

**PARTICIPATION AND NON-PARTICIPATION IN CLIMATE SMART AGRICULTURE IN A
ZAMBIAN FARMING COMMUNITY: A PHENOMENOLOGICAL STUDY IN RISK
COMMUNICATION**

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**Participation and Non-Participation in Climate Smart Agriculture in a
Zambian Farming Community: A Phenomenological Study in Risk Communication**

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This dissertation titled Participation and Non-Participation in Climate Smart Agriculture in a Zambian Farming Community: A Phenomenological Study in Risk Communication is hereby accepted by the Faculty of Information and Communication Studies, U.P Open University in partial fulfilment of the requirements for the degree Doctor of Communication (DCOMM).

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BIOGRAPHY

Bruce K. Mulenga born in Kitwe, Zambia, received his Bachelor of Divinity from Urbaniana University, Rome, and earned a Master of Communication for Development degree from the University of Zambia. He joined the Zambia Institute of Mass Communication Education Trust (ZAMCOM) where he headed the Print Media department and was among the team to pioneer the curricula for Agriculture reporting and certificate in Journalism. He joined Programme Urban Self Help (PUSH), a local humanitarian NGO, to drive its Beneficiary Communication. Under the auspice of the Netherlands government, he undertook a professional course in Media Design for Social Change, organized by the Centre of Development Innovation at the University of Wageningen, Netherlands. During that time, he met Professor Dr. Loess Witteveen, at Van Hall Larenstein, who encouraged him to pursue doctoral studies in communication. While working at Zambia Red Cross Society as Communications and Public Relations Manager, he enrolled into the University of Philippines Open University (UPOU) to pursue Doctor of Communications studies, an academic pursuit he continued even while he worked for the United Nations High Commission for Refugees (UNHCR) as Reporting Associate.

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**In Loving memory to my late brother
Nicholas Mutale Mulenga**

ABSTRACT

This study aimed at understanding participation and non-participation in climate smart agriculture through the lens of Phenomenological Tradition of Communication Theory which conceives communication as an experience of self and other in dialogue. It attempted to answer two questions: What are the views of farmers on Climate Smart Agriculture in a Zambian farming community? How do their views define participation and non-participation in climate smart agriculture? I used qualitative research, particularly, field observations and in-depth conversations with two farmers. I identified repeated statements and phrases from the farmers' conversations and narratives and woven them into themes that described the views of farmers in climate smart agriculture.

Two themes constituted the views of farmers on climate smart agriculture: an "acquired or learnt experience" with potential for good harvest and was dependent on the blessing from the spiritual beings, and it defined the action of participation; and "compromising and non-adherence" towards the well-being of the land, whereas the spiritual beings responded with punishment in form of rainfall anomalies, increased droughts and other eschatological consequences, and this defined the action of non-participation. This can be explained through the lens of Phenomenological Tradition of Communication Theory that farmers were in dialogue with the spiritual beings who did not want to be displeased when farmers engaged in climate smart agriculture. This, therefore, explained Risk communication as an interpretive and communicative action of people's real lived experiences, occurring in a contextualized situation, to gain meaning of their desired action to prevent or minimize effects of potential consequences of risks on their existence. Understanding Risk communication in this way, explains a new communication view called the Phenomenological view of Risk Communication; where people's real lived experiences, based on their contextualized situation, are interpreted and meaning is gained to make farmers in risk environments, to prevent or minimize effects of risks on their existence.

ABBREVIATIONS AND ACRONYMS

- ATM – Agriculture Technological Model
- CERC – Crisis and Emergency Risk Communication
- CSA - Climate Smart Agriculture
- CSO – Central Statistics Office
- CBRN – Chemical, Biological, Radiological and Nuclear
- DComm – Doctor of Communication
- DPM - Deliberative Process Model
- DRC – Democratic Republic of the Congo
- EU – European Union
- ESW – Extension Service Workers
- FAO - Food and Agriculture Organization
- FISP – Farmer Input Support Programme
- FRA – Food Reserve Agency
- GMO – Genetically Modified Organism
- GRZ – Government of the Republic of Zambia
- HSM - Heuristic-Systematic Model
- IEDs – Improvised Explosive Devices
- INGO – International Non-Governmental Organisation
- MoA – Ministry of Agriculture

- NGO – Non-Governmental Organisation
- PUSH – Programme Urban Self Help
- RMS – Risk Minimization Strategy
- SL – Sustainable Livelihoods
- SNV- Stichting Nederlandse Vrijwilligers (Netherlands Development Organization)
- STP – Situational Theory of Publics
- TVTM – Training and Visit Technological Innovations
- UN – United Nations
- UNHCR – United Nations High Commission for Refugees
- UPOU – University of Philippines Open University
- USA – United States of America
- ZAMCOM – Zambia Institute of Mass Communication Education Trust

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Chapter One

INTRODUCTION

Climate Change as a Risk

In recent times, climate change has posed great risks in the lives of people including their source of livelihoods. In many studies, climate change has been described not as a simple threat but as a complex and systemic threat with three major components namely; complexity, uncertainty, and ambiguity, (Mahmoudi and Knierim, 2015). As such, climate change requires not a single source of knowledge but a complex, variant and systemic source of experience from which threats and risks are explained and understood. Mahmoudi and Knierim (2015) argue that the components of complexity, uncertainty, and ambiguity are innately related to the quality of knowledge required to explain and understand the risk of climate change. Climate change risks are also arguably related to the people's acceptability of and reactions to the risks of climate change. For this reason, risk communication is indispensable during climate change risks to enable people to act.

For many years, Agriculture Extension workers were tasked to explain agriculture related innovations, risks and threats, to make people improve their agriculture prospects. One of the communication theories used was the diffusion of innovation. The conventional understanding of the diffusion of agricultural innovations was that technologies or new ideas were passed from scientists through extensionists to farmers (Rogers 1988). However, this traditional model of a unidirectional transfer of knowledge or technology was questioned in the last decades and as such the diffusion concept was transformed into a multi-lateral systemic communication and interaction-

net also referred to as the agricultural knowledge and information system (AKIS) which is supported by the agricultural knowledge and innovation system (AKIS) and the agricultural innovation system (AIS) concepts, and is now widely used but with the same conceptual understanding (Knierim 2015) derived from the cybernetic tradition of communication as shall be discussed in the following sections. This innovation, including its related concepts, did not acknowledge that the lived experiences of people is the source of knowledge upon which threats and risks of climate change are better explained and understood, and indeed, upon which farmers can opt for climate smart agriculture to minimize the potential risk on their farming existence.

Climate Smart Agriculture

Climate change risks, in form of increased frequencies of severe climate events like droughts and irregular rain patterns across the globe, have affected prospects of agricultural development and viable livelihoods of most of the people especially those in rural areas with limited capacity to build resilience towards climate change. FAO (2011) predicts that there will be substantial increases in food insecurity, particularly in the Southern and Central regions of Africa while maize yields will decline by 2055. Efforts including concepts of Climate Smart Agriculture, to slow down the effects of climate change and build people's resilience towards effects of climate change, have been developed in various parts of the world and in Zambia in particular.

Climate Smart Agriculture is not a new agriculture concept, system or an approach.

The concept of climate smart agriculture is linked to sustainable intensification (FAO, 2011) where

changes in agricultural systems are required in order to achieve a sustainable agriculture

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development, food security and preserve natural resources while reducing effects of climate change on agriculture, (Grainger – Jones, 2011). As an approach or system, it is being extended to several other sectors including the food chain approach that ensures operationalization of sustainable agriculture development to contribute to climate change mitigation and preserving of natural resource base and vital ecosystem services in three main ways namely: Increasing sustainable agriculture productivity and incomes of people; Increasing the adaptation and building of people's resilience; and Increasing the reduction of greenhouse gases emissions, (FAO, 2013).

Further, FAO (2013) describes climate smart agriculture in terms of an approach and system for sustainable agriculture development which requires; farmers transitioning from traditional agriculture systems and practices to agricultural production systems that are more productive; using of inputs in a more efficient manner; having outputs that are less variable but greater stable; and adapting to practices that are more resilient to risks, shocks and long term climate variability.

At the core of the description of climate smart agriculture, FAO (2013) argues that the soil is the basis for crop, forest and livestock production. This is because the soil provides nutrients and water that are taken up by plants for growth and contribute to regulating the atmospheric gases. FAO assumes that the diversity and abundance of life that exists within the soils is greater than any other ecosystem because a handful of soil can contain billions of organisms that play a critical role in maintaining the health of the soil and ensuring that the soil carries out its functions, (FAO 2013). However, there are unsustainable land management practices that have highly degraded particularly the soil. These practices, as described by FAO (2013) include: continuous cropping, with reduction

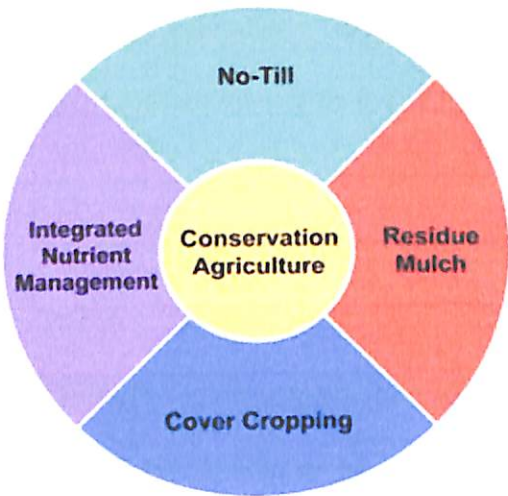
in fallow and rotations, repetitive tillage and soil nutrient mining; overstocking; overgrazing and burning of the range lands; and over exploitation or clearance of wood and forest lands.

FAO (2013) suggests that climate smart agriculture contributes to a reverse or minimization of degradation by way of conserving ground biodiversity, and is required to ensure sustained agriculture productivity in the following manner:

- a. It integrates soil fertility management by improving soil nutrient retention capacity. This include strategies for intensifying cropping system by combining inputs of organic matter with fertilizers to prevent soil nutrient deficiencies such as mulching, compost, crop residues, green manure, etc.
- b. It recycles nitrogen on the farm by using manure and nitrogen fixing plants to enhance soil quality and provide nutrients.
- c. It requires physical conservation structures such as bunds and drainage.
- d. It involves irrigation (in full or partial) where possible and when needed.
- e. It requires direct seeding with no tillage to improve protective soil cover through cover crops, crop residues or mulch; and crop diversification through rotations. This means also that burning of crop residues need to be avoided at all cost.

The diagram below illustrates four distinct parts of climate smart agriculture.

Figure1: Key Principles of Conservation Agriculture



Source: FAO, 2016.

The explanation above suggests that climate smart agriculture is both a theory and practice and has four distinct parts namely: no slash and burn; permanent soil cover; minimal disturbance of soil; and efficient on-farm use of fertilizer. This study therefore, focuses on the theoretical understanding of the concept of climate smart agriculture, rather than the practice in order to define the sense farmers give to participation and non-participation. The study explores the farmers’ real lived experiences in order to understand the meaning they give to participation and non-participation.

This study adopts the Phenomenological Tradition of Communication Theory which explores the views of farmers in climate smart agriculture by using stories of their lives in order to explain participation and non-participation. The Phenomenological Tradition of Communication theory is adopted because the stories, conversations, expressions and experiences of farmers and the interpretations thereof add a new understanding to the body of knowledge of participation and non-participation.

In this study, two farmers who were exposed to most of the elements of climate smart agriculture either by knowledge or by skill alone were involved. These farmers were essential because they were able to illustrate their expressions and actions on the farm and were able to provide narratives of their views on climate smart agriculture. As a result, the meaning of farmers' narratives and interpretation of their expressions and actions in the discursive community of experience was explained to understand the meaning of participation and non-participation.

Phenomenological Tradition of Communication Theory

The focus of the theoretical framework of Phenomenological Tradition of Communication Theory lies on the individual interpreter rather than the functional and symbolic nature of the sign itself. The concept is derived from the field of postmodern philosophy (West and Turner, 2010) and was influenced by Edmund Husserl's specific theoretical approach of seeking to understand human existence, (Angelo, 1998). Philosophically, and following the understanding of

Husserl's (Jansen and Steinberg, 1991), Phenomenology is wholesomely grounded on the assumption that the meaning of life and existence lies in the intersubjective participation of the world rather than in physical objects or circumstances. As a result, Husserl suggests that Phenomenology was a method of analyzing conscious experiences to find meaning, understanding and knowledge about human life and existence, (Craig and Muller, 2007). Thus, Phenomenological approaches explain that although the world is objectively available, it can only be known and understood when individuals inter-subjectively participate, relate and experience it. This implies that individuals can only have knowledge of a thing they are able to have experience of and solicit meaning through interpretation. In other words, Phenomenology is an intuitive process of experiencing the world or circumstances as they really are, and interpreting their meaning, through a process of back and forth between experiencing a circumstance and assigning meaning, based on the perceptions stimulated during life experiences, (Littlejohn and Foss, 2008).

The Phenomenological Tradition of Communication Theory therefore assumes that people actively interpret what happens around them and come to understand the world by personal direct experience with it through perception of a phenomenon, whether an object, event or condition, (Deetz, 2003). According to Deetz (2003) the meaning of things consists of the potential of things in one's life. This means that one can only discover the meaning of something through their own experience and interpretation. As such, knowledge is said to be found directly in the conscious experience of an individual of the world as we engage in it.

In the same vein Edmund Husserl (<http://www.iep.utm.edu/husspemb/>), founder of modern Phenomenology, contended that truth can only be obtained through direct experience. This means that people interpret messages and experiences by filtering the comprehension through their own values and understanding and therefore deciphering the world through this. In literal sense, the above proposition implies that an individual comes to know the world through participating, engaging and relating within it, and through assessment of the meaning behind it (Littlejohn & Foss et al, 2017). This process of participating, engaging, relating and assessing the meaning behind direct experience requires one's conscious attention of the direct experience of the world. In other words, truth, in the Phenomenological Tradition of Communication Theory, can only be discovered by consciously comprehending, understanding and deciphering the world as we experience it and give it meaning. This is why the process of interpretation is at the central point of Phenomenological Tradition, and Littlejohn & Foss et al, 2017 state that interpretation of direct experience of the world is literally what forms the reality of the information or existence of an individual. Direct experience is therefore very important in the Phenomenological Tradition of Communication Theory, (Craig, 1999).

Similarly, Schutz (1970), in his description of social Phenomenology he argues that it relates to Husserl's thought of social world. He states that social Phenomenology is concerned with the way in which people grasp the consciousness and attempt to understand the world from the perspective of an ordinary person. He further argued that the way human beings attached meaning to the outside world was not purely an individual process but that human action consisted of establishing or interpreting meanings. The above assertion implies that reality is socially constructed by knowledge and that social reality is not a social fact but it is produced and communicated, and its meaning is derived through systems of communication.

Schutz's (1970) position is that social Phenomenology imply that people's everyday life is interpreted through a stock of knowledge including meanings, categories and constructs. This means that the objects of the world are accessible to people only in so far as they mean differently to different people.

Schutz (1970) argues that the reciprocity of perspectives and mutual understanding and communication is made possible through the construct of inter-subjectivity. He argues that an inter-subjective world is not a private world but a common world to all. Thus, an inter-subjective world exists because people live in it as individuals among others who are bound to each other through common influence and work, understanding others and at the same time being understood by others. He contends that the common world exists in the vivid present at same time and same place with others. It is however, worthwhile to note that there are variations in the Phenomenological Tradition of Communication theory:

Classical phenomenology: According to Edmund Husserl, the founder of modern Phenomenology, truth can only be ascertained through direct, objective experience. This means that in order to arrive at truth through conscious attention, people must suspend their categories of thinking and habits of seeing in order to experience the thing as they really are. In other words, the world can be experienced without the knower bringing his or her own categories to bear on the process.

