory construct knowledge capable of setting them free first from the superstitiously perpetrated traditional cultural beliefs that bog them down psychologically, economically, socially, politically and morally at household level (Macchi et al., 2008; Assefa et al., 2005).

Paradoxically, the modernization approaches advocated by the modern religious leaders and development partners working in Bolero Community were not absolute. The religious leaders used puppets to advocate for change of various bad traditional cultural beliefs. The approaches, however, ignored the involvement and participation of the target clientele; the intervention strategies became imposed strategies and as such the strategies failed to construct adequate notions of both the causal powers of social structures and the role of human agency in shaping social relations. The approaches also adopted an oversimplified view of social change (Coetzee et al., 2007: 101). Human nature has a propensity to resist change in favor of the status quo. Change is resisted because it brings with it elements of uncertainty and perhaps this explains why witch doctors and the elders were unable to let go their cultural values, beliefs and taboos. Another fascinating weakness of the approach advocated by the religious leaders was that the approach was largely based on deterministic reason which states that within the linear model of socio-economic development, changes are initiated externally (Matunhu, 2011). The determinist reason gave little room for the reciprocal relationship between causation from within the Bolero Community and that of the *externalists* (community development agencies). In other words, the approach encouraged the powers of the *externalists* to prescribe the route to dislodging bad values, beliefs and taboos, which didn't see the desired outcomes at household levels, although at community level there was outward progress. I strongly feel that there has to be a paradigm shift if the Bolero Community is to chart its own route to development and successfully win the battle with climate change, hence participatory community engagement approach.

In fact with the extra layer of burden exerted by climate variability and change on livelihoods and socio-economic systems (DDRN Report, 2009), continued persistence and application of traditional cultural practices and modern religious values will so much depend on one, the extent of structural and attitudinal transformation achieved, two how useful the traditional practices and modern religious values will continue to be in enhancing adaptive capacity to climate change and three, how intergenerational frictions in value placement, perception and application of the traditional cultural beliefs and religious values will actually be negotiated.

## 6.0. Reference

- Acqual, F. (2011) The Impact of African Traditional Religious Beliefs and Cultural Values on Christian-Muslim Relations in Ghana from 1920 through the present: A Case Study of Nkusukum-Ekumfi-Enyan area of the Central Region, University of Exeter, Ghana.
- Adger WN, Barnett J, Brown K, Marshall N, O'Brien K (2013) Cultural dimensions of climate change impacts and adaptation *Nat Clim Change*, 3(2), 112-117
- Adger, W.N. and Kelly, P.M. (1999) Vulnerability to Climate Change and the Architecture of Entitlements, *Mitigation and Adaptation Strategies for Global Change* 4 (1999): 253-266
- Ajani, E. N., Mgbenka, R. N., Okeke, M. N. ( 2012) Use of Indigenous Knowledge as a Strategy for Climate Change Adaptation among Farmers in sub-Saharan Africa: Implications for Policy, *Asian Journal of Agricultural Extension, Economics and Sociology*, 2 (2013) 23-40
- Assefa, D., Wassie, E., Getahun, M., Berhaneselasie, M., and Melaku, A. (2005) Harmful Traditional Practices, *Ethiopia Public Health Training Initiative, The Carter center, the Ethiopia Ministry of Health and the Ethiopia Ministry of education*, Ethiopia
- Bagamba, F., Bashaasha, B., Claessens, L. and Antle, J. (2012) Assessing Climate Change Impacts and Adaptation Strategies for Smallholder Agricultural Systems in Uganda, *African Crop Science Journal* 20 (2012) 303-316
- Berkes, F., Colding, J., and Folke, C. (2000) Rediscovery of Traditional Ecological Knowledge as Adaptive Management, *Ecological Applications* 10 (5) 1251-1262
- Bernard, H. R. (2005) *Research Methods in Anthropology: Quantitative and Qualitative Approaches*, Altamira Press, Walnut Creek, CA
- Bryan, E., Deressa, T. T., Gbetibouo, G. A., and Ringler, C. (2009) Adaptation to climate change in Ethiopia and South Africa: Options and constraints, *Environmental Science and Policy* 12 (2009) 413-426
- Carr, E. R. and Thompson, M. C. (2014) Gender and Climate Change Adaptation in Agrarian Settings: Current Thinking, *New Directions and Research Frontier, Geography Compass* 8 (2014) 182-197

