The Role of Local Knowledge in Sustaining Ecotourism Livelihood as an Adaptation to Climate Change

by

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AUTHOR`S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

Abstract

Ecotourism is a development strategy for many local communities in and around protected areas. Its ability to improve tourism opportunities, conservation and livelihoods is supported by many ecotourism studies. Such communities often employ diverse livelihood strategies to reduce risk and survive. As such, ecotourism becomes an integral part of a portfolio of livelihoods and assist with livelihood diversification. However, in some locales climate change is making livelihoods, including ecotourism vulnerable, due to its impacts on protected areas and their associated biodiversity.

Climate change creates vulnerability as well as opportunities for adaptation. Climate change adaptation has become important in ensuring tourism sustainability, as it is critical in reducing the vulnerability of tourism. However, the literature supplies only limited knowledge on such adaptation at the local level. This may undermine ecotourism's prospects in improving local livelihoods and conservation. There is a need to understand the lived and embodied everyday experiences of local communities who are experiencing tourism within the context of climate change. In particular, this research needs to capture local knowledge and understanding of climate change, and local efforts at adaptation. In understanding adaptation at the local level, it is important to understand how households construct their livelihoods, including the role of ecotourism. This study examined local perceptions and lived experience in sustainable ecotourism development as a livelihood adaptation to climate change in a case study site in Ghana. This examination and subsequent understanding provided a process for integrating local knowledge into livelihood adaptation as communities become more vulnerable to future climate change that will adversely affect traditional patterns of livelihoods.

The study used the vulnerability-based approach which assessed vulnerability of households' livelihoods to climate change and adaptations. Mognori Eco-Village in Ghana was used a case because of its geographic location in the savannah and experience of climate change as well as households` involvement in ecotourism activities. In focusing on lived experience, the

study was guided by the philosophical ideas of Gadamer, as it lends itself particularly well for exploring the complexities and understanding of households' lived experience with climate change. It also informed the recruitment of 22 households, use of conversation interviews and a focus group as well as data interpretation.

The study found four main underlying essences that explain households' lived experience with climate change: 1) adopting different livelihood strategies; 2) experiencing the impacts of ecotourism on assets and activities; 3) experiencing current vulnerability conditions and developing adaptation strategies; and, 4) sustaining ecotourism by building future adaptation strategies. The first essence suggests strategies such as intensification/extensification, livelihood diversification and migration as broad adaptations for survival. The second essence supports the use of ecotourism as a form of livelihood diversification that complements other non-ecotourism activities. The third essence describes the vulnerability to climate change the local adaptations use to reduce vulnerability. The last essence suggests local agency in overcoming adaptation constraints to improve adaptive capacity to sustain ecotourism as an adaptation strategy to climate change.

The study found that local adaptive capacity exists to support ecotourism. However, the capability of the local community is limited and recommendations are made for government and other stakeholders to further support the local adaptation that is underway.

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Dedication

To my newly born twin girls, Annalisa and Evangela Agyeman, the future is brighter…

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

Ecotourism`s prospects in improving tourism opportunities, conservation, and livelihoods are well supported in studies. It benefits local communities in terms of employment, revenue generation, entrepreneurial opportunities, biodiversity conservation, and socio-cultural revitalization (Honey, 2008; Kruger, 2005), even though, some argue that, its benefits are limited (Agrawal & Redford, 2006). Ecotourism can serve as an important livelihood strategy for some local communities living in marginal situations defined by changing climate and other factors. Such communities typically employ diverse livelihood strategies to reduce risk and survive. As such, ecotourism becomes an integral part of a portfolio of livelihoods and an aspect of livelihood diversification (Tao & Wall, 2009a).

Climate change is important issue in tourism, because the associated risks make communities more vulnerable. The literature suggests that climate change may alter the character of the tourism resource-base, thereby negatively affecting local destinations' perceived attractiveness with adverse implications for tourism demand and local people's livelihoods (see Becken & Hay, 2007; Holden, 2008; IPCC, 2007; Kaján & Saarinen, 2013; Scott & Jones, 2006). The focus on climate change adaptation in tourism is the pursuit of on-going sustainability (Becken & Hay, 2007; Farrell & Twining-Ward, 2004; Scott, 2011).

In the case of ecotourism, its partial dependence on protected areas and associated biodiversity makes it vulnerable to climate change (Scott, 2006). However, climate change creates both vulnerability, and opportunities for adaptation (Becken & Hay, 2007; Scott, 2011). Climate change adaptation is important to ensure on-going tourism sustainability (Moreno & Becken, 2009; Scott, 2011). For instance, adaptation encompasses strategies that both reduce the

negative impacts and increase the benefits of climate change to tourism (Becken & Hay, 2007). In considering adaptation at the local level, it is important to understand how households construct their livelihoods. This is because households operating in vulnerable contexts engage in multiple livelihood activities that are needed to diversify their options and reduce their risks. Moreover, in such situations, ecotourism may present opportunities for livelihood diversification (Tao & Wall, 2009b), particularly where there is observed livelihood dynamics as a result of climate change.

1.2   Problem Statement

Knowledge about the relationship between tourism and climate change, from an adaptation perspective, has increased over the years (see Becken & Hay, 2007; Kaján & Saarinen, 2013; Scott, 2010; Scott & Becken, 2010). Recent studies identify key knowledge gaps such as limited geographic scope and local perspectives on climate change (Scott & Becken, 2010; Kaján & Saarinen, 2013). Particularly, these studies, typically, do not note how the local communities are adapting to climate change. It is suggested that, there is a need to understand lived and embodied everyday experiences of local communities in tourism within the context of climate change that will capture local knowledge and understanding of climate change, its local implications and adaptation (Kaján & Saarinen, 2013; Vincent, 2007). In effect, little is understood about climate change adaptation at the local level in tourism.

1.3   Purpose Statement

The purpose of this study was to examine and understand local perceptions and lived experience of a local community in their construction of sustainable ecotourism development as a livelihood adaptation to climate change. This examination and subsequent understanding provides a process for integrating local knowledge into livelihood adaptation as communities become more

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vulnerable to future climate change which is adversely affecting their traditional patterns of livelihoods. Creating a process for integrating local knowledge into livelihood adaptation can also inform policy on how to enhance ecotourism development as an adaptation strategy to reduce vulnerability to future climate change in communities managing development interventions, particularly ecotourism. Such knowledge and insight are essential to communities experiencing livelihood dynamics because of climate change.

1.4   Central Research Question and Subquestions

In understanding the local perceptions and lived experience, the following research questions were addressed:

1. How is ecotourism development used as a livelihood strategy by households?
   a. How do households construct their livelihoods?
   b. How central is ecotourism to the households` livelihoods?
2. What vulnerabilities do households' livelihoods face, and how are they adapting?
   a. What is affecting the households` livelihoods?
   b. What is affecting the ecotourism in the community?
   c. How are the households adapting to climate change impacts?
   d. How do households determine the effectiveness of the adaptation strategies?
3. How can households collectively adapt to future climate change using ecotourism?
   a. How can they adapt to the future climate change impacts?
   b. How can they implement the adaptation strategies to sustain the ecotourism?

1.5   Significance of Study

Knowledge on climate change adaptation at the community level is limited in tourism studies (Kaján & Saarinen, 2013). This knowledge limitation may create challenges for policy makers in terms of improving the benefits and sustaining households' livelihoods through ecotourism particularly in situations where households are experiencing livelihood dynamics because of

climate change. This knowledge limitation may also compromise the prospects of ecotourism in improving tourism experiences and biodiversity conservation at the local level.

While the contribution of local knowledge in climate change research is recognized (see Berkes & Jolly, 2001; Riedlinger & Berkes, 2001; Ford & Smit, 2004; Ford, Smit & Wandel, 2006), this community dimension is limited in tourism studies (Kaján & Saarinen, 2013). In order to contribute to the theoretical and empirical understanding of climate change adaptation in a development context, this study developed local understanding and knowledge of how households construct their livelihoods, experience vulnerability to climate change, and the collective approach to develop adaptations to future climate change. Also, these insights were used to inform policy on how to enhance ecotourism development as an adaptation strategy to reduce vulnerability to future climate change in local communities.

1.6   Overview of Methodology of the Study

The study adopted Gadamer's philosophical ideas that support the study of lived experience. As discussed in section 1.3, it is acknowledged in the tourism literature that lived and embodied everyday experiences of local communities in tourism within the context of climate change need to be better understood. In understanding this, the study used a qualitative approach, using conversation and focus group interviews with people that are sensitive to local perspectives and local culture.

The research used a case study of the Mognori Eco-villages in Ghana. At this locale households engage in diverse livelihoods, including ecotourism in the context of changing climate. After extensive interviews of local people, qualitative data were transcribed from recorded conversation with 22 household heads and interpreted using Nvivo 9.

1.7   Structure of Thesis

The dissertation has 5 main chapters. Chapter 1 presents an overview of ecotourism's prospects and the implications of climate change on ecotourism and adaptation options available to reduce climate change vulnerability. The chapter also highlights the knowledge gaps in tourism, as well as the purpose and central research questions that justify this study.

Chapter 2 presents a literature review on ecotourism, sustainable livelihoods, and climate change adaptation. Also, it provides a justification for viewing ecotourism as a form of livelihood strategy at the local level. It also provides the rationale for considering climate change adaptation as a basis for sustaining ecotourism as a strategy for future climate change. Chapter 3 provides a detailed discussion of the choices that inform the research process, highlighting the philosophical and methodological building blocks that support investigation of households' lived experience with climate change. Also, it presents the bases for selecting Mognori Eco-village as a case for understanding lived experience, as well as selecting households, data collection tools and the procedure for the data collection, management and analyses, and the issues of credibility.

Chapter 4 discusses the finding of four main underlying essences of the lived experience of the households in the process of constructing their livelihoods in context of the climate change. These essences are supported with quotations of households. Lastly, chapter 5 presents the interpretation and understanding of the experiential reality of households. Also, it reflects on the relevance of the conceptual framework, and presents a conclusion and policy recommendations. Here, I explore my own research journey as a result of the study and suggested research issues emerging from this study.

CHAPTER TWO   LITERATURE REVIEW

2.1   Introduction

The relationship between tourism and climate change has been studied for some time in the tourism literature. These studies evolve from climate change impact assessment to adaptation studies (Becken & Hay, 2007; Scott & Becken, 2010; Scott, Wall & McBoyle, 2005). The notion of adaptation became an urgent research need in tourism and climate change studies because of a knowledge gap, and the realization that climate is changing in response to increased concentrations of greenhouse gases in the atmosphere, causing global warming. This trend is anticipated to continue into the future (IPCC, 2007).

This chapter 2 focuses on the link between tourism and climate change from the livelihood and adaptation perspectives where the attention is on climate's influence on ecotourism, in particular at the local level. The discussion provides justification for reconceptualizing ecotourism as a form of sustainable livelihood. The argument is that, in a local community setting, people engage in a portfolio of livelihood activities and ecotourism may become integrated into the existing livelihood system to order to reduce risk. The emphasis on livelihood is based on the premise that within some local communities, engagement in multiple livelihood strategies is necessary to ensure livelihood security. The climate change adaptation perspective is also relevant because of the increasing challenge of climate change to sustainable development and tourism in particular. In this case, adaptation is viewed as the appropriate response to reduce the vulnerability of ecotourism in relation to climate change as well as identify opportunities to sustain it. Thus, the review indicates the need for sustainable livelihood and climate change adaptation perspectives in ecotourism.

2.2 Ecotourism: Evolution and Conceptualization

2.2.1 Evolution of Ecotourism

Ecotourism, an important form of sustainable tourism, contributes to sustainable development. It emerged in the 1980s, driven by the need for sustainable development (Buckley, 2009; Fennell, 2008a). According to Wearing and Neil (2009), ecotourism revealed increasing environmental concern associated with mass tourism, and tourists' demand for nature-based experiences. Other issues leading to the new emphasis include; an inequitable distribution of benefits, poor linkages, cultural degradation and disruption of biodiversity conservation (Mowforth & Munt 2003; Wearing & Neil, 2009). These issues shifted the emphasis from the sustainability of the tourism industry to the well-being of the local communities and the conservation of biodiversity which constitute the core of the attraction base (Fennell, 2008a; Honey, 2008).

Governments and conservationists increasingly use ecotourism as a strategy to support sustainable development and conservation in and around protected areas. This is based on the assumption that ecotourism may stimulate economic activity (Fennell, 2008a; Wearing & Neil, 2009). Another motivation for ecotourism is that, it may provide incentives to reduce some activities of local communities that undermine conservation, such as forest degradation, expanding agricultural frontiers, illegal hunting, logging, firewood collection, and uncontrolled burning (Buckley, 2009; Wearing & Neil, 2009). Also, Caria and Calfucura (2012) advance three arguments for the increased development of ecotourism at the local or indigenous community level. They note that, firstly, these protected areas are well endowed with natural assets and are located in peripheral areas. Secondly, visitors have explicit desire to patronize local services and

respect the customs of the local communities. Finally, local communities have the relevant traditional ecological knowledge[1] because of their tie to the land, that support ecotourism.

Ecotourism development in such areas is based on the premise that it will foster conservation of biodiversity and provide alternative livelihoods to sustain the well-being of local people, thereby creating a symbiotic relationship between the community and conservation areas (Buckley, 2009; Fennell, 2008b; Stronza & Gordillo, 2008; Zeppel, 2006).

2.2.2 Conceptualization of Ecotourism

The conceptual understanding of ecotourism is diverse (see Björk, 2007; Buckley, 2009; Donohoe & Needham, 2006). One of the earlier definitions is that of Ceballos-Lascurain, who defined ecotourism as ``environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features–both past and present) that promotes conservation, has low negative visitor impact, and provides beneficially active socio-economic involvement of local populations' (cited in Björk, 2007, p.26). According to Wearing and Neil (2009), Ceballos-Lascurain emphasized the natural component and this provided the starting point in understanding the nature of ecotourism.

Many scholars have reviewed and synthesize disparate ecotourism definitions and come to different conclusions (see Donohoe & Needham, 2006; Fennell, 2001; Honey, 2008; Weaver & Lawton, 2007; Wearing and Neil, 2009). For instance, Fennell (2001), who reviewed 85 definitions, declares 'variability' as a distinguishing feature in the literature. He identifies common components in the definitions as; natural setting, conservation, sustainability, culture, benefits to locals and education. In general, the plethora of definitions emphasize two core focus

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[1] Colding and Folke (2000) defined it as "a cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings with one another and with their environment".

of ecotourism: ecotourism as contributing to nature conservation (Cater, 2006; Fennell, 2001; Reimer & Walter, 2013; Wearing & Neil, 2009), and sustainable livelihood development (Fennell, 2008a; Foucat, 2002; Reimer & Walter, 2013; Wearing & Neil, 2009). In considering these two core components, Stronza (2007) writes that:

> Especially for communities bordering protected areas, conservationists have promoted ecotourism as a tool for integrating conservation and development, and for protecting natural resources while also meeting human needs. In these places, ecotourism is a catalyst of change in household economies, leading to new opportunities for employment, new sources of cash income (p. 211).

The definition that captures the two core focus of ecotourism and reflects the intent of this study is that of TIES (The International Ecotourism Society). It defines ecotourism as 'responsible travel to natural areas that conserves the environment and improves the well-being of local people' (see Björk, 2007, p. 28). In essence, ecotourism fosters conservation of biodiversity and sustains the well-being of local people creating a symbiotic relationship between local communities and protected areas (Fennell, 2008; Wearing & Neil, 2009). Weaver (2005) adds that the associated cultural components and the education value need to be recognized.

2.2.3   Community-based Ecotourism

In areas where local communities have a role in managing protected areas, ecotourism can be designed to bring increased level of local benefit (Buckley, 2004; Fennell, 2008b). In such areas, ecotourism is labelled as community-based ecotourism, as an attempt to differentiate between forms of ecotourism that advance the needs and concerns of local communities, and those that simply take place in natural areas (Honey, 2008). As a variant of ecotourism, it articulates a high degree of local community control and an equitable share of the benefits (Buckley, 2008; Jones, 2005; Kiss, 2004). According to Walter, the characteristics of community-based ecotourism

include: principles of local participation; control or ownership; focus on conservation and local livelihood benefits; and, promotion of culture (cited Reimer and Walter, 2013).

Reimer and Walter (2013) share the view that community-based ecotourism embodies a mutually-reinforcing relationship between nature conservation, local economic livelihood, and cultural preservation in a kind of mutualistic symbiotic relationship which benefits all three. Scheyvens (1999) suggests that, "a useful way to discern responsible community-based ecotourism is to approach it from a development perspective, which considers social, environmental and economic goals" (p. 246). In effect, it is: small scale; involves active participation by a broad and representative spectrum of its members; provides benefits for the people; brings about an equitable and improvement in the livelihood the residents; and, enhances conservation and improvements in the culture (Buckley, 2008; Fennell, 2008b; Kiss, 2004).

2.2.4   Ecotourism Impacts on Local Communities

Ecotourism`s ability to improve livelihoods of local communities is supported by studies showing that it benefits them in terms of employment, revenue, entrepreneurial opportunities, biodiversity conservation, and socio-cultural revitalization (Honey, 2008; Horton, 2009; Kruger, 2005). Compared to mass tourism, it is touted as providing better sectoral linkages, reducing leakage of benefits, and fostering sustainable development (Holden, 2008; Weaver, 2005).

There is substantial number of studies showing the economic, environmental, and socio-cultural impacts of ecotourism on local people (Adams et al., 2004; Barkin, 2003; Buckley, 2003; Eagles, 2002; Fuller et al., 2007; Goodwin & Roe, 2001; Kiss, 2004; Roe & Elliot, 2004; Stronza, 2009). Its contribution to poverty reduction is acknowledged in the literature (Adams et al., 2004; Goodwin, 2000). For instance, Adams et al. (2004) argue that, ecotourism is one of the approaches often used to reducing poverty through the linkage of conservation and development.

In supporting its poverty reduction prospect, Kiss (2004) remarks that ``the attraction of community-based ecotourism is the prospect of linking conservation and local livelihoods, preserving biodiversity whilst simultaneously reducing poverty`` (p. 234).

In terms of the economic implications of ecotourism, studies provide evidence of the employment and income impacts on local communities and households. In supporting this view, many authors report that ecotourism creates a variety of employment and entrepreneurial opportunities such as tour guiding, restaurant operation, homestays, lodge operation, sales of souvenirs, and traditional entertainment (Buckley, 2003; Fennell, 2008b; Ross & Wall, 1999). For example, Ross and Wall (1999) report that, resident families of Sagarmatha National Parks in Nepal, received income from guiding, selling local goods and clothes, and providing accommodations for tourists. These employment opportunities created income diversification amongst households (Lapeyre, 2010; Stronza, 2009). According to Wood (2002), these activities play a crucial role in the success of the ecotourism as they increased financial benefits to local communities. Some studies suggest that the benefits stimulate local support for conservation (Alexander, 2000; Doan, 2000; Kiss, 2004; Kruger, 2005; Liu, 2003). Kiss (2004) argues that, these benefits improve the attitude of local people towards biodiversity conservation.

While many studies substantiate the prospects of ecotourism, other studies show that the benefits are sometimes limited (Agrawal & Redford, 2006; Barrett et al., 2001; Goodwin & Roe, 2001; Ogutu, 2002; Stone & Wall, 2004). This limitation is linked to the notion of inequity. The argument is made that the benefits are confined to a few. For instance, Ogutu (2002) observes that, ecotourism gains were restricted to a few households in Eselenkei, a community in Kenya. Other explanations for the limited benefits is attributed to low visitation due to lack of easy-to-see charismatic wildlife, access difficulties and the lack of mechanisms to secure a fair distribution of the benefits within communities (see Coria & Calfucura, 2012). It is argued that

inequity discourages participation and creates or exacerbates divisions in local communities. In reducing the occurrence of inequity, local strategies observed include; using the revenue generated to support community development and developing revenue sharing mechanisms (Coria & Calfucura, 2012).

2.2.5   Limitation of Ecotourism Scholarship

The development of ecotourism for local development has progressed in spite of the mixed outcomes identified by some studies. Over the years, the literature became replete with narrow studies focusing on specific study subjects such as economic, environmental or socio-cultural implications of ecotourism on local communities. However, an increasing number of studies are beginning to acknowledge the need for a holistic and integrated framework for understanding the implications (see Ashley, 2000; Ashley & Mitchell, 2010; Shen et al., 2008; Stronza, 2007; Stronza & Gordillo 2008; Tao & Wall, 2009a). These studies use the sustainable livelihood framework to capture the myriad benefits of ecotourism (see section 2.4).

2.3   Justification for Reconceptualization of Ecotourism as Sustainable Livelihood

2.3.1   Sustainable Development: Conceptualization and Critiques

The notion of sustainable development was popularized by the Brundtland Commission, which defined it as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (UNWCED, 1987, p.43). The strength of the concept stems from the emphasis on meeting and reconciling the current needs and that of the future. It is widely viewed as a shift in the development paradigm in that, it links economic development to both environmental protection and poverty alleviation (Holden, 2008). Its emergence was triggered by the convergence of failed traditional development strategies,

increasing environmental concerns, and a new world view that included humans as a part of the environment (Gallaher, 2010).

In most usage, the sustainability and development components of sustainable development are emphasized (Holden, 2008; Sharpley, 2009). Although sustainable development is widely recognized, it is criticized as a slippery construct reflected through different interpretations (Holden, 2008; Robinson, 2004; Williams & Millington, 2004). Robinson (2004) identifies the major criticisms as being vagueness, fake greenery, and the view of sustainable development as an oxymoron. The vagueness of this characterization is based on the different interpretations (Robinson, 2004). The vagueness of the construct is implicit in the view that development is sustaining growth in material consumption or limiting resources utilization. The notion of fake greenery is linked to the concern about the way sustainable development language is used to promote what may be unsustainable activities. Robinson (2004) describes this as cosmetic environmentalism, which is prompted by the rise of public concern over environmental and social issues. He attributes the problem of cosmetic environmentalism, in part, to the vagueness characterization of sustainable development, which provides the basis for the various claims of practices as being sustainable. In describing sustainable development as oxymoron, the argument is that it fosters delusions. According to Robinson (2004), the pursuit of economic growth contradicts the idea of limits to growth, which is linked to both biophysical and social limits of growth. Williams and Millington (2004) describe this as the 'environmental paradox', because of the mismatch between what is demanded of the Earth and what the Earth is capable of supplying. However, within these characterizations, there is common agreement that, the current development trend is unsustainable. Robinson (2004) argues for a shift from sustainable development to the concept of sustainability that integrates environmental, social and economic issues in a long-term perspective, and recognizes it a process, not an end-state.

2.3.2   Sustainable Development and Tourism

The review of sustainable development in the tourism literature reflects similar definitional contestation (see Liu, 2003; Sharpley, 2009; Telfer, 2002; Wall, 2002; Tao & Wall, 2009b). Sharpley (2009) argues the definitional problem is attributed to its ambiguity and contradictory nature, which provides opportunities for different views. He further explains that the ambiguity is linked to a lack of semantic. And the contradictory nature is based on an argument about the incompatibility of resource conservation and economic development. However, Hunter (1997) attributes the different interpretations to its malleable and adaptive nature.

In spite of the different interpretations of sustainable development in the tourism literature, sustainability is highlighted as a central concept (Sharpley, 2009; Tao & Wall, 2009b; Holden, 2008; Honey, 2008). Its centrality in tourism is based on the range of evidential social, cultural, economic and ecological impacts in tourism destinations. It informs the basis for developing and managing the negative impacts threatening the environment, tourism destinations and the viability of the tourism (Holden, 2008; Tao & Wall, 2009).

Sustainability requires a balance of economic, socio-cultural, and ecological elements of tourism and other systems (Saarinen, 2006). Even though it is viewed as holding considerable promise as a vehicle for addressing negative tourism impacts and maintaining its long-term viability, Liu (2003), notes that, it connotes a steady state condition of tourism for generations to come. Such a view is consistent with stability and a state of equilibrium. However, it is argued in the literature that, current events such as climate change must engender a new conceptualization of sustainability (Farrell & Twining-Ward, 2004; Scott, 2010; Robinson, 2004). For instance, Farrell and Twining-Ward (2005) argue that it will be a false optimistic principle if is not reconceptualised in this context. As such, it must be conceived as a transition rather than an end point (Farrell & Twining-Ward 2004; Farrell and Twining-Ward, 2005; Robinson, 2004).

2.3.3 Ecotourism as Sustainable Livelihood

The ecotourism literature suggests that the notion of sustainability should be connected to the needs of people as well as the natural and cultural resources in a way that will safeguard human needs in the future (Buckley, 2009; Fennell, 2008; Goodwin, 2007). Using ecotourism to contribute to these needs means shifting focus from industry sustainability to community livelihoods (Ashley, 2000; Tao & Wall, 2009b). The emphasis on livelihood is based on the premise that within local communities, engaging in multiple livelihood strategies is a norm to ensure livelihood security. Some studies also suggest that, even if tourism dominates the local economies, it is seldom their only source of sustenance. People often engage in multiple activities to ensure livelihood security (Ashley, 2000; Paavola, 2008; Scoones, 2009; Tao & Wall, 2009a).

A review on the livelihood perspective by Tao and Wall (2009b) provides a justification for taking the livelihood perspective in working towards sustainability. They argue that the livelihood perspective to sustainability helps integrate tourism within a complex mix of livelihood activities, diversifying livelihoods and broadens perspective beyond income to consider other factors which contribute to the wellbeing of local communities. They note that, the introduction of tourism may result in conflict with such activities, displacing them or making them less viable, or it may fit into the existing situation as a complementary activity, contributing to economic diversification and forging positive linkages with existing forms of production. Thus, the notion of livelihoods contributes to sustainability as it offers a useful perspective on tourism for enhancing local benefits (Goodwin, 2007; Ashley & Mitchell, 2010).

2.4   Sustainable Livelihoods Perspective

2.4.1   Conceptual Understanding of Sustainable Livelihoods

The concept of livelihood is widely used in rural development (Ashley & Mitchell, 2010; Shen et al., 2008). It emphasizes holistic and integrative thinking about poverty and development. Its centrality in combating poverty through sustainable development is based on the idea that poverty as a major cause of environmental destruction (Holden, 2008).

The concept of livelihood was popularized by Chambers and Conway (1992). Their definition of livelihood, with minor modifications, has been used by researchers and organizations. This led to the development of different frameworks and the pentagram-based framework of DFID (2004) which captures the essential concept of livelihood (Baumgartner & Högger, 2004). DFID (2004) defined livelihood as "the capabilities, assets and activities required to make a living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base" (p. 26). However, Ellis (2000) contends that the meaning of the term 'capabilities' in the above definition overlaps greatly with assets and activities, and the use of the term 'capabilities' can bring confusion. In other words, livelihood should simply mean using assets and engaging in activities to make a living (Ellis, 2000).

The core characteristic of the livelihood perspective is the recognition that the root of development is livelihoods. It is a people-centred paradigm which acknowledges people`s inherent capacities and knowledge. Also, it denotes a multi-sectoral character of real life, integrating environmental, social and economic issues into a holistic framework (see Figure 2.1). It highlights the development of short- and long-term adaptive capacities that enhance the abilities of individuals and communities to deal with changing circumstances (Paavola, 2008).

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Central to a livelihood perspective is the notion of adaptive strategy. Helmore and Singh (2001) defined it as ``the changes and adjustments people make in their livelihood systems in order to cope under difficult circumstances'' (p. 3). These livelihoods are based on local knowledge, combing traditional knowledge with appropriate elements from contemporary or external knowledge, assimilated into the community over time (Tao & Wall, 2009). The understanding of the adaptive strategy of the local communities is becoming important in the context of climate change (Becken & Hay, 2007; Smit & Wandel, 2006).

2.4.2   Sustainable Livelihood Framework

Sustainable livelihoods consist of a conceptual framework (see Figure 2.1) which emphasizes that assets are used and activities pursued to generate a range of livelihood outcomes (alternatively thought of as needs or goals). The framework is made up of subcomponents which are: vulnerability context, livelihood assets, transforming structures and processes, livelihood strategies, and household outcomes.