Phenomenology of perception: According to Merleau-Ponty, Phenomenology of perception is a realm of Phenomenology, as a subjective experience. Thus, the human being is a unified mind-body who creates meaning in the world. As such people give meaning to the things in the world and any Phenomenological experience is necessarily a subjective one.

Hermeneutic phenomenology: According to Martin Heidegger, the reality of something is not known by careful analysis or reduction but by natural experience, which is created by the use of language in everyday life. Communication, in other words, is the vehicle by which meaning is assigned to experience. This means that in communication, one works out new ways of seeing the world. Ones' speech affects one's thoughts and that of the other and in turn create new meanings.

From the discussion above, I surmise that the Phenomenological Tradition focuses on the experience of self and the other through dialogue, and this is what this study aim to surface in order to define the action of farmers. The Phenomenological Tradition of Communication Theory is suited to achieve this because it focuses on an intentional analysis of everyday life from the person actually experiencing it. As a Phenomenologist, I was interested to explore the way farmers view climate smart agriculture and the way they define the phenomenon of participation and non-participation. The Phenomenological Tradition of Communication Theory ensured that the subjective experiences were the Phenomenological data in this study. I focused on stories of individual farmers which were more definitive in order to surface the farmer's views on climate smart agriculture and the phenomenon of participation and non-participation.

Research Questions

- 1. What are the views of farmers in Climate Smart Agriculture?
- 2. How do their views define participation and non-participation in climate smart agriculture?

The above questions were important towards surfacing the views of farmers from their discursive community using their in-depth experiences including narratives and conversations concerning climate smart agriculture, and in explaining the meaning of the phenomenon of participation and non-participation in climate smart agriculture.

Chapter Two

REVIEW OF LITERATURE

Risk Communication

This study arises from climate change risks where climate smart agriculture is experienced as a risk-based option in risk environments. Climate smart agriculture is deemed by many as an option for providing potential benefits of crop yield in times of climate change risk. Risk communication therefore is the vehicle through which climate smart agriculture, like other possible options, are communicated to farmers. Thus, studies in risk communication emerged to show the usefulness of communication in times of risk in order to inform communities on potential and existing risks on their existence so that they can take decisions.

Studies on Risk Communication

The emergence of Risk communication dates to the 1980s when the Congressional action in the United States of America (USA) followed a series of large chemical accidents which prompted the government to embark on supporting research on hazardous material incidents that affected people between 1980 and 1985, (Falkenberry, 1995). A number of researches were conducted and formed a basis upon which the government of the United States (US) passed a legislation in mid-1980 to include laws for the Emergency Planning and Community Right-to-Know

Act, and Section three of The Superfund Amendments and Re-authorization Act that obligated companies dealing with chemicals to inform communities about the type and quantities of chemicals manufactured, stored, transported and emitted in each community, (Palanchar, 2008). As a result of this development, interest from among communication researchers began to increase with an urge to find out how communication could be made effective in time of risks. This interest opened the way into the body of risk communication research.

Thus, Baruch Fischhoff (2012), among others, pioneered research in Risk communication where he identified seven evolutionary stages of Risk communication namely: getting the numbers right; tell the public what the numbers mean; explain what the numbers mean; show the public they have accepted similar risks before; explain how risk benefits outweigh the costs; treat the publics with respect; make the publics to partner with the communicators; and do all the above. In his research, Fischhoff (2012) like other researchers, emphasized that effective risk communication must consider the way the publics provide meaning to risks which are influenced by societal and cultural factors than focusing on science, (Adam & Van Loon, 2000). Other researchers added some factors that contributed to effective public warning communication. A review of Fischhoff's research study illustrated that historically, Risk communication research focused broadly on Organizational risks (when amid a crisis), reputational response and the success or failure of the Organisation in moving forward after the crisis rather than on how communication affected the public and their behaviours (Health & O'Hair, 2000).

Interpretational View of Risk Communication

Thus, Risk communication, was studied like other forms of communication, comprising a two way process which involve communicators and communities to exchange information on a particular risk. As such, most scholars provide a general and similar definition of Risk communication as a “process of exchanging information among interested parties about the nature, magnitude, significance or control of risk”, (Covello, 1992). Lang (2001) also describes risk communication in broad terms as any purposeful exchange of information about risks between interested parties. However, it is argued that risk communication is more than simply disseminating risk information because it combines components of conflict resolution, public participation, and two-way communication messages. Lang (2001) states that the ultimate goal of risk communication is to assist stakeholders and the public in understanding the rationale of a risk-based decision, and to help all affected parties or groups of people to make informed choices about matters of concern to them. These studies show that the whole communication including information source and channel features were biased towards cybernetic tradition.

Based on agriculture communication, Smit (2001) argues that risk communication is an adaptation option where the content of the communication process is tailored according to the interests and concerns of different social and cultural groups or sub-cultures of a community. This is so because more people tend to have more trust in risk communication if the message is in line with their cultural preferences (Renn, 2006). Below is the description of the social groups, illustrating how the communication process is tailored according to people’s interests and their concerns:

Individualist prototype: This group of people perceives risk taking as an opportunity to succeed in a competitive environment like the market and to pursue their personal goals. As such, people in this group are less concerned about equity issues and would like the government to refrain from extensive regulation or risk management efforts.

Egalitarian prototype: This group of people emphasize cooperation and equality rather than competition and freedom. When facing risks, they tend to focus on long-term effects of human activities and are more likely to abandon an activity, even if they perceive it beneficial to them, than to take chances. They are therefore particularly concerned about equity.

Hierarchists prototype: This group of people rely on rules and procedures to cope with uncertainty. They find that if risks are managed by capable institutions, they have been provided for with all eventualities and have no need to worry about risks. They believe in the effectiveness of organizational skills and practices. As such, they regard a problem as solved when a procedure to deal with its institutional management is in place.

Fatalists: This group of people tend to trust only themselves, are often confused about risk issues, and are likely to take high risks for themselves, but oppose any risk that they feel is imposed on them. At the same time, however, they see life as a lottery and are often unable to link harm to a concrete cause.

Such classification of social groups of people in a community is important because it illustrates that not only do people have different levels of acceptance but they also encounter a diversity of information as a result of communication taking place, which they process and digest and prompt their sense of reasoning and construct from them their world views and meaning of things which inform their choice of action. These studies illustrate that individuals who are more cognitively complex in their perceptions of others have the mental capacity to construct sophisticated message plans that pursue multiple goals and can achieve their desired choice of action. Thus, the above studies were biased towards socio-psychological tradition.

More studies of Risk communication research of 1990s and 2000s brought in a new development of the mental models' approach which provided a framework to understand preexisting public observations of less-familiar and higher-dread risks while illustrating key event characteristics impacting risks and behaviors based on Slovic's Psychometric Paradigm. The paradigm sought to identify and characterize risks for researchers to have a baseline understanding of how their target audience might view, understand and respond to risks (Risk perception). This in turn provided a basis for improving dialogue with the public (Risk communicators) prior to an event, (Slovic, 2000):

Lower Familiarity / Lower Dread: These are risk events or occurrences that are viewed as rare and unlikely to be life threatening or causing injuries. Examples of such risk events include rare agriculture diseases like foot-and-mouth disease. The risks in such events present themselves as

not immediately life threatening but seem to be delayed and manifest over a period of months or years. In some cases, the understanding of risk is greater than the actual risk in which case individuals tend to over-react to those risks that are hard to understand involuntary and invisible despite evidence and re-assurance by experts that a particular risk is minimal or unlikely, (Rogers et al, 2007).

Lower Familiarity / Higher Dread: These are risk events that pose significant communication challenge in communicating to the public. Such risk event examples are hazards that give a challenge for individuals and publics to interpret, respond to and prepare for, and they include International risks like Terrorism and Chemical, Biological, Radiological and Nuclear (CBRN) because they involve the intentions of other people. Such events have lower familiarity – higher dread risk characteristics because their effects may be delayed, unknown and can remain in the environment for years, (Sidell, 1998).

Higher Familiarity / Lower Dread: These are risk events where the public is likely to have a general understanding of the risk characteristics through either personal experience or media coverage. Effects of these risks are more observable, easier to understand and shorter term. It is also possible to provide warnings for these risks, making the public more likely to respond. At the same time, these risks contain dread attributes of being involuntary and having the potential to cause fatalities. Examples of such risk events include natural disasters like earthquakes, tornados and floods.

Higher Familiarity / Higher Dread: These are risk events that are life threatening, less observable and lack warning but the public may have a greater understanding of them and the ability to comprehend them once they occur. Unlike CBRN devices, non CBRN like the IED, cause less fear as their effects are not delayed and their characteristics are easier to understand by the public, (Burns, 2007), making their familiarity comparatively higher. Higher dread risk events have enormous ripple effects that extend beyond the immediate direct damage to affect other victims. Examples of higher familiarity – higher dread event risks are IED terrorist attack, Pandemic flu among others.

The interpretation of the studies on risks and behaviours above is primarily on an individual than on the collective community level with the purpose to modify risk perceptions and risk attitudes towards protective risk behavior. In other words, the interpretation of risk communication above suggests that the risk-reducing behavior is determined by the result of a complex evaluation process and prior attitudes, and not just by communicated messages. The above studies were also biased towards socio-psychological tradition.

Risk Communication Models

In the studies of Risk Communication, however, there are also theories and models that are used to describe various interacting agents in order to provide a broad and more in-depth picture of experiences requiring risk communication. Below is a review of three main theories and models that apply to risk communication. They include; the Crisis and Emergency Risk

Communication (CERC) model, the Situational Theory of Publics (STP) and the Heuristic-Systematic Model (HSM), and are discussed below:

Crisis and Emergency Risk communication Model (CERC): This model, established after the 9th September 2011 (9/11) attacks in the US and after the Anthrax attacks in 2001, provides a set of strategies and suggestions for communication. In most cases, CERC supports to increase effective responses and to reduce harm in pre-crisis communication. Reynolds et al (2002) suggests that CERC model is good in countering and avoiding rumors; in involving and engaging the audiences and responding when containing criticisms of response efforts.

Situational Theory of Publics (STP): The aim of the STP, according to Grunig (2003) is to assist Organizations to identify who should be the publics and how those publics engage in communication behaviors. There are three main elements in STP which are: Problem recognition which involve problem detection with no immediate solution; Constraint recognition which involve identification of obstacles to finding a solution; and the level of involvement which imply the extent of connection to the problem, (Grunig, 2011). It is therefore argued that when all these elements are taken together, they can determine whether people will process information and stop, or they will actively seek for more information. Kim and Grunig (2011) reveal that the Situational Theory of Publics has, over time, been expanded in the Situational Theory of Problem solving by including a variable of communication action in problem solving involving a potential problem-solver, increasing active or passive information seeking, selecting and giving. Thus, Aldoory and Sha (2007) argue that the Situational Theory of Publics offers information which is useful in understanding the reason the publics

communicate and when they are most likely to do so, and acknowledge further that the problem recognition and the level of involvement can be influenced by perceived shared experience with public communicators such as spokesperson and their messages.

Heuristic-Systematic Model: This model allows communicators to see and understand the connections between a person's desire for accurate and enough information and the motivation for processing that information (Griffin et al, 2002). This is different from Crisis Emergency Risk Communication (CERC) and Situation Theory of the Publics (STP) which help communicators to predict and explain the behaviors of the publics. Thus, the Heuristic part of the model looks at how the public use superficial cues such as the use of color, visuals or identify the source to process the information. On the other hand, the systematic part of the model looks at how the publics comprehensively analyze information to understand it; and the overall Heuristic-Systematic model argues that the publics will use superficial cues and comprehensive strategies depending on the situation. To illustrate the above assumption, Trumbo (2002) used three case studies to investigate suspected cancer clusters in individuals and found that; superficial cues are associated with a lower evaluation of risk; and publics who focus on message credibility instead of message content tend to assume that there is a decreased importance of the risk presented. In addition, being confident in one's intellectual abilities is a good predictor of using shortcuts to make risk-based decisions. Thus, Risk communication with knowledge of public's processing abilities and interest can again adapt messages and determine how to best present complicated information to the public.

Deliberative Process Model: Pidgeon et al (2003) argues that the model goes beyond predicting public's behaviors and motivations for processing risk messages by offering guidance to communication development based on the understanding of what is required to create and sustain an atmosphere of tolerance to plural view-points which are legitimate. The model consist of three main steps towards understanding the areas of divergences and potential for convergence among stakeholders and publics. The first step is elicitation of values and criteria by stakeholder groups. The second step is provision of performance profiles for each policy option by experts. The third step is evaluation and design of policies by a random sample of citizens. Thus, by applying this process, one can inform risk communication messages to broaden the public base of consensus, acceptability and understanding of a risk. According to Renn (2003), Deliberative process does not eliminate the prospects of perceived risk increasing (also known as Risk amplification) but provides a platform of mutual exchange of arguments. Other studies, however, have demonstrated that deliberative process can also identify potential perceived risks before they are regarded by the public as risk issues and become highly stigmatized by the media and other social groups, (Sheppard & Janoske, 2012). Thus, generally, the deliberative process if conducted before the risk events, helps in setting the desired perception conditions through Risk communication.

The theoretical models above show traits of complex perceptions of others and mental capacity to construct sophisticated message plans that pursue own individual goals. The models possess traits related to socio-psychological processes and as such they are biased towards socio-psychological tradition.

The Gap in the understanding of the Concept of Risk Communication

The above studies suggest that there have not been studies on Risk communication conducted within the Phenomenological Tradition of Communication Theory that explore the views of farmers' experience and describe the phenomenon of participation and non-participation in climate smart agriculture. This study is therefore important as it will surface the views of farmers in climate smart agriculture and define the meaning of participation and non-participation in climate smart agriculture within the framework of risk communication. The concept of risk communication has particularly been chosen because climate change is a risk posing factor such that communities are implored to participate in climate smart agriculture to minimize the effects of climate change on their existence. However, their participation has been minimal.

Chapter Three

METHODOLOGY

This research study is grounded in the Phenomenological Tradition of qualitative methodology whose focus was to understand the views of farmers on climate smart agriculture through their real lived experiences, and to explain the meaning of the phenomenon of non-participation in climate smart agriculture. Phenomenological method is a qualitative research approach that tries to understand the 'whole of' the phenomenon (Heidegger, 1953/1996). For this reason, I used Phenomenological qualitative research approach because I required to understanding the views of farmers in climate smart agriculture and to explain the meaning of participation and non-participation by exploring the real lived experiences of farmers. In addition, the Phenomenological qualitative research approach provided more in-depth understanding of the experience of farmers in like manner scholars argue that, Phenomenological research seeks to explain how individuals construct meaning of the human experience (Moerer-Urdahl & Creswell, 2004).

In this study, I employed the research design that was woven by the tenets of phenomenology in order to ensure that appropriate representation of the lived experiences of farmers were explored and understood. Moustakas (1994) argues that demonstrating the essence of the participants' perspective improves the understanding of the phenomenon. I used Phenomenological Tradition of qualitative methodology to focus on the experience of the farmers on climate smart agriculture in order to understand the stories concerning the views of farmers and the meaning they

give to participation and non-participation. I prioritized the discursive community of farmers who conversed their lived experience through narratives and expressions.

In order to understand the whole of the farmers' experience, I took time to understand the context in which farmers were interacting and making sense of climate smart agriculture and including their views on climate smart agriculture and the way they provided meaning and explanation to the Phenomenon of participation and non-participation in climate smart agriculture.

I observed farmers how they conducted their activities in their daily farming lives, and how they participated in the extended conversations and in-depth discussions among themselves. I identified farmers who participated in the study using purposive technique so that the results had targeted and meaningful explanations.

