Norwegian University of Life Sciences

The Department of International Environment and Development Studies, Noragric

Master Thesis

December 15. 2015

30 Credits

EVALUATION OF AWF PILOT PROJECT FOR REDD READINESS IN KONDOA DISTRICT, TANZANIA: CASE OF KOLO HILLS FOREST

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ACKNOWLEDGEMENT

I would like to express my gratitude to the people of Sokoine University of Agriculture (SUA) especially Dos Santos Silayo for all necessary arrangements he did during my field visits. Also special thanks to field assistants whom I respect their ability to work as a team and manage to collect all data.

Many thanks should go to the AWF field coordinator Mr. Godlisten Malisa for his acceptance to write introductory letters to all villages' councils of all selected villages for this study as well as arranging meetings with central government officers so our visits were known to them in advance. But mostly I am thanking him for accepting to be interviewed as one of our key informants. His views were of great importance.

I would like to thank the local people of all the studied villages, for setting time for us and their willingness to be interviewed, as without them this study couldn't be done. And their inputs were so important for this study, and I learned much from them.

In Norway, I would like to thank my supervisors Arild Vatn and Pål Vedeld for meeting with me regularly, following up on my progression and giving valuable feedback. Also thanks to Maria Nantongo, Elvis Mosi and Ruben Laiva-Montonya for contributing to the research process, especially formulation of research instruments.

I am mostly grateful for the great opportunity to learn during this demanding and exiting process. I thank my family and friends especially Godfrey Joachim Rwechungura for being so understanding and supportive along the process especially in data analysis.

Ahsante sana.

Tusen takk.

Mosses Ishiriande Mungure

15 Dec 2015

DEDICATION

I dedicate this work to all environmental activists who are fighting for making this world a better place.

LIST OF ABREVEATIONS

ARKFo	Advancing REDD in Kolo-Hill Forest
AWF	African Wildlife Foundation
EGFS	Environmental Governance Systems Framework
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
GHG	Green House Gasses
IADF	Institutional Analysis and Development Analysis
IDEC	Institutional Dimension of Environmental Change
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
JGI	Jane Goodall Institute
JMF	Joint Forest Management
LRS	Likert Rating Scale
MCDI	Mipango Conservation Development Initiative
MEA	Millennium Ecosystem Assessment
NGO	Non-Governmental Organization
PFM	Participatory Forest Management
REDD/REDD+	Reducing Emissions from Deforestation and Forest Degradation
SPSS	Statistical Package for Social Sciences
TaTEDO	Tanzania Traditional Energy Development Organization
TFCG	Tanzania Forest Conservation Group
UNFCCC	United Nations Framework Convention on Climate Change
URT	United Republic of Tanzania
USA	United State of America
WCS	Wildlife Conservation Society
WCST	Wildlife Conservation Society of Tanzania
WWF	World Wildlife Fund

ABSTRACT

The continuing loss of forest cover in developing countries, especially in the tropics has become an increasing concern to researchers and policy makers. This concern is a reasonable reflection of the multiple benefits of tropical forests, such as their support of human livelihoods, carbon sequestration, and biodiversity conservation. In addition to its immediate bearing on livelihoods, forests' role in ecological services as through carbon sequestration has been of great interest. However, human activities like land conversion for agriculture, charcoal production, firewood collection, settlement expansions, excessive logging and wild fires posed a grim threat on forests' abilities to sequestrate carbon. In responding to this, the United Nations Framework Convention on Climate Change (UNFCCC) prepared an action plan and road map which includes reduction of Green House Gases (GHGs) through an approach known as Reducing Emissions from Deforestation and Forest Degradation (REDD). Tanzania is one of nine pilot countries where UN assistance is channeled to test REDD interventions in nine (9) pilot sites as a recent policy response to halting global forest deforestation and degradation, and any resulting greenhouse gas emission which also includes the role of conservation, sustainable management and enhancement of forest carbon stocks. However, still at its infancy a number of challenges are associated with its implementation. Therefore, this study was conducted to assessment/Evaluation of the AWF Pilot Project for REDD Readiness in Kondoa District, Tanzania by taking a case of Kolo Hills forests. Specifically, the study had assessed local peoples' awareness and perceptions about the intervention, as well as identified alternative sources of livelihoods for forest dependent communities and challenges in implementing the REDD+ initiative. A cross-sectional research design was adopted and a total of 150 respondents were involved from the opted-in and out implementing villages. Results have indicated that the majority of Kondoa residents were aware of the intervention while, majority had reported REDD+ implementing organization, African Wildlife Foundation (AWF) to be the source of their awareness of the project. A large share of the respondents expressed positive perceptions about REDD+ initiative, however, there were statistically significant differences ($p<0.01$) in perceptions between respondents from the two different villages. Agriculture, tree seedling production, mud bricks and stove making among others were identified as new livelihoods sources for the forest reliant communities in Kondoa,