The vulnerability context is viewed as the key to livelihood sustainability as it frames the external environment in which people exist but is beyond their control (DFID, 2004). People's livelihoods and availability of assets are fundamentally affected by critical trends (i.e., population, resource, governance and technological trends), shocks (i.e., human health, natural, economic, conflict shocks) and, seasonality (i.e., of prices, production, health, and employment opportunities). The vulnerability context can adversely affect people`s assets and their choice of livelihoods, although not all vulnerabilities are negative.
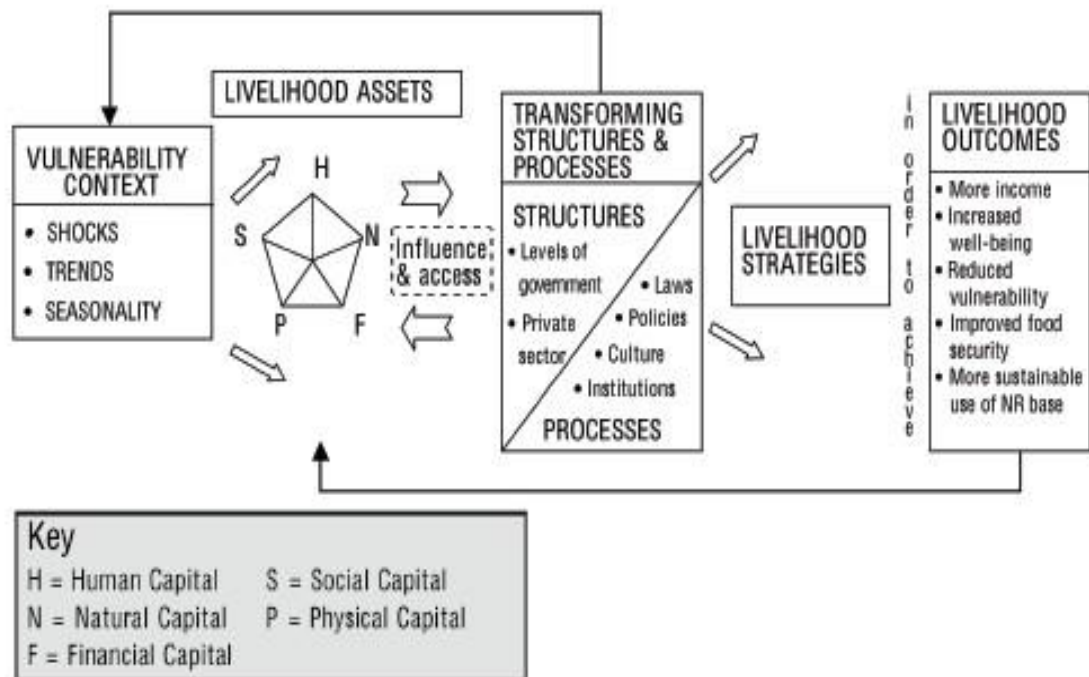
Source: DFID (2004)

Figure 2.1 Sustainable livelihood framework

The framework also suggests an asset portfolio of five different types; financial, social, physical, human, and natural assets. These assets form the building blocks on which people use to develop their livelihoods activities (DFID, 2004; Ashley, 2000). The financial asset includes savings, credit, as well as inflows (e.g., remittances). In tourism, Ashley (2000) categorized the financial asset into wages, casual earning, and collective income. The natural asset includes land, water, forests, marine resources, air quality, erosion protection, and biodiversity. These assets are important to activities such as: farming, fishing, gathering in forests, etc. They also constitute the core attractions in ecotourism. The human asset represents the skills, knowledge, and good health. The physical asset includes transport, shelter, adequate water supply and energy. The social asset refers to social resources, such as relationships of trust, social norms, networks and membership in groups. The framework also includes the transforming structures and processes,

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which are the organizations (i.e., private and public) and policies, laws, culture, which determine the way in which structures and individuals interact. Also, livelihood strategies and outcomes are other components of the framework. The livelihood strategy is an overarching term used to denote range and combination of activities and choices that people make in order to achieve their livelihood outcomes (DFID, 2004). It covers extensification/intensification[2], livelihood diversification and migration, as responses to climatic and other stressors (Ellis & Mdoe, 2003; Paavola, 2008; Scoones, 1998).

In the tourism literature, an emphasis is often placed on livelihood diversification, where households use both tourism and non-tourism activities to improve their standard of living (Shen et al. 2008; Tao & Wall, 2009b). The tourism activities include employment, business and services for tourism purposes. Non-tourism relate to activities such as farming. In the literature, combinations of these strategies are viewed as livelihood diversification (Becken & Hay, 2007; Tao & Wall, 2009a). The integration of tourism into the existing mix of livelihood activities creates economic diversification for the following different purposes: creating a means for accumulation (i.e., income); spreading risks; developing an adaptive response to environmental change; and, taking pressure off fragile lands (Tao & Wall, 2009a).

2.4.3   Linkages in the Sustainable Livelihood Framework

The framework (see Figure 2.1) views people as operating in a context of vulnerability. Within this context, they have access to certain assets. The starting point is the vulnerability context within which people operate. The next focus is on the assets that people draw on for their livelihoods. These assets interact with structures and policies that shape the choice of livelihood strategies. These in turn shape the livelihood outcomes. However, those outcomes are not

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[2] Intensification is the application of more labour on a unit of land, because of population pressure and a surplus of labour, to achieve greater productivity. Extensification refers involves taking new units of land (see Paavola, 2008).

necessarily the end point, as they feed back into the future asset base illustrating the two-way relationships that exist in the framework.

The linkages between the various subcomponents within the framework are two-way relationships. In the assets and the vulnerability context, assets are both destroyed and/or created as a result of the vulnerability context. There is direct feedback to the vulnerability context from the transforming structures. An example given is that when policies are established and implemented through an organization, it can help cushion the impact of external shocks. Also, there may be a direct impact on livelihood outcomes. For example, a responsive organization can implement interventions to improve people's well-being. Policies can also help reduce vulnerability through the provision of a social safety net.

There is a feedback arrow in the framework between livelihood outcomes and livelihood assets, the two being linked through livelihood strategies. For example, a person may choose to reinvest any increased income in assets, with a view to catalyzing a virtuous circle of asset accumulation. In the assets and transforming structures and processes, these elements affect the assets by creating new ones through government policy which may invest in basic infrastructure for example improving access to resources. The linkage between assets and livelihood strategies shows that those with more assets tend to have a greater range of options and ability to switch between multiple strategies to secure their livelihoods. The linkage between assets and livelihood outcomes shows that people's ability to escape from poverty depends on their access to assets, and different assets are required to achieve different livelihood outcomes.

2.5   Sustainable Development, Climate Change and Adaptation in Tourism

2.5.1   Sustainable Development and Climate Change

Over the years, many development interventions have ignored risks associated with climate change (Bizikova, Robinson & Cohen, 2007; Robinson & Herbert, 2001; Swart, Robinson & Cohen, 2003; Wilbanks, 2003). However, current climate change and sustainable development studies suggest the need for the framing of climate change in a way that is sensitive to the complexities of the human systems in which both climate change and sustainable development are embedded. As a result, studies integrating climate change adaptation and sustainable development are becoming important because of the recognition that, climate change influences development, and in turn, development does not only determine greenhouse gas (GHG) emissions affecting future climate change, but also influences capacities to adapt to climate change (Becken & Hay, 2007; Beg et al., 2002; Bizikova et al., 2007).

The integration of climate change adaptation and sustainable development is described by two approaches in the literature. Schipper (2007) described these approaches as adaptation and vulnerability reduction approaches. They represent different starting points, with different understandings of the type of activities that need to be undertaken to achieve a sustainable adaptation process. She explains that the adaptation approach is an intervention in response to the observed and experienced impacts of climate change on society (including ecosystems) to ensure that vulnerability to the impacts is reduced, reducing risks associated with climate change, therefore making development sustainable. With the vulnerability reduction approach, development processes help reduce vulnerability to climate change with a corresponding reduction in the impacts of climate hazards, sensitivity and exposure to those hazards. These two approaches recognize the relationship between adaptation and sustainable development as they both play a role in reducing vulnerabilities (Schipper, 2007).

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The adaptation approach emphasizes the mainstreaming of adaptation into development with the intent of ensuring sustainability of livelihoods even with environmental fluctuations (Schipper, 2007). However, she argues that mainstreaming will be ineffective if the development trajectories are inconsistent with the objectives of adaptation. She adds that privileging adaptation over development is like putting the cart before the horse and that vulnerability to climate change has nothing to do with climate but an underlying series of factors that undermine the ability of people to address the impacts of climate change. This argument is embedded in an alternative view that climate change adaptation is unnecessary because "adequate development" reduces vulnerability. This view (i.e. vulnerability reduction approach), emphasizes the need to reduce vulnerability as the basis for reducing climate risks and ensuring sustainable development. Smit and Pilifosova (2001) add that, the ability to adapt is dependent on the state of development. In this sense, constraints to development undermine adaptation and, thus vulnerability reduction approach presents an effective framework for supporting adaptation (Schipper, 2007). And the knowledge of local vulnerability is a key requirement for successful adaptation (McCarthy et al. 2001).

2.5.2 Evolution of Tourism Development and Climate Change Relationship

The evolution of studies on climate change in tourism has been described in the tourism literature (see Scott & Becken, 2010; Scott, Wall, & McBoyle, 2005; Weaver, 2011). Four phases through which the tourism-climate change relationship has been studied were identified as: the formative, stagnation, emergence and maturation phases.

The first phase, the 'formative phase', occurred between the 1960s to the 1970s, focused on weather/climate and tourism/recreation, exploring the influence of weather on recreation activities at the local scale as well as the interaction of climate and tourism at the global scale.

However, the notion of climate change and its implications for tourism were not considered because of limited study on the tourism-climate change relationship (Scott et al., 2005). The 1980s were recognized as the stagnation phase, because of notable decline in studies as a result of limited interest in climate-related issues. According to Scott et al. (2012), the notion of anthropogenic climate change had not gained wide acceptance among the tourism community. The emergence phase occurred in the 1990s with a substantive growth in studies related to tourism and climate change. A study by Smith (1990), explored the impacts of climate change on outdoor recreation, beach and winter tourism. The study noted some potential adaptation needs. In this phases, however, the climate change and tourism studies highlighted the first-order impacts (i.e. biophysical effects of climate change, such as changes in ecosystems) as detrimental to tourism with limited focus on the implications of climate change for tourism (Scott et al., 2005). Finally, the maturation phase in 2000s and beyond realized substantial increase in tourism and climate change studies. This phase recognized the notion of adaptation, and emphasized it as an urgent need in tourism and climate change studies (Kaján & Saarinen, 2013).

2.5.3   Climate Change, Tourism and Sustainability

The notion of sustainability (see also section 2.3) is suggested by the studies on tourism-climate change relations. These studies sought to assess the impacts of climate change and vulnerability and adaptation of tourism to climate change at different scales and sectors of tourism (Agnew & Viner, 2001; Becken, 2005; Scott & McBoyle, 2007). Climate change[3] is viewed as a major challenge facing tourism. This view is emphasized also in the Davos Declaration on Climate Change and Tourism, which declared that climate change "must be considered the greatest challenge to the sustainability of tourism in the 21st century" (Scott & Becken, 2010).

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[3] According to IPCC (2007), climate change refers to 'a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods' (IPCC, 2007).

In managing climate change impacts, mitigation and adaptation responses are suggested (Becken, 2005; Becken & Hay, 2007; de Freitas, 2005; Scott & Becken, 2010). These responses to climate change exist as being separate and independent. This has been described as 'house-dividing' or 'mitigationists' and 'adaptationists' perspectives in tourism studies (Weaver, 2011). Even though reference is made about mitigation as a response to climate change in tourism because of the contribution of tourism to global climate change through GHG emissions from transport (Becken & Hay, 2007; Scott & Becken, 2010), adaptation is strongly advocated as a viable response to sustain tourism (Becken & Hay, 2007; Kaján & Saarinen, 2013; Scott, 2011).

The advocacy for adaptation as a response strategy to climate change is based on the realization that climate is changing in response to increased concentrations of greenhouse gases in the atmosphere. The resultant global warming will continue into the future (IPCC, 2007). It is argued that even under the most aggressive emission control measures; current greenhouse gas emissions commit the earth to continued climate change (Metz et al., 2001). Fussel and Klein (2006) argue that:

> First of all, given the amount of past GHG emissions and the inertia of the climate system, we are already bound to some level of climate change, which can no longer be prevented even by the most ambitious emission reductions`` (p. 12).

Thus, adaptation emerged as a solution to address some of the impacts of climate change that are already evident in some regions. Particularly, it is considered relevant for developing countries, where communities are already struggling to meet the challenges posed by existing climate variability and are therefore expected to be heavily affected by climate change (Schipper, 2007).

2.5.4   Conceptual Understanding of Adaptation

Adaptation has evolved from being considered as a process in evolutionary biology, where plants and animals respond to environmental changes, to being promoted as a concept for guiding

policy to ensure sustainable development, reduce vulnerability, and minimize risk to humans from climate change (Schipper, 2007). As a biological concept, it is viewed in a historical sense while in climate change, it is futuristic and looks forward to the future changes in environment and attempts to make not reactive, but anticipatory adjustments. Its application in the social science emphasizes the needs to focus on understanding the social vulnerability, instead of the biophysical impacts of climate change (Brace & Geoghegan, 2010; Schipper, 2007).

IPCC (2007) defined adaptation as 'an adjustment in natural or human systems in response to actual or expected climate stimuli or their effects, which moderates harm or exploits opportunities'. It aims at reducing vulnerability to expected impacts of climate change (Mercer, 2010). In the tourism literature, Becken & Hay (2007) suggest that adaptation are ``those actions or activities that people undertake, individually or collectively, to accommodate, cope with or benefit from, the effects of climate change, including changes in climate variability `` (p.225). Scott (2006) is of the view that, apart from reducing the risks posed by climate change, adaptation also maximizes the benefits of new opportunities. It reflects the ability of a system to transform its structure, operations or organisation to survive under changes threatening its existence and success (cited in Kaján & Saarinen, 2013).

Becken & Hay (2007) suggest that adaptation is a dynamic process that influences how people adapt as well as how their needs are constantly changing. From this perspective, adaptation is adjustment to existing strategies.

2.5.6   Climate Change Impacts and Adaptation in Tourism

Climate change implications for different tourism sectors and systems such as skiing, coastal and marine environment, national and mountain parks are well discussed and studied (Becken & Hay, 2007; Hall & Higham, 2005; Hamilton & Tol, 2007; Scott, 2006; Scott et al, 2006). These

discourses and studies highlight two broad perspectives, encompassing; how tourists will respond to climate change and how tourism destination attractiveness will change in response to climate change.

Focusing on the tourists, it is discussed that, climate change affects activity choice and travel patterns both domestically and internationally with considerable implications for the tourism enterprises and community livelihoods (Hall & Higham, 2005; Hamilton & Tol, 2007; Scott, 2006). Becken & Hay (2007) add that, the various components of tourism such as: appeal of a destination, transport infrastructure and operations, the resource base, tourist satisfaction and safety, and the viability or sustainability of tourist facilities are affected, changing the attractiveness of destinations and influencing the tourism flow.

Studies agree that climate change impacts on nature-based tourism (including ecotourism) are profound in terms biodiversity loss and landscape appeal (see Becken & Hay, 2007; Hall & Higham, 2005; Scott, 2006). Increases in intense storms or other weather extremes and their consequences such as flooding, landslides, and forest fires, adversely affect tourism destinations. All of these studies are on the supply side of tourism; few studies have addressed how climate change will affect tourism demand as the home nations are strongly affected by new climate regimes.

In the literature, adaptations are broadly categorized into technological (e.g., snow production), management practices (e.g., product diversification, and marketing), and behavioural changes (Becken, 2005; Dawson & Scott, 2010; Marshall et al., 2011; Kaján & Saarinen, 2013). These adaptations can contribute to tourism sustainability (Scott, 2011).

Most tourism adaptation studies focused on the winter tourism in Northern countries. These studies identified artificial snowmaking and developing higher elevation ski areas as adaptation strategies to sustain the skiing activity (Kaján & Saarinen, 2013; Scott & McBoyle,

2007). The use of insurance is recognized as an additional strategy used by the tourism industry against climate-related hazards (Scott & McBoyle, 2007). Studies on the use of product diversification, found this strategy to be an effective means to reduce sensitivity of the tourism to crises (Kaján & Saarinen, 2013). For example, Marshall et al. (2011) found that some diving operators in the Red Sea Region offer additional tourism experiences such as bird-watching excursions, night time astronomy lessons, and desert camps to introduce guests to indigenous music, food and culture. They note that, tourism operators who offer a range of tourism experiences enhance their adaptive capacity to manage ongoing changes, such as the effects of a shift in climate. These strategies have proven to be viable in securing revenues and employment (Kaján & Saarinen, 2013; Scott & McBoyle, 2007).

Other studies have identified adaptation of tourists to climate change in terms of change in behaviour (Maddison 2001; Lise & Tol 2002; Hamilton et al. 2005; Scott & Jones 2006). These studies suggest that the perception of tourists about destinations as a result of environmental changes, affect their choices of destinations, activities, and travel pattern. On the basis of these reasons, tourists' adaptive behaviors are reflected in the flexibility in activity, and destination choices (Amelung, Nicholls, & Viner, 2007; Becken, 2005; Dawson & Scott, 2010; Kaján & Sarineen, 2013). Other adaptation strategies are activity substitution and limiting tourist access to certain areas to reduce environmental damage (Scott, 2006). Becken and Hay (2007) add that, practices that support conservation, and maintain ecosystem structure and function are important adaptation strategies.

2.5.7   Constraints to Climate Change Adaptation

The barriers to climate change adaptation are listed in tourism studies. Becken (2005) found lack of financial resources and capacity as barriers to adaptation. Low capacity is attributed to poverty

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and structural constraints, limited access to capital, including markets, infrastructure and technology, ecosystem degradation, and conflicts (IPCC, 2007). Weak capacities lead to weak adaptation to climate change and ineffective risk reduction (Christoplos, 2008). Also, Becken and Hay (2007) identify: 1) erroneous or limited understanding of climate change effects; 2) defective or limited understanding of the possible adaptation options; 3) not taking the needs of future generations into account; 4) cultural constraints to certain adaptation responses; 5) limited resources to implement the most desirable adaptation measures; and, 6) not using collective approach in implementing adaptation responses.

As a way of overcoming some of these barriers, IPCC (2007) recommends the consideration of collaboration with government and other relevant stakeholders to help reduce the constraints by building adaptive capacity. This assistance will be relevant because traditional strategies may be inadequate for future climate change (Ford & Smit, 2004; Ford et al., 2006). In supporting this view, Smit et al. (2011) note that enhancing adaptive capacity represents a practical means of reducing vulnerabilities associated with climate change. Also, Shakya (2009) suggests that increasing assets or promoting alternative economic activities such as tourism to diversify livelihoods can strengthen some people's capacity.

2.5.8 Climate Change Adaptation: Taking Vulnerability Perspective

Climate change adaptation is recognized as important in understanding and reducing vulnerability of tourism to climate change (Becken & Hay, 2007; Scott, 2006; Scott, 2011). As discussed previously (see section 2.5), Schipper (2007) made an argument for a vulnerability reduction perspective in development context. She notes that while there is a significant push for adaptation in development, there is a missing step if vulnerability reduction is not considered central to this. By identifying the points of vulnerability within any given system, the applicable

and appropriate adaptation measures can be taken (Smit & Wandel, 2006). Thus, understanding vulnerability forms the basis for developing adaptation strategies.

Füssel (2007) describes four dimensions of vulnerability as: a system, the attributes of concern, the hazard, and a temporal reference. The system can refer to a wide selection of coupled human–environmental systems (Adger et al., 2003; Smit & Wandel, 2006) or socio-ecological systems (Folke, 2006; Turner et al., 2003). The hazard (e.g., climate change) is viewed as having a damaging impact on the attributes of concern, which refer to any valued issues within the local community. The time aspect refers to the temporal reference. Studies suggest a period of 20 years for anticipating change in climate and for climate change projections (Weaver, 2011).

In literature, vulnerability is viewed as an outcome or context (Kelly & Adger, 2000; O'Brien et al., 2005). Brooks (2003) explains that adaptation as an outcome emerged from studies that neglect people's adaptation to climate change but focus on human exposure to hazard events. He notes that, the definition of IPCC is a case in point. IPCC (2007) defines vulnerability as "the degree to which a system is susceptible to and unable to adapt to adverse effects of climate change" (p.883). Brooks (2003) labels this view of IPCC as biophysical vulnerability. Kelly & Adger (2000) argue that IPCC`s definition of vulnerability is contingent on estimates of potential climate change and adaptive responses. In this case, assessment of vulnerability is the end point of a sequence of analyses beginning with projections of future emissions trends, development of climate scenarios, biophysical impact studies and the identification of adaptive options. They explain that any residual consequences of the process define levels of vulnerability. The IPCC`s definition represents a speculative future and is more concerned with assessing the overall scale of the global warming problem and providing comparative estimates

(Kelly & Adger, 2000). It is argued that adaptation strategies aimed at reducing physical risk fail to reduce exposure and damage and may increase vulnerability instead (Vincent, 2007).

The view of vulnerability as a context, as indicated by Brooks (2003), emerged from studies of the structural factors that make the human system vulnerable to climate change. Here, vulnerability is an inherent property of a human system arising from its internal characteristics This view is characterized as social vulnerability, which is influenced by `generic` factors such as poverty, inequality, social networks, health, marginalization, food entitlements, access to resources, and, housing quality (Adger, 2000; Brooks, 2003; Pelling, 2002). Studies with this perspective view vulnerability as a human relationship not a physical one (i.e., vulnerability is socially constructed rather than determined by the occurrence of a physical event). It is a result of social processes and structures that constrain access to resources undermining people's ability to adapt to climate change.

The emerging third view in the climate change discourse (see Adger, 2000; Cutter, 2003; Turner et al., 2003), integrates both the biophysical and social vulnerability, which is consistent with the view of Ford, Smit and Wandel (2006). Ford et al. (2006) view vulnerability as a function of the exposure and sensitivity of a community to climate change effects and its adaptive capacity to deal with that exposure. There is positive functional relationship between vulnerability and exposure and negative one between vulnerability and adaptive capacity (Smit & Pilifosova, 2003). Kelly and Adger (2000) state that it would be foolish to suggest that any particular understanding of vulnerability is more or less appropriate in the context of climate change studies. The purpose of the analysis must guide the selection of the most effective definition. The third view is appropriate and guides this study as it recognizes the integration of both the biophysical and social vulnerability. It is also consistent with the livelihood perspective and sensitive to local perspective. According to Turner et al. (2003), both the social and

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biophysical aspects are essential parts of a comprehensive framework for understanding the vulnerability of coupled human–environment systems.

Based on their vulnerability framework (see Figure 2.2), Ford et al. (2006) describe that exposure-sensitivity reflects the susceptibility of people and communities. It is determined by the characteristics of climatic conditions such as magnitude and frequency. It depends also on nature of the community in terms of its location and livelihoods. Again, it reflects social and biophysical conditions and processes operating at broader scales. In the framework, climate change interacts to affect the characteristics of climate-related conditions, changing the nature of the potential risks or exposures posed.
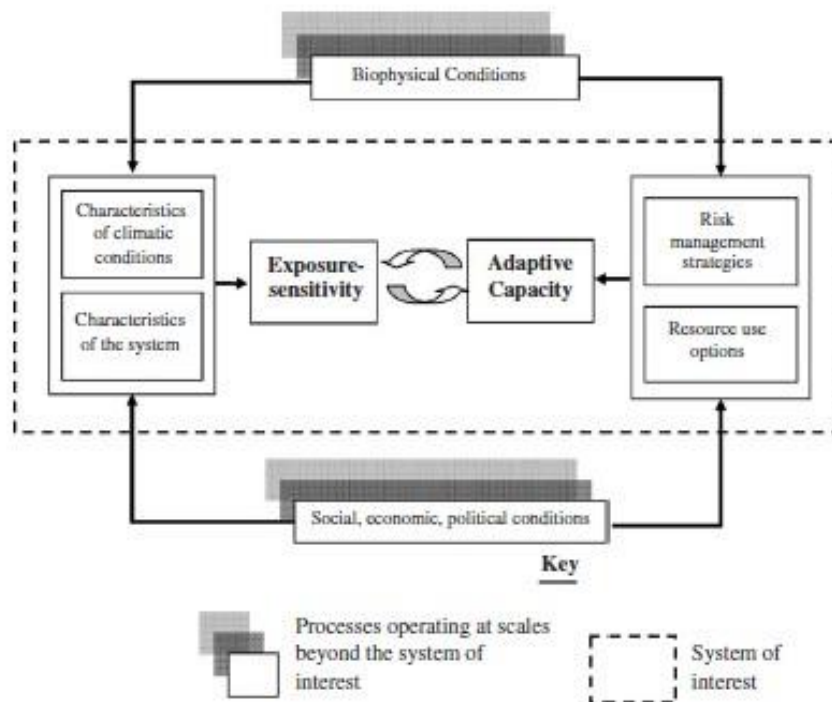
Source: Ford et al. (2006).

Figure 2.2 Framework of vulnerability showing determinants and external factors

The framework also highlights the adaptive capacity, which describes the ability to address, plan for, or adapt to exposure-sensitivity. It reflects resource use options and risk

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management strategies to anticipate, avoid, moderate, and recover from exposure effects. Adaptive capacity is affected by factors such as economic, social capital, infrastructure, social institutions, technology, equality, and experience with previous risk. These factors are interdependent and facilitate or constrain the ability of a community to deal with climate-related risks. The factors are also influenced by human and biophysical conditions and process operating at various scales. The framework indicates that exposure-sensitivity and adaptive capacity are dynamic and interdependent.

2.5.9   Limitations in Tourism-Climate Change Research

Studies on tourism and climate change increased over the years (see section 2.5). However, climate change adaptation research is rudimentary (Scott & Becken, 2010).

Recent studies and discourse on tourism-climate change relationship identify key knowledge gaps in the existing knowledge (see Scott & Becken, 2010; Kaján & Saarinen, 2013; Weaver, 2011). For instance, Scott and Becken (2010) identify limitation in the tourism-climate change studies in terms of geographic scope, since they focused largely on Western countries. They note that studies should address the tourism-climate change relationship, particularly in Africa and other continents because of the relative importance of tourism to their economies. Most studies have focused on the viability or sustainability of the tourism industry. This made Weaver (2011) note that the adaptation research is mainly capitalist-orientated, as the studies focused on the needs and perceptions of the industry. In a review of the tourism-climate change adaptation discussion, Kaján and Saarinen (2013) concluded that, while perceptions of other stakeholders are captured in the adaptation studies, there is limited knowledge on community perceptions. They emphasized that, "a focus on community dimension research in relation to

tourism and climate change allows highly contextual adaptation challenges to be met in a more sustainable way" (p. 167).

Other studies in the climate change literature draw attention to approaches that are dominated by top-down thinking (Adger & Vincent, 2005; van Aalst et al., 2008). They address the impacts of climate change, rather than addressing the underlying factors that cause vulnerability (Schipper, 2007). These studies have been criticized because they focus on potential benefits of adaptation for a target system. They are futuristic as they focus on future climate and address how uncertain impacts can be reduced by the process of adaptation under unknown future socioeconomic circumstances (van Aalst et al., 2008). However, how local communities are adapting to change in climate has been ignored (Kaján & Saarinen, 2013; Vincent, 2007). It is suggested that there is urgent need to understand lived and embodied everyday experiences of local people in tourism with climate change that will capture local knowledge and understanding of vulnerability and adaptation option developed (Huq & Reid, 2007; Kaján & Saarinen, 2013). The urgent need for this research is expressed by studies that suggest that; "those who live and work in a changing environment 'should be our concern'" (see Kaján & Saarinen, 2013, p. 184). This is 'bottom-up' approach described as community-based adaptation approach and has advantages relating to practicality and implementability of adaptation strategies (Smit & Wandel, 2006; van Aalst et al., 2008).

Climate change studies are advanced at the community level and recognize the contribution of local knowledge to climate change research (see Berkes & Jolly, 2001; Ford & Smit, 2004; Lebel, 2013; Ford, Smit & Wandel, 2006). These studies agree that scientific knowledge of climate change and its impacts is useful but rarely sufficient to serve as a basis for effective local adaptation. As a result, local knowledge, which is specific to conditions of a place, is also needed (Brace & Geoghegan 2010; Hulme 2008). This place-specific knowledge

makes it possible to take into account knowledge of specific biophysical and social processes in the design of local processes (Berkes 2009). Local knowledge and experience can help build adaptive capacity and resilience (IPCC 2007). However, this local level of knowledge is limited in tourism (Kaján & Saarinen, 2013). Local knowledge is simply the information gained from the community members irrespective of culture or inter-generational history (Pearce et al., 2009).

2.6   Theoretical Framework for Vulnerability Assessment

This current thesis study is guided by ideas about the sustainable livelihood and climate change adaptation perspectives, which lead to a framework for the examination of households' adaptation (see Figure 2.3). In these two perspectives, the notion of vulnerability is central. It is viewed as the context in which households construct their livelihoods. It is recognized that the changing climatic and social factors at the local scale, influence the vulnerability context. These factors describe the biophysical and social conditions, the two aspects of vulnerability, which determine the exposure-sensitivity of households. Exposure-sensitivity is also influenced by the location of the community and livelihoods. The vulnerability context frames the environment in which households construct their livelihoods. It affects their livelihood choices in terms of livelihood strategies, which are determined by the livelihood assets and activities that households engage in, resulting in certain livelihood outcomes. There is an interrelationship between livelihood strategies and outcomes in the sense that, the outcomes are reinvested into activities generating more assets. The livelihood strategies are also influenced by structures and processes in the locality. The livelihood outcomes affect adaptive capacity of households, which is reflected in the adaptations people employ to deal with biophysical and social conditions. The adaptive capacity also depends on the risk management strategies and social conditions. The choices of adaptation need to be both short and longer term in order to deal with changing

environment or exposure-sensitivity as a result of the dynamics of the vulnerable context. Exposure-sensitivity and adaptive capacity are interrelated, as it is explained that, experience with exposure creates learning and knowledge, improving adaptive capacity, while repeated exposure create low adaptive capacity through assets decline. How the processes are experienced is unknown.
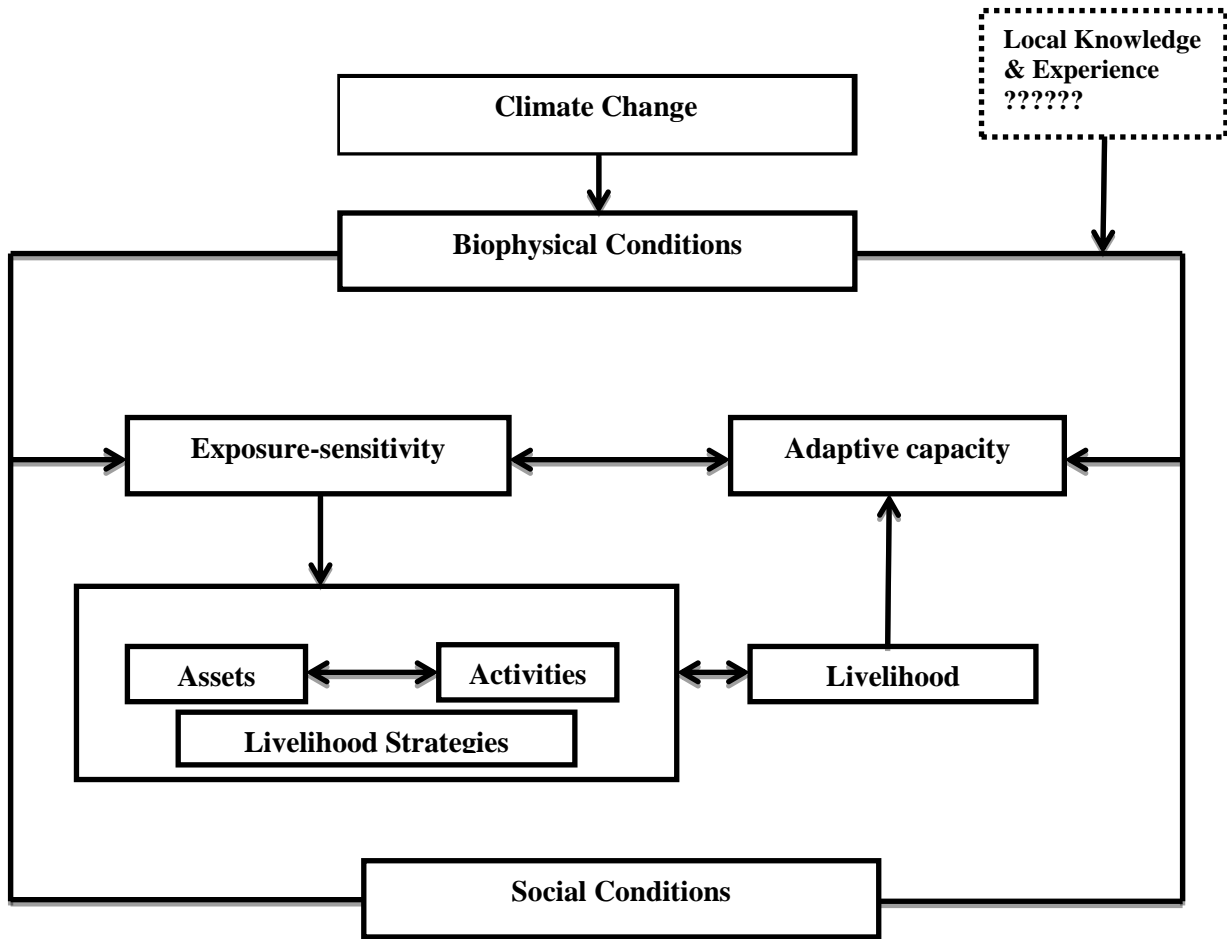
Figure 2.3 Framework for vulnerability assessment

The assessing vulnerability starts with an assessment of the vulnerability of the community, in terms of who and what are vulnerable, to what stresses, in what way, and what capacity exists to adapt to changing climate. This approach recognizes the importance of

involving local community in assessing vulnerability to current climate change as well as the current adaptations as well as opportunities to reduce future vulnerabilities.