Because I based the study on exploring the lived experiences of farmers and on engaging their active minds, new knowledge was formed (Rudestam & Newton). Schroder et al. (2003 p. 30) states that: "Research involving qualitative method constructs records by employing words and images in order to register and interpret the salient verbal and visual features, manifest and latent, of communication process, and at the same time to categorize them into different types", (Schroder et al. 2003 p. 30). I used a variety of empirical materials like farmers' personal experiences and life stories that described routine and successful moments and views and meanings of the

experience of climate smart agriculture in individual farmer's lives. As a result, a product was a collage of the views of climate smart agriculture and an understanding, description, meaning and explanation of the Phenomenon of participation and non-participation in Climate Smart Agriculture.

The Study Site - Zambia

I conducted the study in Zambia. The country is a landlocked country and is situated in the tropical south-central part of Africa. Zambia has a total area of 752,612 km², and lies between 8° and 18° south latitudes and longitudes 22° and 34° east, (CSO, 2015). The country borders Zimbabwe, Botswana, Namibia in the South, Angola in the West, Democratic Republic of the Congo (DRC) and Tanzania in the North, and Malawi and Mozambique in the East.

The Population: The country is politically divided into a total of ten administrative provinces, 103 districts, and 1, 421 wards which are used for sub-district administration and decision-making. There are about 13.1 million people in Zambia, (CSO. 2010), growing at about 2.8 percent per year.

The Climate: Most of the country has a temperate climate. Low-lying areas, such as the valleys of the Zambezi, Luangwa and Kafue Rivers. The shores of the country's lakes have the highest

temperatures in Zambia. The hottest months of the year are August through to October. The months of May to July are slightly cooler.

The Rainfall: The rainy season begins in the middle of November and lasts until April. Rainfall is generally highest in the northern parts of Zambia and decreases from north to south. Climate change, however, coupled with environmental degradation along the river valleys and highlands of Zambia's southern region has intensified food insecurity and loss of viable livelihoods. Soil management practices for climate smart agriculture is the main option and is aimed at giving hope of food security to people along this part of Zambia especially, the southern region.

The Rivers: Most of the country's streams ultimately drain into the Indian Ocean through the Zambezi River and its main tributaries. The Zambezi River is the longest river in Zambia with a total length of 2,735 kilometers. The river offers tremendous agricultural and economic benefits for the millions of people living along its basin. The river also inhabits some of the most evident vulnerability in sub-Saharan Africa.

Agro-Ecological Zones: Zambia is broadly divided into three agro-ecological regions namely: the low-potential, semi-arid, arid plains and valleys; high-potential plateaus, and the northern high-rainfall areas.

Region I: Region-1 consist of the southern part stretching to the east along the Zambezi and Luangwa valleys. The area sits on a valley and plains less than 1,000 meters above sea level with

major rivers passing through it. Because of poor, sandy soils, the region has limited production potential for agriculture. The growing season is short, annual rainfall is less than 800 mm per annum, and temperatures tend to be higher than elsewhere in the country. These conditions are most suitable for subsistence farming of drought-tolerant, short-season crops such as pearl millet, sorghum, sesame, and cotton. Maize production potential is low, but households grow it as it is the most preferred staple food. Landholdings are low, but conditions are favorable for keeping small ruminants, mainly goats. The valleys are a habitat for Tsetse flies, especially in areas with national parks, which limits the keeping of cattle. Livelihoods in the region emphasize cereal production, fishing along main rivers, and tourism in parks and lakes located within the region. The zones in this region are prone to droughts and flooding, resulting in significant variation in agricultural production. The quantity and quality of market infrastructure and general physical access within the zone are generally less well developed than in other parts of the country.

Region II: Region II crosses the centre of the country from west to east with plains, plateaus, and a mountain range. Altitudes range from 1000-1400 meters above sea level. The region receives about 800-1000 mm of rainfall and has a 120-160 day growing season, which supports growth of medium- and long-term crop varieties. This agro-ecological zone is divided into two namely; Region IIa and Region IIb.

Region IIa: The central, southern and eastern plateaus are considered to have the best agricultural potential in the country. The land is suitable for growing of diversified base of rain-fed food and cash crops and livestock production. Livelihoods in this part of the region are dominated by cereal, cash

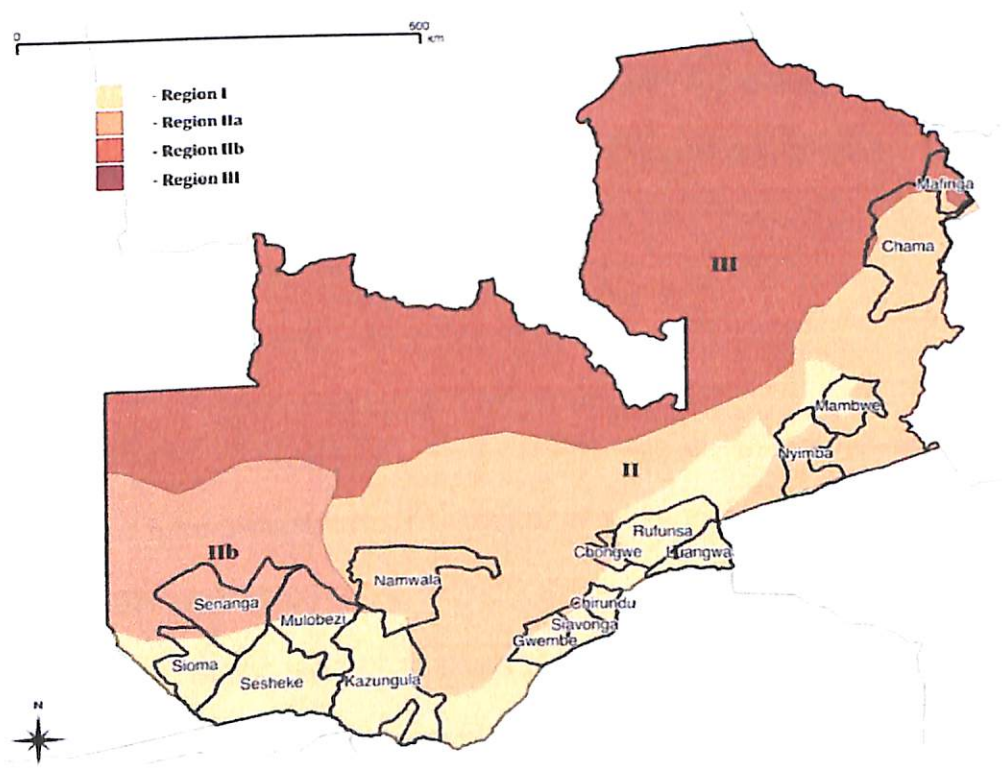
crop, and livestock production. The soils are fertile and support the production of maize, tobacco, cotton, wheat, soybean, and groundnut, which are usually produced in surplus. While most households practice relatively more traditional, subsistence, rain-fed production techniques, commercial farming is widespread in this area. The presence of abundant, perennial water sources enables irrigation, particularly in commercial farming areas, which further increases production potential of the zones.

Region IIb: Region IIb is characterized by semi-arid plains due to differences in soils between Region IIa and Region IIb. The soils in Region IIb are mostly sandy and less fertile with high temperatures that reduce production potential for maize. The Zambezi River and surrounding plains are major features in the region, providing fishing opportunities and wetlands suitable for rice production. The poor soils and high temperatures are also suitable for cassava production. The zone is prone to flooding and livestock diseases. The market infrastructure is poorly developed and characterized by a poor road network and undeveloped water transport across Zambezi River connecting most areas with main markets.

Region III: This agro-ecological region lies in the northern parts of Zambia bordering Angola, DRC and Tanzania, and is characterized by high rainfall. It consists of plateaus punctuated by hills and mountains ranging between 1000-1500 meters above sea level. The soils are moderately fertile with occurrences of strong acidic soils in some parts that are moderately suitable for production of all types of cereals, legumes, tubers, and cassava. The high rainfall (>1000mm per year) and long growing season of over 160 days makes coffee, sugar cane, rice, and pineapple cultivation possible.

The mineral-rich copper belt in this region drives a strong labor and trade economy around the mining areas. The vast forest resources and plantations also contribute to an active timber industry. The population is most concentrated around the copper belt mining areas. The border areas provide opportunities for cross-border trade. A number of lakes located in the eastern part of the region offer opportunities for fishing. Livelihoods in this region vary, but depend primarily on cereal and cassava production, mining, employment, and trade and fishing.

Figure 2: Zambia’s Agro-Ecological Regions



Source: https://www.researchgate.net/figure/Agroecological-regions-of-Zambia_fig1_237290523

The Economy: Zambia's economy is heavily dependent on mining. The country has some of the largest copper and cobalt deposits in the world. However, agriculture is the major source of livelihoods for the majority of rural population, who constitute 65 percent (1,631,000 households) of the population. The sector has great growth potential with over 50 percent of the total 39 million hectares of land classified as medium-to-high potential for crop production.

Most farmers in the region, especially peasant farmers rely on rain-fed crops. Maize is the commonest crop grown in most parts of the country and is followed by cassava, millet and sorghum. In addition, groundnuts, beans, sweet potatoes and rice are also grown as rain-fed crops, (Chapoto et Chisanga 2016). Vegetable gardening, mainly along streams, dams and rivers is practiced by peasant farmers throughout the year.

Less than half of arable land is cultivated due to limited investment in mechanized agriculture. Most agricultural production for subsistence uses traditional technology. With relatively favorable climatic conditions coupled with good agriculture policy, Zambia has become a net exporter of food, particularly maize. Maize marketing takes place both through private traders and the Food Reserve Agency (FRA). Livestock rearing provides a source of food and income for households with slightly more than 50 percent of households owning different types of livestock including cattle, goats, pigs, or chickens. More than 66 percent of the population is employed in the agriculture, forestry, and fisheries sectors. In addition to agriculture, other common sources of food and income are related to natural resource exploitation including, timber, charcoal production, fishing, honey production,

hunting, and mining. Overall gains in agriculture output, however, are not well correlated with reductions in poverty. About 60 percent of the total population lives below the national poverty line, with almost 80 percent of the rural population below the national poverty line.

Kazungula District of Zambia: Kazungula district is located 17° 47' 0" South, and 25° 16' 0" East and is 1,064m above sea level. It is one of the thirteen districts located in Southern Province of Zambia about 259 mi (or 416 km) south-west of Lusaka, the country's capital. The district covers an area of 16,835 km² making it the largest district in the province, and shares International borders with Zimbabwe on the South-East, Botswana and Namibia on South-West. The District stretches along the longest river in southern Africa, the Zambezi River and share boundaries with Mwandi District to the West, Mulobezi, Kaoma, Itezhi-Tezhi and Namwala Districts to the North West, Zimba and Kalomo to the North. Part of the district's landscape towards the Zambezi River is dominated by steep slopes of the Zambezi escarpment, (GRZ, 2006 b).

Furthermore, Kazungula district is located in Zambia's agro-ecological region-I which has poor, sandy soils, with limited production potential for agriculture. The zones in this region are prone to droughts and flooding, resulting in significant variation in agricultural production while the growing season is short and is suitable for subsistence farming of drought-tolerant and short-season crops.

Population: The district has a total population of 120, 231 (CSO, 2010) and 20,417 households with a population density of six persons per square kilometre and a population growth of 3.7%. The district has 95% of the people living in rural areas making it a very rural district with about 66% of the population living below the poverty datum line, (CSO, 2010).

Local Economy: Because the district is very rural with little economic opportunities, most of the population (66%) do not receive any form of income (CSO 2010). They are dependent on peasant and subsistence farming and sparsely on cross-border trading and fishing. As such, the main economic sector for many households in Kazungula is agriculture.

Agriculture and Energy: Most of the people in Kazungula district are small-scale farmers who depend mainly on rain-fed farming of a wide range of crops such as maize, sorghum, millet, groundnuts and cotton. However, the majority of farmers are affected by the effects of climate change and the most affected are peasant farmers. Most households use wood fuel (firewood and charcoal) as the source of energy in the district, accounting for almost 80 per cent of total energy consumption. However, the annual loss of forest cover was estimated at 1.2 per cent due to land clearing for agricultural use rather than energy purposes, (CSO 2010).

In recent times, the local authority have expressed concern that the district has faced challenges of illegal cutting down of trees resulting in floods and droughts among others. It is for this reason that stakeholders are implored to work together with government to combat the vice by carrying out massive sensitization campaign in the communities to educate the masses on the importance of preserving the trees and avoid encroaching into the forest for tree cutting, (<http://www.lusakavoice.com/2013/01/30/kazungula-district-faces-climate-change-adaptation/>).

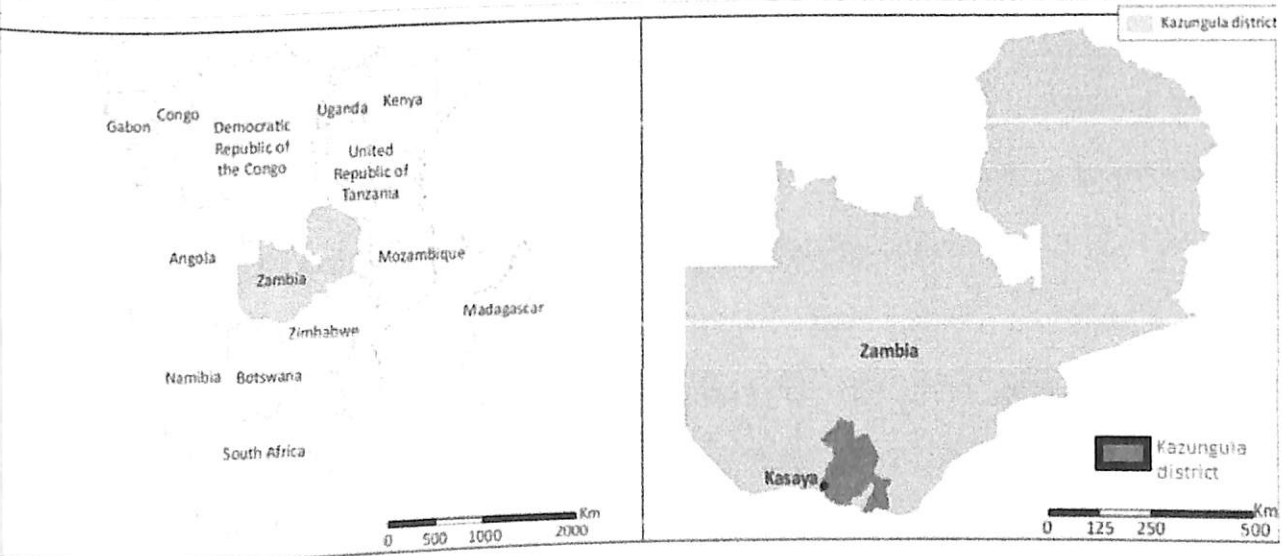
Temperature: Kazungula has a local steppe climate with little rainfall throughout the year averaging about 655 mm of precipitation annually. The average annual temperature in Kazungula is about 22.9 °C. Precipitation is the lowest in July, with an average of 0 mm. The greatest amount of precipitation occurs in January, with an average of 162 mm. October is the hottest month of the year with an average temperature of 27.1 °C. The lowest average temperatures in the year occur in June, when it is around 17.4 °C, (<http://www.lusakavoice.com/2013/01/30/kazungula-district-faces-climate-change-adaptation/>).

Governance and Traditional Leadership: The district has one (1) parliamentary constituency with fourteen (14) political wards namely; Mandia with 9,246 people, Sikaunzwe with 7,542 people, Sekute with 3,228 people, Ngwezi with 10,182 people, Moomba with 2,425 people, Musokotwane with 4,960 people, Simango with 4,745 people, Kanchele with 10,860 people, Katapazi with 6,410 people, Mukuni with 8,862 people, Nyawa with 11,075 people, Nguba with 11,393 people, Kauwe with 6,539 people and Chooma with 7,264 people. Nguba ward is the most populated ward in the

district. Traditionally, the district is divided into five (5) chiefdoms namely: Chief Sekute, Chief Nyawa, Chief Musokotwane, Chief Mukuni and Chief Moomba with Toka Leya, Lozi and Tonga as the main tribes in the district.