and among others, illegal forest harvests, low awareness among people as well as leakages was identified as potential threats for the REDD implementation. The study conclude that, REDD+ has a potential to become an appropriate mechanism to help reduce global Green House Gasses (GHGs) emissions and enhancing the livelihoods of forest dependent people if the mentioned challenges can be addressed. With such a large population depending on forest for subsistence livelihood in Kondoa, the study acclaimed that, strategies for controlling forest degradation need to be focused on reducing the dependence by creating alternative livelihood opportunities that will compete against the desires for forest use and degradation to the forest dependent communities, providing alternative technologies to reduce the gap in demand and supply of forest products and making the community adopt sustainable harvesting practices.

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1. INTRODUCTION

1.1 Background Information

The continuing loss of forest cover in developing countries, especially in the tropics, has become an increasing concern to researchers and policy makers (IUCN, 2009). This loss and concern is a reasonable reflection of the multiple benefits of tropical forests, such as their support of human livelihoods, carbon sequestration, and biodiversity conservation. It is estimated that forests directly support the livelihoods of 1.2 billion people worldwide through fodder, firewood, timber, and non-timber products (Vedeld et al., 2007; Agrawal and Gibson, 2009). In addition to its immediate bearings on livelihood, the forest roles in ecological services through carbon sequestration has been of great interest when it comes to climate change mitigation (Dhital, 2009). Climate change is one of the biggest global challenges posing threats to sustainable livelihoods and economic development especially for the Least Developed Countries (LDC) (Campese, 2012). Its adverse impacts on environment, human health, food security and economic activities are already noticeable in many countries (URT, 2012).

Forests play an important role in climate change mitigation as sinks and sources of carbon dioxide (CO_2), forests acts as carbon sinks when their area of productivity increases resulting in an increased uptake of CO_2 from the atmosphere (Wright, 2005). Despite all these potentials, human activities like charcoal production, firewood collection, and settlement expansions, excessive logging and wild fires among others, have been continuing to pose a grim threat on forests' ability of carbon sequestration. For instance in Morocco, forests exploitation of fuel wood and fodder is three times the forest production and forest-grazing possibility respectively. The Millennium Ecosystem Assessment, (MEA) of 2005 revealed that nearly two-third of the world's ecosystem is under threat due to human influences (Mertz, 2009). This has affected a range of species leading to degradation of ecosystems, loss of genetic diversity as well as the extinction of species thus, escalating the impacts of climate change (Campese, 2012).

In responding to the impact of climate change on ecosystems, the United Nations Framework Convention on Climate Change (UNFCCC) prepared the action plan and road map which includes reduction of Green House Gases (GHGs) through an approach known as Reducing Emissions from

Deforestation and Forest Degradation (REDD). REDD is a mechanism that allows industrialized countries to offset their emissions by purchasing carbon credits from developing countries, thus reduce emissions by avoiding forest degradation and deforestation activities (Dhital, 2009). REDD, which is an initiative created under the auspices of the UN Framework Convention on Climate Change (UNFCCC) is a recent policy response arise in criticisms on CDM (Barbier and Tesfaw**,** 2012). There are many multilateral institutions as well as bilateral assistance and partnerships that countries can choose to access for support for their readiness to participate in REDD. For example, three UN Agencies the UNEP, UNDP and FAO have collaborated in the establishment of the UN-REDD program, a multi-donor trust fund that allows donors to pool resources and provide funding with the aim of significantly reducing global emissions from deforestation and forest degradation in developing countries (Mertz, 2009).

Tanzania is one of the nine pilot countries where UN assistance is channeled to test REDD interventions and currently, REDD is piloted in nine (9) sites in the country (TNRF, 2011). In each pilot site, a specific forest area has been chosen to implement the REDD project while, partner project implementers include African Wildlife Foundation (AWF); CARE Tanzania; the Jane Goodall Institute (JGI); Mpingo Conservation and Development Initiative (MCDI); Tanzania Traditional Energy Development Organization (TaTEDO); Tanzania Forest Conservation Group (TFCG); Wildlife Conservation Society (WCS); Wildlife Conservation Society of Tanzania (WCST) and World Wildlife Fund (WWF) (CARE, 2012). Studies have demonstrated that the introduction of REDD leads to improvements in forest management, reduction in forest degradation and climate change mitigation through carbon sequestration. For example it is estimated that the REDD project in Kondoa Irangi will lead to 10 524 t CO_2e emission saved from avoided deforestation and forest degradation annually which is equivalent to removing 1 872 passenger vehicles from the road every year (Kiruswa and Fitzgerald, 2011).