2.7   Chapter Summary

Chapter 2 provided a review on ecotourism, sustainable livelihood, and climate change adaptation studies. It started with discussing the importance of ecotourism and the rationale for its popularity in local communities in and around protected areas.

The chapter discussed a rationale for viewing ecotourism as a form of sustainable livelihood. The emphasis on livelihood is based on the premise that within local communities, engaging in multiple livelihood strategies is a norm to ensure livelihood security (Paavola, 2008). Ecotourism thus becomes integrated in the existing livelihood system, and becomes a form of livelihood diversification. The discussion emphasizes that, adaptive strategy underlying the livelihood perspective is becoming important because of the changing climate.

The chapter also discussed tourism-climate change relationship from the adaptation perspective, highlighting the need to understand and reduce vulnerability to climate change, if ecotourism development is to continue as a sustainable development option for local communities.

The review of the studies resulted in the development of a theoretical framework that helped to understand of the experiential reality of households involved in ecotourism and experiencing changing climate.

CHAPTER THREE: METHODOLOGY

3.1   Introduction

Chapter 3 provides a detailed description of the methodological choices made in this study. Methodology refers to the philosophical assumptions underpinning the methods and research. It informs the data collection, household selection, the position of the researcher, the process of data analysis, and trustworthiness of the study. In describing the methodology, Hans-George Gadamer`s philosophical hermeneutics is presented. The philosophy lends itself particularly well for exploring the complexities and understanding of households' lived experience with ecotourism development in the context of climate change. The choice for the Gadamerian philosophy is based on the call for understanding lived and embodied everyday experiences to climate change in recent tourism studies. It also provided guidance in developing an interpretively rich descriptions, understandings and meanings on the experiences by identifying the underlying essences of the experiential reality of households.

The chapter starts with discussion on the relevance of case study and the rationale for choosing Mognori Eco-village as the case for exploring households` lived experience. This is followed by a discussion of the Gadamerian Hermeneutics and how it provides a sound basis for the methodological foundations, informing the research process. There is general understanding that there is no prescription of methods or cookbook recipe, except the scholarly tradition of Gadamer which informs my worldview and research process. So the methods employed are consistent with the Gadamerian tradition. In effect, it provides the foundational ideas that informed the choices made regarding the household selection and size, data collection tools and process for understanding of lived experience, the position of the researcher, the procedure for the data management and analyses, quality of study and the issue of ethics.

3.2   Case Study Approach

Case study is widely used in tourism (Beeton, 2005; Stronza & Pegas, 2008; Tisdell & Wilson, 2001). Beeton (2005) states that, ``the extensive use of case study in tourism is based on the learning value from what is observed, which is intrinsic to the development of human psyche'' (p.37). It involves the study of a case, as an example of the phenomenon with the aim to seek understand of the phenomenon (Veal, 2006). The case is chosen because of its uniqueness (Stake, 2003). With this in mind, I selected Mognori Eco-Village as a case to understand households' lived experience with ecotourism development, in the process of constructing their livelihood within the context of climate change.

3.2.1   Rationale for Choosing Mognori Eco-Village

Mognori was chosen for the following reasons: 1) the involvement of many households in ecotourism; 2) the level of control and management of the ecotourism by the community; 3) a partnership with Mole National Park and other institutions; 4) proximity and easy access for data collection; 5) recent improvements in physical assets such as bridge, road network, light, internet and phone; and 6) the availability of background information on households' livelihoods. Another reason for choosing the case was because it is located in the region of Ghana characterized by high temperature, declining and unpredictable precipitation and extreme natural events. Also, the region is characterized by low adaptive capacity and high poverty (Antwi-Agyei et al., 2011).

My past visit and interaction with the community through the Ghana-Canada Protected Areas and Poverty Reduction Project established preliminary contact both in the community and Mole National Park. These reasons reflected the feasibility of conducting the study in terms of accessibility, data collection, cost, and permission to access the sources of information. The

study is relevant to the community and other institutions involved in the development of ecotourism in the community, particularly the Wildlife Division of Forestry Commission, which engages with communities peripheral to national parks in Ghana, to encourage local support for wildlife conservation. The rationale provides a strong basis for studying and understanding local community dimension of ecotourism-climate change relationship.

3.2.2 Geographical Location

Mognori Eco-village is located in the West Gonja District (see Figure 3.1), one of the 20 districts in the Northern Region of Ghana (Ghana Statistical Service, 2012). It has a land area of 8,352 km^2. The district lies on longitude $1^0 5^1$ and $2^0 58^1$ West and Latitude $8^0 32^1$ and $10^0 2^1$ North.
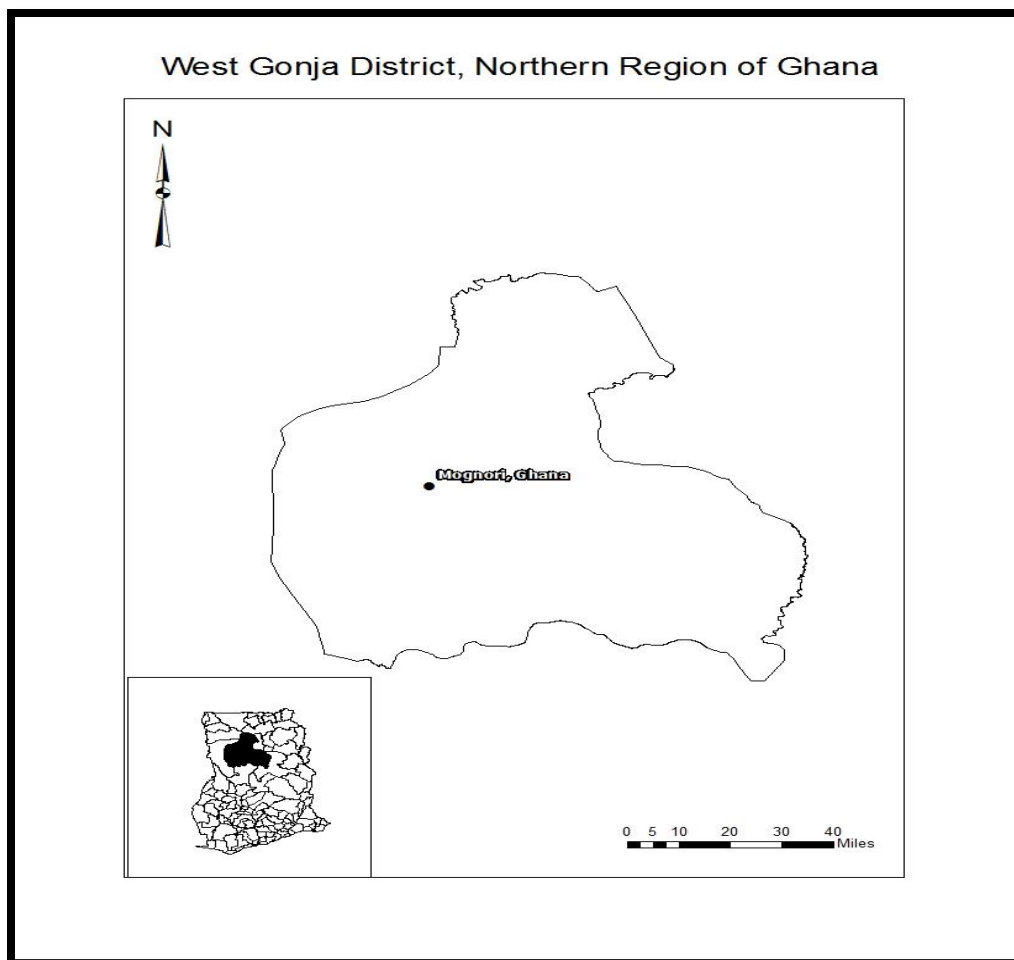
Figure 3.1 Location of West Gonja District in the Northern Region of Ghana

Mognori lies in the Guinea savannah ecosystem of the Northern Region of Ghana, which is characteristically dry due to its proximity to the Sahel and the Sahara. The dryness is influenced by the Harmattan wind, which blows from the Sahara between December and the beginning of February each year (Armah et al., 2010).

3.2.3   Changing Climatic Trend

The district is characterized by high temperatures that vary between 14°C (59°F) at night and 40°C (104°F) during the day. The mean monthly temperature is 27°C, with the maximum in the dry season, between March-April, and the lowest between December-January. The rainfall pattern is erratic. It is bimodal with the average annual precipitation being 1,144 mm. The peak of the rainfall is in June-July with a prolonged dry spell in August. The rains can be stormy and torrential, up to 300 mm per hour, causing flooding (UNDP-Ghana, 2007).

The historical climatic trend in Ghana indicates an increase in average temperature. Since 1960, mean annual temperature has risen by 1.0°C. Generally, the rate of increase is more rapid in the northern rather than southern regions (Würtenberger, Bunzeck & Tilburg, 2011). Also, the country has experienced decreasing rains since the 1960s, with low levels recorded in the late 1970s and early 1980s. This caused an overall country-wide decreasing trend in the period 1960 to 2006 to an average of 2.3mm/month (Stanturf et al., 2011). The rainfall is increasingly erratic.

The assessment of future climate change in Ghana based on Global Circulation Models (GCMs) indicates a general rise in mean temperatures. Based on future scenarios for climate change, the models indicate anticipated increase in mean daily temperatures by 2.5 to 3.2° C by 2100. Also, precipitation will decrease by 9-27% by the year 2100, with the range representing spatial variations across the country (Stanturf et al., 2011). It is projected that an estimated

temperature increase of 1.7° C to 2.04° C by 2030 will occur in the Northern Savannah regions, with average temperatures rising as high as 41° C (Environmental Protection Agency, 2011).

3.2.4 Livelihood, Poverty and Vulnerability

The district is predominantly rural and its economy is built on the natural resource base with rain-fed agriculture being the predominant livelihood strategy for most people. Agriculture is influenced by low and erratic rainfall, low soil fertility, and frequent wildfires, resulting in post-harvest losses (Armah et al., 2010).

The 2005 report of the Ghana Living Standards Surveys (GLSS) shows poverty in the district amongst those relying on subsistence agriculture. While the report indicates declining poverty in other regions of the country, the region where the district is located is still at a 52-88% poverty level (GSS, 2008). This is viewed as troubling for a district with an average household size of about 8 people, larger than the national average of 5 per household. According to Sabates-Wheeler and Castaldo (2008), by 2003, poverty was broadly eliminated in the South, while it still affects two-fifths of the North area of Ghana. They further notes that, in the absence of climate change mitigation and adaptation measures, poverty could worsen in Northern Ghana through reduced agricultural yields and more frequent natural disasters. Unemployment is also high, increasing from 8.5% in 2000, to about 14.5% in 2007. Adult literacy in the district is low as well (UNDP-Ghana, 2007). The district is characterized by low adaptive capacity due to low socio-economic development as a result of low education and high unemployment (Antwi-Agyei et al., 2011; Stanturf et al., 2011). As a result, there is high emigration to the South (Sabates-Wheeler & Castaldo, 2008).

According to a review of opportunities by Shepherd et al. (2005), in spite of the constraints, agriculture is seen as the mainstay of households and there are limited opportunities

outside of the agricultural sector. However, tourism to Mole National Park, with its rich wildlife, history and cultural heritage, is increasingly providing opportunities for some households in the district (Stanturf et al., 2011).

3.2.5   Wildlife Conservation and Community Resource Management Areas

In 2000, the Ghana Wildlife Division (GWD) proposed a policy of Collaborative Community Based Wildlife Management (CCBWM) which sought community involvement in wildlife conservation. It recognized that wildlife use is part of local culture, and depriving local right of access will only result in the preservation of ecological islands from which people are excluded, as opposed to a more holistic form of resource management. This led to the establishments of Community Resource Management Areas (CREMAs) in areas adjacent to the national park.

The CREMA is based on the establishment of areas where wildlife management is incorporated into existing land use. It created incentives for the communities to use and manage the natural resources on a sustainable basis by devolving management rights and responsibilities to them with an advisory role played by GWD, the District Assembly and Traditional Authority under the Protected Area Management Unit (GWD, 2004). The policy recognizes the strong role of local knowledge in the conservation of wildlife resources and functions through the local byelaws. According to A Rocha Ghana (2012), the integration of local knowledge and natural resource management systems in the CREMA created greater understanding and commitment among communities. It also created opportunities for ecotourism for some local communities, as an alternative source of livelihood, in areas pressured with threats such as poaching, bushfires, and land conversion due to farming. Mognori (together with Murugu community) is one of the communities, close to Mole National Park, that GWD assisted to create a CREMA (see Figure

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3.2). The CREMA constitutes a key wildlife management system outside of Mole National

Park[4], with an estimated area of 64,731 ha (A Rocha Ghana, 2012).
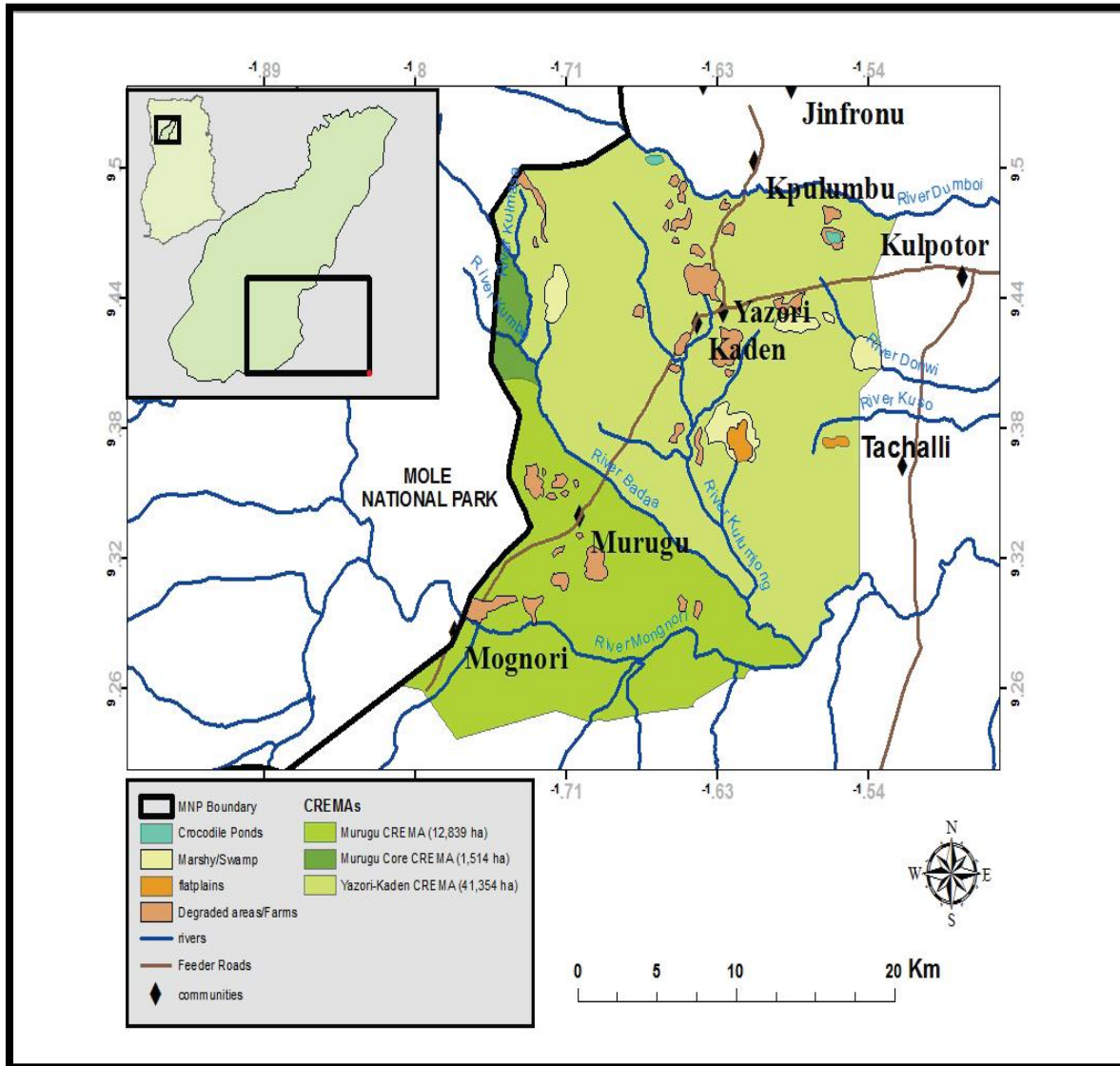
Source: A Rocha Ghana (2012)

Figure 3.2 Map of Murugu-Mognori Community Resource Management Area

The management of the CREMAs was devolved to Murugu-Mognori CREMA Executive

Committee (see Figure 3.3) with the park authority playing an advisory role. As shown below,

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[4] Mole National Park is in Gonja District. It is Ghana's largest protected area, covering about 4,577 km² with adjacent CREMAs.

the Mognori`s part of the CREMA is managed by Mognori CREMA Committee, which also acts as the Tourism Committee, providing support to the Tourism Manager and Assistant. The tourism committee also manages the Tour Guides, Canoe Operators, Dancers and the Cleaners.
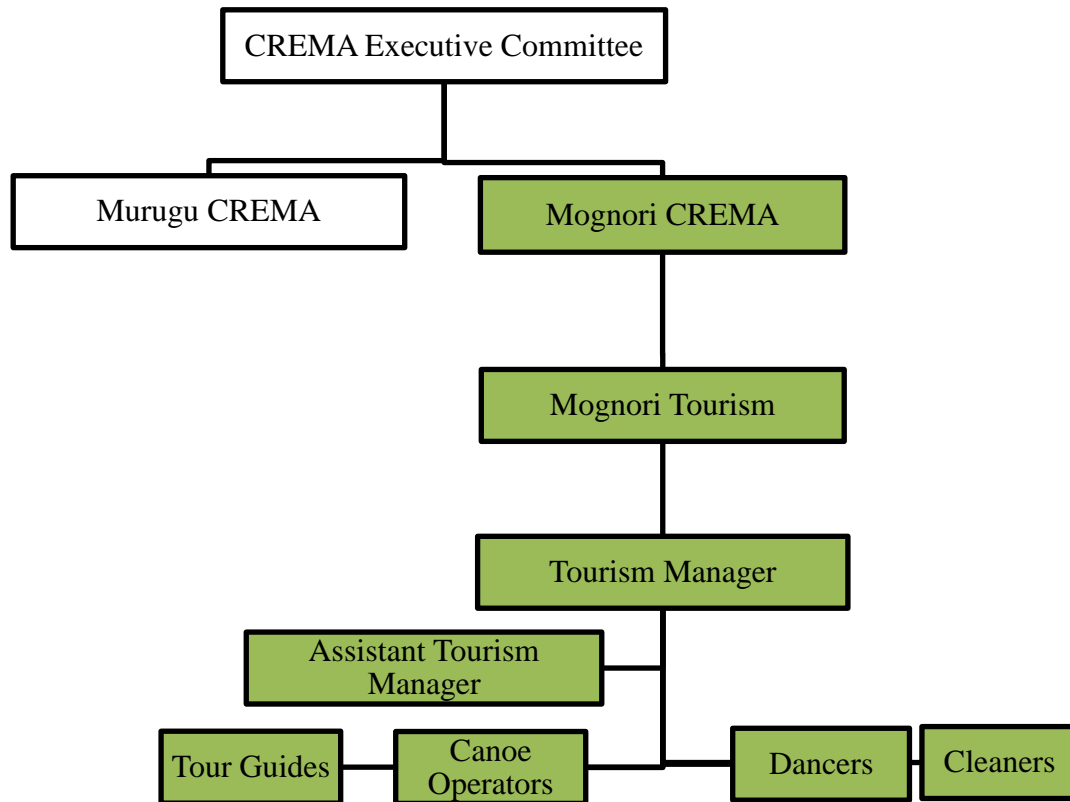
Source: GWD (2012)

Figure 3.3 Governance structure of Mognori CREMA

3.2.6   Ecotourism Development and Growth in Mognori

The Mognori portion of the CREMA is rich in wildlife. It contains over 30 different mammals and numerous plant species. The mammals include Roan antelope, Western hartebeest, Yellow-backed duiker, and Elephants which constitute the major attractions drawing visitors. The rich wildlife was the underlying consideration for ecotourism development in Mognori, with support

from the Ghana Wildlife Division and other partners, such as the Ghana Tourism Authority and the SNV Netherlands Development Organization, Ghana.

Interest in ecotourism development was also based on the assumption that Mole National Park, which is the main tourist attraction in the North, will draw visitors to Mognori. For instance, the park receives over 12,000 visitors a year. Visitor numbers have increased steadily for the last 15 years, increasing by 21% per year since 2001. GWD assists in marketing and drawing these tourists' attention to the Mognori Eco-Village for nature and cultural experiences.

Mognori Eco-Village is owned and managed by the Mognori Tourism Committee. The management committee is made up of households appointed by Mognori CREMA Committee. Ecotourism development has been a major source of income for many households and the community in general. It employs about 45 households from the community (A Rocha Ghana, 2012). Since 2008 when it was launched, revenues accruing to the community have increased by 20%. The revenue generated is important to the community as it pays for the wages of those involved in delivering services. Also, some of the revenue is invested into a community development fund for other community projects including the expansion of the primary school. Other households gain income through sales of souvenirs and farm produce (SNV Ghana, 2009).

Ecotourism opportunities include bird-watching, village tour, traditional dancing entertainment, wildlife viewing, and a canoe safari on the Mole River, which connects the CREMA to the Mole National Park. Tourists are provided with homestays with indigenes for local lifestyle experience (SNV Ghana, 2009). Figure 3.4 illustrates the path of the guided tour that provides a cultural and nature experience to visitors.

MOGNORI VILLAGE WALK

fulani'shouse

Mognori river

visitor reception

mat weaving

traditional herbal medicine

local architecture

gari processing

mosque

shea/dawadawa processing

chief's house

farm

canoe riding

path

Road from Mole

bridge

mole national park

mognori wildlife camp
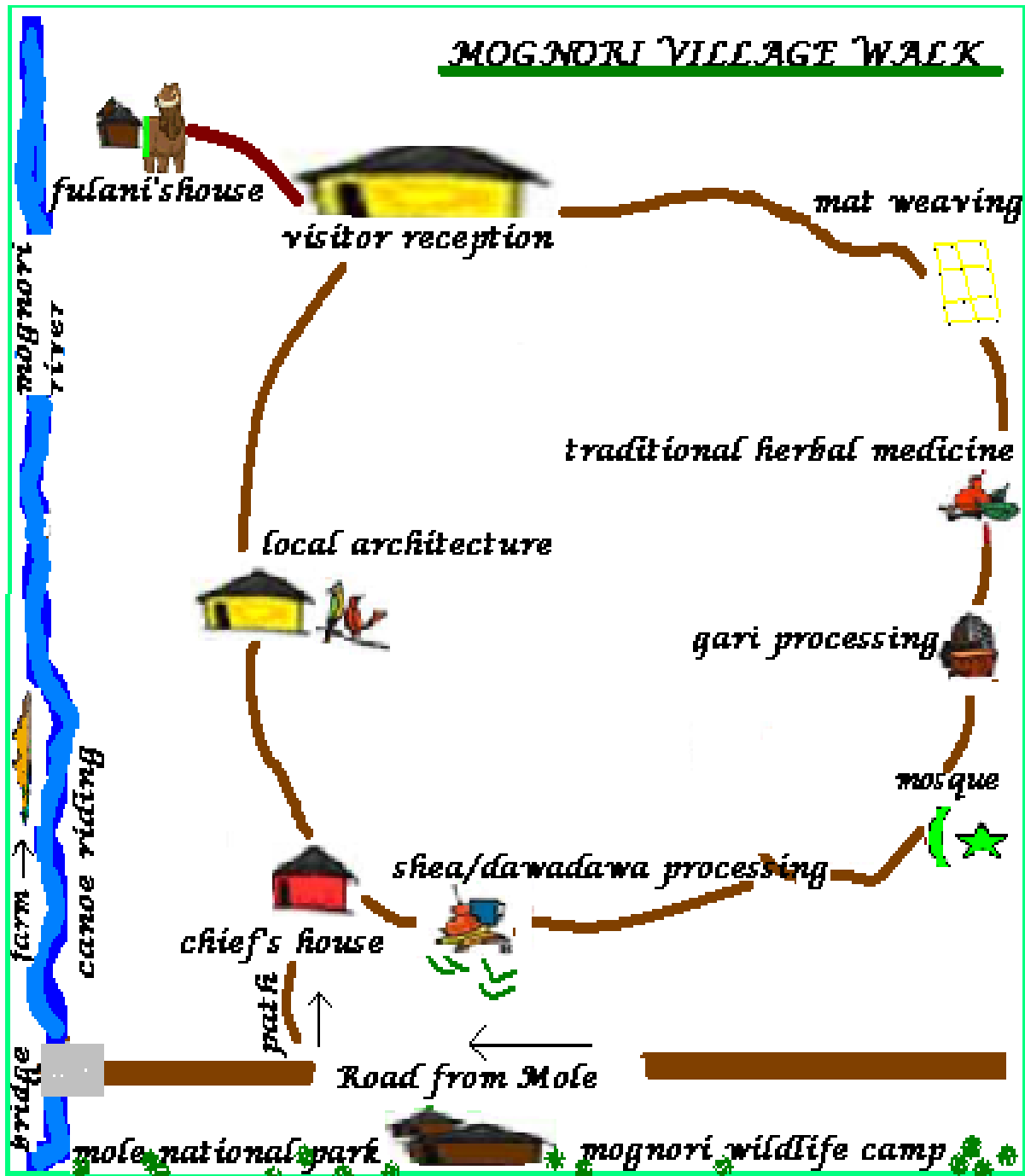
Source: GWD (2012)

Figure 3.4 Ecotourism activity route in Mognori Eco-village

3.3 Hermeneutic Philosophy and Methodological Considerations

3.3.1 Hermeneutics and Tourism

Hermeneutics is increasingly been used in a variety of disciplines including tourism (Pernecky, 2010; Pernecky & Jamal, 2010). It is described as the theory which focuses on interpreting and understanding the external objectifications of the human mind including texts (Cerbone, 2006). Its application is now extended to all spheres of human enquiry, in which meaning is seen not as something to be calculated and represented but rather as something to be explicated and extended (Ablett & Dyer, 2009).

In the tourism field, hermeneutics offers guidance for interpretive research on understanding and meaning, focusing on the experiential and lived existence. It addresses experience from the perspective of meanings, understanding and interpretations (Pernecky & Jamal, 2010). Pernecky & Jamal (2010) review the tourism literature and acknowledge that the tourism studies with this underlying framework lack adequate theoretical and philosophical assumptions and explanations. They note that, though it is valuable, it is still an under-utilized approach for understanding lived experience in tourism studies.

3.3.2 Background to Hans Gadamer's Hermeneutics

Hans-Georg Gadamer's hermeneutics is an extension Heidegger's work into practical application. In his seminal work, *Truth and Method* in 1989, his philosophy extended Heidegger's existential ontological exploration of understanding by providing an emphasis on certain key concepts (see section 3.3).

Hermeneutics is conceptualized by Martin Heidegger as the phenomenology of *Dasein*. *'Dasein'*, refers to 'the mode of being human' or 'the situated meaning of a human in the world'. His phenomenology aims to interpret our everyday activity and is often described as

phenomenology of "everydayness" (Cerbone, 2006). Here, he offers an ontological conception of hermeneutics emphasizing on the existential understanding (*Verstehen*) and historicism. In explaining this, Jamal and Stronza (2009) argue that, Heidegger's notion of Being (*Dasein*) refers to an ontological existence involving 'being there', i.e. being present in the here and now. Place is the locus of Being, in a world that is understood historically and temporally by beings capable of understanding. So Heidegger argues for a move to the ontological question of the nature of reality and 'Being' in the world and thus to what is postulated as the pivotal notion of human everyday existence (Annells, 1996). He concerned himself with the question 'what it means to be', or as he termed it '*Being-in-the-world*'. He noted that, the aim should be to discover meaning or to uncover the universal structures of Being as they manifested themselves in the phenomena' (Crotty, 1998). So the *Dasein* concept of a person's 'Being-in-the-world' necessitates a view that the person and the world are co-constituted (Koch 1994).