Kasaya Village: The study was particularly conducted in Kasaya village in Sikaunzwe ward which has a population of 7,542 people. The area has in the past four decades experienced an increase in the frequency of floods and droughts as a result of climate change, as well as changing rainfall patterns, with shorter rainy seasons and more intense rainfall (Funder et al, 2013). Kasaya village in Sikaunzwe Ward is located in Zone-I agro-ecological region of Zambia which is highly affected by the impacts of climate change. In recent years the area has suffered from an alternating pattern of droughts and floods often forcing people into seasonal migration and hugely disrupting people’s lives and livelihoods as they are unable to attend to their crops.

Figure 3: Location of Kazungula district in Zambia, Africa



Source: <https://www.google.com/search?q=Map+of+Kazungula+district&tbm=>

Participants of the Study

Rudestam and Newton (2007) argue that most phenomenological studies deal with a relatively small number of participants, and they state that ten or fewer participants may be appropriate. In this research study therefore I purposively identified a total of two (2) peasant farmers from the farming block. I observed the farmers as they conducted their daily farming activities and as they conducted conversations among themselves during farming activities. I also conducted conversations with them in order to gain deeper meaning of their actions which were not so obvious to me but were relevant towards explanation of their actions to concretize their views on climate smart agriculture. This process assisted me, as a researcher, to avoid guessing on the meaning of their actions and thoughts.

Process of Identification of Participants

I used the objective of the research study, to guide the process of identifying study participants, Bryman (2008 p. 458). I purposively identified two (2) farmers to explore and surface the depth of their thoughts, nuances, and their lived realities concerning climate smart agriculture and the explanation they gave to participation and non-participation in climate smart agriculture. Among the two farmers I identified, one was practicing climate smart agriculture and the other was not practicing climate smart agriculture.

I chose purposive sampling because according to Ritchie et al., (2003) purposive sampling approach is a strategy where members are chosen to represent a location or type in relation to the criterion. It is for this reason that it assisted in drawing the parameters where the study participants were obtained. The parameters assisted me to define the appropriate farmers to be involved in the study, namely, one who practiced climate smart agriculture and another who was not involved in climate smart agriculture.

Data Gathering Tools

Field Visits and Observations: I undertook several field visits to the community of farmers in order to observe them in their community while they undertook their normal daily farming activities including the way they prepared their land for planting and the way they planted their crops including weeding activities and while they talked to their families, friends and other community members and fellow farmers. As a researcher, I kept a journal to record the observations and the conversations of the farmers among themselves and with me as I sought clarifications on their actions and stories. A journal assisted me to remember all that I observed, heard and experienced with the farmers in their community and on their farms.

The observations were important because they enabled me to gain familiarity with the way farmers lived their experiences and the way they established their priorities and understanding the sense they rendered to climate smart agriculture including the way they explained participation

and non-participation, while my conversations with the farmers provided clarity in the manner farmers lived their experiences.

Open-ended Interviews: I also conducted general and open-ended questions with the farmers in order to further open conversations with farmers to obtain detailed explanation and clarity of farmer's actions in the community and on the farm. I drafted the open ended questions in order to probe on ambiguous actions of farmers that required clarity. I recorded the conversations of farmers among themselves, with friends and families in a journal for ease of remembering including analysis. I used my listening and observation skill I learnt from my extension work, to capture the stories they told amongst themselves and the actions they performed on their farm-fields. Rudestam and Newton (2007) argue that in most Phenomenological studies, the interviewer interacts with farmers for a relatively long period of time and finds ample time to probe and gather detailed information from the farmers.

Design of Interview Format

I designed the open-ended questions in such a way that the questions provided guidance of topics or subject areas within which I, as a researcher, was free to explore, probe and ask in reference to the perceived actions of the farmers in the community and on the farm. The open ended questions assisted me, the researcher, to solicit for more information on the actions of the

farmers which were pertinent and relevant to the study. However, I used my facilitation skill I learnt from my extension work, to encourage farmers not to diverge from the topic of discussion during the discussions or conversations while I sort clarifications of the meaning of their actions.

Data Set

Transcribed Data Farmer-A: Did not Practice Climate Smart Agriculture in Kazungula District of Zambia

"My name is Peter Mulongo. I have a family of seven children and a wife. I have lived here in Naluja ward since my birth, 35 years ago. My source of livelihood is farming. I own a farm of ten (10) hectares. I grow mainly maize crop for both eating and selling. I earn money from the yields I produce to send my children to school and to buy other household needs. I also own cattle mainly for use to cultivate my farm land and sometimes for sale to earn money. I am well acquainted with knowledge about climate Smart Agriculture and the first time I was exposed to such knowledge was in 2014. By that time, I was already a farmer. I use traditional method of cultivation that include slash and burn of farm residues, tilling of the whole field using cattle and plough, and I use the same field over and over again without rotational farming because I want to use (cultivate) the entire farm land so that I can have enough yield for use by my family. I grow maize and vegetables because I can sell maize and vegetables easily to earn money. Because of my experience in farming, I was selected by the Agriculture Extension Officer together with other community farmers to undergo a community training in climate smart

agriculture. I was told that conservation farming had a lot of benefits on the farm. I was told that conservation farming would increase my harvest and make me earn more money than I am earning with my traditional farming method. I was also told that conservation farming would help me manage the soil fertility on my farm land. Because of the benefits that conservation farming had on the farm, I was enticed to start thinking about learning the agriculture innovation. I was also told that the reason for being chosen to undergo an agriculture training was that I can become one of the lead farmers who would start practicing conservation farming and start training other people or follower farmers in the community to use conservation farming. I must say that before the training, I had no knowledge of conservation farming. I did not know what conservation farming meant neither did I know how it was practiced on the farm. As such, I became too inquisitive to learn about it and I joined a few other farmers to become a learner. During the training, a lot was taught through practical training that lasted for about three months in the village. A demonstration field or farm land of about two hectares was constructed. Vegetable seeds and maize were planted to show case the farming innovation especially in regard to soil management practices. On the demonstration farm plot, ways of minimizing the disruption of soil structure, composition and natural diversity were demonstrated by limiting portions of tilling. This was referred to as zero tillage because it ensured that very little soil was disturbed. Additionally, ways to ensure that the soil was ever covered by organic residues from the previous crops was demonstrated. We were taught that we did not need to remove the maize stalks or the residues from the crops after harvest but rather leave them on the farm so that the soil is ever covered. To this end, we were discouraged to let our cattle in the fields after harvest because cattle would eat all the residues on the farm and leave the land bare. We were advised to take our cattle far away from the fields

for feeding so that our farm lands had the required farm residues. We were further shown how to grow different types of crops on one piece of land. However, to realize considerable yield from mixed farming, one needed to use a relatively bigger portion of land than would be used in a monoculture method. Similarly, we were discouraged to grow same crops on one piece of land over and over again but rather to rotate crops. For crop rotation, we were given the same advice that we needed to have a considerable bigger portion of farm land in order to rotate the crops properly and have enough yields for our families. All these practices were said to be of assistance towards making the soil fertile and that consistent practice of these methods preserved the fertility of the soil. As farmers, we were assured that if we used such methods on our farms, we were going to be realizing greater yields each year because we are returning the fertility of the soil each time we used it. The agriculture extension officer warned us that the soil was the greatest asset any farmer had because without it no crops could produce effectively. As such we needed to take care of it through use of farming practices such as conservation farming or climate smart agriculture. After the demonstration training, I was made to become a lead farmer. This meant that I had to begin practicing all that I learnt on my farm so that other farmers in the community who had no chance to attend the initial training can copy from me the new method of farming. When I started practicing conservation farming method or climate smart agriculture on my farm land, I discovered that I generally needed more land than I had in order to expand my field. I discovered that in order to have enough space for crop rotation, establishing of basins where to plant seed and intercropping of seed crops required me to clear more fresh land to increase my farm land. Additionally, not allowing my cattle to feed on my farm residue meant that I walk miles away from the village to fresh bushes to feed my animals. It was at this time that I started thinking that if all farmers were to increase the

size of their farm land and establish other grazing land for animals other than our individual farm lands, more fresh land will be invaded, and our community will no longer have fresh land for future generation. As you may know, grazing lands hardly have enough grass because all the grass tends to be eaten up leaving the land bare and susceptible to soil erosion. As a result, I started becoming apprehensive towards climate smart agriculture. I began to realize that the act of invading more fresh land was going against my deepest traditional belief of land preservation. In my Tonga tradition, especially those of us emanating from the **Gwembe** valley along the Zambezi River in the Southern part of Zambia, also known as **Simaamba Tonga**, there is a traditional ceremony called the **Lwiindi**. The ceremony is part of the larger **Lwiindi** ceremony celebrated by the Tonga people of Southern part of Zambia. It encompasses several ceremonies and rituals which are connected to praying for the rains. The ceremony which is predominantly a rain making ritual is celebrated annually around October and November when people begin to prepare for their fields. Apart from being a rain making ceremony, we also ask for the blessings from our ancestors for the fertility of the land. This is because we believe that without the blessings of our ancestors, the fertility of the land will be compromised. During this ceremony, our leaders or ritual performers, supplicate to our ancestors called **Mizimu** and our royal ancestors known as the **Mhodolo** for the fertility of the land and the good rains including good harvests for the following year. Traditionally, and in the olden days, the **Sikatongos** or Earth Priests were the officiants of this ceremony. Today, the chiefs have taken up the role of the earth priests and they usually perform this ritual. In other words, the chiefs are our earth priests or spiritual priests and cultural leaders with considerable influence. According to our tradition, the earth priests have the ability to call the rains and depending on their ability to call the rains, some earth priests command

more respect than others. Successful rain callers have control over larger communities. We also believe that the supreme source of all life (**Leza**), the Lords of the rain (**Basangu** or **Baami bamfula**), and the family ancestors (**Mizimu**) are the principal guardians of the land because the rains can help the land become fertile. Consequently, the earth priests have also the ability to control the fertility of the land. Our role as a community of the living and as individual **Tongas** is to ensure that the ecological well-being of the land is preserved and remains unadulterated from any foreign practices that can destroy it. The simple obligation of any Tonga person in the community is to ensure the well-being of the land. Although we have specific places in the community that carry significance sacredness, we believe that the whole of our land is sacred. We believe that the whole landscape along the Zambezi valley is sacred even though there are specific sacred places of spiritual powers including rain shrines where sacrifices are offered. Our land has an important message to the community for it symbolizes the importance of the earth and the powers inherent in nature. As such destroying the land by invading it through cutting down of trees, bushes and grass is disrespect and annoyance to the spiritual powers. This is why during the **Lwiindi** ritual, we offer supplications, to say sorry for the times we have not behaved well towards maintaining the ecological well-being of the land, to the Lords of the rain (**basangu**) and ultimately to the supreme source of all life (**Leza**) by offering ritual beers (**Kankata**) to the ancestors at the sacred groves (**Malende**). The supplications are based on our obedience to the **basangu** the previous year for preserving the land. Thus, if our conduct towards the well-being of the land was debauched in the last year, the spiritual forces will not hear our supplications this year because they are annoyed unless ritual beer is offered to appease the spirits. Droughts, famine, diseases and soil infertility are all signs that the spirits are not happy with our conduct towards land

*will be contributing to exerting more pressure on the natural and ecological well-being of our land and I will be contributing to the loss of our ancestral land because more natural trees will be cut down and grass cleared to pave way to crop cultivation, and grazing. In other words, in as much as conservation farming is said to have good benefits, I feel that it requires one to have a bigger portion of land to implement it so that crop rotation, intercropping and so on are exercised. To have a bigger portion of land means that I invade the natural land by destroying it and turning it into agriculture land. In the end, the natural well-being of the land of our ancestors will be completely invaded by agriculture activities of human beings. It should be noted on the contrary that through the **Lwlindi** traditional ceremony and its rituals of rain making and land preservation, we are obliged to protect the land against forces that compromise ecological harmony such as conservation farming. Otherwise, the whole of the community will face unexplained illnesses, including famine, diseases, drought and hunger. When you observe across the community, much of our land has very little natural vegetation. Most of the trees have been cut down to give way to agriculture activities. As a result, we face frequent droughts and loss of crops almost every year. Conservation farming has contributed to this trend because we are told to practice conservation farming which in turn make us cut down trees and clear natural bush to increase our farm sizes to satisfy our need to produce enough yield for consumption and for selling and to have new grazing land. As a result, even if we present our supplications or invoke the spiritual forces to give us rain it fails because we have not been obedient to the **basangu** the previous year. Our behavior towards land preservation has not been in tandem with the requirement of the family ancestors (**Mizimu**), the Lords of the rain (**Basangu** or **Baami bamfula**) and ultimately the supreme source of all life (**Leza**) who are the principal guardians of the land who*

demand from us a complete guardianship of the ecological well-being of our land. All the droughts and hunger we face are a signal that the spiritual forces are not happy with the way we have behaved towards land preservation. In conclusion, I strongly believe that conservation farming is in bigger part contributing to ecological mismanagement of the land. In other words, conservation farming puts us in a bad relationship with the spiritual powers who in turn react to us by way of bringing us drought, famine, diseases, soil infertility and hunger. That sort of a relationship has potential to bring us an eschatological crisis from which we cannot recover but perish. I believe that nature including trees are dwelling places of the spiritual forces and as such, we ought to respect it and ensure that we always live within our means without disturbing its growth," Farmer A.

Transcribed Data Farmer-B: Practiced Climate Smart Agriculture in Kazungula District of Zambia

"My name is Peter Syamutete. I am married and I have got three children. I have lived here in Naluja ward since my birth, 28 years ago. Farming is my main source of livelihood. I grow maize for both eating and selling. I own a farm of five hectares. I earn money from my produce and use the money to supplement on other household needs. I have ten cows which I use for ploughing my land. Before I learnt about climate smart agriculture, I used traditional ways of farming which involved ploughing of the entire field and making of ridges on which I planted seeds. I used to burn all the bushes on my farm when preparing the land for cultivation for cultivation. I also used to allow my animals to enter my farm land to feed on the crop residues after harvest. The residues proved to be

the cheaper food for animals because I could not send my herd of cattle to fend for food far away from my homestead for fear of either losing them to snake bites or getting stolen by cattle rustlers. I also used a small portion of land repeatedly without undertaking rotational cropping or intercropping of seed crops and I used chemical fertilizers quite a lot because the land was becoming less fertile. As years passed by, I noticed that the yield from my field began to lessen and I did not harvest as much as I needed.