1.2 REDD Intervention

Programs for Reducing Emissions from Deforestation and Forest Degradation (REDD) intends to financially reward individuals, communities and countries that cut carbon emissions from forests (Wertz-Kanounnikoff et al., 2008). They envisage improving incentives towards either retaining

standing forests or instigating more sustainable and controlled forest activity. REDD is widely considered to present a possible entry-point for improving forest governance practices in developing countries while simultaneously addressing emissions from deforestation and forest degradation as part of a global climate regime (Pistorius, 2009).

Green economy is now a focus put for the energy sector. The interest in the role of forests in emissions reduction and in forest carbon markets is also growing. Deforestation and forest degradation accounts for approximately 17% of global greenhouse gas (GHG) emissions and forestry can make a significant contribution to a low cost global mitigation portfolio and it provides synergies with adaptation and sustainable development (IUCN, 2009). This has led to the rise of the Reducing Emissions from Deforestation and Forest Degradation, enhancement of carbon stock and sustainable management of forests in developing countries initiative (collectively known as REDD+) as a means through which individuals, projects and communities in developing countries can be financially rewarded for reducing emissions from deforestation, forest degradation and enhancement of carbon stock (Tanner and Hiraldo, 2011).

1.2.1 REDD Intervention in Kondoa District

Kondoa District has a history of severe land degradation that originates from various deforestation drivers (Blomely and Iddi, 2009). The remarkable deforestation events started with tsetse fly eradication campaigns from 1927 to 1940s which led to massive clearance of natural vegetation (Vatn et al., 2009). Other deforestation drivers in the area includes among others shifting cultivation, overgrazing as well as uncontrolled bush fires (Mwakalobo et al., 2011). The consequence of these environmentally unfriendly activities leads to prolonged reduced vegetation cover, soil erosion and general land degradation. Therefore, this situation has made Kondoa District a typical example of severely degraded areas in Tanzania (Mdemu, 2012).

To address the situation above in 1973, the Government of Tanzania launched a Land Rehabilitation Program for Dodoma Region; abbreviated as HADO (HADO stands for a Swahili phrase “Hifadhi Ardhi Dodoma”). HADO activities included rehabilitation of degraded or eroded areas both by bounding and closure of grazing, tree planting (woodlots, agro-forestry, and homestead), training on soil and water conservation, and establishment of Village Environment Committees (Luwuge et al., 2011). Although good results were observed especially in forest

regeneration and reduced soil erosion, the biggest weakness of HADO was its top-down, non-participatory approaches which makes it difficult to attain the anticipated results. The AWF has become involved in the national REDD+ readiness efforts through a REDD+ pilot project, entitled Advancing REDD in the Kondoa Irangi Hills Forests, for which it is the lead implementing and coordinating organization; AWF has designed the REDD+ implementation plan that has averted the weaknesses of HADO by including people in the grass root in implementing the intervention (Blomley and Iddi, 2009).

1.3 Problem Statement

A recent policy response to halting global forest deforestation and degradation, and any resulting greenhouse gas emissions is REDD+, which also includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks (Barbier and Tesfaw, 2012). However, still at its infancy, a number of challenges are associated with the REDD implementation. These include among others, local people's participation, 'permanence' whether a county can ensure that forest carbon savings are permanent as well as the 'leakage' issue; what happens when carbon conservation in one area drives deforestation in another? (Aune *et al.*, 2005). Albeit, successfully as it may be seen, it might fail to deliver the anticipated outcomes if these challenges are overlooked. As a new emerging field with little outputs and outcomes to vindicate its potentials as a climate change mitigation option and enhancement of community livelihoods, here is a need to conduct an exhaustive investigation of the effectiveness of this intervention. This study therefore, assessed the effectiveness of AWF pilot project for REDD readiness in Tanzania, taking a case of Kollo- Hills.