According to Jamal and Stronza (2009), Heidegger offers prescient insights to bridging the body-mind divide by situating the person as an embodied *being-in-the world* engaged in relations with the things around – the person as an experiential being situated in place. As such, man makes sense of his world from within his existence and not while detached from it. This is linked to the notion of temporality, viewed as a connectedness rather than as linear time, and this is a strong theme in Heidegger's hermeneutics (Annells, 1996).

Heidegger indicates that nothing can be encountered without reference to a person's background understanding, and every encounter entails an interpretation based on the person's background, in its 'historicality' (Laverty, 2003). This raises the idea of pre-understanding. Heidegger refers to it ``as the meanings or organization of a culture that are present before we understand and become part of our historicality of background`` (cited in Koch, 1996, p. 3). He argues that, this is something that cannot be set aside or `bracketed` as it is understood as already

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being with us in the world. Heidegger's regards the historicality of understanding as one's background or situatedness in the world. Historicality is a person's history or background, which includes what a culture gives a person from birth and is handed down, presenting ways of understanding the world. Through this understanding, one determines what is 'real' (see Laverty, 2003).

Pernecky and Jamal (2010) note that, for Heidegger, human existence and experience is based on interpretation and understanding; and language is the house of being. Experience is formed through interpretation of the world, and all interpretation is governed by the concrete situation of the interpreter. Also, understanding is achieved through a hermeneutic circle which moves from the parts of experience, to the whole of experience and back and forth again and again to increase the depth of engagement with and the understanding of texts (Annells, 1996; Polkinghorne, 1983).

3.3.3   Application of Hans-Georg Gadamer`s Hermeneutics

Gadamer's philosophical hermeneutics, served as the relevant framework that guided the methodological choices to study of experiential reality of households' constructing their livelihoods in the context of vulnerability. Gadamerian Hermeneutics is not a methodology but a philosophical endeavour that seeks to clarify conditions in which understanding takes place (Laverty, 2003). These conditions refer to the key philosophical concepts such as prejudice, language, dialogue, fusion of horizons, interpretation, and hermeneutic circle. These are embedded deep in my belief about the nature of understanding and knowledge production.

Prejudice refers to our biases. As researchers we take prejudices (i.e., value positions) into research process and these assist us to understand (Pernecky & Jamal, 2010). It forms the horizon within which a researcher understands any phenomenon of interest. Gadamer advises

anyone seeking understanding to make their prejudices explicit. Prejudice is more in keeping with pre-understanding, which reflect one's historicality (i.e., a person's history or background). It argued that, it is not possible to lose one's pre-understandings as everyone always has a pre-understanding of the topic in question (Fleming et al., 2003). This raises the question; what personal biases' do I bring to this study, and how can these be brought into the study of experience? As I reflected on this, I acknowledged that I share the view and belief that as a researcher, I am intrinsically part of the research process and influence the interpretation that emerges and my horizon also evolves. As a result, I cannot be ''bracketed'' out of the process. The matter of pre-understandings or, prejudices, which Gadamer describes, is intricately part of my being, and cannot be isolated scientifically. As a researcher, I kept a reflective journal that helped in identifying those biases and tracing the expansion of my horizon (see section 3.4). The notion of horizon is central to Gadamer's philosophy. He is of the view that expansion of one's horizon occurs when the pre-understanding evolves and translates into understanding. This process is fusion of horizons and is dynamic as explained in section 3.4.1, showing how my understanding of the phenomenon evolved over time.

Gadamer emphasizes the role of language in understanding of a human 'being-in-the world'. He states that "language is the universal medium in which understanding occurs (see Laverty, 2003, p. 25). So, in understanding the meaning of experience, understanding relies on conversation as the primary medium for research activity (Daly, 2007). The aim of using conversation is to allow immersion into the subject matter, therefore a conversation between researcher and participant is a suitable method for achieving understanding of the phenomenon of interest (Crotty, 1998). Conversation was used in the study, to discern how households make sense of their own experiential reality in the household interviews and focus group stages.

Also, language assumes a role in dialogue. According to Gadamer, people make meaning (i.e. the hermeneutic aspect) of lived experiences (i.e. the phenomenological aspect) through dialogue. This process involves the logic of questions and answers, which creates new horizons and understanding (Koch, 1996). In the study, the dialogue process occurred during the interviews, focus group and data interpretation stages. For instance, during the conversation with households, I posed questions to understand the lived experiences of households, which resulted in the expansion of my pre-understanding of the phenomenon under study. The dialogue process was broadly concerned with the question of how households have experienced vulnerability in the process of making a living. The questions were open-ended and appropriate with the aim of hermeneutics, to ensure internal consistency. This is important as research carried out in a Gadamerian tradition is developed from a desire to achieve a deep understanding of the phenomenon of interest. Also, the recruitment of households was aligned to the aim of hermeneutics, by selecting households who have lived experience with ecotourism and climate change and, who were willing to share their experiences.

The conversation and dialogue with households led to co-construction of meaning. Under Gadamer's philosophy, the dialogue between researcher and participant generates shared meaning through fusion of horizons. Households engaged in interpreting and assigning meanings to their experiences. These were recounted to me, expanding my horizon of the phenomenon. The co-construction occurred when versions of the households` reality (transcriptions) were subjected to further interpretation to understand the broader patterns of meanings that exist. Focusing on the generic pattern involved a shift from individual meanings of experiences and helped to identify the four essences that adequately describe households' experiential reality (see section 3.4). The interpretation stage involved the process of dialoguing with the texts (transcriptions), where I posed questions like, what are they trying to say? It also involved the

process of hermeneutic circle, where I moved from the whole text to pieces of it in the process of interpreting the data.

3.4   Research Process of Study

As discussed previously, there is no prescription of methods or cookbook recipe, except the scholarly tradition of Gadamer which informed the methodological choices. However, Gadamer is of the view that in order to reach understanding, methodical direction through a systematic approach is needed. van Manen (1997) also supports this view by noting that it is necessary to discover an approach, which helps to guide inquiry (see Fleming et al., 2003). In using methods that are consistent with the tradition, I drew on a five-stage process outlined by Fleming et al. (2003) based on Gadamerian perspective. The stages are: 1) deciding on the research questions; 2) identification of pre-understanding; 3) gaining understanding through dialogue with participants; 4) gaining understanding through dialogue with texts; and 5) establishing trustworthiness.

3.4.1   Personal Reflection and Emergence of Research Questions

The personal reflection and emergence of research questions are in line with the first and second stage of Fleming et al. (2003)'s five-stage process. In starting the research, I reflected on my pre-understandings of the study to understand my historical horizon, beliefs and views, before interacting with the households. Based on the philosophical ideas of Gadamer, one needs to identify and reflect on his pre-understandings (or prejudices) of the topic to enable him to move beyond their pre-understandings to understand the phenomenon of interest and transcend his horizon (Fleming et al., 2003). Gadamer notes that prejudgments or pre-understandings are the starting point of any interpretation because they provide the means for us to identify and question the things we encounter (Ablett & Dyer, 2009). In the process of reflecting on this, I was able to

identify my initial understanding and map out the shift in theoretical and methodological understanding of the phenomenon under this study in the way of hermeneutic circle.

The phenomenon and associated research questions emerged from my own knowledge and familiarity with ecotourism development in local communities in Ghana, in my capacity as a practitioner and researcher. For five years of my life, I supported the development of ecotourism as a strategy for biodiversity conservation and well-being of impoverished rural communities in Ghana. So I have had personal experience in supporting local communities in developing ecotourism, both as a student volunteer, and project manager in Ghana Association for the Conservation of Nature (GACON), an environmental non-profit organization in Ghana. In these capacities, I contributed to the generation and dissemination of ideas on ecotourism development and sustainability in rural context, to the academia, policy-makers and the local communities through a conference, workshops and community gatherings. Also, over the years, I have familiarized myself with the ecotourism and general tourism literature and knowledge through lectures, conferences, seminars, intellectual discussions with colleagues, and other informal and personal engagements, to expand my understanding.

In the course of my career and academic experiences, my theoretical and methodological insights on the impacts of ecotourism development on local communities have been challenged by how these impacts change in the context of sustainable livelihoods and climate change. The question of how local communities experience and interact with ecotourism development has been studied in terms of impacts assessment focusing narrowly on the economic, environmental or socio-cultural aspects. These studies established my pre-understanding on the various impacts of ecotourism development on the local communities. They are grounded in assumptions that are reductionist and deterministic in nature and limited in explaining the complexity of factors involved.

Some scholars question the nature of ecotourism and impact assessment approaches used in studies. As discussed in section 2.2, studies have viewed ecotourism as having different components such as; natural setting, conservation, sustainability, culture, benefits to locals and education (Björk, 2000; Fennell, 2001). Studies have focused on different components, creating a limited and narrow focus on the local community-ecotourism interplay as well as the methodological considerations. Some scholars have argued for reconceptualizing ecotourism as a form of sustainable livelihood in local communities, a perspective that is holistic (see Ashley, 2000; Scoones, 2009; Tao & Wall, 2009). They argue that households in these communities engage in multiple livelihood activities using different assets, to reducing risk and secure their livelihoods. In such communities, ecotourism development is integrated into the livelihood system and presents opportunities for livelihood diversification (Tao & Wall, 2009), particularly in the context where there is observed livelihood insecurity as a results of threatening factors. A case in point is the livelihood dynamics as a result of climate change. The livelihood perspective presents a framework for studying and gaining a holistic view of such livelihood dynamics, instead of the reductionist view underpinning these studies. They lack the holistic and complex interplay of factors, including climate change, shaping livelihood outcomes (Ashley, 2000). Also, methodological shift informed by interpretivist views is advocated in tourism literature. For instance, emphasizing a holistic view rather than the reductionist perspective of current tourism research, Jennings (2007), advocates for understanding complexity of meaning making. This shift has become necessary because of the disregard of questions of meaning and understanding associated with the positivist and post positivist paradigms (Goodson & Phillimore, 2004).

Another aspect is the question of how the local community-ecotourism development interaction, plays out in the context of climate change? The stream of literature focusing on the

context of climate change is generally limited in the ecotourism literature but is becoming important with regards to tourism sustainability (see Becken & Hay, 2007; Moreno & Becken, 2009; Scott, 2006), even though a knowledge gap exists in terms of geographical scope and local community perceptions (see Scott & Becken, 2010; Kaján & Saarinen, 2013; Weaver, 2011).

The concept of "sustainability" of ecotourism within the context of climate change and other factors, had become (and continues to be) one of the issues challenging the contribution of ecotourism development in local communities facing livelihood dynamics because of climate change. Even though the question is commonplace, there is no common understanding about how the sustainability issue is understood or what it meant in the context of climate change, even though some scholars argued for livelihood perspective in working towards sustainability, particularly in marginal economies, where ecotourism development presents opportunities for livelihood diversification (see Ashley, 2000; Tao & Wall, 2009). Also, argument is made that instead of applying predetermined stimuli and theoretical responses to climate change adaptation, suggestion is made to explore localized lay knowledge and lived and embodied everyday experiences of local people in tourism with climate change that will capture localised lay knowledge and understanding of climate change, its local implications and adaptation. The urgent need for this research focus is expressed by studies that suggest that; "those who live and work in a changing environment 'should be our concern'" (see Kaján & Saarinen, 2013, p. 184).

My pre-understanding shifted from the narrow perspective to more holistic perspective based on livelihood and climate change adaptation, rooted in interpretive perspective to gain understanding of how households' lived experience on constructing their livelihoods using ecotourism, in the context of climate change. In my reflexive entry, I note that:

> Going into my research, I believed that the ways in which households make sense of their particular situations, such as involvement in the ecotourism development in the process of constructing their livelihoods, could be conceptualized and described

through an interpretivist perspective which explores meaning making. This approach would be of benefit to the ecotourism scholarship and the discussions going on within the general tourism field about the implications of climate change and other factors to ecotourism. In the ecotourism literature, sustainability issue within climate change context is not considered and linked to climate change adaptation. In terms of the research focus, Gadamer's philosophy is very suitable for exploring lived experience of households in using ecotourism development in developing livelihood security within a changing climate and positioning themselves relative to other factors effecting long-term sustainability of ecotourism.

The expansion of my pre-understanding discussed above assisted me in the framing of the research questions. I repeat for this thesis, the central research questions, found in section 1.4, that guided the study are:

1) How is ecotourism used as a livelihood strategy by households?

2) What vulnerabilities do households' livelihoods face and how are they adapting?

3) How can households collectively adapt to future climate change using ecotourism?

These three central research questions have specific questions helped elicited data for understanding households` lived experience.

3.4.2 Conducting the Fieldwork

In developing understanding of the lived experience, I visited and interacted with households in the Mognori Eco-Village. The visit was organized in three phases during a period of December, 2011 through March 2012. The visits created an opportunity to gain further understanding of the phenomenon through my engagement with the households and institutional representatives involved in this study. This process conforms to the stage of gaining understanding through dialogue with participants (Fleming et al., 2003).

In the first phase, I sought to understand the community protocols and context by gathering documents and interacting with key informants in order to gain understanding of the context and to determine the relevant questions that would be eventually addressed. Also, I made preliminary contacts for the interviews carried out in the second phase. During the second phase, I

interviewed household heads to gain understanding of their lived experience by understanding how they construct their livelihoods and the importance of ecotourism development within the context of a changing change and how they are adapting to it. The third phase used focus group discussion to validate the preliminary findings of the second phase, with the aim of build consensus on the adaptation strategies to vulnerabilities as a result of a changing climate.

Phase One: Understanding Community Protocols

Conducting research in local communities needs to be consistent with local culture and protocols (Wilson, 2001). On this basis, the first visit to the study site (Mognori Eco-Village) in December, 2011, sought permission and to inform the elders and the community about the study and then gain permission to conduct it. However, to ensure easy access to the community, I first sought the advice and permission from Ghana Wildlife Division (GWD), because of their relationship with the Mognori community. Even though the community and GWD were aware of the research intent, since they had already given approval through a letter (see Appendix L) used to solicit funding from International Development Research Centre, Canada (IDRC), I still had to gain research permission from GWD in order to gain access into the community and the park.

I met the Park Manager, Community Liaison Officer, and the Tourism Manager. I discussed with them the purpose of my study and gained understanding of the households' livelihoods and the relevance of ecotourism to them. They provided the context for the development of ecotourism in the community and suggested prospective respondents and key informants in the community to contact for interview in the second phase. I was advised to contact the Tourism Manager and the Community Tourism Committee as they are responsible for receiving, advising and introducing researchers to the chief, elders and the community. I also had the opportunity to interact with representatives of the Environmental Protection Agency

(EPA), Arocha-Ghana, local government, World Vision and Ministry of Food and Agriculture based on letters sent to them (see Appendices B and C). In all, I interacted with twelve (12) informants (see Appendix A1). In the process, I gained access to reports and documents such as monthly reports of the community on ecotourism, government policy documents on conservation and ecotourism development, climate change, and households` livelihoods. These provided me with the general framework of understanding how the community construct their livelihoods and the relevance of the ecotourism in this process.

I visited the study community in December 4th, 2011, with the assistance of the Tourism Manager of Mole National Park. As tradition demands in terms of gaining access to the community for research, I had to meet the Tourism Manager and members of the Tourism Committee to discuss the intent of my study and its relevance to the community. I was later escorted to the palace to meet the chief and the elders, where my intent was made known to them by the chairman of the Tourism Committee. I was then granted permission to conduct my study. I was also escorted to one of the homestays where I stayed for the month of December, 2011.

Phase Two: Recruiting Households

As discussed in section 3.3.3, in understanding the relevant lived experience of the participants, the recruitment process should be aligned to the aim of hermeneutics, by selecting participants who have lived experience with ecotourism, and who are willing to talk about their experience. Even though I was given contacts of prospective participants for the interviews, I had to be more concerned that the participants (i.e., heads of households[5]) recruited for the study, are those whose lived experienced are consistent with the purpose of the study. So the recruitment process was aligned to the aim of hermeneutics, i.e. selecting participants who have lived experience

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[5] I defined households as the physical and social spaces in which people were sharing decisions, and engaging jointly in subsistence production and the procurement of food, clothing, and shelter (Netting, 1993).

with changing climate in the process of constructing their livelihoods and involved in ecotourism and, who are willing to talk about their experience. The Assistant Tourism Manager was helpful in identifying and building rapport with 10 household heads involved directly in the ecotourism. I engaged them informally in their houses where I believed they felt comfortable and safe. Bailey (2007) argues that interview involves building good social relationship with interviewees and good interviews begin with care and nurturance of the relationship between the researcher and respondents. Reflecting on this idea, I used a week in visiting and having conversations with them, exchanging pleasantries, and building rapport (see Figure 3.5). These interactions provided me with a sense of comfort, knowing the households were prepared to freely divulge and share their experience in the spirit of trust.

Starting with the 10 household heads, I started interviews (Appendices D and E). Using an interview guide, I explored the historicity of each participant and gaining understanding of their pre-understandings by asking who they are, their household members and what they do for living. I chose their houses as the place for the interview, with the permission of the household heads to ensure convenience and comfort. They also signed letters of consent as a way of agreeing to freely participate in the interviews. They also agreed to have the interviews recorded.

During the period of time I interacted with the household heads, I asked them to describe in detail their experience on how they construct their livelihoods in the context of the changing climate and the relevance of ecotourism in this process. This specific question asked was generally very open in nature. The process was informed by Koch's (1996) idea that, openness is critical and the exchange should be entirely open, with few direct questions asked. The reason for this is to encourage the interview process to stay as close to the lived experience as possible. This type of question is appropriate with the aims of interpretative hermeneutics, to ensure

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internal consistency. It is argued that, this is important as research carried out in a Gadamerian tradition is developed from a desire to achieve a deep understanding of the phenomenon.

Figure 3.5 Interacting with some household heads to build rapport

During the first two interviews, I sensed that the household heads were uncomfortable with this formal interviewer-interviewee style of interaction, as they showed signs of discomfort and started giving excuses to end the interviews. I anticipated spending about two hours for each interview, but they took only about 40 minutes due to excuses from the household heads. It took me 5 interviews over two weeks to understand that they were uncomfortable with the interview style, I got to understand that for the reasons such as the discomfort in responding to the

questions in an appropriate way, research fatigue, and what they perceived I represented, as a researcher who is highly-educated and walking around with a clipboard and pen and knows everything. This triggered another process of reflecting on how to approach the interaction and how to position myself to avoid these perceptions. As I observed and reflected on these reactions from the household heads, I decided to change the mode of questioning to a conversational style and allowed them to share their experiences with little interruption for clarification or steering them to the phenomenon of interest. I had to avoid carrying around my clipboard and just listen attentively to their story.

Mason (1997) who conducted his study at Mole National Park advised that, the use of formal interviews is insensitive to the culture of the people as they respond inappropriately because of limited education. Also, according to Denzin and Lincoln (2005), it is preferred in such rural areas to provide the opportunity for people to identify their answer within the framework of their own culture. So considering the culture of Mognori, which is based on oral tradition, I found the participants were more comfortable with verbal discourse such as conversational interaction that allowed them to explain and illustrate their thoughts and feelings. So in understanding the meaning of experience, conversation became the tool I used as a participant (not researcher) in discerning how households are making sense of their own experiential reality. This is consistent with Gadamer's view of the central role of language in understanding of human 'being-in-the world' in dialogical way. In his thesis, language assumes a supreme role as a medium for dialectical and historical experience of understanding of households' reality concerning changing climate in the process of constructing their livelihoods. As I reflected, my understanding of the nature of knowledge and its production and my role in the process changed from a researcher to participant and good listener to the narratives of the household heads` lived reality. I became more concerned about my role and position, as I

reassured them of my interest in their experiences. This encounter changed my pre-understanding of how I should relate to the households.

During the first visit, I was able to complete discussions with 10 household heads. So, I developed preliminary analyses of the 10 interviews during the Christmas, and identified the issues and gaps. In most cases, I identified issues that were not completely explained or I did not finish the conversation because of time constraints. I decided to seek clarification or complete the interviews with the relevant household heads in addition to the 12 I was going to interview during my second visit.

My second visit to the community was in the second week of January 2012, when I went back to finish the conversations with the rest of the households, totaling 12. So, I spent the next 3 weeks in January engaging the remaining household heads in understanding their experiences.

In total, I completed conversations with 22 household heads (see Appendix A2). After all the interactions with them, I extended my appreciation for their support (see Appendix F).

Phase Three: Conducting Focus Group

On the bases of preliminary findings from the overall conversations, I visited the community for the third time in the last week of February, 2012, this time to organize a focus group with 10 selected households. The participants were selected from the 22 household heads and they were given a verbal invitation (see Appendix H). Also, the selection for inclusion in the focus group was based on the willingness of the participants. So, the focus group meeting started at 9am on March 3rd, 2012. On that day, the various representatives of households were supposed to be going to their farms. They agreed to participate out of their free will and as at 9 am there were 10 participants. Even though, my initial plan was related to the literature, that a typical group session consists of a small number of participants of 6-10 (King & Horrocks, 2010), I ended up

with 16 participants instead. The additional 6 joined the focus group even though they were not invited. They were part of the interviews held between December 2011 and January 2012. The focus group included 2 women, two youth and the rest were men. They all signed the consent form (see Appendix I).

The use of a focus group in this phase of the study was based on the need to elicit collective views (Denzin & Ryan, 2007) on households' anticipated adaptation to climate change in the process of constructing their livelihoods in order to build resilience, using ecotourism development. The collective perspective is important based on the view that ecotourism is viewed as a common property and involves multi-actors (Shen et al., 2008). Also, based on the sustainable livelihood approach and climate change adaptation, community level actions are required to build resilience (see Becken & Hay, 2007; Tao & Wall, 2009). Central to the SL approach, is the concept of adaptive strategy which explains that people make changes and adjustments to their livelihood in coping with difficult circumstances based on both local and conventional knowledge (Helmore & Singh, 2001).

The conduct of the focus was culturally sensitive in terms of time and place. I consulted members of the Tourism Committee, the Tourism Manager and some of the interviewees regarding the best place and time for the event. Focus group uses group interactions, among and between the group to stimulate group dynamism in which members discuss and share ideas, issues, and solutions to a problem and by so doing create ``synergistic group effects`` (Berg, 2007). Based on this understanding, safety and trust among the participants were ensured by choosing to hold the event in the house of the chairman of the Tourism Committee, where meeting are held regularly. Saturday morning was considered by the people I consulted as the best time for them because the rest of the week days are busy with farming activities, since it was the farming season. The sitting arrangement, in circular form was culturally symbolic, as it

creates the opportunity for people to see who is talking and it's respectful for people to see each other during group dynamics and engagement. People also claim that it helps with full participation in the conversation of everyone there.

A Video camera was setup with the permission of the participants to record the proceedings. I was supported by the Assistant Tourism Manager. I was responsible for introducing, and capturing the discussions and also facilitating the process. This experience challenged my pre-understanding based on literature on how to conduct focus group. I got the understanding that being sensitive to culture was important in enhancing participation and interaction among participants.

The meeting started with a self-introduction, where people mentioned their names, occupation, and what they like doing every day, with the conversation guided by the interview guide (see Appendix G). The focus group was framed around the question: "How can the community adapt to future climate change using ecotourism development?" The initial conversation was used in building rapport, trust, and comfort to encourage and facilitate discussion and participation. The purpose of the meeting was explained after the self-introduction. This was to prepare the participants on the issues to be discussed and also steered the meeting effectively and efficiently. There were two items on the agenda for the meeting. The first was reviewing the issues that emerged during the interviews stage with the households in December 2011-January, 2012, on household lived experiences. So the first item was to review the issues identified during the household interviews and seek clarification and eliciting more information where necessary. The rationale was to develop issues that would inform the second item.

The second item was to find out what adaptation strategies or measures they propose and how they plan to achieve to adapt to the changing climate with respect to their livelihoods based

on ecotourism. These two items were explained and discussed accordingly. Also, I explained to the participants again what I would use the information that would be gathered for. I mentioned it would be used for thesis, presentations, conferences and publications. I mentioned the report would be used to inform their ecotourism management plan. I also dealt with issue of confidentiality as well. I anticipated using a maximum of 2 hours but the focus group ended after an hour because participants had planned to visit their farms. Near the end, I provided rice meal and extended my appreciation for their participation in the event (see Appendix J).

3.4.3   Ethical Considerations

The study was conducted with approval from the University of Waterloo's Office of Research Ethics. Also, permission for the study and protocols for engaging the communities and participants were granted by Ghana Wildlife Division and chief and elders of Mognori community. These were instrumental in avoiding conflict during the period of the fieldwork.

Participation in the study was voluntary and consent forms were signed by household heads who participated in the interviews and focus group discussion. The issues of confidentiality and anonymity were ensured by use of pseudonyms for all the household heads involved. Veal (2006) advised that consent be sought from each interviewee before recording commences. In the process of conducting the interviews, each household head was prompted that, the interview was going to be recorded using tape recorder. So I read (and translated in using *Twi*) and provided each person with a consent form (see Appendices E & I). But instead of signing, they gave their consent verbally, as they found this comfortable because of their familiarity with the oral tradition in contracts and arrangements.

King and Horrocks (2010) indicated that the use of focus group discussion to validate study findings is ethical. This provided the study participants the opportunity to verify the issues

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or preliminary essences identified. As a researcher, I was also under obligation to protect the information entrusted unto me by the households. What I did was to make duplications using a memory stick and giving it to a friend for keep. Lastly, regarding dissemination of results, I agreed with the participants and the institutions involved that, copies in the appropriate forms will be made available to them (see Appendix K). I also informed them that, the results would be presented in conferences, seminar and journals, to which they agreed.

3.4.4   Managing the Data

Managing Data

The interactions and conversations with the household heads were captured with an audio tape and transcribed verbatim into word documents, using pseudonyms to represent each household heads. In most of the conversations, I used my local dialect (i.e. *Twi*), which is well understood and spoken by many of the household heads. However, with five (5) of the household heads, I had to use the support of the Assistant Tourism Manager for translation into their local dialect.

Everything was captured and transcribed personally into the English Language using Microsoft Word. Also, the focus group process was captured using a video camera and transcribed as well into a word document. I did a lot of the transcribing using my laptop during my stay in the homestay in Mognori and the rest in Kumasi the place of my residence. During my stay at the homestay, I kept a reflexive journal (using a word document) to capture my own thoughts about each interaction with the household heads, my feelings and reflecting on my own pre-understanding and its dynamics during the period of the fieldwork, which I have discussed above (see section 5.2). It also served as a reminder in the situation where I had to engage the heads for the second time in conversations. This undertaken was consistent with the view of

Fleming et al. (2003), that: "returning the transcripts together with the researcher's preliminary interpretation may stimulate shared understandings" (p.118).

In securing my documents, I made duplicates using a memory stick given to a friend, to avoid unexpected mishaps.

3.4.5   Interpreting the Data

As discussed under the methodological consideration for the study, I noted that Gadamer's philosophy did not elaborate any methodological procedure or methods, even though, he shared the view that methodical direction is needed. It was on this basis that I justified for the inclusion of the stages outlined by Fleming et al. (2003). The discussion of this interpretation stage was influenced by Fleming et al. (2003) fourth stage; gaining understanding through dialogue, with the use of texts. Transcribing the interviews and focus group produced texts that served as means for the dialogue. According to Gadamer, the notion of dialogue does not transpire between two people alone, but also occurs between the reader and text through which understandings becomes possible through the fusion of horizons, with the process of analysis occurring in hermeneutic rule of movement from the whole to the part and back to the whole (see Fleming et al., 2003).

In the process of trying to understand households' experiences with the changing climate in the process of constructing their livelihoods and adaptation strategies, I used Nvivo 9 as the data management and interpretation tool. Nvivo 9 is a qualitative data analysis (QDA) computer software package produced by QSR International (QSR International, 2008). As a tool for the interpretation of textual material (emerging from interviews and focus group discussion), Nvivo served the functions of supporting the storing, retrieval and manipulation of texts or documents as well as supporting the creation and manipulation of nodes (Gibbs, 2002). The software allows users to classify, sort and arrange information; and examine relationships in the data (QSR

International, 2008). Also, I used my reflexive journal to capture thoughts and reflection to assist in interpretation (Long, 2007) as well as my frustrations with the interpretation.

In using Nvivo 9, I applied the four-stage cyclical process outlined by Fleming et al. (2003), which covered: 1) gaining understanding of the whole text by reading and re-reading; 2) reading single or sections of the texts to capture the hidden meaning for understanding; 3) relating the single sentence or sections with the whole text; and, 4) the identification of quotations that represent the shared understandings. Even though this process is consistent with Gadamer's philosophy, I used it as an umbrella framework and weaved Yin's (2011) five phase analytic process involves; compiling, disassembling, reassembling and arraying, interpreting, and concluding in iterative process. I applied Yin (2011) approach within that of Fleming et al. (2003), because of the Nvivo program I was using. I applied this process to both the texts generated from the household interviews and focus group discussions.

Initially, I compiled data by reading the whole material and correcting any grammatical mistakes. After that, I uploaded them into the Nvivo program. Long (2007) is of the view that this process is a way of familiarizing oneself with the contents of the material. I again read and re-read to gain a general framework of understanding of each text. Fleming et al. (2003) argue that, this helps in gaining understanding of the whole text because the meaning of the whole will influence understanding of the single or sections of the text I read. This stage was followed by the second stage, involving reading single or sections of the texts to capture the hidden meaning for understanding. According to Fleming et al. (2003), this stage facilitates the identification of themes. Using Nvivo 9, I applied Yin (2011) idea of disassembling or breaking down the texts into smaller fragments by assigning labels or codes to the fragments in a process called coding[6]. I

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[6] Is a process of assigning bits of texts to categories by attaching key words or tags (Long, 2007). The coding involves attaching operational and/or conceptual identities to the data in order for these to be organized and categorised, then to be broken down and

reassembled the data into themes based on the emerging patterns in the texts. This was guided by the integrated theoretical framework (see section 2.5.8). This process merged into the stage involving relating the single sentence or sections with the whole text. This stage took about three weeks.