In 2014, my way of farming started changing. This was when the Agriculture Extension Officer from our farming block came to my village and announced that he wanted to discuss with interested farmers on how to enhance the fertility of the soil so that we can have good crop yields from our farm lands. I got interested and I attended the meeting which lasted about two days. In the meeting there were several farmers from my community. The village chief also attended the meeting. After the meeting, the Agriculture extension officer organized a few of us to construct a demonstration field in the community where he could start demonstrating to us in a practical way how to implement soil management for climate smart agriculture. The demonstration on a farm plot, took approximately two to three months. Growing of various vegetables and legumes were demonstrated on a farm plot to show case how the soil can be managed to produce high yield. During the on-farm demonstration, the agriculture extension officer encouraged us to ask various questions pertaining to the growing of those crops. He also allowed us to participate in the on-farm tasks so that we get well acquainted and have a hands-on experience with the new agriculture method. During the on-farm demonstration, the agriculture extension officer showed us ways of preparing the farm land by implementing minimum or zero tillage which involved use of the Magoye Ripper and a special hoe for digging a hole or basin for planting in seeds; he showed us how to prepare and use

compost manure. According to him, compost manure was more preferred because it had no chemicals that would spoil the soil nutrients even when over used. He also showed us ways to intercrop and implementing rotational farming. According to the agriculture extension officer, monoculture and growing of seed crop on the same piece of land repeatedly, depletes soil nutrients and leads to soil infertility. We were also shown how to plant trees that are beneficial to soil fertility on the farm land. He stated that although trees planted in this way are not as big as the natural Mopani trees found in our area, they help to afforest or replace those cut down in the process of preparing the farm fields. He further cautioned us not to remove the farm residues or feed them to cattle from the previous crops on the farm but rather allow the residues to remain on the farm land. He demonstrated to us how to lay them on the surface of the soil so that they provide soil cover in a perfect manner. After all this demonstration of preparing the land for crop cultivation, seeds were planted and managed according to his lessons. The crops germinated and grew very healthy. In the end, I and the rest of the trainees observed that the demonstration field produced greater yields. As a result, we were all encouraged to replicate conservation method on our farm lands. I must mention that throughout this whole training process, our village chief fully participated. After the training, the Agriculture Extension Officer informed us that we were now the lead-farmers. Our role was to replicate what we learnt from the demonstration farm plot onto our own household farm plots so that the rest of the farmers in the village can see the benefit and get encouraged to use climate smart agriculture method in order to preserve the soil fertility in my community. He explained that once the community members observed the benefits, like we have observed from the demonstration farm plot, they will develop interest and approach us to learn how to prepare the land and manage the soil fertility. Then we can seize the

opportunity from their willingness to learn and teach them how to use the agriculture innovation. He stated that once they register willingness, we are supposed to take them through the hands-on learning process like he taught us. He emphasized to us that all those that would follow us with the desire to learn should be taught in a practical manner and be encouraged to take up practical tasks so that they are able to master the skills. The village chief was very excited, and he encouraged all of us to use the method because he was convinced that it protected the soil and the land from impoverishment and that it assisted in realizing increased crop yields. The chief pledged to take up a leading role and become a lead farmer in the village. The chief reminded everyone that as Tongas, we believe in the preservation of land and that conservation farming was one such way that can augment our belief of land and soil preservation. When I and my fellow lead farmers started practicing climate smart agriculture on our farm land, the village chief reminded us again that we have a traditional ceremony known as the **Lwiindi**. The **Lwiindi** traditional ceremony has a ritual of praying for the rains. Apart from being a rain making ceremony, we also ask for the blessings from our ancestors for the fertility of the land. As such, he told us that we needed to enjoin the agriculture innovation of conservation farming with the traditional ceremony. The chief being the community leader, ritual performer, as well as the leading lead-farmer, he will be supplicating to our ancestors (**the Mizimu**) and the royal ancestors (**the Mhodolo**) not only for the fertility of the land but also for good rains and harvests for the following year. He stated that only when we do this that the supreme source of all life (**Leza**), the Lords of the rain (**Basangu or Baami bamfula**), and the family ancestors (**Mizimu**) and the principal guardians of the land will help us control the fertility of the land and ensure that we have abundant yield the following year. He instructed us that every time we begin preparation of our individual farm land, we need to offer

supplications to our family ancestors (the Mizimu) within our families. He further instructed that without each family not being able to offer supplications, the family ancestors will not bless our family farm land and be able to realize greater yields the following year. If we did not live up to the demands of land preservation on our farm land the previous year, the family ancestors may not bless us with good yield in the coming year and we will have no good yield. Unless we offer supplications and feel sorry for our previous misconduct towards land the spiritual powers will forgive us and bless us with good yield.

He went on to emphasize that climate smart agriculture methods on their own cannot make the land fertile unless there are supplications made to cause the rains and make the land fertile. Similarly, even the seed for planting in our fields must be dedicated to our ancestors for blessing so that it does not pollute our soil. As such, each family had a duty to make family supplications before beginning preparing the farm land while the Lwiindi traditional ceremony remain the general ceremony and ritual for the entire community of the Tonga people. He reminded us that each family had different needs on the farm land. Owing to the fact that conservation farming generally required expanding land to have enough space for cultivation and also securing another land for grazing of animals, each family required to ask blessings for use of fresh land from the spiritual powers. As such he encouraged all of us to include in our supplications requests to use fresh land. Failure to do so, we will be annoying the spiritual powers who are the owners of the land and we will get punishment in form of infertile land and diseases within our families and clans. Following the advice of our chief, I attend the Lwiindi traditional ceremony each year to join the rest of the community in offering supplications to the supreme source of all life

(Leza), the Lords of the rain (Basangu or Baami bamfula), and the family ancestors (Mizimu) and the principal guardians of the land who will help us control the fertility of the land. By attending the Lwiindi ceremony, I feel I am part of those who will be blessed with good rain, soil fertility and abundant yield. When I return home to my village and before I and my family begin to prepare our farm land, we gather as a family and sometimes as a clan or extended family to call upon our family ancestors through family supplications, to bless us with good soil fertility and abundant yield. Additionally, I include in my supplications, requests to use fresh land whenever I needed to expand my farm size. This request is a way of asking for permission from the spiritual powers, the owner of the land, to use the land. Whenever I do this, I get confidence that whatever I do on the farm land, especially the fresh land I have expanded to, has full blessings from the spiritual powers. For sure, I get blessings for good fertility in the expanded farm land. However, even when I get the confidence and blessings, I have the duty not to exploit the fertility of the land but work to ensure that the land remains fertile. This is why I feel that conservation farming can assist me to live in harmony with the ecological well-being of our land. As such, since I started practicing conservation farming, I have always held family supplications to my family ancestors following the Lwiindi ceremony. Because of this, I have succeeded to produce excellent results that have marveled others in the community. I can safely say that now I cannot implement conservation farming in exclusion of our traditional ceremony, I feel secure and free to participate in climate smart agriculture for soil management. With this conviction, I gladly became a lead farmer who practices conservation farming. Currently, I have thirty lead farmers who I teach. Apart from that, my field is doing very well by producing enough crop yields. Thus, am sure that as long as the chief who is our leader, supplicates to the spiritual forces, our land is protected and I also proceed to enjoy

my family supplications to our family ancestors to ensure that climate smart agriculture helps me and my family enforce the fertility of the soil and the ecological well-being of my farm land by ensuring that I request for pardon for my previous miss-use of land, ask for good rains, ask for the blessings for good yield in the coming farming season and ask for use of fresh land. In summary, I say that in as much as conservation farming can jeopardize our relationship with the spiritual powers if we do not take into consideration requests for use of fresh land from the guardians of land, it can also improve our relationship with the spiritual powers if we are constantly in relationship with the spiritual powers through supplications for good rains, enriched land fertility and generally obedience to ecological well-being of nature,” Farmer B.

Qualitative Data Organization

As a researcher, I gathered information from the field through field observations and in-depth conversations and I transcribed and arranged it in a methodical way for easy access and reference during the coding stage. This was followed by the cutting and sorting technique. The cutting and sorting technique involved identifying quotes or expressions that seemed somehow important; also called exemplars, and then arranging the quotes or expressions in piles of things that go together, (Bernard & Ryan, 2010 p. 63).

Based on the information I gathered from the field, I sorted out the quotes and expressions of the farmers by arranging them into similar quotes and expressions and into piles. I gave each pile a name according to the themes I identified.

Qualitative Data Coding Process

As a researcher, I used two types of coding namely; theme codes and memos. Theme codes showed where the identified themes actually occurred in a text, while Memos were field notes about codes and contained running commentary as they were read through the texts, (Bernard and Ryan, 2010 p.76). Only when the transcribed conversations were organized, that I, as a researcher, made sense of the information from the available information using a code sheet. I then provided each theme with a short and detailed descriptive narration.

Qualitative Data Presentation and Display

As a researcher, I presented the findings in a logical and structured manner for easy of comprehension by readers. I also strove for objectivity in the way I presented the findings by taking into account necessary criticism. Criticism assisted me to recognize where I under-utilized and under-analyzed my data and where my presentation of findings was not logical and, in some cases,

incomplete. After the criticisms, my final presentation of the research findings was displayed in a complete and logical manner.

Plausibility of the Findings

In order to ensure plausibility of the findings of the study from the qualitative inquiry, I established versions of farmers’ personal experiences and views in relation to climate smart agriculture and the versions of the explanation farmers gave to the phenomenon of participation and non-participation in climate Smart Agriculture.

As a researcher of the qualitative study, I ensured that I assumed the role of a detective, a metaphor which characterized the qualitative researcher and the search for evidence about the views of climate smart agriculture and the explanation given to the phenomenon of participation and non-participation in climate smart agriculture. In this case, I developed an understanding of the information through careful consideration of potential experiences of farmers and I systematically eliminated rival explanations and interpretations until the final case was made beyond a reasonable doubt. This process ensured the study findings to be more believable and defensible when challenged.

Chapter Four

RESULTS AND DISCUSSION

In this chapter, I present the findings of the research study which include the views of the farmers on climate smart agriculture and the meaning of the phenomenon of participation and non-participation in climate smart agriculture. The findings were based on the following research questions:

- 1. What are the views of farmers in Climate Smart Agriculture?
- 2. How do the views define farmers' participation and non-participation in climate smart agriculture?

This section is divided into two sections. The first section presents the views of farmers on climate smart agriculture and the second section presents the meaning of participation and non-participation in climate smart agriculture. I have concluded the chapter with a summary theorizing the phenomenon of participation and non-participation in climate smart agriculture by farmers in a Zambian community.

Views of Farmers on Climate Smart Agriculture

What are the views of farmers in Climate Smart Agriculture?

I interacted with farmers in their community, listened to their stories and observed their actions on their farm-land. The stories described their lived experience and explained their

views on climate smart agriculture. I arranged their stories, narratives and expressions in themes. Two themes surfaced from the community discourse and expressions describing the views of farmers on climate smart agriculture: "Learning experience" and "Compromising and non-adherence".

Learning experience

From the interacted with farmers, observation of their actions and listening to their stories in their discursive community, I understood that farmers regarded climate smart agriculture as a learnt and acquired skill from the farming demonstration fields. I was told that farmers learnt climate smart agriculture concept from the experts known as Agriculture Extension Officers from the Ministry of Agriculture (MoA). Farmers explained that the Extension Officers used field demonstrations to teach them climate smart agriculture concept so that they could grow and manage their crops well and be able to realize good yields in times of climate change.

"I use traditional method of cultivation that include slush and burn of farm residues, tilling of the whole field using cattle and plough, and I use the same field over and over again without rotational farming because I want to use (cultivate) the entire farm land so that I can have enough yield for use by my family. I grow maize and vegetables because I can sell maize and vegetables easily to earn money. Because of my experience in farming, I was selected by the Agriculture Extension Officer together with other community farmers to undergo a community training in climate smart agriculture. I was told that conservation

farming had a lot of benefits on the farm. I was told that conservation farming would increase my harvest and make me earn more money than I am earning with my traditional farming method. I was also told that conservation farming would help me manage the soil fertility on my farm land. Because of the benefits that conservation farming had on the farm, I was enticed to start thinking about learning the agriculture innovation,” Farmer A.

As I listened to the stories of the farmers, they explained that the extension officer trained them in various new agriculture skills among them soil management practices in order to deepen the understanding of the concept of climate smart agriculture. Farmers explained that the new concept involved ways which minimized the disruption of soil structure, and ways to conduct zero tillage among others. Farmers explained that the lessons were mostly delivered in form of practical demonstrations in order to deepen the understanding of the new farming concept. As a result, farmers had the confidence to participate in the new farming concept by using it on their farm-land. Farmers explained further that the results from the concept of climate smart agriculture were so good that they harvested abundantly in spite of the effects of climate change on their farm-land. Furthermore, farmers praised learning using on-farm demonstrations because it gave them hands-on understanding of the concept of climate smart agriculture.

“During the training, a lot was taught through practical training that lasted for about three months in the village. A demonstration field or farm land of about two hectares was constructed. Vegetable seeds and maize were planted to show case the farming innovation especially regarding soil management practices. On the demonstration farm

plot, ways of minimizing the disruption of soil structure, composition and natural diversity were demonstrated by limiting portions of tilling. This was referred to as zero tillage because it ensured that very little soil was disturbed. Additionally, ways to ensure that the soil was ever covered by organic residues from the previous crops was demonstrated. We were taught that we did not need to remove the maize stalks or the residues from the crops after harvest but rather leave them on the farm so that the soil is ever covered. To this end, we were discouraged to let our cattle in the fields after harvest because cattle would eat all the residues on the farm and leave the land bare. We were advised to take our cattle far away from the fields for feeding so that our farm lands had the required farm residues. We were further shown how to grow different types of crops on one piece of land," Farmer A.

Farmers explained that because of the acquired knowledge and skills in climate smart agriculture, they were encouraged to replicate the concept on their farms.

"Once the community members observe the benefits like you have observed from the demonstration farm plot, they will develop interest and approach you to learn how to prepare the land and manage the soil fertility. Then you can seize the opportunity of their willingness to learn and teach them how to use the agriculture innovation...Once they register willingness, you are supposed to take them through the hands-on learning process like I have taught you...All those that will follow you with the desire to learn should be taught in a practical manner and be encouraged to take up practical tasks so that they are able to master the skills," Farmer B.

Farmers explained that although the concept of climate smart agriculture showed potential for good harvest in times of climate change, they did not forget to attend the Lwiindi traditional ceremony where they requested the spiritual beings for the rains and the fertility of the land and for a good harvest. The farmers explained that whenever a family needed to engage in climate smart agriculture, they presented petitions for blessings for the rains, the fertility of the land and for a good harvest from the spiritual beings through supplications. They explained that when a blessing was granted to them by the spiritual beings, farmers were free to participate in climate smart agriculture including use of foreign seed on the land of the spiritual beings. If a request was not presented to the spiritual beings, farmers and the community feared that punishment in form of infertile land and diseases among others were going to strike them.

"...every time we begin preparation of our individual farm land, we need to offer supplications to our family ancestors the Mizimu within our families... If families did not offer supplications, the family ancestors will not bless our family farm lands and we will not be able to realize greater yields the following year. If we did not live up to the demands of land preservation on our farm land the previous year, the family ancestors may not bless us with good yield in the coming year and we will have no good yields,"

Farmer B.

The stories above explain that climate smart agriculture alone did not make the land fertile. Despite acquiring knowledge and skills in climate smart agriculture, farmers required to supplicate to the supreme beings in order to cause the rains and the land fertile.

When I return home to my village and before I and my family begin to prepare our farm land, we gather as a family and sometimes as a clan or even as extended family to call upon our family ancestors through family supplications. I want them to bless us with good soil fertility and abundant yield...I include in my supplications, requests and permissions to use fresh land whenever I needed to expand my farm size or do anything to the land," Farmer B.

The stories above explain that although farmers managed to produce excellent yields because of the skills they learnt and acquired, they believed that climate smart agriculture alone did not guarantee blessings of good yield but their connectedness to the supernatural as shall be discussed in the sections below.