- Charles, N. and Rashid, H. (2007) Micro-level analysis of farmers' adaptation to climate change in Southern Africa. IFPRI Discussion Paper 00714, Washington Dc, USA
- Chika, I.S., and Nneka, U. (2014) Discriminatory Cultural Practices and Women's Rights among the Igbos of South-East Nigeria: A critique, *Journal of Law, Policy and Globalization* (2014): 2224-3240
- Chinsinga, B., Mangani, R. and Mvula, P. (2011) The Political Economy of Adaptation through crop diversification in Malawi *IDS Bull* 42: 110-117
- Claudia, R., Zhu, T., Cai, X., Koo, J., and Wang, D. (2010) Climate Change Impacts on Food Security in Sub-Saharan Africa: *Insights from Comprehensive Climate Change Scenarios*, IFPRI
- Coetzee, K.J, Graaf, J., Heindricks, F., and Wood, G. (2007) *Development: Theory, Policy and Practice*. Cape Town: Oxford University Press. Daly
- COMECE (2011) *A Christian View on Climate Change: The implications of climate change for lifestyles and EU policies*, Brussels, Belgium
- Connell, R. (2009) *Short Introductions to Gender* 2<sup>nd</sup> Ed. Polity Press, Cambridge
- Dei, G. (1993) Sustainable development in the African context: Revisiting some theoretical and methodological issues. *African Development* 18(2):97-110.
- Dionne, K. Y., & Horowitz, J. (2013) *The Political Effects of Anti-Poverty Initiatives: An Analysis of the Malawi's Agricultural Input Subsidy Program*, Fulbright Fellowship
- Dunnington, G. (2010) *The Potential Impacts of Climate Change on Agriculture in Vermont*, Climate Change Adaptation White Paper Series, Agency of Natural Resources, Vermont
- DPPC (2000) *Vulnerability Profile: Strengthening emergency response ability*, Addis Ababa, Ethiopia
- Edriss, A. (2006) *Introduction to statistics*, Bunda College of Agriculture, University of Malawi, Lilongwe Malawi
- Etwire, P. M., Al-Hassan, R. M., Kuwornu, J. K. M., and Osei-Owusu, Y. (2013) Smallholder farmers' adoption of technologies for adaptation to climate change in Northern Ghana, *Journal of Agricultural Extension and Rural Development* 5 (2013) 121-129

- Frame, D. (2007) Indigenous Peoples and Climate Change Models: Environmental Change Institute, University of Oxford. <http://www.eci.ox.ac.uk/news/events/indigenous/frame/.pdf>
- Frumhoff, P.C., McCathy, J.J., Melillo, J.M., Moser, S.C., Wuebbles, D.J. (2007) Confronting Climate Change in the U.S. Northeast st: Science, Impacts and Solutions, Synthesis report of the Northeast Climate Change Impacts Assessments (NECIA), Cambridge, M.A: Union of Concerned Scientists (UCS)
- Funicane, M. L. (2009) Why Science Alone Won't Solve the Climate Crisis: Managing Climate Risks in the Pacific, Analysis from the East-West Center, Issue No. 89, US Congress, USA
- Genzuk, M. (1999) A Synthesis of Ethnographic Research, Center for Multilingual, Multicultural Research, University of Southern California, Los Angeles
- Given, L. M. (Ed.) (2008) Purposive Sampling, The Sage Encyclopedia of Qualitative Research Methods 2 (2008) 697-698
- Gyampoh, B. A., Amisah, S., Idinoba, M., and Nken J. (2009) Using traditional knowledge to cope with climate change in rural Ghana, *Unasylya* 231/232, Vol. 60, 2009
- Gomez-Baggethun, E., Reyes-Garcia, V., Olsson, P., and Montes, C. (2012) Traditional ecological knowledge and Community Resilience to environmental extremes: A case study in Donana, SW Spain
- Goulden, M. C., Adger, W. N., Allison, E. H., and Conway, D. (2012) Limits to Resilience from livelihood diversification and social capital in lake social ecological systems, *Annals of Association of American Geographers* 103 (2013) 906-924
- Gujarati, D.N. (2004) Basic Econometrics, Fourth Edition. The McGraw–Hill Companies
- Haluza-DeLay R (2014) Religion and climate change: varieties in viewpoints and practices. *WIREs Climate Change*, 5(2), 261-279
- IPCC (2007) Climate change 2007: Synthesis report, contribution of working groups I, II, and III to the fourth assessment of the Intergovernmental Panel on Climate Change
- IPCC (2001) Climate change, synthesis report, Cambridge University Press, UK
- Johnson, L. G., and Sabin, K. (2010) Sampling hard to reach populations with driven sampling, *Methodological Innovations Online* 5 (2010) 38-48

- Kalanda-Joshua, M., Ngongondo, C., Chipeta, L., Mpembeka, F. (2011) Integrating IK with conventional science: enhancing localized climate and weather forecasts in Nessa Mulanje, Malawi, *Journal of Physics and Chemistry of the Earth* 36 (14-15) 996-1003
- Kandji, S. T., Verchot, L. and Mackensen, J. (2006) *Climate Change and Variability in Southern Africa: Impacts and Adaptation in the Agricultural Sector*, Nairobi: Kenya.
- Kpadonou, R.A.B., Adegbola, P.Y., Tovignan, S.D. (2012) Local Knowledge and Adaptation to Climate Change in Oueme, *African Crop Science Journal* 20 (2012) 181-192
- Levine, S., Ludi, E. and Jones, L. (2011) *Rethinking Support for Adaptive Capacity to Climate Change: The role of development interventions*, London: UK
- Lisa F. Schipper, E. (2006) *Climate Risks, Perceptions and Development in El Salvador*, International Water Management Institute Colombo, Sri Lanka, Tyndal Center for Climate Change Research Working Paper 93
- Macchi, M., Oviedo, G., Gotheil, S., Cross, K., Boedhihartono, A., Wolfangel, C., and Howell, D. (2008) *Indigenous and Traditional Peoples and Climate Change*, Issue Paper
- Maleche, A., and Day, E. (2011) *Traditional Cultural Practices and HIV: Reconciling culture and human rights*, Working Paper for the Third Meeting of the Technical Advisory Group of the Global Commission on HIV and the Law, 7-9 July, 2011
- Mangistu, D. K. (2011) Farmers' perception and knowledge of climate change and their coping strategies to the related hazards: Case study from Adiha, Central Trigay, Ethiopia, *Agricultural Sciences* 2 (2011) 138-145
- Marshall, N. A., Park, S. E., Adger, W. N., Brown, K. and Howden, S. M. (2012) Transformational capacity and the influence of place and identity, *Environmental Research Letter* 7 (2012) 034022 (9pp)
- Matunhu, J. (2011) A critique of modernization and dependency theories in Africa: Critical assessment, *African Journal of History and Culture* 3(5): 65-72
- Nielsen, O. J. and Reenberg, A. (2010) Cultural barriers to climate change adaptation: A case study from Northern Burkina Faso, *Global Environmental Change* 20 (2010) 142-152