After many readings, discussions with colleagues and review of Fleming et al. (2003) work, I understood the process of dialoguing with the texts. In this process, I constantly asked questions regarding what they are trying to say and what thematic structure I should use to represent the text interpretation. Being aware of my pre-understandings, I started gaining new understanding that helped me to identify new themes that became the essences underlying the experiences of the households. Also, during this process, in order to gain deeper understanding of the texts, cross comparisons were made of the individual households, between and across texts. As I explored each text and compared them by reading and re-reading, I was able to finalize the essences I believe underlie households' experiences. After the identification of the essences, I retrieved relevant quotations that represent and justify the shared meanings of the essences.

3.4.6   Establishing the Quality of Research

The last stage of Fleming et al.'s (2003) method is about establishing trustworthiness. According to them, auditability is consistent with Gadamerian research process, and is a criterion of truth which emphasizes the need to detail the steps and decisions made in the research process.

In the study, the use of multiple sources of information was instrumental in the process of achieving inquiry credibility (Bailey, 2007; Yin, 2009). I used key informant interviews and documentation to establish the context in which the households operate in the process of

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reassembled in a more meaningful form. It is therefore a process of ordering, reducing and summarizing the data (Brotherton, 2008).

constructing their livelihoods in the context of the changing climate. The use of household interviews and focus group discussion identified the experiential reality of the households in terms of livelihood construction and adaptation strategies. I also used subsample in focus group discussion to validate study findings as a process of ensuring credibility and appropriate representation of community`s views of the phenomenon under study (Bailey, 2007; King & Horrocks, 2010).

According to Fleming et al. (2003), the use of quotations to represent the essences underlying households' experiential reality, help establish credibility. At the analytical stage, as I explored and compared the texts and identified the essences I believe underlie households' experiences, I retrieved relevant quotations to represent and justify the essences. Also, contextualization of the case produced adequate representation of the setting, enhancing internal validity.

3.5   Chapter Summary

Chapter 3 discussed the bases for examining and understanding the lived and embodied everyday of households experiencing climate change, proving the justification for using ideas from philosophical hermeneutics of Hans-George Gadamer and Mognori as a case. Gadamerian philosophy is based on understanding the experiential and lived existence in tourism studies. It addresses experience from the perspective of meanings, understanding and interpretations (Pernecky & Jamal, 2010). The key constructs such as; language, prejudice, dialogue, fusion of horizons, interpretation and hermeneutic circle, served as conditions, informing the methodological choices regarding households selection, data collection tools and process for understanding of the lived experience, the procedure for the data management and analyses, quality of study and the issue of ethics.

CHAPTER FOUR: FINDINGS OF HOUSEHOLDS` LIVED EXPERIENCE

4.1 Introduction

Chapter 4 discusses the characteristics of households in the case study area and the four main underlying essences that explain lived experience of households constructing livelihoods in vulnerable context. These essences are: 1) adopting different livelihood strategies; 2) experiencing the impacts of ecotourism on assets and activities; 3) experiencing current vulnerability conditions and developing adaptation strategies; and, 4) sustaining ecotourism by building future adaptation strategies.

The chapter starts by describing how households construct their livelihoods, highlighting the livelihood strategies and their rationale. These broad adaptation strategies sustain households in the changing environment. The importance of ecotourism to households in the livelihood process is discussed in terms of assets, activities and outcomes. The assets are captured in terms of financial, natural, human, physical, and social assets.

Also, the current vulnerabilities faced by households, that accounts for the broader livelihood strategies are described in terms of biophysical and social conditions. The specific implications of these conditions to households' livelihoods, including ecotourism, are discussed. As well, specific adaptation strategies developed to reduce household vulnerability to the conditions are discussed.

The discussion also highlights the constraints faced in the process of the adaptation process and how these constraints provide the bases for the proposed adaptations to sustain ecotourism as a result of livelihood dynamics resulting from changing climate.

4.2   Description of Household Characteristic

Household heads in this study are subsistent farmers involved in ecotourism. Farming constitutes the primary livelihood activity, however, the household head or other members of the household may be involved in other activities. A total of 22 household heads were engaged in a conversation to share their everyday lived experience in the process of constructing livelihoods in the context of changing climate and other stressors. Out of the 22 household heads, 5 are females and 17 are males, between the ages of 27 and 55 years. They have limited education except for a few with high school education or above. The household size ranges from 5 to 8 members.

4.3   Livelihood Strategies of Households

This section 4.3 discusses the households' livelihoods and the resulting outcomes based on the strategies used. Households use combination of livelihood strategies to secure food and income for household sustenance. Intensification/extensification of farming, livelihood diversification and migration constitute the livelihood strategies used in an attempt to adapt to the changing climate and other stressors.

4.3.1   Livelihood Intensification/Extensification Strategy

Farming, particularly crop farming, constitutes the primary economic activity of the households. They plant variety of crops on a piece of land. The crops include cassava, yam, maize, pepper, tomatoes, groundnut, millet, and okro. Some of the farm produce, such as the cassava and groundnut, is processed and sold either in the community or a nearby market. The crop farming is supported with livestock farming with sheep, goats, fowls, and cows. The households indicate that, they plant these crop varieties on their farms to ensure household food and income security. One of the household heads, **Charles** explains that:

> Farming is my major way of making a living. I plant maize, yam and groundnut. My wife plants pepper and white beans in the same farm. I also have livestock like goats, fowls and guinea fowls. My wife is also involved in gari production and she sells them in the market at Damongo. The gari is extracted from cassava which comes from my farm. We process everything on the farm and bring them home. We do all these to ensure there is food and money to support my children's education, household needs for clothes and labour on my farm when needed.

Some households have farmlands located at different places. The rationale according to these households is to avoid crop-raiding by wildlife, which may come out of the national park. According to **Ben**, who has experienced crop-raiding, claims its occurrence undermined his effort to provide food and to earn income. So to protect his farm, he is farming outside the locality near the park to avoid any further crop-raiding. He explains that:

> The elephants raid and destroy my farm. Anytime I report it, I am not compensated. They elephants disturb my farming activity a lot. My farm has been raided twice. What I don't understand is that anytime I make a report to the park authority, I don't get compensation. It is frustrating and I can't also sleep in my farm and guard it against them because you never know when they come. So now what I have done is to find another farmland far from the park to avoid raiding.

There are two underlying rationales for the strategies adopted by households. The planting of many crops on the same piece of land, is an adaptation strategy to deal with risks associated with the climatic conditions experienced in the locality. Also, farming is carried out at separate locales in order to avoid the risk of elephant raids. These strategies are adopted to secure household food consumption and income from selling some farm produce.

4.3.2   Livelihood Diversification Strategy

All the households complement farming with forest-based activities, local businesses, and ecotourism-based activities as well as formal employment. The forest-based activities include hunting, harvesting of fuelwood, charcoal production, beekeeping, and gathering medicinal

plants. Other households operate local businesses such as a sheabutter business, a drinking bar, as well as sewing. The formal employments noted are teaching and masonry.

Households indicate being involved in ecotourism-based activities and services. The activities identified are: 1) tour guiding, and interpretation; 2) canoe operation; 3) homestay and food services; 4) sanitation management; and, 5) cultural display and entertainment. They receive remuneration for providing these activities and services to visitors. For instance, **Agnes** states that that income from agricultural products is supplemented by a small tourism business:

> I am single mother, having a farm and working on my sheabutter business at home. My main source of income comes from sheabutter production. I also operate homestay and sell beverages such as coca cola. The homestay is becoming more important to me, as I get money from it.

Some households indicate that, because of the ecotourism, they get the opportunity to sell artifacts and food produce to visitors. **Magdalene** who is involved in gari production speaks of her situation, saying that:

> I do farming and also involved in gari production. I get the cassava from my farm to produce the gari. I sell the gari to retailers from Damongo. I also sell some of the gari to visitors who come to sleep in my house.

It is important to note that income from farm products is supplemented by income from tourism services and products. The farm products are sold to the larger market, but the presence of tourists provides a new market for such products.

4.3.3 Migrating to Secure Resources

Emigration constitutes another livelihood strategy used by households. Some households indicated some family members emigrating to seek employment and education opportunities.

Households note that some of their children travel outside the locality to seek employment. They argue that the children moved away because they find farming unattractive because of crop-raiding, fire and poor rains, which result in poor farm yield. Further, they emphasize that

wage-earning opportunities in the locality are limited, motivating some of the household members to travel outside the locality. These households note receiving remittances, which is money sent home from family members working elsewhere. For instance, **James** supports his sons travelling outside the locality to seek jobs, because of the limited job opportunities in the locality. He explains that:

> My children have all travelled to the city for jobs and send me money. There are no jobs here, so they have traveled to Sunyani, Tamale and Kumasi. They are working there. The children are all travelling out here because there is no job and farming is no good because of the weather and the elephants that keep on destroying our farms.

Other households note their interest in supporting their children to emigrate was to gain higher education because the education programs in the locality are limited to the primary level, motivating the children, who have completed their primary level of education, to seek further education elsewhere. For instance, **Rosemary** argues that for her daughter to be better educated, she supported her financially to seek her secondary education in Tamale. She states that:

> My daughter is now schooling in the Tamale and comes home during vacation. She has to go to the city where she can get higher education because we don't have secondary school in this village.

Households believe that the emigration of children for higher education will enhance their opportunities for better employment. This will then increase remittances to the local households, improving households' savings and ability to afford other household needs. Table 4.1 provides a summary of livelihood strategies, activity type, specific livelihood activities and outcomes.

Table 4.1 Households' livelihood strategies and outcomes

Livelihood Strategies	Activity Type	Livelihood Activities	Outcomes
Intensification/extensification	Farming	Crops and livestock farming	Food & income
Livelihood Diversification	Forest-based	Hunting, charcoal production, beekeeping, fuel wood and medicinal plant harvesting	Food & income
	Local Business	Sheabutter, drinking bar & sewing	Income

Livelihood Strategies	Activity Type	Livelihood Activities	Outcomes
	Ecotourism	Tour guiding & interpretation, homestay & food services, canoe operation, cultural display & entertainment and sanitation management	Income
	Formal Employment	Teaching & masonry	Income
Migration	Employment Education		Food & income Remittances Knowledge & skills

4.4 Impacts of Ecotourism on Household Assets and Activities

This section 4.4 focuses on the impacts of ecotourism on the livelihood assets and activities of the interviewed households. The assets are financial, natural, human, physical and social assets.

4.4.1 Ecotourism Impacts on Financial Assets

Ecotourism has impacts on the financial assets of households. The financial assets refer to financial resources that people use to achieve their livelihood objectives. It is expressed in terms of collective income, wages, and casual earning. The positive impacts experienced by households are collective income, wages and casual earnings, as well as an ecotourism-based loan facility. The negative impacts of the ecotourism are expressed in terms of a lack of financial incentives and drain on households' savings.

Having Positive Impacts on Financial Assets

The involvement of the households in ecotourism has created economic opportunities, generating different financial benefits, making ecotourism important to them. The importance of the ecotourism is ardently expressed by **Daniel**, who views the ecotourism as an intervention that is improving their financial assets. He happily expresses that:

The ecotourism is important for me and others. It is very important because it has generated income for some households including me. The incomes we receive improve our lives.

The households specify that ecotourism generates revenues which are managed by the Tourism Committee. It is out of these revenues that they receive monthly wages for providing activities and services to visitors. **Peter,** a member of the Tourism Committee, explains that the revenues generated are collected and distributed on behalf of the community. He further explains that they have developed a system of sharing and distributing revenues. He notes that:

We, the Tourism Committee, disburse the money to those who are working such as tour guides or canoe operators. We save the rest in the bank in Damongo and put some in the community development fund for community projects.

In explaining how she is paid from the ecotourism revenues, **Rosemary**, who operates a homestay, expresses that:

I get paid for hosting visitors and opening my house to them. As a member of the homestay operators, I get paid depending on how many visitors come to my house, the number of days they spent and the food they eat.

Also, **Charles**, who is a tour guide, says that:

I get paid as a tour guide. The wages are paid on monthly basis from the ecotourism revenues generated. It varies depending on the number of visitors I provide guiding to.

Some households receive income directly from tourists by selling souvenirs and farm produce. However, they note that this is not their most important source of income, as they sell most of their farm produce at the local market. Particularly, in households where members engage in gari and groundnut processing, income is also from showing the visitors the processes involved and their cultural significance. In other words, the food processing operation is an attraction generating additional income for these households. For instance, **Magdalene,** who operates a homestay, shares her experience by saying that:

The visitors buy some of the gari I produce, bringing me some money. They buy small quantities though. Most of the gari is sold to the buyers from Damongo town.

Households note that part of the ecotourism revenue is pooled to serve as a loan facility, creating available capital for households who need financial assistance to support other livelihood activities and households` needs. One of the household heads, **Ben,** explains that the loan facility can be accessed if one is a member of the ecotourism group. He explains that:

The ecotourism created a loan facility for those involved in the ecotourism. I can borrow, so can my wife because she is a member of the dancing group.

They also indicate that their earnings enable them to meet their needs for clothing and food. They are able to support the education of their children in terms of meeting their needs for stationery and school uniforms.

Having Negative Impacts on Financial Assets

Ecotourism is not only having positive impacts but negative ones as well on households` financial assets. The households identify two financial constraints: lack of financial incentives and a drain on savings.

The households represented by an individual on the tourism committee complain about a lack of financial benefits for their involvement in the ecotourism management. They acknowledge that even though they serve as volunteers, mandated by the community to manage the ecotourism, they need financial incentives to continue serving in that capacity. **James**, a member on the committee, argues that:

There is unfairness in how we distribute the proceeds from the ecotourism. Even though, my role is voluntary, it feels unfair when I don't receive any pay for the advisory role I play. We, the committee, pay wages to those providing activities and services every month but we don't get anything. There is no payment for serving on the tourism committee.

This reveals that the distribution of the financial returns from the formal ecotourism programs needs to be refined to include reward for involvement in overall management.

One other negative impact of the ecotourism is the financial drain experienced by households involved in homestay operation. They acknowledge the financial benefit of homestay operation but complain that the requirement of revamping the houses in preparation for the new tourism season, create costs that may drain their savings. They explain that they are required to revamp the roofs to avoid leakage during the raining season that may destroy properties and undermine the experiences of visitors. Also, they have to provide new bedspread, mosquito nets, and other items such as cutlery and cooking items. According to **Agnes**:

> Changing the roof (straw roof) every year is a requirement in operating the homestay. This is to ensure the roof is not leaking when it rains. The bedspread and other items for visitors have to be changed. Changing the roof and items is expensive and even though I earn money from the homestay, this can be difficult as I have to draw from what I save.

These households acknowledge that sometimes they get support from members of other households to revamp the roofs. With this support, they incur less cost because instead of paying for the labour, they provide food as an appreciation gesture. Evidently this cost of capital investment in the tourism business is counterbalanced by the resultant income, or they would not stay in the business. Table 4.2 provides a summary of ecotourism impacts on households' financial assets and outcomes.

Table 4.2 Impacts of ecotourism on households' financial assets and livelihood outcomes

Impact Type	Financial Asset	Livelihood Outcomes
Positive Impacts	Collective income Wages Casual earning from sales Ecotourism loan facility	Community projects Clothing Food Education
Negative Impacts	Lack of financial incentives Drain on savings	Limited income

4.4.2 Ecotourism Impacts on Natural Assets

Natural assets constitute the natural resources in the locality, including Mole National Park and CREMA. They are the land, farms, water, forests, and biodiversity. These assets constitute the ecotourism attraction base. The section also highlights the impacts of ecotourism on the natural assets as expressed by the households. The positive are: supportive governance system, wildlife protection, population increase and reduced illegal activities. The negative impacts of the ecotourism on households are expressed in terms of recurring crop-raiding and lack of compensation for crop damage.

Having Positive Impacts on Natural Assets

The households identify different natural assets in the locality that support ecotourism experience. These assets are: the forest, Mole River, and wildlife protected in the community resource management area (CREMA). These assets constitute the natured-based attractions based on which wild viewing and canoe safaris are organized for visitors.

The households explain that the CREMA was earmarked to protect wildlife and associated assets as well as serving as an habitat attracting wildlife such as elephants, bush-buck, and warthogs, from Mole National Park. The Mole River which runs through the CREMA, coming from Mole National Park, provides an important source of water and fish used by both the households and the wildlife. It serves as the navigation pathway for the canoe safari into the national park from the CREMA. **Abraham** explains how he connects to the river when he says that:

> The river is very important to me and the community and it serves as an important source of drinking water and abode of our god. The river provides me fish too.

The households explain that the presence of wildlife in the CREMA motivated them to seek support from the park authority and other partners to develop ecotourism. They note that the

development of ecotourism facilitated the formation of the CREMA and the tourism committees as well as the enforcement of existing local byelaws to protect and manage the attraction base. They acknowledge the committees and byelaws helped reduce hunting, farming, use of DDT in fishing and fire events in the CREMA and the locality. They note that the protection of wildlife has resulted in population increase over the years. **Charles** substantiates this when he notes that:

> We were not seeing wildlife in our CREMA and the surrounding because of the hunting that was done by the people here. Now hunting is banned and people have stopped it since we started the CREMA. Now the wildlife population is increasing in the CREMA because we see them, particularly along the river and outside it. So we take the tourists to see the wildlife in the CREMA as well as the park.

This evidence reveals that the CREMA and associated ecotourism program development has resulted in increases in wildlife populations, and apparently an increase in the local peoples' acceptance and appreciation of those wildlife.

Having Negative Impacts on Natural Assets

The increase in wildlife population is a threat to households' farming activities in the locality. Households identify crop-raiding as a major and recurrent problem. They blame the crop-raiding incidence, particularly by the elephants which cause large damage in the farms. Some people explain that they used to control the raiding using their guns but the byelaws prohibit shooting elephants. They acknowledge crop-raiding as a persisting challenge. However, households express frustration over the recurrence of this even which undermines household food and income security. For instance, **Kenneth** explains that:

> As a community is located near the park, the problem we face is the elephants raiding our farms. It is a big problem because of the extent of damage they cause. They know when harvest is near and they invade our farms. It has happened to me once and when I made a report, I got no money from the park, for the damage the elephants caused. I am not able to do anything about it, except hope they don't raid again. It is hopeless since it keeps on happening.

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The households recount that over the years, they have supported the park authority in patrol activities to reduce the occurrence of crop-raiding. However, this has been of limited success as indicated by the recurrence of the raiding. This has created a sense of helplessness in them as to how to stop this crop-raiding and as a result, some households have relocated their farming activities elsewhere. These households complain that they don't receive any compensation from the park authority for the destruction of their farms.

Ben expresses his frustration when he says that:

The elephants raid and destroy my farm. Anytime I report it, I am not compensated. The elephants disturb my farming activity a lot. My farm has been raided twice. What I don't understand is that anytime I make a report to the park authority, I don't get compensation. It is frustrating and I can't also sleep in my farm and guard it against them because you never know when they come.

Some households, however, acknowledge that, their farming activities are close to the park and are within the feeding range of the elephant raiding events. Table 4.3 provides a summary of ecotourism impacts on households' natural assets and outcomes.

Table 4.3 Impacts of ecotourism on natural assets and livelihood outcomes

Impact Type	Financial Asset	Livelihood Outcomes
Positive Impacts	Supportive governance system Wildlife protection Wildlife population increase	
Negative Impacts	Crop-raiding Lack of compensation	Undermining food and income

4.4.3 Ecotourism Impacts on Human Assets

The aspects of human asset refer to knowledge, skills, and ability to work in ecotourism. The underlying experiences are described in terms of positive or negative impacts by households. In describing the positive impacts, households highlight: gaining knowledge about the importance

of ecotourism; gaining tourism training, and skills; improving communication; exchanging knowledge; and transferring cultural knowledge. Also, they identify as negative impacts such as: experiencing communication barriers, and providing limited interpretation.

Having Positive Impacts on Human Assets

The households explain that in the process of stimulating communal support for the development of ecotourism, the park authority assisted them in organizing a field educational trip to other communities who were managing ecotourism initiatives. They note gaining knowledge about the prospects of ecotourism in improving livelihoods and conservation. **Peter** explains that the field education trip was instrumental in motivating him and other households to support the ecotourism idea and promote it to the rest of the community. He notes that:

> We visited places where communities are running ecotourism. When we got there we were excited and we said we can also do it. So we liked the idea and when we came back we were also to sell the idea to the community.

The increased interest in developing ecotourism resulted in the building of capacity within the community. The households indicate receiving tourism training from the Ghana Tourism Authority, through the assistance of the park authority. They mention training on hospitality, tour guiding and interpretation, first aid administration, communication, conflict resolution, financial management (i.e. bookkeeping), cooking, hygiene, and facility maintenance. They acknowledge that the training provided them with the knowledge and skill sets to provide better services to visitors. **Charles** talks about the importance of the training and how it enables him to provide adequate tours and interpretation to visitors. He explains by saying that:

> I have gained training in tour guiding and interpretation. I was also trained in how to ensure visitor satisfaction, comfort, safety and happiness concerning the experiences provided. By making them happy, they will come back and also tell their friends to come visit. These training are important and help me perform my role as a tour guide, educator and provider of services that will make visitors happy. In terms of safety which is important during the canoe safari, I ensure they

> put on the life jackets. The training also includes identification of wildlife and birds. I know some birds because of this job.

Households emphasize that the knowledge and skill sets obtained through the training received, enable them to provide adequate services to visitors, creating a good tourism experience and visitor satisfaction. They remark that some visitors make repeat visits and come with their friends or family each year. The visitors write good comments in the visitor's book that are kept.

The households express improvement in communication over time despite having low education levels. They stress that interacting with visitors often has been helpful. For instance, **Charles** shares how his interaction with the visitors during tours has been beneficial and improved his ability to communicate in English. He explains that:

> The interaction I have the visitors every day as I give the tours has helped improved my ability to converse with them in English now. I can now go anywhere and communicate confidently in English.

Some households note that hosting the visitors creates opportunities for their children to interact with and learn from the visitors. **Agnes** talks about how the opportunity to host visitors in her house makes it possible for her children to converse and learn from them. She acknowledges that the interaction helps her children in learning to speak English well. She explains this by saying that:

> My children talk and play with the visitors when they are in my home, they get the chance to learn and improve their ability to speak English.

Also, through interacting with the visitors, some households acknowledge teaching and learning from the visitors. Particularly, this is the case where visitors express interest in understanding the food processing and its cultural significance. As a result, these households get the opportunity to teach visitors. **Agnes** recounts excitedly that she teaches her guests about the processes involved in producing sheabutter. According to her:

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When visitors come to the community and I host them in my homestay, I teach them how to produce the sheabutter. I take them through the process, with the help of the tour guide.

Some households talk about how in the process of providing tour guiding, they gain an opportunity to teach visitors about the wildlife and their culture, while they gain knowledge about wildlife from the visitors as well. They claim that such exchange improves the interpretation experience they give to other visitors. **Frederick** shares his experience about how he gets the opportunity to shares his knowledge with visitors and also learns from them during the expeditions. He explains that:

I find the journey interesting as I get the chance to interact with the visitors and learn about birds or their names in their language. I make friends and chat with them. For me, I have learned a lot from them and I have also taught them a lot about the wildlife here and my culture. It's my job to make them have the best experience so that they tell their other friends to come.

Organized cultural dance designed to create cultural experiences for the visitors also becomes a learning opportunity for the locals. Particularly, it is observed that in the process of entertaining the visitors, the locals, most importantly, the children participate in the dance at the periphery, and learn the skill of dancing and its cultural value. Sharing his observation, **Ahmed** says:

Anytime we dance to entertain the visitors, it brings some of the people in the community, particularly the children around. When they see it, they also learn to dance. They will take over from us when we are gone. It brings excitement into the community as you see other people in the community coming to join in the dancing. It makes us happy to dance I can tell you.

The participation of the children in the dance creates a sense of hope that they will understand the local culture through the dancing and be involved in the future. This is an example of how ecotourism can revitalize and preserve local culture.

Having Negative Impacts on Human Assets

Some households acknowledge that interacting with the visitors is constrained by their limited knowledge of spoken English because of low formal levels of education. Even though they acknowledge an improvement in communication over time, they admit inadequately expressing themselves and having conversations with the visitors. According to **Rosemary**:

> I think the only problem I have is not conversing with them because I don't speak their language. They speak English and I didn't go to school so can't speak. When my daughter in the secondary school is here, she helps me to understand and attend to them. She is schooling in the Tamale and comes home during vacation. She has to go to the city where she can get better education because we don't have secondary school in this village. So when she comes, she helps me in understanding the visitors because she is a student and can speak English better.

The households admit that the language constraint affects them emotionally, but they have developed strategies to overcome them. They seek interpretation support from well-educated locals, including their children, which improves the interaction with their guests.

Providing interpretation helps visitors understand the local culture and the nature within the local landscape. However, some households admit that they are constrained by limited knowledge of the ecosystem and its wildlife. Additionally, they have inadequate knowledge of the common English names of certain birds, trees and other wildlife, though they have adequate traditional knowledge of them. They acknowledge that this creates difficulty when identifying some of the wildlife and providing interpretation to visitors during expeditions. **Frederick** expresses the challenges he faces during guided tours. He admits inadequacies but acknowledges learning from the visitors to improve his knowledge. He explains this by saying:

> I try to provide good interpretation to make their trip enjoyable, though, I need to learn more names of the trees and birds. When visitor ask the name of a bird or a tree and I am not able to tell, they become disappointed. I find the journey interesting as I get the chance to interact with them, and learn about birds and their names.

This is an evidence of how ecotourism creates challenges for host community in a situation where education is low. Table 4.4 provides a summary of ecotourism impacts on households' human assets and outcomes.

Table 4.4 Impacts of ecotourism on human assets

Impact Type	Impacts on Human Asset	Livelihood Outcomes
Positive Impacts	Ecotourism knowledge Tourism training and skills Improved communication Knowledge exchange Transfer of cultural knowledge	Improved capacity Secured income from repeat visits Preserved culture
Negative Impacts	Communication barrier Poor nature and cultural interpretations	Low capacity

4.4.4   Ecotourism Impacts on Physical Assets

Physical assets refer to transport, shelter and building, energy and water supply. The households identify these assets and their implications for the ecotourism activities. These implications are identified as positive or negative impacts. They describe the positive impacts in terms of gaining improved access, improving tourism experience tourism facilities, and improved social life and safety as well as access to clean water supply. Also, they describe experiencing limited mobility within the locality, as a negative impact.

Having Positive Impacts on Physical Assets

The households identify the improved roads and bridge as important assets improving access to the community and tourism areas. The households recount that over the years, access into the locality was difficult and the travel time was long for both the locals and visitors, because of the poor nature of the road network and bridge. They acknowledge that the roads and bridge were recently rehabilitated by the local government, improving access to the locality and ecotourism

areas. Other road networks are being improved as well in the locality to boost ecotourism. **Peter**

shares the insight that:

> Now the government is providing a good road network to connect the locality to the major towns in this district. So now the visitors can traveled in without any hustle. The road through our community has improved very much. The culverts and the bridge have been rehabilitated.

It is important to note that the government-led improvement of the roads and bridge over the

river was done to facilitate tourism traffic. It has also assisted households as well. This

improvement can be seen as a central-government financial subsidy to the local communities

around the park.

Households list other assets such as the visitor centre, Fulani camp, wildlife viewing

platform and canoes that support and improve the ecotourism experience. They indicate that

these assets were built with support from the park authority and SNV-Ghana. Particularly, they

recognize the centre as an important place to interact with visitors and provide them with

information about the ecotourism activities and the cultural aspects of the community. **Frederick**

provides the understanding that:

> When the visitors arrive, I receive them at the visitor information centre where I brief them on the attractions and activities we offer. Also, I tell them about the culture of the community as well as the dos and don'ts in order to avoid conflict between the visitors and the locals. For instance, I notify them to ask a tour guide to accompany them, anytime they want to go somewhere within the community and see the natural and cultural attractions.

Wilderness experience is a major draw for the community. In creating a wilderness

experience, households provide canoe safari into the Fulani camp, using the Mole River that

links the CREMA to the park. The camp is located in the National Park and provides visitors a

viewing platform to see wildlife and experience wilderness. **Frederick** explains that:

> There is also the Fulani camp for those who want to sleep in the park. There, they can see more wildlife in their natural setting. In the camp, there is a platform for

viewing wildlife. So visitors who prefer overnight camping are taken there because the chance of seeing animals in the morning is high.

The development of ecotourism motivated the local government to build a solar light in the community. Households admit that their social life is improved because of the increased social interaction and night activities associated with the light. They organize movie shows and music entertainment occasionally. Also, they indicate feeling safe and having more time to interact among themselves and with the visitors being hosted. Highlighting improvement in the social life in the community, **Frederick** notes that:

> I must say that, the ecotourism has brought in many important benefits such as solar light, internet and phone access in the community. The District Assembly has brought in solar light, about 5 of them that light the community in the evening and has improved night life and safety because people can see where they are going. They also stay outside more, to enjoy movies and music entertainment.

Households express their happiness about gaining access to clean portable water from boreholes built by the local government. They acknowledge that this has reduced the incidence of water-related diseases and infections they experienced when they were dependent on the river. They acknowledge the health implication of depending on the boreholes by sharing the view that it is safer than the river. They admit still using water from the river to do other household chores but not for cooking or drinking. The boreholes provide them with clean water to take care of the households and visitors as well. According to **Agnes**, she prefers using water from the borehole because it is cleaner and safer. She emphasizes that all the households that host visitors use the clean water in preventing health complications for the visitors. She explains that:

> I cook and take care of the visitors. I cook all kind of local meal for them. I use the clean water from the borehole near the river. That is cleaner and safer than the river. All the other home operators use the water from the borehole for the visitors to drink, bath and coke and wash their hands.

These interviews reveal that several important physical developments, such as improved transportation infrastructure, a new night light, internet and phone, and improved water supply

have all come about due to ecotourism development. These changes have increase the community access to the outside world, improved the social life of community members as well as their health.