1.4 Study Justification

Understanding the local communities' perception as well as assessing their awareness and participation in implementation will inform REDD whether it is meeting its goals of reducing degradation and deforestation thus, making adjustment to accommodate the emerging hurdles and guarantee the intervention bright future. Furthermore, this study supplements a portion to the body of knowledge and can be taken as reference to similar studies to be conducted anywhere in the world.

1.5 Research Objective

Several research objectives was employed to establish the effectiveness of the REDD readiness project implemented by AWF in Kondoa; the general objective and specific objectives.

1.5.1 General Objective

The overall objective of this study was to assess/Evaluate AWF pilot project for REDD readiness in Kondoa District, Tanzania by taking a case of Kolo-Hills.

1.5.2 Specific Objectives

i. To assess institutional changes undertaken after REDD+ introduction.

To respond to this objective, the following research questions were asked;-

(a) What are the institutional reforms undertaken to facilitate REDD+ implementation in Kondoa district?

(b) Which actors were involved and what roles did they play in institutional reforms?

(c) Are there any organizational/administrative bodies established at the village level related to institutional reforms (VLUP committee, VNRC/environment committee, Payment/MRV)?

(d) Where there any issues/conflict raised during the introduction of REDD+? How was it solved/still unsolved?

(e) How was the decision to implement REDD+ reached in the villages (opted in/opted out)?

ii. To assess local people's awareness and overall evaluation and impression of the project.

This objective looks at the overview of free prior-informed consent.

To respond to this objective, the following research questions were asked;-

(a)What is the general impression on the process involved to introduce REDD+? Were people satisfied with the process and outcome? And what is their impression after the trial?

(b) Did local people feel they have enough information regarding implementation of the project in their villages?

(c) How and who was involved in different processes? How do people evaluate this process?

(d) What is the local people's perception on REDD+ rules established? Do people know the rules and follow? Do they think these new rules work in their villages?

(e) How do local people evaluate AWF process of establishing REDD+ project?

(f) How do local people perceive REDD+ intervention?

iii. To identify alternative sources of livelihood to local people after REDD introduction.

To respond to this question, the following research questions were asked;-

(a) What are the emerging sources of livelihood after introduction of REDD+ (income greeting activities/source of living)?

(b) What were the local people sources of livelihood prior to REDD+ intervention?

(c) Do local people benefit from the new sources of livelihood? Are they satisfied with the new sources?

(d) Did people choose participate in this new sources? Did they have a choice?

(f) Are there people who are not involved in any new sources? If Yes: Why?

iv. *To identify challenges in REDD+ project implementation.*

To respond to this objective the following research question were asked;-

(a) What are the challenges in REDD Project implementation?

(b) Generally, how is the scope of the challenge? If implemented/not implemented (future of the project and environment in Kondoa)?

Table 1: Specific objectives matrix

Objective	**Analysis tool**	**Underlying theory**
1	Content analysis from resource person interviews and focus group discussion	Structure process framework in institutional and organizational change
2	Descriptive analysis (cross-tabulation) and chi-square test to establish a relationship between demographic characteristics and awareness	Environmental governance framework system
3	Descriptive analysis (Likert scale) and independent sample t-test	Local participation legitimacy
4	Descriptive analysis Multiple responses)	
5	Descriptive analysis(Multiple responses)	

2. LITERATURE REVIEW

2.1 Theoretical approaches

Two theoretical approaches were employed to analyze change in the governance structure, the local people participation and the physical legitimacy of the project structure and processes involved. In analyzing the change in governance structure, the environmental governance system framework developed by Vatn (2011), was used. While on the other hand, the structure process model was used to analyze local people's participation and legitimacy of the structure and process involved (Vedeld, 2002).

2.1.2 Environmental governance framework system

The environmental governance systems framework (EGSF) developed by Vatn (2005; 2011), has its roots in political economy with emphasis on institutional dimensions in relation to environmental resources. The framework was inspired by the work of Ostrom and her institutional analysis and development framework (IADF), (Ostrom, 1990). However on the resource attribute aspect, EGSF is informed by Young's work of the Institutional Dimension of Environmental Change (IDEC) especially with the "**fit**" concept which holds an assertion that if the resource regime does not fit the characteristics of the resource in hand, then there might be problems (Young, 2008).