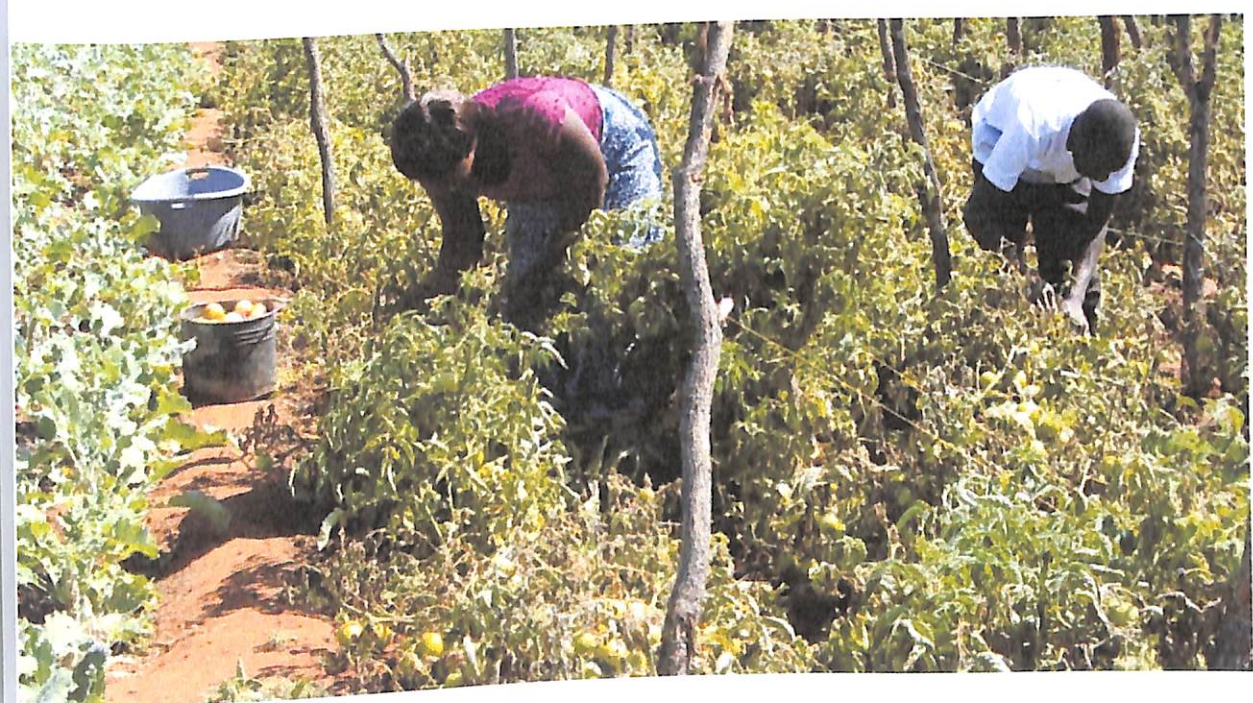
"The village chief was very excited, and he encouraged all of us to use the method because he was convinced that it protected the soil and the land from impoverishment and that it assisted in realizing increased crop yields. The chief pledged to take up a leading role and become a lead farmer in the village. The chief reminded everyone that as Tongas, we believe in the preservation of land and that conservation farming was one such way that can augment our belief of land and soil preservation. When I and my fellow lead farmers started practicing climate smart agriculture on our farm land, the village chief

reminded us again that we have a traditional ceremony known as the Lwiindi. The Lwiindi traditional ceremony has a ritual of praying for the rains. Apart from being a rain making ceremony, we also ask for the blessings from our ancestors for the fertility of the land. As such, he told us that we needed to enjoin the agriculture innovation of conservation farming with the traditional ceremony. The chief being the community leader, ritual performer, as well as the leading lead-farmer, he will be supplicating to our ancestors (the Mizimu) and the royal ancestors (the Mhodolo) not only for the fertility of the land but also for good rains and harvests for the following year. He stated that only when we do this that the supreme source of all life (Leza), the Lords of the rain (Basangu or Baami bamfula), and the family ancestors (Mizimu) and the principal guardians of the land will help us control the fertility of the land and ensure that we have abundant yield the following year. He instructed us that every time we begin preparation of our individual farm land, we need to offer supplications to our family ancestors (the Mizimu) within our families. He further instructed that without each family not being able to offer supplications, the family ancestors will not bless our family farm land and be able to realize greater yields the following year....Whenever I do this, I get confidence that whatever I do on the farm land, especially the fresh land I have expanded to, has full blessings from the spiritual powers. For sure, I get blessings for good fertility in the expanded farm land. However, even when I get the confidence and blessings, I have the duty not to exploit the fertility of the land but work to ensure that the land remains fertile. Therefore I feel that conservation farming can assist me to live in harmony with the ecological well-being of our land," Farmer B.

Photos of Study Participants



**Farmer-B inspects his field of tomatoes in Kasaya village in Kazungula.
Photo by Bruce Mulenga**



**Farmer-A with his wife working in his crop field in Kasaya village in Kazungula.
Photo by Bruce Mulenga**

The discussion above explains that farmers viewed climate smart agriculture as an experience that was learnt or acquired and that its new knowledge and skills, had potential to provide farmers with good harvest and that this benefit was a blessing for farmers in times of climate change risk. Further, it was because farmers viewed climate smart agriculture as an acquired or learnt experience with potential for good harvest and provided blessings in times of climate change that they were able to participate in it. In other words, the view of farmers on climate smart agriculture as illustrated above, defined the action of participation.

The table below shows the theme and the selected significant stories which surface that climate smart agriculture was a learnt and an acquired concept to benefit farmers in times of climate change in order to minimize risks of climate change.

Table 1: Farming Demonstration Fields and significant quotes

No	Theme	Quotes
01	Learnt experience	"I use traditional method of cultivation that include slush and burn of farm residues, tilling of the whole field using cattle and plough, and I use the same field over and over again without rotational farming because I want to use (cultivate) the entire

farm land so that I can have enough yield for use by my family," Farmer A.

"...we were discouraged to let our cattle in the fields after harvest because cattle would eat all the residues on the farm and leave the land bare...we were discouraged to grow same crops on one piece of land over and over again but rather to rotate crops...we needed to have a considerable bigger portion of farm land in order to rotate the crops properly and have enough yields for our families, Farmer A.

Compromising and Non-Adherence to Ecological well-being

In my interaction with farmers, I observed that farmers understood climate smart agriculture as a concept that required considerable bigger size of land for cultivation. Farmers explained that the farming activities pertaining to climate smart agriculture such as crop rotation, potholing, intercropping among others required extended portions of land in order to obtain a good harvest that could sustain a sizeable family of about more than five members. They gave an example which illustrated that growing maize crop alone, without intercropping it with another crop, on a five (5) acre piece of land, a minimum of 2, 500 kilograms of maize would be harvested. They argued that if the same maize crop was intercropped with another crop on the same piece of land, only about 1,250 kilograms of maize, which is half the amount of the harvest from non-

intercropping method, would be harvested, unless the five-acre piece of land was doubled in size. This example gave me an insight that climate smart method required an expanded field for cultivation order to realize enough yields for farmers.

"...it is one such farming practice that requires bigger piece of land so that I can practice rotational farming and intercropping for example. A small piece of land cannot sustain my conservation farming practice and enable me produce yields I require. I mean, I cannot yield enough crops for my family to feed on throughout the year and be able to sell some yields and to enable me buy other household needs if I used a small piece of land. Naturally, by using conservation farming like I explained above, I am forced to extend my farm size so that I can practice conservation farming including intercropping, rotational farming and digging of basins. In addition, to discouraging me from feeding my cattle with the residues of the farm yield of the previous year means that I should open other fresh land where they can begin to graze. In so doing, I will be attacking fresh land and destroying its natural and ecological well-being. Thus, in wanting to expand my farm land and finding other grazing land other than my farm land, for purposes of practicing conservation farming however, I will be contributing to exerting more pressure on the natural and ecological well-being of our land and I will be contributing to the loss of our ancestral land because more natural trees will be cut down and grass cleared to pave way to crop cultivation, and grazing. In other words, in as much as conservation farming is said to have good benefits, I feel that it requires one to have a bigger portion of land to implement it so that crop rotation, intercropping and so on are exercised. To have a bigger portion of land means that I invade the natural land by destroying it and turning it into agriculture land. In the end, the natural well-being of the land of our ancestors will be completely invaded by agriculture activities of human beings", Farmer B.

Farmers also stated that, for crop rotation to work, farmers had to avoid planting same crops (mono-cropping) on the same piece of land every time. They argued that by avoiding mono-cropping, they were not able to specialize their production on a single type of crop so that they could produce on a large scale over a long period of time.

The explanation suggests that climate smart agriculture concept required extended portions of land in order to accommodate its components such as intercropping, mixed cultivation, potholing among others.

"When I started practicing conservation farming method or climate smart agriculture on my farm land, I discovered that I generally needed more land than I had in order to expand my field. I discovered that in order to have enough space for crop rotation, establishing of basins where to plant seed and intercropping of seed crops required me to clear more fresh land to increase my farm land. Additionally, not allowing my cattle to feed on my farm residue meant that I walk miles away from the village to fresh bushes to feed my animals. It was at this time that I started thinking that if all farmers were to increase the size of their farm land and establish other grazing land for animals other than our individual farm lands, more fresh land will be invaded, and our community will no longer have fresh land for future generation. As you may know, grazing lands hardly have enough grass because all the grass tends to be eaten up leaving the land bear and susceptible to soil erosion. As a result, I started becoming apprehensive towards climate smart agriculture. I began to realize that the act of

invading more fresh land was going against my deepest traditional belief of land preservation," Farmer A.

Farmers further explained that climate smart agriculture required avoiding removing crop residues left behind from the harvest of the previous crops. They stated that grazing of animals on the farm-land which contained remains from the previous harvests was discouraged. Farmers needed to preserve the residues so that soil remained covered to prevent erosion and to retain moisture in the ground in addition to providing manure when the residues decompose. As a result of this prohibition, farmers explained that they were forced to fetch another additional land, apart from the crop field, for animal grazing. The farmers argued therefore that action of fetching additional land for animal grazing, other than their fields, meant that more land was strongly required (invaded) when opting climate smart agriculture.

Because climate smart agriculture required more land when practicing it, farmers stated that they were not keen to participate in climate smart agriculture.

The stories of the farmers suggested that climate smart agriculture was a concept that did not only require more land for agriculture activities, but it was also a concept that endangered fresh land in the community because more vegetation was cleared to accommodate the concepts of climate smart agriculture. The stories also show me that farmers were worried that by clearing the land of its natural vegetation for farming, communities will no-longer have fresh

and natural land for preservation for future generation, and more importantly, more natural soil nutrients (or soil fertility) would be depleted because natural vegetation is no-longer there to enhance soil fertility.

It is for this reason that farmers viewed climate smart agriculture as a concept that invaded fresh and natural land, and that it compromised the fertility of the soil because fresh and natural vegetation was cleared away. I also argue that farmers viewed climate smart agriculture as a concept that exerted pressure on natural land and its ecological well-being because it disturbed the growth and well-being of natural vegetation, and this amounted to ecological mismanagement, and compromising of the ecological harmony. Thus, farmers understood that climate smart agriculture was compromising the preservation of natural vegetation and the ecological well-being; an experience that was held against farmers' deepest traditional belief of land preservation as shall be discussed in the following sections. Climate smart agriculture was therefore viewed as detrimental to the ecological well-being of the land because of its extravagant management of natural vegetation.

As a researcher, I found that the above farmers' view was in contra-distinction to several studies that hold that the size of land cultivated by farmers who participated in climate smart agriculture or conservation farming was significantly smaller than those who did not, (Njabulo Lloyd Ntshangase, 2018). I, however, surfaced a contrary view that explained that climate smart agriculture was a concept that posed a threat towards land preservation by placing more

fresh land on serious risk of invasion by farmers because it consumed large and fresh portions of land for cultivation.

From the community discourse of farmers and from observing their actions and expressions in their fields and the community, I saw that farmers viewed climate smart agriculture as compromising the ecological well-being of the land. Farmers described that climate smart agriculture involved taking up of fresh land wherein vegetation is cleared to pave way for the extension of the land for agriculture activities. This task was generally understood by farmers as non-adherence to preservation of the ecological harmony and well-being of natural vegetation, and non-adherence to the responsibility of good guardianship of the land and its natural vegetation.

"...in my Tonga tradition, especially us emanating from the Gwembe valley along the Zambezi River in the Southern part of Zambia...we are also known as the Simaamba Tonga...we have a traditional ceremony called the Lwiindi...The Lwiindi ceremony encompasses several ceremonies and rituals which are connected to praying for the rains. The ceremony is predominantly...a rain making ritual...Apart from being a rain making ceremony, we also ask for the blessings from our ancestors for the fertility of the land. This is because we believe that without the blessings of our ancestors, the fertility of the land will be compromised...during this ceremony, our leaders or ritual performers, supplicate to our ancestors called Mizimu and our ritual ancestors known as the Mhodolo for the fertility of the land and the good harvests for the following year. Traditionally, and in the olden days, the Sikatongos or Earth Priests were the officiants

of this ceremony. But today, the chiefs have taken up the role of the earth priests and they usually perform this ritual...according to our tradition, the earth priests can call the rains. We also believe that the supreme source of all life who is Leza, the Lords of the rain who are the Basangu or Baami bamfula, and the family ancestors who are the Mizimu are the principal guardians of the land. Now, because the rains can help the land become fertile, the earth priests have also the ability to control the fertility of the land," Farmer A.

Farmers explained that the whole of their landscape along the Zambezi valley was sacred and that their land had an important message to the community. They believed that the land symbolized the importance of the earth and the powers of nature and so, it required to be preserved.

"The simple obligation of any Tonga person in the community is to ensure the well-being of the land. Although we have specific places in the community that carry significance sacredness, we believe that the whole of our land is sacred. We believe that the whole landscape along the Zambezi valley is sacred even though there are specific sacred places of spiritual powers including rain shrines where sacrifices are offered. Our land has an important message to the community for it symbolizes the importance of the earth and the powers inherent in nature. As such destroying the land by invading it through cutting down of trees, bushes and grass is disrespect and annoyance to the spiritual powers,"
Farmer A.

The farmers explained that if at any given time the community participated in destroying the vegetation and contributed to soil impoverishment, the community was to offer supplications for non-adherence towards their responsibility of good guardianship to the ecological well-being of the land.

*"This is why during the **Lwiindi** ritual, we offer supplications, to say sorry for the times we have not behaved well towards maintaining the ecological well-being of the land, to the Lords of the rain (**basangu**) and ultimately to the supreme source of all life (**Leza**) by offering ritual beers (**Kankata**) to the ancestors at the sacred groves (**Malende**). The supplications are based on our obedience to the **basangu** the previous year for preserving the land. Thus, if our conduct towards the well-being of the land was debauched in the last year, the spiritual forces will not hear our supplications this year because they are annoyed unless ritual beer is offered to appease the spirits. Droughts, famine, diseases and soil infertility are all signs that the spirits are not happy with our conduct towards land preservation and are forms of punishment to the living. Even the modern seed for planting in our fields, by far contributes to polluting our soil if it is not dedicated to our ancestors for blessing. It is profane to use seed that does not carry a blessing with it and plant in our land without dedicating it to our ancestors," Farmer A.*

Farmers further explained that the reason their territory faced rainfall anomalies and increased frequent droughts was because most of the vegetation had been destroyed by humans through cutting down of trees and burning of grass among others. As a result, their ancestral spirits

were not happy with the human activities of encroaching into fresh land and clearing of natural land for agricultural purposes among others.

*"It should be noted on the contrary that through the **Lwiindi** traditional ceremony and its rituals of rain making and land preservation, we are obliged to protect the land against forces that compromise ecological harmony such as conservation farming. Otherwise, the whole of the community will face unexplained illnesses, including famine, diseases, drought and hunger. When you observe across the community, much of our land has very little natural vegetation. Most of the trees have been cut down to give way to agriculture activities. As a result, we face frequent droughts and loss of crops almost every year. Conservation farming has contributed to this trend because we are told to practice conservation farming which in turn make us cut down trees and clear natural bush to increase our farm sizes to satisfy our need to produce enough yield for consumption and for selling and to have new grazing land," Farmer A.*

They further emphasized that by expanding farm-lands for agriculture activities or even for animal grazing purposes they contributed towards exerting pressure on the natural and ecological well-being of the land, and as a result their ancestral spirits were to punish the community in form of rainfall anomalies, droughts and other eschatological consequences as discussed in earlier sections.