- Nhemachena, C. and Hassan, R. (2007) Micro-level analysis of farmers' adaptation to climate change in the Southern Africa, USA: Washington D.C.
- Nkomwa, E. C., Kalanda-Joshua, M., Ngongondo, C., Monjerezi, M., and Chipungu F. (2014) Assessing IKS and Climate change adaptation strategies in Agriculture: A case study of Chagaka Village, Chikwawa, Southern Malawi.
- Nyong, A., Adesina, F., Osman Elasha, B. (2007) The value of indigenous knowledge in climate change mitigation and adaptation strategies in the African Sahel. International Development Research Centre, Nairobi, Kenya
- Pareek, A., and Trivedi, P. C. (2010) Cultural values and indigenous knowledge of climate change and disaster prediction in Rajasthan, Indian Journal of Traditional Knowledge (2011) 183-189
- Pew Forum on Religion and Public Life (2010) Tolerance and Tension: Islam and Christianity in Sub-Saharan Africa. <http://www.pewforum.org/files/2010/04/sub-saharan-africa-full-report.pdf> Accessed 14/12/2014
- Pierce, G.J. and Boyle, P.R. (2003) Empirical modelling of interannual trends in abundance of squid (*Loligo forbesi*) in Scottish waters. Fisheries Research 59: 305-326
- Price, C. J., Walker, A. I., and Boschetti, F. (2014) Measuring cultural values and beliefs about environment to identify their role in climate change responses, *Journal of Environmental Psychology* 37 (2014) 8-20
- Riche, B., Hachileka, E., Awuor, C. B. and Hammill, A. (2009) Climate-related vulnerability and adaptive-capacity in Ethiopia's Borana and Somali communities, Final Assessment Report, UK
- Schipper ELF (2010) Religion as an integral part of determining and reducing climate change and disaster risk: an agenda for research. In: Voss M (ed) *DerKlimawandel: SozialwissenschaftlichePerspektiven*. VS Verlag, Wiesbaden, pp 377-393.
- Silverman, D. (2004) *Qualitative research: Theory, method and practice*. SAGE. London
- Sofoluwe, N. A., Tijani, A. A., Baruwa, O. I. (2011) Farmers' perception and adaptation to climate change in Osun State, Nigeria, *African Journal of Agricultural Research* 20 (2011) 4789-4794



- Swai, O. W., Mbwambo, J. S. and Magayane, F. T. (2012) Gender and perception on climate change in Bahi and Kondoa Districts, Dodoma Region, Tanzania, *Journal of African Studies and Development* 4 (2012) 218-231
- Tembo, M.J., (2013) Gender Based Structural Violence in Relation to the traditional practice of Wife inheritance, the case of Malawi, University of Nordland, Norway
- Traerup, S. L., and Mertz, O. (2010) Rainfall variability and household coping strategies in northern Tanzania: a motivation for district-level strategies, *Reg Environ Change* 11 (2011) 471-481
- Ter Haar, G. and Ellis, S. (2006) Role of Religion in Development: Towards a New Relationship between the European Union and Africa, *European Journal of Development* 18 (2006) 351-367
- Tongco, Ma. D. C. (2007) Purposive Sampling as a Tool for Informant Selection, *Ethnobotany Research and Applications* 5 (2007) 147-158
- White, S., Kamanga, D., Kachika, T., Chimeza, A., Chidyaonga, F. (2002) Dispossessing the widow, Gender Based Violence in Malawi, Blantyre: CLAIM Mabuku
- Zhou, P., Gwimbi, P., Maure, G. A., Johnston, P., Kanyanga, J.K., Mugabe, F.T., Manyats, A.M., Masarirambi, M.T., Thomas, T.S., Hachigonta, S. and Nelson, G. (2010) Assessing the Vulnerability of Agriculture to Climate Change in Southern Africa Part of “*Strategies for Adapting to Climate Change in Rural Sub-Saharan Africa: Targeting the most vulnerable*”. BMZ: FANRPAN