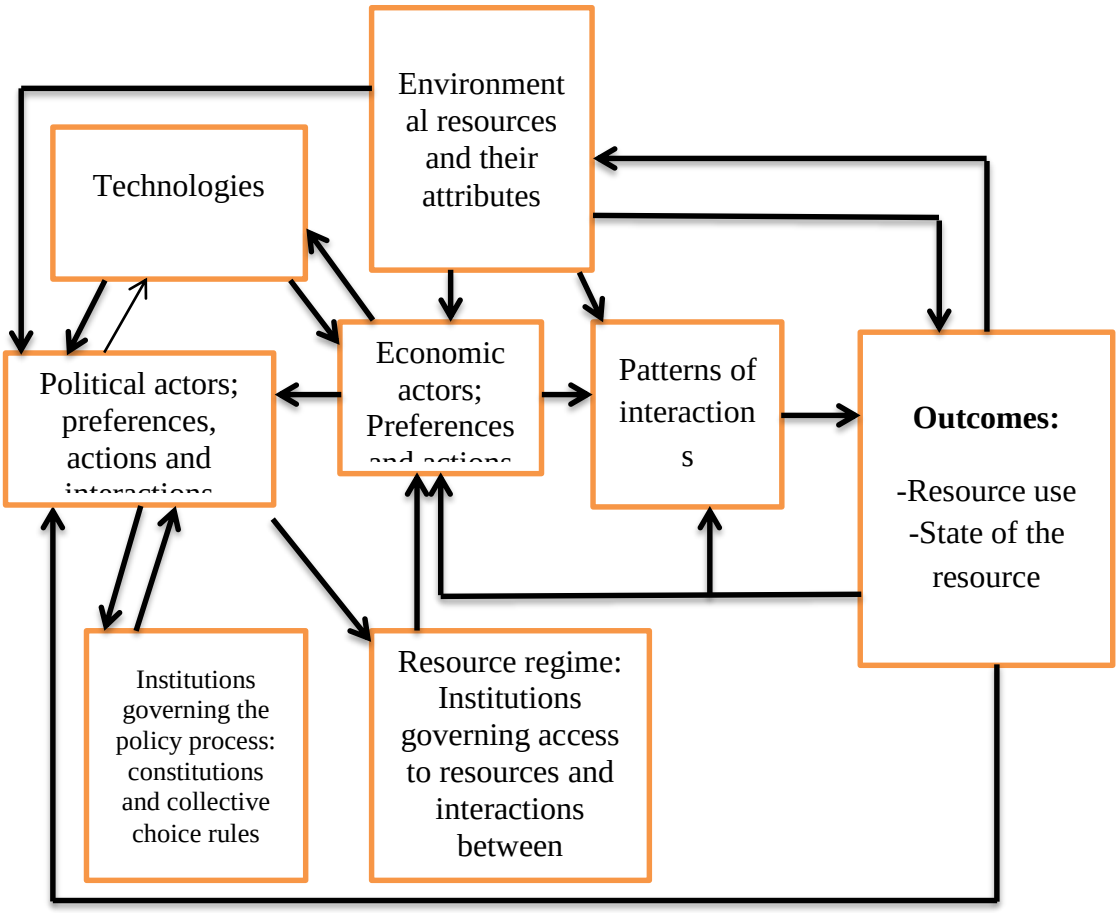

Figure 1: Framework for studying environmental governance system **(Source: Vatn, 2011)**

In this matter it is therefore assumed that the previous resource regime like Participatory Forest Management (PFM) to a large extent failed to fit with the resource at hand in forest carbon sequestration. One introduced REDD+ as a new regime and anticipated it indeed fit better with the characteristics of a resource (forest) in storing carbon. Therefore, this framework was used to analyze institutional and organizational changes undertaken for REDD+ to be implemented as a new mitigation strategy in reducing emissions from forest deforestation and degradation.

To make use of this framework it is six main concepts it includes: Attributes of the resource, infrastructure and technology for resource use; institutions governing the policy process including

constitutional and collective choice rules, formal and informal rules for resource regime; resource regime that gives access to resource and govern/facilitate interaction between actors; economic and political actors and their preferences; patterns of interaction between actors on choice of regime as well as outcome of interaction between actors governing the resource regime are explained below.

- **Attributes of Environmental Resources, Available Technology and Infrastructure**

Two aspects of the framework consists of the physical attributes of the environmental resource and the technology, here the technology and the infrastructure forms the most potential variable influencing the use of the resource. As the use of a specific resource depends much on how knowledgeable the user is on the characteristics and what type of technology is available to make possible the uses with the overall goal of avoiding forests deforestation and degradation, in this case the resource here is forests.