They further explained that the role of every Tonga person in this regard was to ensure that the ecological well-being of the land was preserved and remained unadulterated from

any practices that had potential to destroy it. Farmers explained that the community was obliged to protect the land against practices like climate smart agriculture, which according to farmers, compromised the ecological harmony. As a result, they feared that the practices of climate smart agriculture were tantamount to both invading fresh land such that turning it into agriculture land was in fact destroying the natural and fresh land.

Farmers explained that they understood climate smart agriculture as a concept that aggravated punishment by the spiritual beings on the farming community and that was the reason the farming community was prone to more unexplained illnesses, including famine, diseases, drought and hunger.

Farmers insisted further that although the spiritual forces endowed them with a responsibility to preserve the land, they also demanded from the community adherence towards good guardianship of the ecological well-being. This was the reason farmers believed that the forests, including trees, were the sacred dwelling places for the spiritual beings and ought not to be destroyed but preserved. Farmers explained that they had a responsibility of living within their limits of knowledge of not disturbing the growth of natural vegetation.

However, farmers recalled that when they realized their non-adherence towards Preservation of the ecological well-being by experiencing crises like drought, famine among

others, they resorted to their traditional ceremony called the *Lwiindi*, to request for forgiveness through supplications so that the spiritual beings could forgive them and bless them with good rains and the fertility of the land in the following year:

"This is why during the Lwiindi ritual, we offer supplications, to say sorry for the times we have not behaved well towards maintaining the ecological well-being of the land, to the Lords of the rain (basangu) and ultimately to the supreme source of all life (Leza) by offering ritual beers (Kankata) to the ancestors at the sacred groves (Malende). The supplications are based on our obedience to the basangu the previous year for preserving the land. Thus, if our conduct towards the well-being of the land was debauched in the last year, the spiritual forces will not hear our supplications this year because they are annoyed unless ritual beer is offered to appease the spirits," Farmer A.

The above stories and experience of farmers explain that farmers viewed climate smart agriculture as a concept that destroyed the vegetation and destroyed the ecological harmony which was endowed to the community by the ancestral spirits because farmers were not adhering to the responsibility of preserving the natural vegetation and guardianship of the ecological well-being.

"I strongly believe that conservation farming is in bigger part contributing to ecological mismanagement of the land. In other words, conservation farming puts us in a bad relationship with the spiritual powers who in turn react to us by way of bringing us drought, famine, diseases, soil infertility and hunger. That sort of a relationship has potential to

bring us an eschatological crisis from which we cannot recover but perish. I believe that nature including trees are dwelling places of the spiritual forces and as such, we ought to respect it and ensure that we always live within our means without disturbing its growth,"
Farmer A.

Thus, as a researcher, I surface that the concept of climate smart agriculture was viewed as one that placed the farmers and their community in bad relationship with the spiritual beings wherein the spiritual beings brought about punishment in form of drought, famine, diseases, soil infertility and hunger and further caused eschatological crisis on the community. This view of climate smart agriculture defined farmers' non-participation.

The table below shows the farmers' theme and selected significant statements related to the theme:

Table 2: Compromising and Non-Adherence towards Ecological Well-Being and significant quotes

No.	Theme	Quotes
01	Compromising and Non-Adherence towards Ecological Well-Being	"I discovered that I generally needed more land than I had in order to expand my field. I discovered that in order to have enough space for crop rotation, establishing of basins where to plant seed and intercropping of seed crops required me

to clear more fresh land to increase my farm land. Additionally, not allowing my cattle to feed on my farm residue meant that I walk miles away from the village to fresh bushes to feed my animals," Farmer A.

"...if all farmers were to increase the size of their farm land and establish other grazing land for animals other than our individual farm lands, more fresh land will be invaded and our community will no longer have fresh land for future generation," Farmer A.

"I began to realize that the act of invading more fresh land was going against my deepest traditional belief of land preservation," Farmer A.

"Our role as a community of the living and as individual *Tongas* is to ensure that the ecological well-being of the land is preserved and remains unadulterated from any foreign practices that can destroy it. The simple obligation of any Tonga person in the community is to ensure the well-being of the land," Farmer A.

"When I was introduced to conservation farming, I learnt that it is one such farming practice that requires bigger piece of land so that I can practice rotational farming and intercropping for example. A small piece of land cannot sustain my conservation farming practice and enable me produce yields I require. I mean, I cannot yield enough crops for my family to feed on throughout

the year and be able to sell some yields and to enable me buy other household needs if I used a small piece of land. Naturally, by using conservation farming like I explained above, I am forced to extend my farm size so that I can practice conservation farming including intercropping, rotational farming and digging of basins. In addition, to discouraging me from feeding my cattle with the residues of the farm yield of the previous year means that I should open other fresh land where they can begin to graze. In so doing, I will be attacking fresh land and destroying its natural and ecological well-being...in wanting to expand my farm land and finding other grazing land other than my farm land, for purposes of practicing conservation farming however, I will be contributing to exerting more pressure on the natural and ecological well-being of our land and I will be contributing to the loss of our ancestral land because more natural trees will be cut down and grass cleared to pave way to crop cultivation, and grazing...in other words, in as much as conservation farming is said to have good benefits, I feel that it requires one to have a bigger portion of land to implement it so that crop rotation, intercropping and so on are exercised. To have a bigger portion of land means that I invade the natural land by destroying it and turning it into agriculture land. In the end, the natural well-being of the land of our ancestors will be completely

invaded by agriculture activities of human beings,” Farmer A.

“As a result, even if we present our supplications or invoke the spiritual forces to give us rain it fails because we have not been obedient to the *basangu* the previous year. Our behavior towards land preservation has not been in tandem with the requirement of the family ancestors (*Mizimu*), the Lords of the rain (*Basangu or Baami bamfula*) and ultimately the supreme source of all life (*Leza*) who are the principal guardians of the land who demand from us a complete guardianship of the ecological well-being of our land. All the droughts and hunger we face are a signal that the spiritual forces are not happy with the way we have behaved towards land preservation...I strongly believe that conservation farming is in bigger part contributing to ecological mismanagement of the land. In other words, conservation farming puts us in a bad relationship with the spiritual powers who in turn react to us by way of bringing us drought, famine, diseases, soil infertility and hunger. That sort of a relationship has potential to bring us an eschatological crisis from which we cannot recover but perish. I believe that nature including trees are dwelling places of the spiritual forces and as such, we ought to respect it and ensure that we always live within our means without disturbing its growth, Farmer A.

Participation and Non-Participation

How do the views of farmers define participation and non-participation in Climate Smart Agriculture?

This section discusses the result of who the other to the farmers is and what the other does in terms of participation and non-participation.

From the previous sections, I discussed that farmers including their community existed in order to enhance land preservation and to adhere to a relationship of guardianship of the ecological well-being with the spiritual beings. This way, the spiritual beings did not accept abuse or misuse of the land lest the community of farmers experienced physical crises and eschatological consequences.

*"In my Tonga tradition, especially those of us emanating from the **Gwembe** valley along the Zambezi River in the Southern part of Zambia, also known as **Simaamba Tonga**, there is a traditional ceremony called the **Lwiindi**. The ceremony is part of the larger **Lwiindi** ceremony celebrated by the Tonga people of Southern part of Zambia. It encompasses several ceremonies and rituals which are connected to praying for the rains. The ceremony which is predominantly a rain making ritual is celebrated annually around October and November when people begin to prepare for their fields. Apart from being a rain making ceremony, we also ask for the blessings from our ancestors for the*

*fertility of the land. This is because we believe that without the blessings of our ancestors, the fertility of the land will be compromised. During this ceremony, our leaders or ritual performers, supplicate to our ancestors called **Mizimu** and our royal ancestors known as the **Mhodolo** for the fertility of the land and the good rains including good harvests for the following year," Farmer A.*

The above argument describes an existent dialogue and interaction (dialogic interaction) between farmers and the spiritual beings. The dialogic-interaction subsisted in form of supplications during the traditional rituals of the *Lwiindi* ceremony which was part of the farmers' lives. I refer to this dialogic-interaction as ritualistic or sacramental dialogue because it transcended from the physical dialogic interaction into the spiritual realm, in a manner only the Tonga people in their ceremonial, customary and ritual style could interpret, understand and describe as real and as existential experience influencing their action of participation and non-participation in climate smart agriculture.

I further argue that through the sacramental dialogue or transcendental interaction, farmers were conscious of the spiritual beings and their demand for good guardianship over land. The consciousness of the spiritual beings by the farmers through the ceremonial, customary and rituals, made them to interpret, understand and describe that land required preservation from destruction regardless of human-wants. The opposite was also true that if farmers were unconscious of the demands of the spiritual beings and they abused the land, crises in form of drought or flood or diseases leading to poor harvest was going to occur as a result.

It is for this reason that this study describes further that the spiritual beings and the farmers including their farming community were indeed in a relationship where they interacted within the realm of the rituals and ceremonies and that they exchanged feelings and thoughts. This implied that between farmers and the spiritual beings, there was an inter-subjective interaction which provided meaning to participation and non-participation.

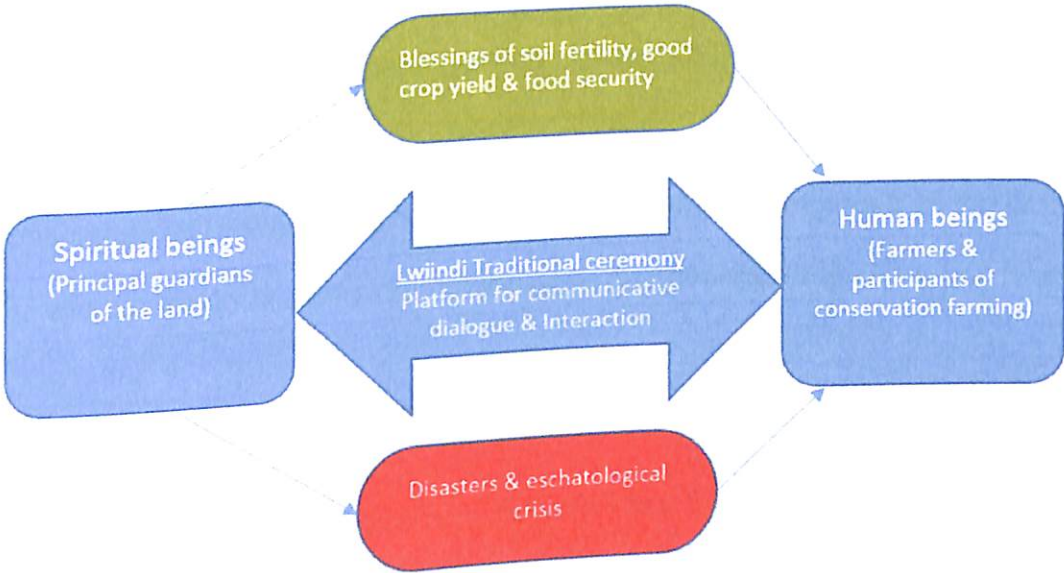
*"This is why during the **Lwiindi** ritual, we offer supplications, to say sorry for the times we have not behaved well towards maintaining the ecological well-being of the land, to the Lords of the rain (**basangu**) and ultimately to the supreme source of all life (**Leza**) by offering ritual beers (**Kankata**) to the ancestors at the sacred groves (**Malende**). The supplications are based on our obedience to the **basangu** the previous year for preserving the land. Thus, if our conduct towards the well-being of the land was debauched in the last year, the spiritual forces will not hear our supplications this year because they are annoyed unless ritual beer is offered to appease the spirits", Farmer A.*

From the above discussion, I furthermore argue that the other in dialogue with the farmers were the spiritual beings. This dialogue was based on good guardianship of the ecological well-being of the land, and the dialogue was personified through the traditional ceremony of the **Lwiindi** and its rituals. In other words, the dialogical and interaction (dialogic interaction), took place in a contextualized ritual of the **Lwiindi** ceremony, where the inter-subjective meaning and understanding of participation and non-participation was explained. It is therefore fitting to state

NON PARTICIPATION IN CLIMATE SMART AGRICULTURE IN A ZAMBIAN FARMING COMMUNITY:
A PHENOMENOLOGICAL STUDY IN RISK COMMUNICATION

that the *Lwiindi* traditional ceremony was the medium through which the other, namely the spiritual beings, in dialogue with farmers existed, and shared the meaning of participation and non-participation. The figure below explains the dialogical relationship between the spiritual beings and the farmers as personified in the traditional ceremony, the *Lwiindi*.

Figure 5: Dialogical Relationship of Farmers and Spiritual Beings



The above discussion explains that the other in dialogue with farmers were the spiritual beings.

Thus, the other in dialogue with the farmers were the spiritual beings whereas such dialogue was referred to as the sacramental-dialogical relationship and was based on complete guardianship and preservation of the ecological well-being.

"...every time we begin preparation of our individual farm land, we need to offer supplications to our family ancestors (the Mizimu) within our families. He further instructed that without each family not being able to offer supplications, the family ancestors will not bless our family farm land and be able to realize greater yields the following year," Farmer B.

The sacramental-dialogical communication was essential for guaranteeing the blessings for the fertility of the land and for providing meaning to participation and non-participation which instilled a sense of realization among farmers that the ultimate owner of the land was the superior being who demanded a complete preservation and guardianship of the land from farmers.

Thus, the other in dialogue with farmers were the spiritual beings. In other words, farmers were in an experience with the spiritual beings who obligated them to adhere to land preservation and ecological well-being. Farmers experienced the spiritual beings through the subjective dialogue with the spiritual beings in the *Lwiindi* traditional ceremony and its rituals. This is the reason farmers viewed climate smart agriculture through direct personal experience with them including how they interpreted and defined participation and non-participation.

Explaining Risk Communication within the Lens of Phenomenological Tradition

Traditionally, Risk communication is about assisting the public in understanding the rationale of a risk-based decision, and to help all affected parties or groups of people to make informed choices about matters of concern to them.

This study contributes to a new understanding that risk communication is about understanding people's stories, conversations and views (referred together as real lived experiences) on the perceived risk event and interpreting those real lived experiences to gain meaning of the action (desired option) in order to prevent or minimize the effects of potential consequences of risks on their existence. I surfaced this interpretation from farmers' own understanding and interpretation of climate smart agriculture as a concept that aggravated punishment and this interpretation defined farmers' non-participation. The interpretive meaning of climate smart agriculture surfaces the meaning of people's stories, conversations and experiences and these meanings are communicated through a communicative action to occasion the desired option called non-participation in risk environments. This sense therefore defines Risk communication, because it assumes the constitution of understanding people's real lived experiences on the perceived risk event and it interprets them to gain meaning of the desired option to prevent or minimize consequences of risks.

Risk communication therefore constitutes an interpretive communication of people's real lived experiences from which they can understand the meaning of their desired options to prevent or minimize effects of potential consequences of risks.

This understanding suggests that risk communication is constitutive of people affected by risk events, comprehension of the meaning of potential consequences of risks and interpretation of their lived experience. This is justified by the ability of farmers to interpret their own views on climate smart agriculture within the sacramental and dialogical relationship with the spiritual beings. In other words, farmers interpreted their real lived experiences because they were in an experience of the inter-subjective relationship with the spiritual beings who did not want to be displeased when farmers engaged in climate smart agriculture. This implied that farmers did not want to displease the spiritual beings because of fear that the spiritual beings would punish them. Because the other in dialogue with farmers were the spiritual beings, I argue that the experience of risk, by farmers, and the concomitant risk of punishment from the other (spiritual beings) promulgated an interpretive and communicative action called risk communication and defined farmers' action of non-participation.

Thus, in risk environments, like climate change, the real lived experience of people is indispensable in explaining and defining risk communication as an action that prompts the sense of reasoning through interpretation and surfaces the action of preventing or minimizing potential consequences of risk on people's existence.