Having Negative Impacts on Physical Assets

Households acknowledge that though access to the community is improved; there is limited access to transport. They indicate that the motor bikes are the common means of transport in the locality, although some visitors often use rented vehicle from the park or near communities to come to the community. As a result, sometimes it is difficult for community members to organize transport for visitors to commute out of the community. They admit this creates unnecessary waiting time for the visitors. **Daniel** anticipates this may affect visitor flow and numbers, by explaining that:

> There is mobility problem as there is no vehicle in the community to transport visitors back to the park or out of the community. This is not helpful as it is an inconvenience for the visitors who do not drive their own vehicle. This may affect the number of visitors visiting. I guess more people will be coming if there is easily means of transport. Also, this is a basic problem of the community.

This finding implies that a more efficient and effective means of transportation is needed within the community to help move visitors out between the community and the park, even though the park currently provides transport when needed. Table 4.5 provides a summary of ecotourism impacts on households' physical assets and outcomes.

Table 4.5 Impacts of ecotourism on physical assets

Impact Type	Impacts on Physical Asset	Livelihood Outcomes
Positive Impacts	Rehabilitated road and bridge Tourism facilities Solar light Boreholes	Improved access Improved tourism experience Improved social life & safety Improved health
Negative Impacts	Limited vehicles	Low mobility High waiting time

4.4.5 Ecotourism Impacts on Social Assets

Social assets refer to the resources which enable households to undertake and meet their needs. It encompasses membership of groups, social norms, relationships of trust, reciprocity and exchanges, and networks. The households describe the positive impacts as: benefiting from group membership, being guided by social norms, experiencing trust, gaining community support, and benefitting from external networks. Some households express feeling marginalized, which is the only negative impacts identified by households.

Having Positive Impacts on Social Assets

The households indicate belonging to different ecotourism-based groups in the community. These groups are: 1) the homestay operators, 2) canoe operators, 3) cultural display and entertainment group, 4) tour guiding group, and 5) sanitation management. They claim that their membership in these groups generates benefits such as: group support, securing income, and access to loans. They explain that being part of a group helps them interact regularly with each other through organized meetings. They also provide each other with support in addressing challenges they are facing regarding the ecotourism activities they are involved in. For instance, **Rosemary** remarks excitedly that:

> Sometimes, we do meetings and discuss and share experiences and challenges and try to find solutions to them. So we help each other when one person knows the solution to the problem the other is facing. So we support each other.

The interactions and behaviors of the households within the groups are guided by formal and informal rules binding the various groups. The formal are externally developed and negotiated with the community to prohibit certain activities. Examples are the regulations against fire and hunting developed by the GWD and implemented by the park authority in collaboration with the tourism committee. The informal are local byelaws well-rooted in the tradition of the

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people. Households note that their roles and responsibilities as well as how members of the

various groups are expected to behavior are guided by these social norms. In supporting the

importance of these norms, **Magdalene** explains in providing satisfactory services to the visitors,

members follow certain rules. However, the members attract some sanctions, if the rules are not

followed. An example of a sanction is denying a household the ability of hosting visitors. She

outlines some of the rules that members of the homestay need to follow, by saying that:

> The members must: ensure improved sanitation, and cleanliness in their homes; treat visitors with care and make sure they are happy and satisfied by providing good food, bedding and water for drinking and bathing; meet regularly to deliberate and discuss issues that will improve the homestay operation and make visitors satisfied; and if a member breaches any of the rules she loses the opportunity to host visitors in her home. This affect the money the member earns.

Households believe that trust underlies the interactions in the groups, engendering

increased cohesion and cooperative spirit among the members. They argue that it is the sense of

trust that fosters endeavours such as regular meetings, community mobilization for cleaning, and

observation of the byelaws prohibiting hunting. They note that trust accounts for the cohesion

among the ecotourism working groups and within the community in general. They admit that the

development of ecotourism has contributed to a cooperative spirit and community cohesion. As a

result, they have good relationships among themselves and they easily agree and build consensus

on issues relevant to the management of ecotourism and the local community. **Ben** shares this

view that:

> The ecotourism has stimulated community mobilization for communal labour for general cleaning and weeding. This has made the community clean and it has improved sanitation. The ecotourism has also brought oneness and peace to the community. Everyone now is interested in helping to make it a success. There is oneness and peace because we now do discussions together. And we agree on issues easily. It was not so formerly.

It is interesting that the need to cooperate in the delivery of ecotourism products and services to the tourists has resulted in improved community cohesion, working towards a community operation, and improved sanitation.

Also, **Peter** describes how much he and others have been seen as trustworthy and the community as a result entrusted them with the ecotourism revenues. He states that:

> As the chairman, the community trusts me so much that the money safe is placed in my house under my care. But we (i.e., tourism committee) have made some arrangement to avoid theft. In avoiding theft, we selected three people from the committee and gave them different access keys to the safe. Also, they open it at the same time, any time we have to add or take money or account for the money. They do this in the presence of the rest of the committee. We place the tourism revenues temporarily into this safe before sending it to the bank. This safe contains all the money of the people in the community. That is a lot of money and the community has entrusted me with this. I am trustworthy person and I will not do anything evil because I want the community to prosper.

They recognize that the sense of trust account for the support they give to each other (i.e., reciprocity). In situations where households do not have sufficient resources, they draw on the support of other households. For instance, one of the households gained support from others to rebuild his house during the period of the field study. Also, when households rehabilitated their homestays, they seek the support of other households. The recipients reciprocate by providing food in exchange for labour and help when other households need it. In sharing her experience, **Agnes** expressed excitedly, saying:

> The cost involved in roofing my house is a challenge. It can be expensive if I don't get help from the community. If they help me, I only have to prepare food for them.

Community support is an important resource that many households draw on in times of need and limited household income. They explain that it is part of their culture to provide such support and people also reciprocate accordingly. Apparently the shared ecotourism ventures have improved this inherent cultural desire to provide support to each other.

The trust which has engendered a cooperative spirit and community cohesion has also created opportunities for networking with external organizations, bringing in developments that benefit many households. Households explain that external organizations find them appealing because of the cooperative spirit and lack of conflict in the community. Accordingly, these organizations find it easy to collaborate with them on development interventions. They note developing relationships with organizations such as A Rocha Ghana, Ministry of Food and Agriculture, Ghana Wildlife Division, SNV Ghana, M & J Tours, Ghana Tourism Authority, World Vision Ghana, Habitat for Humanity, the District Assembly and other private entrepreneurs. **Abraham** recounts that:

> The ecotourism made the community appealing to organizations such as A Rocha Ghana. So A Rocha realized how the community is well organized around the ecotourism, has no conflict and supports the conservation of wildlife. So A Rocha introduced bee keeping as an incentive to create more support for conservation and also improve our lives. They supported interested people with materials, training and technical advice on bee farming and honey harvesting.

According to the households, these external organizations supported developments such as: the tourism training: solar light, borehole construction, and sponsorships for children. They acknowledge these developments are of great benefit to them. It is noteworthy that the ecotourism ventures have enhanced community cooperation and cohesion, which in turn has made it much easier for external bodies to provide additional support.

Having Negative Impacts on Social Assets

In an attempt to take advantage of the economic opportunities of the ecotourism development, some households offered their homes for consideration under the homestay program. However, they were not successful because of limited space for comfortably hosting visitors. They expressed feeling marginalized from benefitting financially. This sense of marginalization can

possibly create envy among households, undermining community cohesion and cooperative spirit. Explaining the situation and sharing his interest, **Abraham** says:

> The accommodation can be provided by other households to the visitors. However, only few households enjoy this. There is no attempt to increase the benefits by expanding to involve other households. So there is lack of opportunities to increase benefits. I have one room I can use but only five households are involved. They know they will have to increase the number because sometimes, more than three visitors sleep in room that should take two people. I don't think it's nice for visitors to sleep that way but it's because the rooms are not adequate to accommodate more visitors that is why more rooms are needed.

It was found that the large family size makes it difficult to allocate rooms for hosting visitors. The average household size is five people and most households have 2 to 3 rooms, making it difficult to be considered under the homestay program. **Frederick** explains that:

> Many people in the village don't benefit directly because they are either not on the paid list or don't have rooms to be used under the homestay program. They have many children in their homes and bringing in visitors will cause them problems. We want the visitors to feel comfortable when they are hosted.

The interviews reveal that not all households can be involved in homestay programs, for three reasons. Firstly, there is a finite need for homestays. Secondly, some people do not have the capital investment to prepare their house properly to host tourists. Thirdly, family size of some households is high, making it difficult to host visitors. Table 4.6 provides a summary of ecotourism impacts on households' social assets and outcomes.

Table 4.6 Impacts of ecotourism on social assets

Impact Type	Impacts on social Asset	Livelihood Outcomes
Positive Impacts	Benefiting from group membership Guiding with social norms Experiencing trust Gaining community support Benefiting from external networks	Improved group support Access to loans Income security Increased cooperation Increased community cohesion Increased developments Available safety net
Negative Impacts	Feeling Marginalized	Undermine cohesion and cooperation

4.5   Current Vulnerability Experienced by Households

The section 4.5 starts with the discussion on the current vulnerability in terms of the biophysical and social conditions and the implications on households' livelihoods, including ecotourism. The biophysical conditions described are those changing climatic conditions and associated characteristics, observed and experienced by households. They describe the biophysical conditions as: increasing temperature and induced environmental changes such as drought and increase fire events, erratic rainfall, episodes of heavy rains and induced environmental changes such as flooding and related health risks. The social conditions describe the social processes and structures that constrain access to assets, undermining people's ability to adapt to climate change. Households describe the social conditions as: limited education, unemployment, crop-raiding, and unsustainable traditional practices. The implications of the biophysical and social conditions on ecotourism are discussed as well.

4.5.1   Biophysical Conditions and Impacts on livelihoods

Increase Temperature and Induced Changes

Increase in temperature has been observed over the past 20 years. Households indicate that, the increasing temperature creates drought conditions, with corresponding increase in the occurrence of wildfire events, and general drying of the environment, including drying of water bodies in the locality. The dry condition also affects their crop farming and creates health challenges for them.

The households observe that the drought conditions, that affect both their farming and ecotourism activities, include poor crop yield, destruction of farms and homes, and drying of the river which serves as a source of water for consumption and navigation path for the wilderness experience. According to **Abraham**:

During the dry season, we experience drought. This means that everything become so dry and even the river starts to dry up. What happens is that the volume of water in the river gets low because of insufficient rains. This also affects navigation as it reduces the volume of water and exposes the river bed making navigation difficult.

The increase temperature, according to the households, increases the occurrence of fire events. They explain that drought causes grasses to dry up which serve as fuel, creating conditions for fires. They also suggest that, fires are not only natural but caused by the careless use of fire during hunting and land preparation. **Kenneth** substantiates this by explaining that:

Bushfire is a problem that occurs every year in the dry season. This is because the temperature is very high and causes dryness. This dry condition makes everything really dry and causes the forest and farms to burn easily, in the dry season. The fire is caused by careless people who are preparing their land for farming and as they burn, the fire gets out of control because the vegetation is so dry they catch fire easily.

They indicate that the fire events damage their farms, wildlife and the habitats, homes and tourism facilities in the locality in a way that poses a threat to the sustainability of ecotourism.

Charles mentions that:

Bushfire incidence is a problem during the dry season. In avoiding the structures at the campsite from fire destruction, the tourism committee instructs me and other people to clear the dry grass to reduce the incidence of fire.

It is noteworthy that it is the tourism committee that is creating management activities, such as clearing out the fuel load, that reduce community risk from fire. This is an example of ecotourism leading to improved environmental management outside the park, which reduces community susceptibility to fire damage.

The increase in temperature also creates situations that affect the health of some households. They complain of extreme heat in the rooms of their houses during the dry season. This creates discomfort and makes them sleep outside of the rooms, where they are exposed to

mosquitoes, resulting in malaria. This situation also affects the visitors as well. Sharing his views, **Kenneth** explains his experience by saying that:

> The high temperature makes sleeping in the room uncomfortable. The sun heat the houses during the day and in the night, we can't sleep because the rooms become hot. We sleep outside on the ground or on the roof. And here, mosquitoes don't give us peace of mind. Now there are many mosquitoes and I don't even understand it. They come high up to the roof where my family sleeps. It's strange.

This reveals that increasing heat levels in the homes forces people to move outside at night, where mosquito bites can lead to malaria. This issue of climate change leading to increased levels of tropical disease is a very important issue that needs to be highlighted.

Erratic Rainfall, Episodes of Heavy Rains and Induced Changes

The rainfall pattern is increasingly unpredictable in the area and undermines the food and income security of households. Being involved in farming activities, they explain that the rainfall pattern is more erratic causing poor harvests, affecting their food stock and income. **Thomas** highlights that the timing and inadequate rains during the cultivation season results in poor growth and yield. He complains that that:

> What disturbs my farming is the inadequate rainfall. The low rains over the years have affected my farming badly. Particularly, they affect my maize and yam crops, causing poor yield. The rains are not adequate to help with good growth of the plants. Sometimes, it also starts early or late distorting the timing of planting.

The households complain that the unpredictable nature of the rainfall, confuses the timing of planting, and also threatens them with food scarcity and the less cash earned from selling farm produce.

In relating this situation to ecotourism, they note that the poor yield affects not only their food stock, but the food services they provide to the guests. They draw on the low food stock that is supposed to sustain the households or buy it from the market to meet the needs of guests, draining their savings. **James** explains vividly that:

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Unreliable rainfall affects my farming and when there are low rains, which have been happening, harvest is poor. My wife has to go to the market at Damongo to buy food stuff when harvest is poor and I spend the little money I have. This also means that we may not have enough food to give to our guests.

The erratic nature of the rainfall also affects the water level of the river making navigation difficult during the canoe safari. This creates situations where visitors and the guides have to come out of the canoe and walk in the water if that section is not easily navigable. **Daniel** explains:

> One other problem is that, the low and poor rains affect canoe movement in the river because the river level becomes low and the river bed becomes exposed, hindering navigation. In that case, the visitors, the tour guide and peddlers have to come out and push the canoe.

The households recount how episodes of heavy rainfall, with accompanying high winds, devastate their properties. They complain that when their roofs are blown away by the wind, the rooms become flooded, destroying household items. Sometimes parts of their houses collapse. They indicate that this incidence creates unnecessary costs as they have to replace the items or revamp the roofs and buildings before the high tourism season. **Agnes** complains that:

> When it rains heavy, which is often the case, the straws on the roof are easily taken off or they get rotten with time, causing the room to get flooded from leaks. Now the rains come pouring heavily and destroys things in the room, including the bed and chair. I have to replace everything before the visitors come and this cost me money.

The households identify limited mobility and restricted access to resources and ecotourism areas as a result of flooding in the locality. According to **Kelvin**, the flooding not only restricts access to water supply but also affects the water quality and restricts other livelihood activities like fishing. He explains that:

> There have been occasions of flooding during the raining season, such that we had to cross the bridge with canoes and this can be dangerous as it can carry people off. Now culverts have been constructed and hopefully, this will reduce the flooding. This flooding also affects the quality and drinkable nature of the river. It also halts my fishing activity.

Flooding causes erosion. The soils from the erosion are deposited into the river, causing siltation in certain places. It also deposits dead trees and branches in the river, making navigation difficult during the expeditions in the dry season. **Abraham** identifies problems that affect ecotourism by explaining that:

> Some places are shallow because of erosions at the banks. I think the rushing of the river and water from the tributaries of the river causes that. They have made some place very shallow and the canoe operators have to get down and lift the canoes across order to continue the expedition.

These interviews reveal that households are experiencing climate change impacts that are often outlined in the literature, such as: erratic rainfall affecting crop production, and occasional floods that severely damages homes. These households are living on the edge of the habitable zone in Ghana, where climate change impacts are making it difficult to engage in normal activities. It raises the issue of how much adaptation can occur as these conditions continue to change in the future. Table 4.7 below presents summary of the biophysical impacts as discussed above.

Table 4.7 Biophysical conditions and impacts on ecotourism

Biophysical conditions	Impacts on Assets	Livelihood Outcomes	Impacts on Ecotourism
Increase temperature Drought Increase in fire events	Drying of rivers Fragmentation of wildlife habitats Destruction of farms & homes Increase health risk	Threats to wildlife Low food stocks Low income Health risk	Threat to tourism assets Poor food services Poses health risk Poor navigation
Erratic & episodes of heavy rains Flooding	Restricted access to Park and CREMA areas Restricted access to water Restricted access to fishing Destruction of homes	Restricted mobility Lose of properties Low food stocks Low income	Restricted access to tourism areas and activities Poor food services Restricted access to water Threat to tourism facilities High costs Poor navigation

4.5.2 Social Conditions and Impacts on livelihoods

Limited Education Levels

Most households have limited formal education, which affects their abilities to communicate in the English Language and interact with visitors. **Rosemary** describes her experience with visitors by explaining that:

> I think the only problem I have is not conversing with them because I don't speak their language. They speak English and I did get enough schooling, so can't speak well…I can't speak English so it's difficult for me to talk to the visitors.

Limited education also affects interpretation as the guides find it difficult to express themselves well in the English language, which may result poor interpretation and low visitor satisfaction. However, as noted earlier many people have improved their knowledge of English through interaction with tourists.

Limited Unemployment Opportunities

Unemployment, beyond farming, is a challenge faced by many households. The limited employment opportunities in the locality result in limited opportunities to increase household income beyond farming and ecotourism. **Daniel** says that:

> Inadequate income to support my household is my biggest challenge. Because I am unemployed and only do farming, I don't get income until I sell some of my farm produce. Also, the sewing I do brings some cash but not enough. This makes it sometimes difficult to take care of my household. However, food is not a problem.

> Unemployment has also stimulated high youth emigration to the cities looking for employment, reducing the human assets. They express concern that the youths may not come back and this could affect the management of the ecotourism in the future. According to **Daniel**, this migration has serious implication for the ecotourism. His concern is that:

> The lack of job opportunities in the area makes our children travel to the cities for jobs. They go the Damongo, Tamale, Sunyani and Kumasi, to look for jobs. So,

this will affect who will manage the ecotourism once we are old. They are educated and can communicate better with the visitors than us.

However, the local family often receives remittances from those in a wage economy elsewhere, which serve as capital for investing into local businesses.

Experiencing Crop-raiding

The destruction of farms by elephants in the locality is a recurrent event that affects the farming activities of households. This event occurs because farming in the locality attracts elephants from the park. Households receive no compensation from the government or the park for destroyed food crops. They note that, the destruction of food crops has implications for the food services offered by the households operating homestays. **Ben** emphasizes that:

> The elephants raid and destroy my farm. Anytime I report it, I am not compensated. The elephants disturb my farming activity a lot. My farm has been raided twice. What I don't understand is that anytime I make a report to the park authority, I don't get compensation.

This ongoing damage to farms by wildlife from the park and CREMA is a serious issue for the local farmers. There are several policy alternatives available, such as: 1) having the park authority provides some level of compensation for crops damaged; 2) building a fence between the farms and the park; 3) relocating farming to distant locales from the park; and, 4) using elephant repellent to control crop-raiding.

Unsustainable Traditional Practices

Some households share the view that certain traditional practices adversely affect the environment. Traditional practices such as slash and burn, harvesting of fuel wood, tree cutting for building, charcoal production, and careless use of fire in farmlands damage patches of forest, farms and wildlife habitats in the locality. They acknowledge that, these practices pose threats to

wildlife, farms and ecotourism. **Ben** attributes the destruction of the environment to traditional

practices pertaining in the locality, when he explains that:

> There are certain traditional practices which are destroying the environment. For
> example, when I am preparing the land for cultivation, I use fire and this kills a lot of
> trees and destroys wildlife habitat. Everyone also harvest fuelwood for cooking. I
> gather wood when I go to my farm. Also, the some people cut trees for burning
> charcoal. I understand that households need that to cook but these activities are
> destroying the forests. These practices need to change if we want our children to
> have a healthy environment to live in. So I understand but we will have to change to
> protect wildlife.

Households acknowledge the destructive nature of some of the traditional practices to ecotourism

in general. These practices have reduced drastically due to education and enforcement of local

byelaws. These data reveal that ecotourism and the associated community-based ecotourism

leads to better nature conservation in areas outside the national park Table 4.8 below provides

summary of the impacts of the social conditions.

Table 4.8 Social conditions and impacts on ecotourism

Social conditions	Impacts on Households	Livelihood Outcomes	Impacts on Ecotourism
Limited education	Limited communication Low interactions	Limited human capital Limited social assets	Poor host-guest interactions Inadequate nature & cultural interpretations
Unemployment	High youth migration Increase remittances	Limited human asset Available financial asset	Unavailable human asset
Crop-raiding	Destruction of farms Lost income Lack of compensation	Threat to natural asset Threat to financial asset	Low food stock for food services
Unsustainable traditional practices	Fragmentation of wildlife habitats Destruction of farms Low food stock Lost income	Threat to natural asset Threat to financial asset	Threat to tourism attractions Threat to tourism facilities Degrading landscape Low food services

4.6   Developing Adaptation Strategies for Survival

This section 4.6 discusses the adaptation strategies used by many households. These strategies are used to reduce the adverse impacts associated with the biophysical and social conditions. They reveal the local community's adaptive capacities. The strategies developed to address some of the impacts related to the biophysical conditions are: 1) using irrigation to manage drought; 2) changing behaviours using education; 3) early burning; 4) creating a green fire belt; 5) communal support to control fire events; 6) constructing culverts to control flooding; 7) managing river sanitation; and, 8) reducing health risks using mosquito nets.

Households have also developed strategies to address impacts related to social conditions. The strategies are: using communal support to manage communication challenges, using livelihood strategies to manage unemployment, engaging in seasonal patrolling, relocating farming activities, using elephant repellent to control crop-raiding, and using local byelaws to improve conservation. The implications of the strategies on ecotourism are discussed as well.

4.6.1   Adaptation Strategies to Manage Impacts of Biophysical Conditions

Using Irrigation

The drought conditions induced by the increase in temperature, undermines households` food security by causing poor farm yields. This affects households` food stock and income as well as the food services provided to the guests. Some households use irrigation farming along the Mole River with the support of the Ministry of Food and Agriculture. According to the Ministry, the irrigated farming was developed to improved households` food security by addressing poor farm harvest related to the dry condition. However, the use of water from the river will exacerbate the identified issue of low water levels affecting tourism movement on the river. This will also reduce available water to wildlife in the national park and CREMA.

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Changing Household Behaviour

The occurrence of fire is recognized as being both natural and human-induced. It is a threat to households' food security and income, wildlife habitats, and tourism facilities and houses. As a result, households use different strategies such as: education, early burning, and a green fire-belt. Also, community support is available for households to manage fires.

The households explain that educational programs are used to create the awareness about the destructive nature of fire to livelihood activities of households and the environment. In this locality, fire is the most devastating factor contributing to loss of food, biodiversity, wildlife habitat and especially accounting for forest degradation. Radio and community video shows are the common communication tools used. According to **Abraham:**

> During the dry season, fire threatens our farms. During that time, people use fire to prepare their land towards before the farming season and outset of the rains. Sometimes, the fire gets out of hand and destroys other people's farms. In this community, we don't have that problem anymore because of awareness of the danger of fire. The park does a lot of education with the CREMA Committee and there are also radio announcement and discussions on the danger of using fire during the dry season.

Households practice early burning. This practice reduces the fuel loading on the farms to prevent any fire outbreak. Also, this practice is used in reducing the potential fire threat to tourism facilities. **Charles** notes that:

> Bushfire incidence is a problem during the dry season. In avoiding the structures at the campsite from fire destruction, the tourism committee instructs me and other people to clear the dry grass to reduce the incidence of fire. The overnight campsite is inside the National Park and to help with conservation we perform this function to reduce the occurrence of fire.

Around the farms, households construct a green firebelt to serve as protective wall to reduce the spread of fire. **Ben** explains that the green firebelt serves to reduce the spread of fire when he says that:

We also use firebelt to reduce fire from outside entering the farm. I have constructed one around my farm. I have not experienced any disturbance from fire yet. I don't think I will because people are careful and the firebelt is also helpful and reduces the chances of my farm burning and getting my crops destroyed. Someone once tried to burn my farm and if I had not constructed a firebelt around my farm, it would have been destroyed by fire.

Another strategy used by households to manage fire with community support. People in the community are called upon anytime there is fire outbreak in the locality or someone needs assistance in controlling fire on the farm. Households view communal support as an important resource available to them because of their limited ability to use savings to control fire. **Ben** remarks that:

There is also support within the community anytime people need help to use fire to prepare their farmland.

In a situation where a farm is destroyed because of fire, compensation is paid to the victim by those who started the fire. It is explained that people who careless burn and destroy others' properties are brought before the chief and the elders of the community, and if found to be a fault must pay the value of the crops damaged. In explaining the use of compensation, **Ben** states that:

There is a fine for anyone who burns the farm of another person. That person is asked to pay for the value of the farm produce destroyed and this is deterring as people do not have money to compensate.

The payment of compensation for properties serves to deter the careless use of fire for any purpose. This has contributed to the reduced occurrence of human-induced fire outbreak in the locality.

These quotes reveal that educational programs created by the CREMA have created management actions that have eliminated much of the fire problem. This is a remarkably important finding that an ecotourism-associated program has resulted in much more effective fire management in the local community, which reduces a major community risks and improves everyone's livelihood.

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Controlling Floods

Flooding is one of the challenges in this locality. It restricts mobility and access to ecotourism areas and affects access to water from the boreholes located near the river. This is experienced by households during the rainy season, due to episodes of heavy rains. According to **Kelvin**, the recent construction of culverts along the road near the river by the local government will reduce flooding. He explains that:

> There have been occasions of heavy rains during the rainy season, causing flooding in the community such that we can't use the bridge but cross with canoes and this can be dangerous as it can carry people off. Now culverts have been constructed and hopefully flooding will be reduced.

The construction of the culverts was done along with the rehabilitation of the bridge and the road passing through the community. This program to improve access for both the locals and visitors has a major benefit of reducing flood risk in the local community.

Managing River Sanitation

The siltation and the deposit of dead trees in the river obstruct navigation during canoe safaris. Households describe that soil and dead trees are deposited into the river from its tributaries during the rainy season. Also, the winds uproot and deposit trees in the river as well. These events create shallowness and obstacles during the canoe safari. In an attempt to improve navigation, some households are mandated by the tourism committee to remove dead trees and soils. This ensures smooth navigation and safety of the people on the canoe during the safaris.

Frederick explains that:

> Now one of the main challenges is that when the visitors are taken on canoe safari, the river pathway can become blocked at certain places. The tourism committee make sure that the river is cleared of any obstacles to ensure good navigation and safety of every on the canoes.

Reducing Health Risk

The increased temperature generates heat in the houses, forcing household members to sleep out either on the ground or up on the roofs. According to households, they avoid the discomfort by sleeping outside. However, they become exposed to mosquitoes, experiencing malaria sickness. Households that support overnight experiences in the wild, also endure mosquito infestations. They note that in preventing malaria disease among household members and visitors, mosquito nets are used. **Frederick** explains that:

> The mosquitoes cause malaria and this was a problem some time ago but now it is under control because mosquito nets are used. So now net are used in the homestays and camp to prevent malaria disease among the households and visitors.

> Another is the use of communal labour to clean the community. This ensures cleanliness and possibly reduces mosquito infestations. **Abraham** raises the issue that communal labour and improved sanitation by saying that:

> The community is also clean because I help organize communal labour to clean the community and the tourism centre. We remove all the waste and cut the grasses. When it is clean, the visitors like it. Cleaning in the community keep us healthy and make visitors healthy as well.

These quotes reveal that ecotourism programs have helped increase the adaptation strategies used by people in the local communities. The two strategies mentioned here improved community members' health and community cleanliness. Table 4.9 below gives a summary of local adaptation strategies to the biophysical conditions.

Table 4.9 Adaptation strategies of households

Impacts of Biophysical Conditions	Adaptation strategies	Impacts on Ecotourism
Drought	Irrigated farming	Securing food services & income
Fire Events	Education Early burning	Securing food services & income Reducing threats to

	Green firebelt Communal support Compensation	tourism attraction base and facilities
Flooding	Constructing culverts	Improved access to tourism areas Improving access to portable water
River siltation	Debris & silt removal	Improved navigation Improved access to tourism areas Improved safety
Health risk	Using mosquito nets	Reduced health risks

4.6.2   Adaptation Strategies to Manage Social Conditions

Using Community Support

Low education constrains people's ability to communicate in the English language with the visitors, creating communication barriers. Some respondents in the study acknowledge that this limitation reduces their ability to interact effectively with visitors and to understand their needs. In maneuvering this barrier, people draw on the supported of tour guides and well-educated people in the community, including many children. They use sign language when this support is unavailable.

These households explain that in managing the communicate barrier, two people have been recruited who support guided tours (i.e., tourism manager and assistant). They are well-educated youth from the community, who communicate effectively in English. They play the role of receiving visitors at the visitor information centre, and brief them about the community and its culture and activities they can engage in. The visitors are then allocated to the homestays. Also, they speak with visitors to identify their needs. The needs are then communicated to the hosting households. For instance, **Frederick** explains that:

There are some challenges experienced by the women who operate the homestays. The persisting challenge is communication barrier. The women have little education and cannot speak and interact well with the visitors. Well, most of the visitors are foreigners who speak English. This is a challenge when the visitors want food, or other services. However, I assist in reducing this challenge. What I do is to find out what their needs are before I even distribute them over the households. So for instance, the women know when and what the visitors want to eat, bath or do some other things. I also try to make myself available each morning and evening to ensure everything is going well with the visitors.

Also, these households often use their children to understand the needs of guests. They explain that the children receiving primary education can speak and interact with visitors using the English language. Sharing her experience, **Agnes** recounts that:

I am not able to speak and understand English. This affects my interaction with visitors and understanding what they need can be difficult. So what I do is use my children as interpreter. I sometimes use members of the tourism committee to communicate and understand the needs of my visitors.

One other strategy is using sign language to communicate with visitors and this is found to be helpful in creating some understanding. **Rosemary** explains that:

I think the only problem I have is not conversing with them because I don't speak their language. They speak English and I did not go to school so can't speak. When my daughter in the secondary school is here, she helps me to understand and attend to them. Also, the tour guide always comes here to ask them what they want and all I do is prepare it for them. I can't speak English so it's difficult for me to talk to them. Sometimes, I use sign language and they get it but most times I don't understand when they are talking to me.

These strategies serve to reduce communication challenges faced by these households. It is noteworthy that ecotourism encourages children of the community to gain higher levels of education and to learn English.

Adopting livelihood Strategies to Manage Unemployment

Unemployment can be reduced using diverse livelihood strategies. Community members engage in diverse livelihood activities including ecotourism. **Ahmed** remarks engaging in diverse livelihood activities to sustain his household by saying:

I do some many things to feed my family. I do farming mainly to make a living. The food crops I plant are yam, cassava and maize. I have been a farmer all my life and I like farming. That is what brings me food and money when I sell some. I also do masonry, and work on people's farms. I am also involved in the bee farming and ecotourism as canoe operator. I do all these to be able to provide for my family.

Emigration is another strategy used by some households to sustain themselves. Some respondents note that some of their children have emigrated to the cities for employment opportunities and they receive remittances from them. **James** justifies the migration by explaining that:

My children have all travelled to the city for better opportunities and send me money. There are no jobs here, so they have traveled to Sunyani, Tamale and Kumasi. They are working there. The children are all travelling out here because there is no job and farming is no good because of the weather and the elephants that keep on destroying our farms.

The lack of local employment opportunities and poor farm harvest motivate many youth to travel out of the community. The emigration of some youths to the cities has been helpful to some households in terms of the remittances received. However, it undermine ecotourism in terms of reducing human assets that could be available to support it management.

Reducing Crop-raiding

Respondents have inadequately adapted to crop-raiding. The strategies used are: patrolling, farming off the feeding range of the elephants, and using repellent. Households explain that the proximity of the community to the park accounts for the recurrence of crop-raiding. They share the view that the event undermines household food and income security, as well as affects the food services delivered to guests. **Rosemary** indicates that she uses her farm produce to feed her guests. She says that:

I use what I produce on my farm to cook for them, so they get the blessing coming from my farm. I use the tomatoes, cassava, yam, pepper and fruit I get from my

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farm. So I don't buy a lot of things except meat, eggs, and salt. So they eat what come from me and my husband`s farm.

They also explain that in protecting their farms, they collaborate with the park authority on patrolling to reduce the incidence of crop-raiding. According **Kelvin**:

> Elephant raiding is also a common problem…I help guards from Mole National Park do patrolling sometimes. But normally the elephant raiding is when you don't expect.

Other households note that, they have relocated their farms to avoid crop-raiding.

According **Charles**:

> Our biggest problem is crop raiding by wildlife, particularly elephants. Elephant raiding is a peculiar case because they destroy everything on the farm. As a result of elephant attacks and no compensation, I have chosen to farm far away from the park, where elephant don't come.

Improving Conservation

Traditional measures that serve to protect the environment are identified. Households note that traditionally, certain trees are not destroyed because of their medicinal and economic values. Trees such as Shea tree (*Vitellaria paradoxa*), Dawadawa (*Parkia biglobosa*) and baobab (*Adansonia digitata*) are locally protected. They are crucial to local livelihood activities such as sheabutter production. Households share the view that the traditional practices of conserving trees is because of the role the tree plays in reducing poverty, particularly among women, who process and produce shea products. They explain that the local byelaws prohibit harvesting these trees for any purpose. According to **Charles**:

> Trees I do not cut are the dawadawa trees, shea butter trees, fruit trees like mango, and large timber trees. As a way of conserving trees, I don't cut them. They have economic value, nutritional value, nutrient fixing value and serves as shade for resting when I am on my farm.

Households also agree that protecting wildlife is important for ecotourism. They argue that wildlife conservation is the reason for CREMA creation. They explain that the wildlife

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population has increased as a result of the CREMA and enforcement of the byelaws. The local byelaws ban hunting, farming and use of fire in the CREMA and surrounding areas. Table 4.10 below provides summary of local adaptations to the social conditions.

Table 4.10 Adaptation strategies of households

Social conditions	Adaptation strategies	Impacts on Ecotourism
Low education	Recruited well educated people Communal support Use of sign language	Reduced communication barrier Improved host-guest interactions Improved visitor satisfaction
Unemployment	Livelihood diversification Migration	Securing food and income Securing food services
Crop-raiding	Seasonal patrolling Relocating farming activities Using repellent	Securing food and income Securing food services
Unsustainable Traditional Practices	Preserving trees and wildlife Enforcing local byelaws	Conserving nature-based attractions

4.7   Adaptation to Future Climate Change

This section 4.7 discusses the proposals made during the focus group to collectively reduce vulnerability to future climate change, if ecotourism is to continue as a livelihood diversification.

As discussed (see section 3.2), future climate change based on Global Circulation Models (GCMs) indicates a general increase in temperature and a decrease in precipitation in this locale. This trend in climatic factors is anticipated to create more vulnerability. Participants acknowledge that the physical manifestations of climate change, described in terms of temperature and precipitation are beyond their control. In this sense, they proposed strategies and identified mechanisms to improve the assets to adapt to the social conditions, thereby reducing social vulnerability. These strategies are to address constraints undermining households' financial, natural, physical, human and social assets linked to ecotourism. The strategies cover: 1) improving human assets through training; 2) improving financial assets through diversifying

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ecotourism experiences, and promoting the destination; 3) Improving financial and physical assets through transport; 4) protecting social asset by developing incentive to address inequity; and, 5) securing natural asset by protecting farming and increasing support for conservation. These proposals were based on consensus during the focus group discussion.

4.7.1 Improving Human Assets through Training

This study found that training needs emerged from the focus group discussion in which households note constraints such as low education and communication barriers, inadequate host-guest interactions, poor nature interpretation and food services. Training is needed to improve human assets, services and secure associated benefits such as income.

The need to address the problem of low education, and associated communication barrier and inadequate interaction, motivated the proposal for adult education from **Agnes** and **Charles**. Even though, adaptation strategies in the terms of recruiting well-educated locals, using communal support and sign language for managing the difficulty with interacting in the English language, exist, participants share the view that improving the ability to speak English well would improve communication, services and interaction with visitors, thereby improving visitor satisfaction and repeat visit. They agree to use available resources in the locality, including seeking the support of the headmaster of the primary school and the District Education Office. This support was proposed particularly for the homestay operators and tour guides to enhance interaction, food services and nature interpretation. **James** suggests using part of the ecotourism revenues to support this program in terms of purchasing books, pens and provide payment as an incentive for the headmaster and anyone who comes to the community to support the adult education for English learning.

Additionally, further training in hospitality, hygiene, and first aid administration were proposed. First Aid Administration training and box were considered as equally important because of the occasional injuries from motor cycle or the expedition in the wild. Bookkeeping was also proposed as another training need to manage the financial asset adequately. This was found necessary because of the increasing buildup of financial resources from ecotourism. Participants identify the park authority and Ghana Tourism Authority as the institutions to support the training needs because of the existing relationships.

4.7.2   Improving Financial Assets by Diversifying and Promoting Ecotourism Experiences

Participants recommend diversifying ecotourism experiences by identifying other activities to make the eco-village more attractive, to improve visitation and increase revenues. **Frederick** suggests agritourism and volunteer tourism as forms of tourism that can complement existing ecotourism opportunities. He is of the view that, with agriculture as the mainstay of households, hosts could showcase their agrarian lifestyle by taking their guests to the farms. Also, he identifies beekeeping and honey harvesting as something that may be appealing to the guests and visitors. He explains that student volunteers in the region could be an important source of support for improving the education of the children in the primary school. According to him, they already visit the community to experience the local culture but also take the opportunity to engage the kids in the different forms of recreation and education. The participants agree that the volunteers would be of great service to the primary school. **Frederick** suggests that in addition to the homestays, the teachers' housing could be made available for long-term volunteers in the community, when not in use by the teachers. He pledges to sell the idea to some of the volunteers and get to the organizations hosting volunteers. **James** suggests that **Frederick** develop the idea and present it to the committee for consideration.

One of the discussions focused on the issue of the seasonality of ecotourism. **Frederick** explains that the visitor number is high in the dry season, but declines in the raining season. This causes variation in the revenues gained. He proposes that there is a need to increase visitation by considering the domestic market, using radio, brochure and word of mouth. He remarks that the park, motel and M & J Tour assist with the promotion to the foreign market but indicates the need to target the domestic market as well. Also, he suggests inviting school environmental clubs in the region to showcase the culture and natural endowment. He proposes that, the CREMA can be used as an environmental field school, where the student can learn about wildlife and other attractions. Participants tasked **Nicholas** to consult the District Education Officer to discuss the field school idea to increase use during the low tourism season.

Also, **Frederick** notes that communication with the outside world should be given a serious attention. He explains that it would be a good idea to use the internet for promoting ecotourism activities and community's culture. He indicates he has access to a laptop, internet and emails of some of the foreign visitors. Members of the tourism committee agree to allocated money for any expenses he incurs for the promotion. **Frederick** again notes that now there is access to mobile phone. They can communicate with the park, tour operators and visitors in order to prepare for their arrival. He explained that this will reduce the long waiting time that the tour guides complain about and have time for their farming activities.

4.7.3 Improving financial and physical assets through transport

Experiencing mobility problem because of limited access to means of transport is noted therefore participants are of the view that acquiring a vehicle should be seen as a necessity to support ecotourism. They discussed that owning a vehicle will impact positively on both the visitors and the locals. They share the experience of how they have to make arrangement for motorbikes

anytime visitors have to return to the park, if the rented vehicle that brought them is not available to take them to the park. **James** notes that money goes to people (with motor cycle) outside the community and is a lost opportunity for them. He explains that for now this arrangement is necessary to support visitors to commute in and out of the locality. He mentions that purchasing a vehicle has been considered by the tourism committee and they are saving part of the revenues to meet that need. Participants agree that the tourism committee should go ahead with the plan to acquire a vehicle when money is available.

4.7.4 Protecting social assets by developing incentive to address inequity

Members of the tourism committee raise the issue of fairness in how the revenue from the ecotourism is shared. They discuss that they feel left out in the benefits sharing, even though they account and distribute the revenues. They acknowledge their role is voluntary but they should receive some form of financial incentives. **James** notes that the committee has discussed the issue and considered some form of incentives for the members to ensure continues support for ecotourism. Also, he notes this would eliminate the feeling of unfairness and avoid any conflict that would disrupt the support committee members are providing. The participants agree to support any incentive that will motivate the committee members to work well. By incentive they mean some form of remuneration from the tourism revenues.

Abraham raises the issue of expanding the homestay program, to increase the financial benefits to other households. **Frederick** explains that though it is a good idea, the tourism committee has to be careful to identify households that have sufficient space to accommodate guests. **James** says he is aware that some households are interested to be part of the homestay program. He suggests to Tourism Manager that he should make a list. He indicates that the tourism committee would make a final decisions later based on the list.   This is all dependent

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upon there being sufficient market for more homestays. Also some homes would need upgrading to become suitable for homestays, and other homes would have to be enlarged due to the large family size.

4.7.5   Improving Natural Assets through Protection of farms and Wildlife

The issue of crop-raiding was raised and discussed passionately as all the participants made comments on this issue. **Charles** notes that this has been a long-standing problem between the community and the park, without any lasting solution, even though the park authority has been trying different strategies, but with limited success. **Daniel** proposes that the Tourism Committee need to collaborate more with the park authority to intensify patrolling around the "hot zone" to drive away the elephants. He is of the view that continuing the use of chili in the farms will be a complementary measure. The participants agreed that the strategies they have used are good but have not been effective in stopping the farm raiding. **Charles** proposes that people whose farms are regularly raided should consider relocating. But participants agree that the recurrence of the crop-raiding is because the farming activities are close to the park and are within the feeding range of elephants. They agree that they need to work more with the park authority if they want to see any significant reduction in raiding. The tourism committee members agree to take up the responsibility of supporting the park authority in patrolling. The issue of an elephant-proof electric fence used in South African national parks was not raised.

Natalie proposes that one strategy to reduce raiding is for households involved in beekeeping to relocate the beekeeping activities in the farms. She explains that bees drive away the elephants. Participants agreed to explore this method as many of them are involved in beekeeping. Also, they agreed to cooperate more with the park authority when the elephant raiding season comes, since food is scarce and they don't want to go hungry. They believe these

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strategies would ensure food and income security and improve food services, as it depends on the food stock of the hosting households involved in the homestay program.

When **Charles** raised the issue of fire events, participants agreed that it is still a threat even though the frequency at which it occurs has reduced in their locality. **James** explains that most of the fire events start and spread from outside the community. Participants acknowledge that people in the locality still use fire for cultivation and this may burn other areas. They still hunt with fire but outside the park and CREMAs. Participants identify available communal support anytime there is fire outbreak and anytime households need that support. **Charles** proposes the CREMA/Tourism Committee should strengthen its role with the park in educating, and monitoring the use of fire around the CREMA and locality. The members of the CREMA/Tourism Committee also agree to work with Murugu CREMA Committee, as the Murugu community is part of the Murugu-Mognori CREMA.

Table 4.11 below provides a summary of adaptation proposals to reduce future vulnerability.

Table 4.11 Proposed strategies for adaptation

Proposed Strategies	Challenges	Impacts on Ecotourism
Improve human asset through Training	Low education Communication barrier Low host-guest interactions Inadequate nature interpretation	Improve host-guest interactions Improve interpretation Ensure visitor satisfaction Secure income
Improve financial asset through Diversification of ecotourism experiences	Seasonal variation in revenues	Increase visitation and revenues Diversify experiences
Improve financial and physical assets through transport	Limited mobility	Improve mobility Increase revenues
Protect social asset through financial incentives	Lack of financial incentives Financial marginalization	Motivate tourism committee Expand financial benefits from homestay operation
Protect natural asset through communal support	Crop-raiding	Secure farms Secure food services & income

4.8   Chapter Summary

Chapter 4 discussed the four main essences underlying the day to day reality of households. The essences are: 1) adopting different livelihood strategies; 2) experiencing the impacts of ecotourism on assets and activities; 3) experiencing current vulnerability conditions and developing adaptation strategies; and, 4) sustaining ecotourism by building future adaptation strategies.

In diversifying their livelihoods, households in Mognori complement the primary subsistence farming with other activities such as businesses, forest and ecotourism-based activities as a way of diversifying their livelihoods. Also, some members of households move outside the locality to seek employment opportunities. With ecotourism becoming important in terms of increasing their assets, they have integrated it into their livelihoods as a form of livelihood diversification. Livelihood diversification is a typical strategy in a context where tourism is becoming important (Shen et al., 2008). However, the changing climate poses threats to their livelihoods and undermines their adaptive capacities. In responses the households have developed adaptation strategies to reduce the adverse impacts associated with climate change, to sustain the ecotourism livelihoods.

CHAPTER FIVE: GENERAL DISCUSSION AND CONCLUSION

5.1   Introduction

Chapter 5 presents the discussion and conclusion of the study. Firstly, the chapter repeats the study's purpose and research questions. Secondly, the findings about the local knowledge on experiential reality of households constructing livelihoods in the context of vulnerability are discussed. The discussion includes how vulnerability is experienced and adapted to by households. Thirdly, the process for using ecotourism as an adaptation to future climate change is presented based on adaptation constraints. Lastly, the relevance of Gadamer's hermeneutics to research is discussed. As well, the conclusion and recommendations for future research are presented.

5.2   Purpose of Study

The purpose of the study was to examine and understand local perceptions and lived experience in reference to constructing sustainable ecotourism development as a livelihood adaptation to climate change. This examination and subsequent understanding was to provide a process for integrating local knowledge into livelihood adaptation as communities become more vulnerable to future climate change that will adversely affect traditional patterns of livelihoods. Creating a process for integrating local knowledge into livelihood adaptation will inform policy on how to enhance ecotourism development as an adaptation strategy to reduce vulnerability to future climate change in communities managing ecotourism. In understanding the local perceptions and lived experience, the following research questions were addressed;

1. How is ecotourism development used as a livelihood strategy by households?
a. How do households construct their livelihoods?
b. How central is ecotourism to the households` livelihoods?

2. What vulnerabilities do households' livelihoods face, and how are they adapting?

a. What is affecting the households` livelihoods?

b. What is affecting the ecotourism in the community?

c. How are the households adapting to climate change impacts?

d. How do households determine the effectiveness of the adaptation strategies?

3. How can households collectively adapt to future climate change using ecotourism?

a. How can they adapt to the future climate change impacts?

b. How can they implement the adaptation strategies to sustain the ecotourism?

5.3 Local Knowledge on Livelihoods, Vulnerability and Adaptation

5.3.1 Households' Lived Experience in Constructing Livelihoods

This study observed complexities in local knowledge based on lived experience with regards to livelihoods construction within the constraints of changing climate. Local knowledge is the information gained from the community members, irrespective of culture or inter-generational history (Pearce et al., 2009). It reveals a portfolio of livelihood choices regarding livelihood strategies, assets, and activities that ensure livelihood resilience. These complexities in local knowledge are reflected in the notions of diversity, complementarity, conflicts, and coping strategies, as well as flexibility in households' livelihood choices that support livelihood resilience.

The use of different livelihood strategies (i.e., intensification/extensification, livelihood diversify and migration) reflect the notion of diversity in survival strategies. It is reflected in the combination of extensification and intensification strategies within the agriculture context, where different crops are planted on a piece of land and some farming activities are relocated to avoid crop raiding. These strategies are used as an attempt to optimize farming outcomes and also ensure resilience of the subsistence agricultural livelihoods within a vulnerable context (see

section 4.3). The notion of diversity is also reflected in the way ecotourism generates diverse impacts on households' livelihood assets in terms of financial, natural, physical, social and human (as discussed in section 4.4). The observation of diverse livelihood strategies is found in other studies where households make a living within a constraining context. These studies suggest that, the use of diverse strategies is an attempt to achieve households' livelihood resilience, which is consistent with the observation of this study (see Mbaiwa & Stronza, 2010; Shen el at., 208; Tao & Wall, 2009a). However, these studies place emphasis on livelihood diversification, where ecotourism is separated from non-ecotourism activities, ignoring the complex relationships between ecotourism and other activities in the process of building livelihood resilience. As observed in this study, this intricate relationship is a two-way process. For instance, the application of extensification and intensification strategies within the agriculture context reflects not only the process of ensuring food and income security from farming but also an attempt to sustain food services and associated income within the ecotourism context. The second aspect of the relationship is reflected in how ecotourism complements other activities or creates conflicts.

Ecotourism's complementarity occurs in terms of improvements in the financial, human, natural, social and physical assets as well as linkages in the local economy (see section 4.4). For instance, its support to households' financial assets evolves from its ability to create diverse employment opportunities, resulting in different streams of income. This creates opportunities for reinvestment into other livelihoods. Also, its support to the natural assets is realized through increases in wildlife population, reduced fire outbreak and unsustainable traditional practices. Ecotourism creates opportunities for improvement in households` human assets through capacity building that support its management. Ecotourism also stimulates different social assets such as trust, relationships and shared decision-making that result in a more cooperative spirit and better

community cohesion. For instance, households' cooperative spirit and shared decision-making stimulated by ecotourism, attracts development support from external organizations in the form of tourism training, solar light construction, borehole construction, and sponsorships for children. Also, it plays a role in improving physical assets that support both ecotourism and non-ecotourism activities. For instance, it was observed in this study that rehabilitation of the road networks by the government has improved access to market and tourism areas, water supply, health, and social life of the locals. Its ability to create linkages within local economies was also observed in this study. This is observed in the way existing non-ecotourism activities have become attractions (e.g., food processing) in the community. All these observations in the study support ecotourism's ability to complement households' livelihood assets and other activities. It therefore helps to diversify local opportunities within a vulnerable context.

Conflicts tend to occur between ecotourism and local livelihoods. The aspects of conflict are seen in ecotourism's demand on households' time, financial, natural, social and human assets. Ecotourism creates situations where attention for non-ecotourism activities, like farming, is reduced. For example, time normally for land preparation towards the planting season is invested in ecotourism activities and not in agriculture as it has been traditionally. Even though strategies such as scheduling and reinvesting of income into extra labour exist, it still presents a challenge to local communities. Ecotourism also requires investments that may create demand on households' savings, which were originally dedicated to other needs. For instance, in this study, meeting the homestay standards requires capital investment which may be prohibitive and could place a high demand on households' savings. However, community support provides a means to ameliorate this costly investment, thereby sustaining households` involvement in the homestay program. Conflict also exists in the form of inequity in the ecotourism system. Even though it was found that ecotourism revenue distribution schemes are functioning well, inequity exists in

the form of financial marginalization and a lack of incentives for some. Observation of the study results suggests intent to expand financial benefits to marginalized households. However, such inequity poses a potential threat to local involvement in ecotourism. As a social enterprise, ecotourism creates opportunities for interactions between host and guests but where local education is low, it may result in weak host-guest interactions and inadequate nature interpretation. These may also lead to conflicts between hosts and guests. As observed in this study, local strategies exist to ameliorate such deficiencies and avoid any potential conflicts. Local strategies include sign language and community support. Such strategies have the potential to improve host-guest interaction and nature interpretation, resulting in better visitor satisfaction. Another aspect of conflict is observed in the way in which increases in wildlife populations can result in increased crop-raiding that undermines food and income security, including local restaurant services. Even though local strategies such as patrolling and relocation of farming exist, these strategies and the others discussed above are inadequate in resolving ecotourism conflicts effectively, suggesting limits to local adaptive capacity.

Integration of ecotourism into existing livelihood systems of households reflects flexibility in households' livelihood choices and decision-making in this vulnerable context. Households in such marginal situations are flexible in incorporating ecotourism as a form of livelihood diversification to improve asset distribution. Also, the choice for other non-ecotourism activities and different livelihood strategies reflect flexibility in decision making on livelihood choices. For example, emigration is used to expand livelihood opportunities, even though it potentially undermines ecotourism in terms of reducing available human assets that could support tourism in the future. However, the emigration of youths from agricultural areas to cities is a phenomenon found all over the world. Such flexibility in households' decision-making on livelihood choices

is motivated by an attempt to expand opportunities and reduce risks to ensure livelihood resilience.

5.3.2   Local Knowledge on Lived Experience in Vulnerability Context

The experience of vulnerability in the process of constructing livelihoods occurs in the form of awareness of the changes in climatic and non-climatic factors that create vulnerability as well as their impacts on livelihood assets and activities. Awareness of these changes is an important local knowledge on lived experience of vulnerability, as it stimulates local adaptations to ensure livelihood resilience.

Particularly, local awareness of the changes in climatic elements such as increased temperatures and increased unreliability of precipitation, as well as their manifestations in terms of drought and flooding are well known. The dry season is observed to be associated with increased drought and fire outbreak. Also, the wet season sees increased floods and storms. As well, changes in the climatic elements are observed over time as local knowledge reflects historical analysis of the climatic changes. The characteristics of climatic elements are known, as expressed in terms of severity of temperature, speed of wind, and changes in magnitude of precipitation related to seasons. Also, existing non-climatic factors that increase vulnerability to climate change is known in terms of unemployment, crop-raiding, limited education and unsustainable traditional practices.

Also, how vulnerability is locally experienced is reflected in the awareness of the changes to households' livelihood assets, and activities, resulting in certain outcomes (see section 4.5). A case in point is the frequency of fire outbreak as a result of the severe drought that degrades wildlife habitat, destroys farms and threatens tourism facilities, resulting in low food production. The observation of the biophysical conditions and the adverse implications for the environment,

and livelihoods are congruent with other livelihood studies (Akudugu et al., 2012; Laube at al., 2012; Maddison, 2007; Stanturf et al., 2011). For instance, a review of local experience in the Northern Ghana, suggests trends of increasing temperature, decreasing rainfall, unreliable amount of precipitation and delays in the onset of the rainy season, wind storms, heavy rains late in the rainy season, increase fires, drying of rivers, and increase flooding events, causing crop and property damage as well as food insecurity (see Akudugu et al., 2012; Stanturf et al., 2011). In effect, the climatic changes and associated social conditions reflect local knowledge about climate change and other factors that place stress on households' assets and activities as observed in this study (see section 4.5). While such local knowledge is well discussed in climate change studies (see Ford & Smit, 2004; Lebel, 2013; Ford et al., 2006), it is less known in tourism studies, where priority is given to climate change impacts on different tourism sectors and tourists (see Kaján & Saarinen, 2013; Moreno & Becken, 2009).

5.3.3   Local Knowledge on Households Adaptation Experience

Local knowledge on adaptation to vulnerability is reflected in four kinds of strategies: 1) technological; 2) sustainable (i.e., managerial) practices; 3) behavioural changes; and, 4) livelihood strategies. These broad adaptations reflect underlying notions of diversity, complementarity, flexibility in local adaptations, and knowledge use to ensure livelihood resilience.

As observed in this study, technological adaptation reflects the rehabilitation of physical assets to reduce risks associated with the changes in climatic factors. Such adaptation reduces potential risks such as flooding and increases opportunities such as improved access and security of assets and activities. For instance, the study found that, the local bridge and road were revamped to increase tourist access to the national park, but also had the important outcome of

reducing flooding risks, increasing local community access to the outside world, and increased opportunities for households.

Sustainable practices show the new management practices to support conservation and livelihoods. Such practices are observed in local efforts in conserving indigenous trees and wildlife, removing deposits in river, and early burning to reduce fuel load early in the dry season. Also, behavioural changes are observed in the use of different tools such as greenbelt creation to reduce fire outbreak and to protect assets and activities. It is noteworthy that it is the tourism sector that is creating environmental management activities, such as clearing out the fuel load that reduces community risk from fire. This is an example of ecotourism practices leading to improved environmental management outside the park, which reduces community susceptibility to fire damage.

These adaptations exist in different combinations, complementing each other to reduce risks, optimize benefits, and ensure households livelihood resilience. The notion of flexibility is induced by seasonality and the temporally nature of vulnerability, which create opportunities for employing combinations of suitable adaptation strategies. For instance, when and what adaptation is used is influenced by the seasons. The effectiveness of these adaptations depends on how they reduce risks and maximize benefits to households. For instance, observed use of innovation such as greenbelts is claimed to reduce the drastic spread of fire and farm damage.

Even though, these broad categories of adaptations are discussed in the literature (see Becken & Hay, 2007), the specific adaptations expressed through local knowledge and experience was missing until this study. As discussed previously, because the focus of tourism studies is on the tourism sectors and tourists, adaptations are dominated by that of the industry and tourists (see Becken & Hay, 2007; Kaján & Saarinen, 2013; Moreno & Becken, 2009).

Knowledge on diverse local adaptations as observed in this study adds to the discourse on adaptation to climate change.
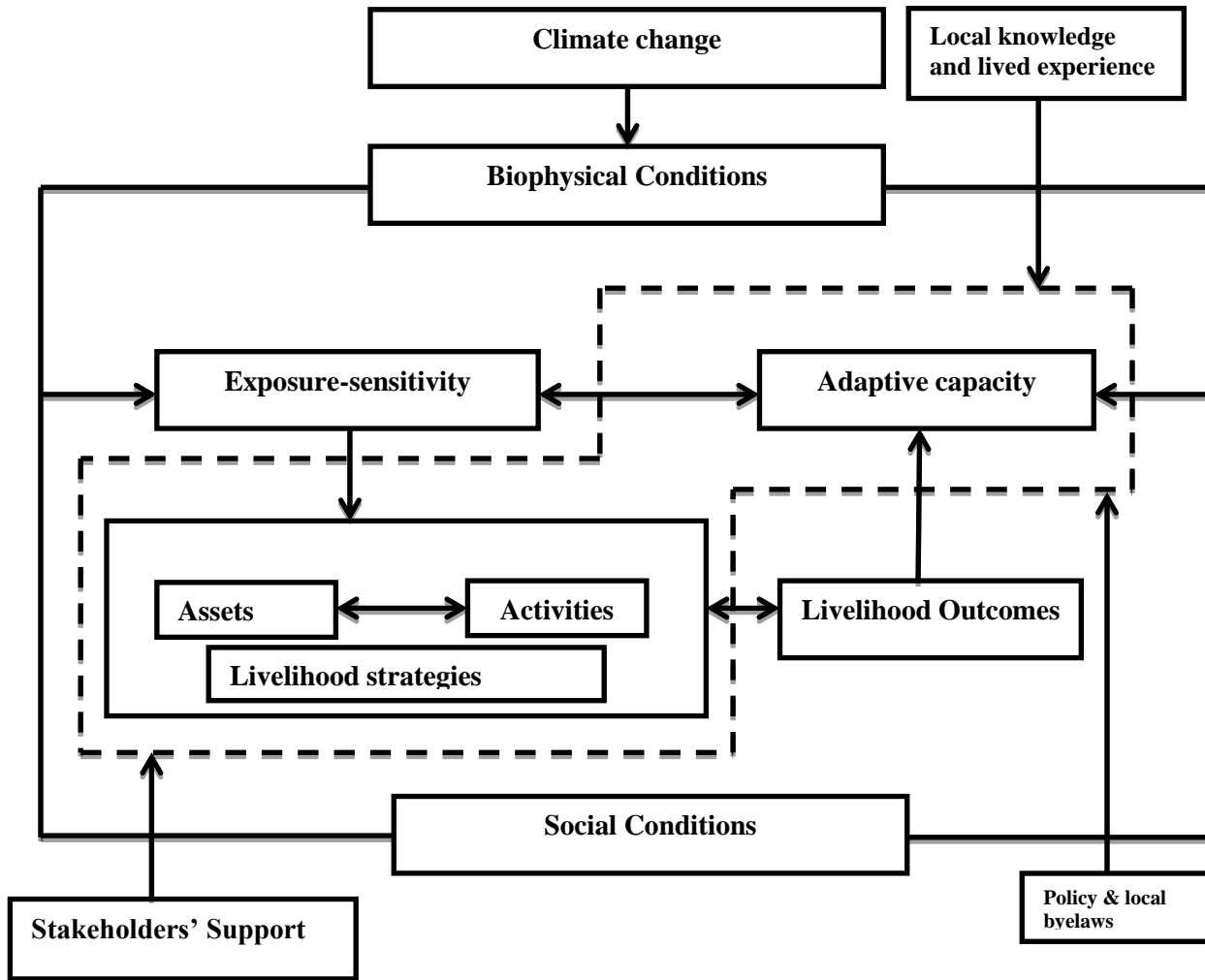
Figure 5.1 Framework showing area of lived experience of households

Figure 5.1 provides a general understanding of how households' construct their livelihoods in a vulnerable context. The study aimed at capturing local knowledge and lived experience within this context (see Figure 2.3 in section 2.6). It was found that local knowledge and lived experience are captured in the area within the broken line in the framework. As explained previously (see section 5.3.1), households' construct their livelihoods based on livelihood

choices regarding livelihood strategies, assets and activities. The impacts are experienced by households and their assets and activities, resulting in certain outcomes that may increase adaptive capacity to reduce vulnerability (biophysical and social conditions) and ensure livelihood resilience. Their livelihoods are shaped not only by the vulnerable context, but also structures (e.g. organizations) and processes (government's policy on CREMA and local byelaws) in terms of access to assets to construct livelihoods and improve adaptive capacity.