Risk communication is thus an interpretive and communicative action of people's real lived experiences, occurring in a contextualized situation, to gain meaning of their desired action to prevent or minimize effects of potential consequences of risks on their existence. This explanation suggests a new view of risk communication called Phenomenological view of Risk Communication and is discussed below.

Phenomenological View of Risk Communication

The above explanation of risk communication, as seen through the lens of Phenomenological Tradition of Communication theory, provides a new view of risk communication which involves understanding people's lived experiences on the perceived risk event and interpreting them in order to gain meaning of the desired option to prevent or minimize the effects of potential consequences of risks.

Because, risk communication is explained as an interpretative and communicative action of peoples' real lived experience and is interpreted within the bounds of the inter-subjective relationship of the self with the other in dialogue (spiritual beings and farmers), I suggest a new view of risk communication called the Phenomenological View of Risk Communication. This view suggests that risk communication is an interpretation of people's experience of risk and the concomitant risk of punishment from the other in dialogue with farmers and the surfacing of the meaning of the desired action of farmers.

The explanation above describes important elements in the definition of risk communication and these elements are indispensable in understanding and theorizing the new view of risk communication. These elements include; the risk environment in which people find themselves, people's subjective experiences, interpretation and meaning of the lived subjective experiences, and the concomitant experience of self in dialogue with the other. This implies that Risk communication occurs when people experience the (risk) environment subjectively and can interpret the meaning of their experiences in relation to the way they inter-subjectively relate to the consequences of favor or punishment and are able to take action to prevent or minimize the risk.

This view of risk communication is suggested from the discussion that farmers were able to interpret their lived experiences because of their inter-subjective relationship with spiritual beings who did not want to be displeased when farmers engaged in climate smart agriculture. In other words, in risk environment, farmers did not want to displease the spiritual beings because of fear to experience punishment and eschatological consequences. Thus, the experience of risk, by farmers, and the concomitant risk of punishment by the other in dialogue with farmers made them to opt for an action of non-participation. Hence, risk communication is an interpretive communication through which meaning of the risk environment is understood and people's desired option is gained.

This view provides an opportunity for the farmers' voice to surface. In many instances, it is always the science voice that is heard when studying climate change and climate smart agriculture. The Phenomenological view of risk communication is an attempt to further understand the innovation theory in communication innovation technology.

Chapter Five

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

This study explained that farmers viewed climate smart agriculture as a learnt experience with potential for good harvest and that this benefit was a blessing for farmers in times of climate change risk. This view defined the action of farmers' participation in climate smart agriculture in times of climate change risk.

Farmers also viewed climate smart agriculture as compromising and non-adherence towards ecological preservation through increased destruction of natural forests in order to pave way for expanded portions of land for cultivation. As a result, climate smart agriculture was further viewed as a threat that brought about risk towards ecological preservation because natural vegetation was ruined down by cutting down natural vegetation for agriculture activities. Because of this, climate smart agriculture was viewed as detrimental to the ecological well-being of the land.

This can be explained through the lens of the Phenomenological Tradition of Communication Theory that farmers were in dialogue with the spiritual beings who did not want to be displeased when farmers engaged in climate smart agriculture.

Because farmers desired to conduct themselves with a sense of adherence, obedience and respect for land, they interpreted non-participation in climate smart agriculture as preservation of the land and its ecological harmony and well-being while participation was non-adherence for land preservation and as such a call of petitions for blessings from the spiritual beings for good soil fertility and abundant yield through supplications. Such a meaning was deeply rooted in the rituals of the *Lwiindi* traditional ceremony and was interpreted within the interpretive and communicative intellectual bounds of farmers through the sacramental and dialogical relationship where they comprehended the sense of guardianship and preservation of the land.

In this regard, I depart from the usual conception of risk communication emphasizing public warning communication. The study has surfaced the concept that people affected with risk events require comprehending the meaning of potential consequences of risks on their existence by interpreting their lived experience within their interpretive and communicative intellectual bounds, just like farmers were able to interpret their views on climate smart agriculture within the sacramental and dialogical relationship with the spiritual beings. Risk communication, can be explained through the lens of the Phenomenological Tradition of Communication Theory as constituting the interpretive communication of people's stories and conversations of farmers so that they are able to understand the meaning of their desired options to prevent or minimize the effects of potential consequences of risks on their existence.

This study advances the conceptualization of non-participation as adherence towards preservation of natural vegetation and ecological well-being to a deeper understanding of the

meaning of a subjective judgement of avoiding risks often experienced but unexplained in the lives of farmers. The meaning and understanding of non-participation, advanced by this study, may be used to conceptualize non-participation in other social innovations and to bring those theories that are non-human-centric to more human centred-ness.

Conclusion

This study was significant in many ways. It provided new understanding of how climate smart agriculture (CSA) was viewed and enabled to comprehend beyond the commonly argued understanding that a society tend to reject new technologies when it substituted for, rather than augment , our humanity, (Calestous Juma, 2016). It did so by strongly arguing further that the meaning and understanding of a phenomena such as non-participation in climate smart agriculture was arrived at by actively and directly engaging people through conversation and observation in order to bring about conscious realization of peoples' real lived experiences and interpreted their actions in regard to their lived experience.

Concretely, the study adds to the body of knowledge that, in risk environments, like climate change, the lived experience of farmers are indispensable for exploring the phenomenon in order to prompt the sense of reasoning and the meaning assigned to participation or non-participation in climate smart agriculture, which is deemed as a risk based option in time of climate

change. I found that this endeavor is a deeper process for people and farmers because it involves deeper reflection of the experiences of farmers regarding the sense they give to climate smart agriculture and to the phenomenon of participation and non-participation.

The Phenomenological Tradition of Communication Theory used in this study was useful because it helped towards understanding how climate smart agriculture is viewed by farmers and it helped in explaining the phenomenon of participation and non-participation in climate smart agriculture. The Phenomenological Tradition of Communication Theory used in this study, assisted to actively and directly interpret and understand the personal experiences of farmers and to understand what happens in the farming lives of farmers. It is in this regard that an understanding of everyday life of farmer's experiences were brought to the fore in order to consciously understand the views of farmers on climate smart agriculture and the meaning of participation and non-participation. It is also in this regard that a new understanding of communication called Phenomenological view of risk communication is explained and it entails an interpretive and communicative action of real lived experiences to enable people opt for desired options of preventing or minimizing effects of risks on people's existence.

Recommendations

This study provides several recommendations necessary for the understanding of Phenomenological view of Risk communication, and for conceptualizing participation and non-

participation in the technological innovation particularly climate smart agriculture. Among the recommendations are:

- a. On-farm demonstrations are an effective way for providing farming skills (skills transfer) to farmers for them to embrace climate smart agriculture in times of climate change risks. Agriculture extension-workers ought to continue using on-farm demonstrations in their outreach extension services of educating farmers.
- b. When endeavoring to understand and explain the reason for non-participation by farmers in an agriculture innovation, it is recommended that the experiences of everyday life of farmers including their views are understood and reflected upon in order to provide correct interpretation and meaning to their personal experiences. This approach will also fit when theorizing non-participation for any given development innovation.
- c. In risk environments, like climate change, the lived experience of farmers are indispensable for exploring the phenomenon in order to prompt the sense of reasoning and to uncover the meaning assumed by risk-based decisions such as participation or non-participation in climate smart agriculture.
- d. Climate smart agriculture is best understood when taken jointly with farmers' personal experiences, and participation or non-participation is best theorized and defined in relation to the way people view the phenomenon. It is therefore recommended that the process of

theorizing a phenomenon of participation and non-participation should be initiated by understanding people's personal views.

- e. Future studies may use the findings of this study, in particular the Phenomenological view of Risk Communication, for further understanding and recommendation of the adoption of innovation in communicating innovations of technology.

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APPENDICES

Appendix 1: Qualitative Question Guide

In-depth Questions guiding the Researcher during interaction with farmers

1. Describe what climate smart agriculture mean to you?
2. Describe how you first became aware of climate smart agriculture in your farming life?
3. Describe how climate smart agriculture fits in your farming culture?
4. How do you see yourself today, in terms of your farming practices?
5. To what extent do you consider yourself active in climate smart agriculture as a farmer?
6. Describe any difficult experiences in your farming life that cause non participation in climate smart agriculture?
7. What are your anxieties/fears in your farming life concerning climate smart agriculture?
8. How do you view non participation in climate smart agriculture?
9. What does non participation in climate smart agriculture mean to you?
10. How would you describe non participation in climate smart agriculture in your farming life?

Appendix 2: Qualitative Data Analysis Table

No	Data (Excerpts)	What does this tell me about farmer's view of CSA	What does this tell me about farmer's action on CSA	What does this tell me about the other in dialogue with farmers
01	"I use traditional method of cultivation that include slush and burn of farm residues, tilling of the whole field using cattle and plough, and I use the same field over and over again without rotational farming because I want to use... the entire farm land so that I can have enough yield for use by my family," Farmer-A. "...we were discouraged to let our cattle in the fields after harvest because cattle would eat all the residues on the farm and leave the land bear...we were discouraged to grow same crops on one piece of land over and over again but rather to rotate crops...	Farmers viewed climate smart agriculture as an experience that was learnt or acquired and that its new knowledge and skills, had potential to provide farmers with good harvest and that this benefit was a blessing for farmers in times of climate change risk.	Farmers were able to participate in it in order to minimize risks of climate change.	
02	"I discovered that I generally needed more land than I had in order to expand my field. I discovered that in order to	Farmers viewed climate smart agriculture as a concept that	Farmers' action was non-participation in climate smart	

have enough space for crop rotation, establishing of basins where to plant seed and intercropping of seed crops required me to clear more fresh land to increase my farm land. Additionally, not allowing my cattle to feed on my farm residue meant that I walk miles away from the village to fresh bushes to feed my animals," Farmer A. "...if all farmers were to increase the size of their farm land and establish other grazing land for animals other than our individual farm lands, more fresh land will be invaded and our community will no longer have fresh land for future generation," Farmer-A. "I began to realize that the act of invading more fresh land was going against my deepest traditional belief of land preservation," Farmer-A. "Our role as a community of the living and as individual <i>Tongas</i> is to ensure that the ecological well-being of the land is preserved and remains unadulterated from any foreign practices that can destroy it. The simple obligation of any Tonga person in the	destroyed the vegetation and destroyed the ecological harmony which was bestowed to the community by the ancestral spirits. It was viewed as a failure by farmers not to adhere to the responsibility of preserving the natural vegetation and guardianship of the ecological well-being. It placed farmers and their community in bad relationship with the spiritual beings as a result spiritual beings brought about punishment to the community of farmers in form of drought, famine, diseases, soil infertility and hunger and other eschatological crisis on the community.	agriculture as a result.	
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community is to ensure the well-being of the land,” Farmer A.

“When I was introduced to conservation farming, I learnt that it is one such farming practice that requires bigger piece of land so that I can practice rotational farming and intercropping for example. A small piece of land cannot sustain my conservation farming practice and enable me produce yields I require. I mean, I cannot yield enough crops for my family to feed on throughout the year and be able to sell some yields and to enable me buy other household needs if I used a small piece of land. Naturally, by using conservation farming like I explained above, I am forced to extend my farm size so that I can practice conservation farming including intercropping, rotational farming and digging of basins. In addition, to discouraging me from feeding my cattle with the residues of the farm yield of the previous year means that I should open other fresh land where they can begin to graze. In so doing, I will be attacking fresh land and destroying its natural and ecological well-

being...in wanting to expand my farm land and finding other grazing land other than my farm land, for purposes of practicing conservation farming however, I will be contributing to exerting more pressure on the natural and ecological well-being of our land and I will be contributing to the loss of our ancestral land because more natural trees will be cut down and grass cleared to pave way to crop cultivation, and grazing...in other words, in as much as conservation farming is said to have good benefits, I feel that it requires one to have a bigger portion of land to implement it so that crop rotation, intercropping and so on are exercised. To have a bigger portion of land means that I invade the natural land by destroying it and turning it into agriculture land. In the end, the natural well-being of the land of our ancestors will be completely invaded by agriculture activities of human beings," Farmer A. "As a result, even if we present our supplications or invoke the spiritual forces to give us rain it fails because we have not been obedient to the <i>basangu</i>			
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the previous year. Our behavior towards land preservation has not been in tandem with the requirement of the family ancestors (*Mizimu*), the Lords of the rain (*Basangu or Baami bamfula*) and ultimately the supreme source of all life (*Leza*) who are the principal guardians of the land who demand from us a complete guardianship of the ecological well-being of our land. All the droughts and hunger we face are a signal that the spiritual forces are not happy with the way we have behaved towards land preservation...I strongly believe that conservation farming is in bigger part contributing to ecological mismanagement of the land. In other words, conservation farming puts us in a bad relationship with the spiritual powers who in turn react to us by way of bringing us drought, famine, diseases, soil infertility and hunger. That sort of a relationship has potential to bring us an eschatological crisis from which we cannot recover but perish. I believe that nature including trees are dwelling places of the spiritual forces and as such, we ought to respect it and ensure that

	we always live within our means without disturbing its growth, Farmer A.			
	Data (Excerpts)	What does this tell me about participation and non-participation	What does this tell me about the meaning/interpretation of participation and non-participation	What does this tell me about the other in dialogue with farmers
03	"In my Tonga tradition, especially those of us emanating from the <i>Gwembe</i> valley along the Zambezi River in the Southern part of Zambia, also known as <i>Simaamba Tonga</i>, there is a traditional ceremony called the <i>Lwiindi</i>. The ceremony is part of the larger <i>Lwiindi</i> ceremony celebrated by the Tonga people of Southern part of Zambia. It encompasses several ceremonies and rituals which are connected to praying for the rains. The ceremony which is predominantly a rain making ritual is celebrated annually around October and November when people begin to prepare for their fields. Apart from being a rain making ceremony, we also ask for the blessings from our ancestors	There was dialogue and interaction (dialogic interaction) between farmers and the spiritual beings. The dialogic-interaction subsisted in form of supplications during the traditional rituals of the <i>Lwiindi</i> ceremony which was part of the farmers' lives and it transcended from the physical into the spiritual realm only the Tonga people could interpret. The <i>Lwiindi</i> ceremony was the medium through which interaction between farmers	Participation fostered guardianship and preservation of the ecological well-being by farmers. Non-participation in climate smart agriculture meant preservation of the land and its ecological harmony and well-being while participation meant non-adherence for land preservation and as such a call of petitions for blessings from the spiritual beings for good soil fertility and abundant yield	The other in dialogue with the farmers were the spiritual beings who did not want to be displeased when farmers engaged in climate smart agriculture

for the fertility of the land. This is because we believe that without the blessings of our ancestors, the fertility of the land will be compromised. During this ceremony, our leaders or ritual performers, supplicate to our ancestors called <i>Mizimu</i> and our royal ancestors known as the <i>Mhodolo</i> for the fertility of the land and the good rains including good harvests for the following year," Farmer A. "This is why during the <i>Lwiindi</i> ritual, we offer supplications, to say sorry for the times we have not behaved well towards maintaining the ecological well-being of the land, to the Lords of the rain (<i>basangu</i>) and ultimately to the supreme source of all life (<i>Leza</i>) by offering ritual beers (<i>Kankata</i>) to the ancestors at the sacred groves (<i>Malende</i>). The supplications are based on our obedience to the <i>basangu</i> the previous year for preserving the land. Thus, if our conduct towards the well-being of the land was debauched in the last year, the spiritual forces will not hear our supplications this year because they are annoyed unless ritual beer is	and the spiritual beings subsisted.	through supplications	
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	offered to appease the spirits”, Farmer A. “...every time we begin preparation of our individual farm land, we need to offer supplications to our family ancestors (<i>the Mizimu</i>) within our families. He further instructed that without each family not being able to offer supplications, the family ancestors will not bless our family farm land and be able to realize greater yields the following year,” Farmer B.			
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