5.4   Process for Using Ecotourism as Adaptation: Integrating Local Knowledge

Local knowledge on vulnerability and adaptation as it exists, is discussed in section 5.3. However, it is inadequate in terms of the future changes needed because of the drastic effects of climate change. The inadequacy is a result of local awareness focused on current vulnerable contexts only and local adaptations that are reactive, need-based, and short-term (see section 4.7). Moreover, local adaptation may become limited when the livelihood assets and activities that increase adaptive capacity are adversely affected as a result of vulnerability dynamics. Considering future climate change means the current level of local adaptive capacity may be inadequate to ensure livelihood resilience. As observed in this study, climate change impacts are making it difficult for a community living on the edge of the habitable zone in Ghana, to engage in normal activities. It raises the issue of how much adaptation can occur as these conditions continue to change in the future. Therefore, there is the need to continuously build local adaptive capacity, by supporting assets and activities that shape choices on livelihood strategies. For example building human assets through tourism training will support ecotourism. The dynamic nature of the process reflects changes in the components in the framework, as indicated by broken lines (see Figure 5.2).

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Within the constraint of limited resources, assets that support ecotourism can be increased, since ecotourism has ability to increase assets (i.e., financial, natural, physical, social, human), complement other activities, and create linkages within the local economy. Increasing assets requires the integration of local and expert's knowledge in the area of livelihood assets of relevance to ecotourism sustainability. This can result from interaction among stakeholders to create a knowledge system in which significant communication, integration and co-production of new knowledge for action takes places.
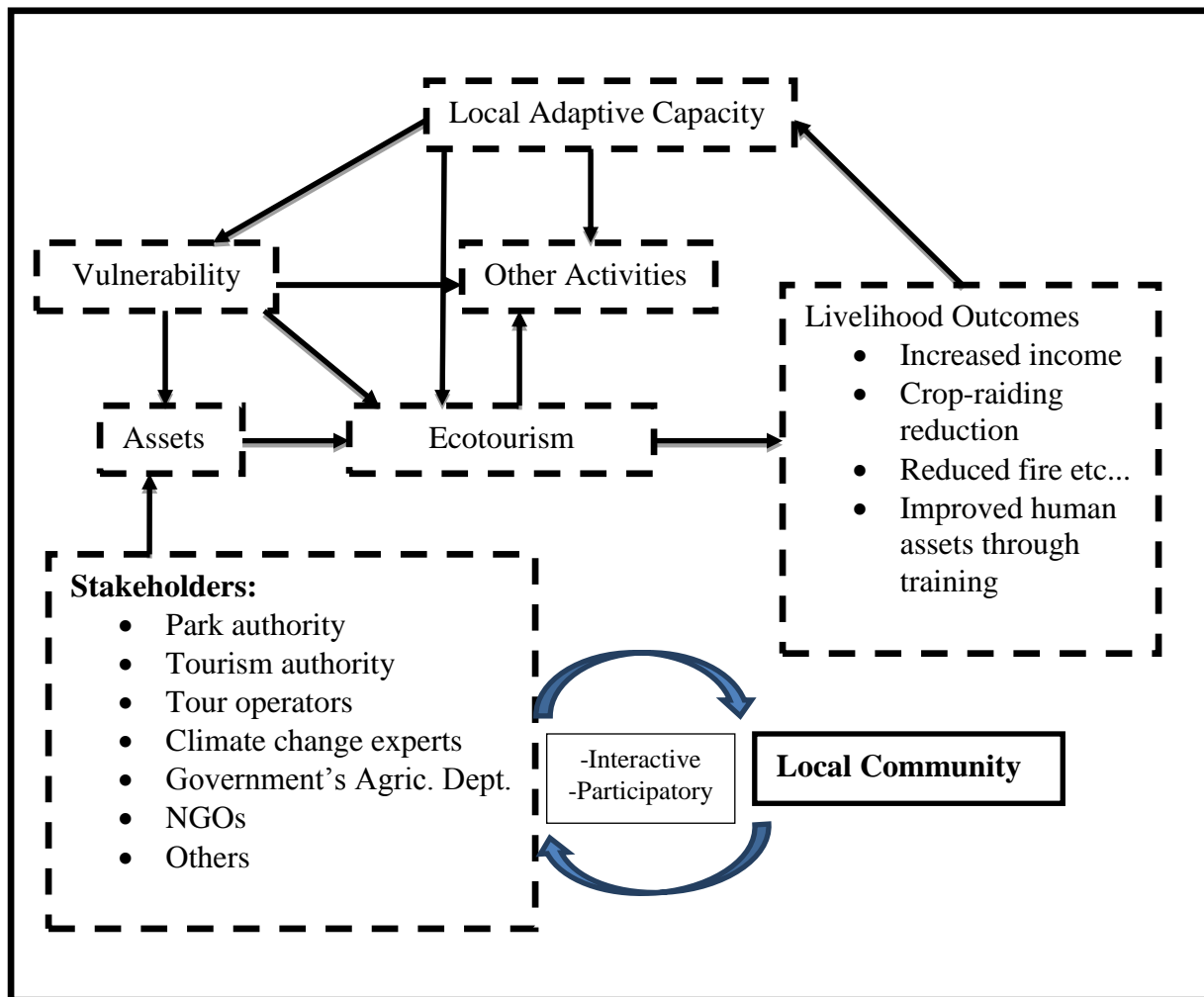

Figure 5.2 Framework showing a process for integrating local knowledge into livelihoods

A process that integrates local knowledge into a comprehensive system to ensure livelihood resilience through ecotourism is demonstrated in Figure 5.2. It presents a framework to support the assessment of vulnerability in terms of who and what are vulnerable, to what stresses, in what way, and what capacity exists to adapt to changing climate as well as how to plan for future changes in climate. It will help understand the extent of local knowledge and lived experience on livelihood-climate change interactions as a basis for planned adaptation using ecotourism as an adaptation strategy to future climate change.

The focus on local community and stakeholder interactions to generate knowledge systems that incorporates local knowledge is based on what is locally known and how ecotourism (as observed in this study) enhances local structures, relationships, trust, and shared decision-making that create community cooperation and cohesion. These attract development support from external organizations that helped improve adaptive capacity. These are pre-conditions facilitating and implementing planned adaptation.

The process as described in this framework capitalizes on existing networks and interactions by focusing on three major components such as those listed below;

1. Identifying relevant local communities

Focusing on the lived experience means identifying households involved in ecotourism and experiencing changes in climate and other factors. It involves active and continuous participation by households in order to capture issues of importance to them. The lived experience may reflect local knowledge on current climatic and social conditions, their implications on ecotourism livelihoods and current adaptations, as well as constraints that may undermine access to livelihood assets (i.e., adaptive capacity). The knowledge of the lived experience then informs planned adaptation to reduce vulnerability to future climate change.

2. Identifying stakeholders

The process is supported by stakeholders involved with ecotourism and other livelihoods within the local community. Government can play a leading role, particularly in the case where ecotourism is promoted in and around protected areas by government. Also, climate change experts or knowledge will help improve local knowledge systems to include future changes in climate. This is important as local knowledge is based on current changes in climatic elements. Other stakeholder such as public and private tourism organization, and NGOs, may support assets that are of relevance to ecotourism to facilitate livelihood outcomes that will increase local adaptive capacity to reduce vulnerability and ensure ecotourism resilience.

3) Identifying Participatory Process (as identified in the circle at the bottom of Figure 5.2)

This research identified the critical nature of participation and interaction at the local level in order to take advantage of local knowledge as communities contend with climate change. In understanding local knowledge and lived experience, the process needs to be participatory to provide opportunity for households to share implications that are relevant to them. Also, the process needs to be continuous as needs and vulnerability are dynamic. The purpose of the assessment should be made clear and households involve actively to build and improve their knowledge in order to reduce false expectations. As it was observed in this study (see section 4.7), involving households increases their understanding and helps them create some adaptations to reduce vulnerability. The process should be culturally sensitive in terms of allowing households to identify issues of relevance to them and meet their development needs. The study used conversational interviews and focus group strategy that was sensitive to the local culture and needs, and these procedures could be used in other settings as well. Further, this interaction is based on Gadamer's philosophy of hermeneutics which formed the basis on which this study

was carried out. These concepts can also be implemented by communities as they participate and interact with each other as they reach decisions on future actions to mitigate the effects of climate change on their livelihoods.

5.5   Relevance of Gadamer's Hermeneutics to Research

Gadamer's Hermeneutics provided the foundational ideas that supported consideration for; choosing the case for the study, establishing trustworthiness and establishing the role of the researcher.

The use of Gadamer's Hermeneutics in the study was justified by recent studies suggesting knowledge gap on lived and embodied everyday experiences of local communities involved in tourism within the context of climate change. Hermeneutics is a theory of interpretation that offers guidance for interpretive research on understanding and meaning, focusing on the experiential and lived existence. This supported the basis for choosing the case (i.e., Mognori Eco-Village), where households with lived experience with ecotourism and climate change exist. The households helped in co-creating understanding through dialogue and language. These are key conditions for gaining understanding, which occurs through fusion of horizons of participants and researcher. Gadamer's Hermeneutics contributes to trustworthiness in research through auditability and credibility. In establishing the conditions for understanding, clear methodological choices were made in the various stages of the study (see section 3.3.3). Also, in ensuring credibility, the perspectives of households are represented in the form of direct quotations.

In establishing how the researcher is connected to the phenomenon, Gadamer raises the notions of prejudice, which refers to the biases of the researcher which assist in understanding the phenomenon. Prejudice reflects pre-understanding, (i.e., a person's background) of the

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phenomenon of study. Gadamer advises that these biases are made explicit (see section 3.4.1). In making my pre-understanding explicit, I also demonstrated how my knowledge of the phenomenon has evolved and expanded (i.e., through dialogue with the texts from participants), supporting the idea of Gadamer that, expansion of one's horizon occurs when the pre-understanding evolves and translates into understanding. This is a process of fusion of horizons and is dynamic because understanding evolves. It suggests that understanding and knowledge are not static but dynamic.

5.6   Conclusion of Study

Climate change poses real risks to local people and their livelihoods, including ecotourism. In such a vulnerability context, local knowledge exhibits complexities in the form of diversity, complementarity, conflicts, and coping strategies as well as flexibility, underpinning an over local attempt to ensure livelihood resilience. Such complexities in local knowledge demonstrate the existence of adaptive capacity within a vulnerable context that ensures survival, although it is limited to some extent.

Local knowledge on vulnerability experienced occurs in the form of awareness of the climatic and social factors and changes in livelihood assets and activities. Awareness of these changes stimulates local adaptations to ensure livelihood resilience. Also, local knowledge on adaptation to vulnerability is reflected in four kinds of strategies used: technological, sustainable (i.e., managerial) practices, behavioural changes and livelihood strategies. These adaptations are diverse in nature, and exist in combinations that complement livelihoods in such a way to ensure livelihood resilience. Therefore, local knowledge is reactive, need-based and short-term. These characteristics indicate inadequacy of local knowledge and adaptive capacity in terms of future

climate change, suggesting a need to move across the local scale to building knowledge and capacity to sustain livelihoods, particularly ecotourism in the face of changing climate.

5.7   Recommendation for Future Research

The study has contributed to the academic discourse on tourism and climate change interactions by providing understanding on lived experience of local people. The study developed a framework that can be used for assessing lived experience of local communities involved in ecotourism and experiencing climate change. The framework will help integrate local knowledge in a process of building adaptive capacity to ensure livelihood resilience based on ecotourism. The relevance of this a framework is justified by the findings of the present study which showed that households often have adaptive capacity that is reactive, need-based and short-term. Such capacity is however inadequate when a long-term perspective is taken. Local knowledge is limited when future climate change is considered. Building adequate and relevant capacity with the support of stakeholders can help households explore the opportunities in using ecotourism as an adaptation strategy. The starting point would be test the framework in other communities where ecotourism is locally managed, relationship with external organization exists and climate change poses a risk to local livelihoods. The testing of the framework by other researchers would lend itself to modification to enable its wider application.

6.0   References

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7.0   Appendices

Appendix A1: Institutions and Representatives Interviewed

Institutions	Representative and Role
Forestry Commission	Asst. Director GWD, Accra
Ghana Wildlife Division Forestry Commission	Park Manager, Mole National Park
Ghana Wildlife Division Forestry Commission	Community Officer, Mole National Park
Ghana Wildlife Division Forestry Commission	Tourism Officer Mole National Park
Ghana Wildlife Division Forestry Commission	Manager, Tour Guiding Mole National Park
SNV Ghana, Tamale	Community Officer
Mole Motel	Receptionist
A Rocha Ghana	Manager
A Rocha Damongo	Tourism Manager
World Vision Damongo	Community Officer
Ministry of Food and Agriculture	Project Officer
Environmental Protection Agency	Climate Change

Appendix A2: List of Household Heads Interviewed

Household Head Interviewees	Role in Ecotourism	Education Level
Agnes	Homestay Operator, Mognori	Primary
Rosemary	Homestay Operator, Mognori	Primary
Magdalene	Homestay Operator, Mognori	Primary
George	Member of Tourism Committee	None
Nsamba	Member of Tourism Committee	None
James	Member of Tourism Committee	None
Peter	Member of Tourism Committee	Secondary
Kelvin	Member of Tourism Committee	Secondary
Daniel	Member of Tourism Committee	Primary
Nicholas	Member of Tourism Committee	College
David	Tourism Manage	Teacher`s College
Frederick	Assistant Tourism Manager	Teacher`s College
Thomas	Tour guide, Mognori	Primary
Charles	Tour Guide, Mognori	Primary
Abraham	Canoe Operator	Primary
Jacob	Canoe Operator	Secondary
Kenneth	Canoe Operator	Secondary
Natalie	Cleaner	Primary
Ben	Cleaner	Primary
Ahmed	Dancer	None
Stephen	Dancer	None
Monica	Dancer	None

Appendix B: Letter to the Community Leader and Elders

[Date]

[Community Name]

[Community Address]

Dear Sir,

Subject: Doctoral Research Project: Ecotourism Development as an Adaptation Strategy for Mitigating Future Climate Change Impacts on Local Communities around Protected Areas: The Case of Mognori Eco-Village in Ghana.

My name is Yaw Boakye Agyeman, a doctoral student in University of Waterloo under the supervision of Professor Paul Eagles of the Department of Recreation and Leisure in University of Waterloo, Canada.

I am conducting the above named research project in Mognori Eco-Village and would like to provide you with the information on the relevance of this project to the community and the nature of their involvement in the project. The research project explores ways of enhancing the sustainability of the ecotourism development going on in the Mognori Eco-Village by understanding how households construct their livelihoods and how ecotourism fit in the existing livelihood development. Also, the research explores how the ecotourism development is vulnerable to climate change, the adaptation strategies and factors influencing the ability of the community to adapt. The research hopes to assist the community to develop adaptation strategies for the future climate change impacts in order to contribute to the sustainability of the ecotourism as a tool for recreation, conservation and well-being of the community.

I am seeking permission to conduct this research project in the community and interact with them to understand their views. I would be grateful if you could find time to speak with me and also introduce me to the community. Also, I will need your assistance in identifying some households who will be willing to participate in the interviews and focus group. Participation in this study is voluntary and would involve 20 members of the community at a convenient location and time. With the participants` permission, the interviews will be recorded. There are no known or anticipated risks to community in this study. The questions are quite general (for example, how do households make a living? What is the importance of ecotourism to the way they make a

living?; What is affecting the ecotourism development? In what ways are the households dealing with the consequences?).

In the study, any participant may decline answering any questions. All information gathered will be considered confidential and the participants will not be identified by name in my dissertation or in any report or publication resulting from this study. The data collected through this study, such as the audiotapes, photographs and notes, will be stored indefinitely in a secure location and accessed only by Dr. Paul Eagles and Yaw Boakye Agyeman associated with this project.

If you have any questions about this study, or would like additional information to assist you in reaching a decision about granting permission or your own participation, as well introduce me to the community member to be involved, please feel free to contact me; Yaw Boakye Agyeman at 5197227444 (Canada) or 0244633511 (Ghana). I would like to assure you that this study will be reviewed and receive ethics clearance through the Office of Research Ethics at the University of Waterloo, Canada. However, you reserve the right to permit this study in the community. In the event that you have any comments or concerns about the study, please contact the director of that office, Dr. Susan Sykes, at 1-519-888-4567 Ext. 6005, email: ssykes@admmail.uwaterloo.ca.

Thank you for your assistance.

Yours Sincerely,

Yaw Boakye Agyeman (PhD.)
Department of Recreation and Leisure Studies
Faculty of Applied Health Science
University of Waterloo
Canada N2L 3G1
Email: ybagyema@uwaterloo.ca

Appendix C: Letter to the Institutions

[Date]
[Organization Name]
[Organization Address]

Dear Sir,

Subject: Doctoral Research Project: Ecotourism Development as an Adaptation Strategy for Mitigating Future Climate Change Impacts on Local Communities around Protected Areas: The Case of Mognori Eco-Village in Ghana.

My name is Yaw Boakye Agyeman, a third year doctoral student in University of Waterloo under the supervision of Professor Paul Eagles of the Department of Recreation and Leisure in University of Waterloo, Canada.

I am conducting the above named research project in Mognori Eco-Village and would like to provide you with the information on the relevance of this project to the community and the nature of their involvement as well as yours in the project. The research project explores ways of enhancing the sustainability of the ecotourism development going on in the Mognori Eco-Village by understanding how households and the construct their livelihoods and the role of the ecotourism development in their livelihoods development. Also, the research explores how the ecotourism development is vulnerable to climate change, the adaptation strategies and factors influencing the ability of the community to adapt. The research hopes to assist the community to develop adaptation strategies for the future climate change impacts in order to contribute to the sustainability of the ecotourism as a tool for recreation, conservation and well-being of the community.

I am seeking permission to conduct interviews with some staff to gather their views on the above stated issues. I would be grateful if you could find time to speak with me and introduce me to the staff. Also, I will need your assistance in identifying some households in the community who will be willing to participate in interviews and focus group discussion at a later date. The questions for the interview are quite general (for example, how do the community members do to make a living? What is the importance of ecotourism to the way they make a living?; What is affecting the ecotourism development? In what ways are the households dealing with the consequences? Participation in this study is voluntary at a convenient location and time. With the staffs` permission, the interviews will be recorded. There are no known or anticipated risks to the staff and the community in this study. Participant may decline answering

any questions. All information gathered will be considered confidential and the participants will not be identified by name in my dissertation or in any report or publication resulting from this study.

If you have any questions about this study, or would like additional information to assist you in reaching a decision about granting permission or your own participation, as well introduce me to the staff and the community member to be involved, please feel free to contact me; Yaw Boakye Agyeman at 5197227444 (Canada) or 0244633511 (Ghana). I would like to assure you that this study will be reviewed and receive ethics clearance through the Office of Research Ethics at the University of Waterloo, Canada. However, you reserve the right to permit and involve your staff in this study in the community. In the event that you have any comments or concerns about the study, please contact the director of that office, Dr. Susan Sykes, at 1-519-888-4567 Ext. 6005, email: ssykes@admmail.uwaterloo.ca.

Thank you.

Yours Sincerely,

Yaw Boakye Agyeman (PhD.)
Department of Recreation and Leisure Studies
Faculty of Applied Health Science
University of Waterloo
Canada N2L 3G1
Email: ybagyema@uwaterloo.ca

Appendix D: Interview Schedule

<div align="center">

Preamble

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Thank you for agreeing to meet and participate in this study. The purpose of the study is to gain understanding of how households make a living and how ecotourism development is perceived as playing a role in the way households make a living. Your involvement in this study is very valuable.

I am going to ask some questions to understand how your household makes a living and the role of ecotourism development in the process of making a living. There are other questions are what is affecting the ecotourism development and what you are doing about that. The interview will proceed in the form of open discussion and friendly conversation.

Your agreement to participate in this event is completely voluntary and you may choose to withdraw at any time or respond to any question I pose. Excerpts from this discussion may be used in final thesis report or publications. Confidentiality and anonymity will be assured. With your permission, I will turn on the audio-tape recorder now, so that I can be sure I accurately record all the information you give me. Thank you.

Research note: These questions may vary according to the interviewees.

Interviewer: Aim to ensure to seek clarification and obtain as much information as possible on each question, asking interviewees to elaborate and be specific. For example, Can you explain further? Can you tell me what that means?

To begin with the interview, can you tell me a little about yourself?

Questions

1. How does your household make a living?
2. Does ecotourism contribute to the sustenance of your household? If yes how?
3. What is affecting the way you make a living?
4. What is affecting the ecotourism development in the community?
5. Are you dealing with them? If so what do you do to deal with them?
6. How do you determine that what you do is/are working? If not why?
7. What strategies are you considering for the future?

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Appendix E: Consent Form for Interview

Consent Form

I agree to participate in the interview being conducted by Yaw Boakye Agyeman from the University of Waterloo, Canada. My participation in the interview is completely voluntary. I understand that the information I am providing is completely confidential and that at any time during the interview, I am free to decline answering any questions, or if I deem necessary, to end the interview. Also, I am free at any time, to withdraw from this study, and I am not obligated to follow through with any further questions that Yaw Boakye Agyeman may have.

In addition, I understand that any information I provide may be used for reports, journal articles and presentations, but that at no time will my name appear anywhere, nor any quotations that I give be used that may compromise my confidentiality.

I understand that that this project has been reviewed by, and received ethics clearance from the Office of Research Ethics at the University of Waterloo. If I have any comments or concern resulting from my participation in this study, I can contact Dr. Susan Sykes at the Office of Research Ethics at (519) 888-4567 Ext. 36005.

With full knowledge of all foregoing, I agree, of my own free will, to participate in this interview.

O Yes O No

I agree to the use of audio-tape recording of the interview.

O Yes O No

I agree to the use of anonymous quotations in any thesis or publication that comes from this study

O Yes O No

Participant Name:_____ (Please print)

Participant Signature:_____

Date: _____

Appendix F: Letter of Appreciation after Interviews

Dear Sir/Madam,

I am writing to thank you for a stimulating conversation we had on my study entitled ``***Ecotourism Development as an Adaptation Strategy for Mitigating Future Climate Change Impacts on Local Communities around Protected Areas: The Case of Mognori Eco-Village in Ghana.***``I have been able to complete all the interviews with different households and key informants. I thank you for suggesting other households or key informants as a potential source.

I hope you will get in touch with me if further thoughts occur to you about the subject of our conversation, particularly if you decide in retrospect that you would like to designate some of it for non-attribution. Should you have any comments or concerns you could also contact Dr. Susan Sykes of our Office of Research Ethics at 519-888-4567 Ext. 36005 or ssykes@uwaterloo.ca.

As the need be, I would invite for the focus group for your criticism and comments on the general findings based on the interviews. This is schedule to take place in January of February, 2012. It was indeed a pleasure meeting you.

Thank you for your assistance.

Yours Sincerely,

Yaw Boakye Agyeman
Department of Recreation and Leisure Studies
Faculty of Applied Health Science
University of Waterloo
Canada N2L 3G1
Email: ybagyema@uwaterloo.ca

Appendix G: Focus Group Interview Guide

Focus Group Guide

Material: Marker, flipchart, tape recorder, pens and pencils

Duration: Approximately 2 hours

Introduction

Before, we commence the discussion, I will like to formally acknowledge your participation in today`s event and express my sincere gratitude for your time and willingness to share. The objectives of this focus group are to; validate the preliminary interpretation of the interviews and explore how the community can adapt to climate change vulnerability using ecotourism. Particularly, the identification of the strategies will assist in reducing threats and explore opportunities in sustaining ecotourism`s prospects for providing recreational and tourism opportunities, and as a livelihood strategy in the context of climate change. I will be happy to answer any question you may have about this study.Your agreement to participate in this event is completely voluntary and you may choose to withdraw at any time. With the participants` permission, the discussion will be recorder using a tape recorder. Excerpts from this discussion may be used in final thesis report or publication. Confidentiality and anonymity will be assured. The interview will proceed in the form of open discussion involving every participant. During the discussion, it is expected that open, polite and orderly environment where every participants can feel encouraged to participate in the discussion. Each participant may have a different proposal or opinion about the issues to be discussed and I will be happy to hear them.

Part One (1 hours): Validation of the Preliminary Findings

The part will start with self-introduction by each participant. This is purported to create comfort, trust and familiarity among the participants. This will be followed by feedback on the preliminary findings of the second phase.

Part Two: (1 hour): Adaptation to future climate change

1. How can the community adapt to future climate change vulnerability using ecotourism development?
   a. In what way (s) can the community deal with future climate change?
   b. What can the community do to implement what is decided?

Appendix H: Script of Verbal Invitation to Participate in the Focus Group in Mognori

Hello,

My name is Yaw Boakye Agyeman and I am doctoral student at the Department of Recreation and Leisure in University of Waterloo, Canada**.** I am under the supervision of Dr. Paul Eagles of the Department of Recreation and Leisure Studies.

I have been working in the community for some time, interviewing some households in the community to understand how they make a living and the role of ecotourism development in the way they make this living. In order to validate the findings from the preliminary interpretation of the study and also explore how the community can adapt to future climate change through ecotourism, I will like to invite you to participate in focus group in the community.

I am proposing that the event will take place in the community and will last for 2 hours. Your participation in this event is voluntary and there are no known or anticipated risks to you participating in the focus group.. With your permission, I would like to audio-tape the group discussion in order not to miss important information you may provide. The tapes and transcripts will be stored in a locked cabinet in the university. Also, the electronic data will be stored for indefinite period of time in a secured University of Waterloo server. Only my supervisor, and I will have access to the data.

This project has been reviewed and received ethics clearance through the University of Waterloo`s Office of Research Ethics. Please let me know if you are interested in participating in the focus group and kindly pass this invitation to household who participated in the first interview. Thank you for listening.

Appendix I: Consent Form for the Focus Group

Consent Form

I agree to participate in the study being conducted by Yaw Boakye Agyeman from the University of Waterloo, Canada. I agree to participate based on the verbal invitation from him. My participation in this audio-tape recorded focus group is completely voluntary. I understand that, the discussion will focus on the preliminary interpretations of data and the ways of adapting to vulnerability due to climate change through ecotourism development.

I understand that the information I am providing is completely confidential and I will not be identified in any report or publication that results from this study. I also understand that, I may withdraw from the discussion at any time during the process without any penalty by informing Yaw Agyeman.

I understand that that this project has been reviewed by, and received ethics clearance from the Office of Research Ethics at the University of Waterloo. If I have any comments or concern resulting from my participation in this study, I can contact Dr. Susan Sykes at the Office of Research Ethics at (519) 888-4567 Ext. 36005.

With full knowledge of all foregoing, I agree, of my own free will, to participate in this focus group.

O Yes O No

I agree to the use of audio-tape recording of the discussion.

O Yes O No

I agree to the use of anonymous quotations in any thesis or publication that comes from this study

O Yes O No

Participant Name:_____ (Please print)

Participant Signature:_____

Date: _____

Appendix J: Letter of Appreciation after the Focus Group

Dear Sir/Madam,

I am writing to thank you for a stimulating conversation during the focus group discussion on exploring adaptations to mitigate future climate change impacts. Your involvement in this discussion was important in understanding how ecotourism development could be used to provide recreational experience to visitors, while helping the well-being of the community.

I hope you will get in touch with me if further thoughts occur to you about the subject of the focus group, particularly if you decide in retrospect that you would like to designate some of it for non-attribution. Should you have any comments or concerns you could also contact Dr. Susan Sykes of our Office of Research Ethics at 519-888-4567 Ext. 36005 or ssykes@uwaterloo.ca. It was indeed a pleasure meeting you and thank you again for your invaluable contribution to the focus group discussion.

Thank you.

Yours Sincerely,

Yaw Boakye Agyeman
Department of Recreation and Leisure Studies
Faculty of Applied Health Science
University of Waterloo
Canada N2L 3G1
Email: ybagyema@uwaterloo.ca

Appendix K: Feedback to the Community and Organizations

 Date (…….)

Dear Sir/Madam*,*

I would like to thank you for your participation in this study entitled "***Ecotourism Development as an Adaptation Strategy for Mitigating Future Climate Change Impacts on Local Communities around Protected Areas: The Case of Mognori Eco-Village in Ghana.***" As a reminder, the purpose of this study is to identify the positions and concerns of various interest groups about fundamental issues related to adaptation to climate change impacts using ecotourism development in Mognori Eco-Village. The data collected during interviews and focus group will contribute to a better understanding of the appropriate adaptation and implementation strategies to ensure ecotourism`s sustainability.

Please remember that any data pertaining to the participants will be kept confidential. Once all the data are collected and analyzed for this project, I plan on sharing this information with the research community through, seminars, conferences, presentations, and journal articles. I will also send a lay summary of the findings to the community and the organizations. I would be happy if you could provide your contact address to enable me send this information.

In the meantime, if you have any questions about the study, please do not hesitate to contact me by email or telephone as noted below. As with all University of Waterloo projects involving human participants, this project was reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. Should you have any comments or concerns resulting from your participation in this study, please contact Dr. Susan Sykes, Director, Office of Research Ethics at 519-888-4567, Ext., 36005 or ssykes@uwaterloo.ca.

Thank you

Sincerely,

Yaw Boakye Agyeman.