Therefore, technology and infrastructure influence actors on the choice of regime to be implemented. For example previously forest resources were heavily in pressure of use as energy source in form of fuel wood and charcoal due to lack of efficient energy source among local communities, therefore, as the results of improvement in technology he local communities are subjected to the use of sufficient and environmental friendly energy sources such as gas, improved cooking stove and electricity thus, reducing the pressure on the forest resources and behavioral change among the communities towards the resources (forest). REDD+ was therefore, REDD+ was introduced to reduce pressure on forest resources by offering alternative technology and infrastructure to bring about the perception that forests are not just there for fuel wood rather for other important functions for survival.

- **Institutions in General**

The term institution is hard to define as its definition differs across fields and disciplines, for instance, from sociological and anthropological disciplines the focus is on informal institutions, while economist tends to concentrate on the organizations and their formalized rules (Vatn, 2005; 2011). Given the multi-interpretations and the ambiguity of the concept “institution”, this study

therefore, in order to avoid dispute of meaning has borrowed the definition of institution from North's perspective that organizations are made up of groups of individuals bound together by some common purpose to achieve certain objectives (North, 1994). In this case organizations are considered actors regulated by the rule (institutions).

However, in his definition of institution Scott (1995), introduces three key concepts of **cognitive**, **normative** and **regulative pillars**. The cognitive part focuses on the mental structure, how to classify objects, giving them meaning and how to act on the defined domains. The normative pillar focuses on the implicit or value involved while, the regulative is concerned with the introduced reward and punishment to obtain a desired outcome. He asserts that institutions consists of cognitive normative and regulative structures and activities that provide stability and meaning to social behavior. Institutions are transported by various carriers such as culture, structures and routines and they operate at multiple levels of jurisdictions (Scott, 1995). Relatively, the definition of institution can be categorized into three groups; conventions, norms and legal rules which are important in the context of REDD+ policy on the choices and constitution of convetions, norms and legal rules (Vatn, 2005).

- **Institutions as Governing the Policy Process**

Institutions as governing the policy process are associated with the concepts of governance. Governance is more than government in the sense that it allows for collective decisions from different stakeholders. Governance is defined as combined different principles for collectives decision–making. Governance also reflects power relations in the society and issues from local to global level; hence it involves formulation of international treaties and national policies defining conditions for the activities of firms, households and individuals (Vedeld, 2010; Vatn, 2011).

- **Institution and institutional change**

According to Vatn (2011) institutions are seen as rules that make up a community and they are defined by habitual actions of individuals whereby there is a reciprocal on how individuals influence institutions as well as new institutions influence individuals. As observed earlier, institutions can be categorized into three types, norms, institutions as convetions and institutions

as legal rules. These three categories of institutions and institution's ability to influence individuals' choices are what termed as institutional changes. Therefore, institutional changes do cover both the process of changes in existing institutions and also the establishment of new institutions where there were no any institutions before. Vatn (2011) has grouped institutional changes into four groups namely; spontaneous institutional change. This non-intentional changes, designed institutional changes, a change here is intentional change aiming to increase efficiency at minimal transaction cost as well as institutional changes in response to interest; values, and/or power, (this type of institutional changes has its origin from the concept of property right), and the last type of institutional change, is institutional change as a reaction to crises.

2.1.3 Structure process framework in institutional and organizational change

This model was developed by Vedeld who borrowed some ideas from Ostrom's design of principle for long enduring common pool resource and structural life mode approach for local institutions to work well over time in management of natural resources (Vedeld 2002). In many ways this model for institutions analysis and local participation, has some similarities with our previous framework of analysis adopted from Vatn; some of the similarities are physical characteristics of a resource in hand and both have almost showed that, the physical attributes/structure can offer opportunity and limitation for the resource to be utilized, also available technology can have a great impact on the resource use. Another similarity of the two frameworks is actors, whereby, both assert that actors are the ones who make choice on various regimes to be implemented toward the resource in hand. Therefore, it will be easier to see the changes that will be happening post-REDD+ pilot project as a new regime, and how local communities did participate in various processes, as the structure framework to explicit emphasis changes from structure A to structure B after certain period of time, due to various processes taken to execute a new regime in an area, how local communities are involved in various process as well as the influence from external actors.

- **Local Participation and Legitimacy**

Local participation can be defined as the devolution of authority and power, resource, distribution of right and duties from state to local level of governance and from public to civil society (Vedeld,

2010). Devolution involves transferring policy formulation and policy implementation, power from central to local levels. And local participation in here has been put in two perspectives, local participation as a means to increase efficiency thereby, if local people are involved in projects they are more likely to agree and support the project at hands than if it could have been otherwise.

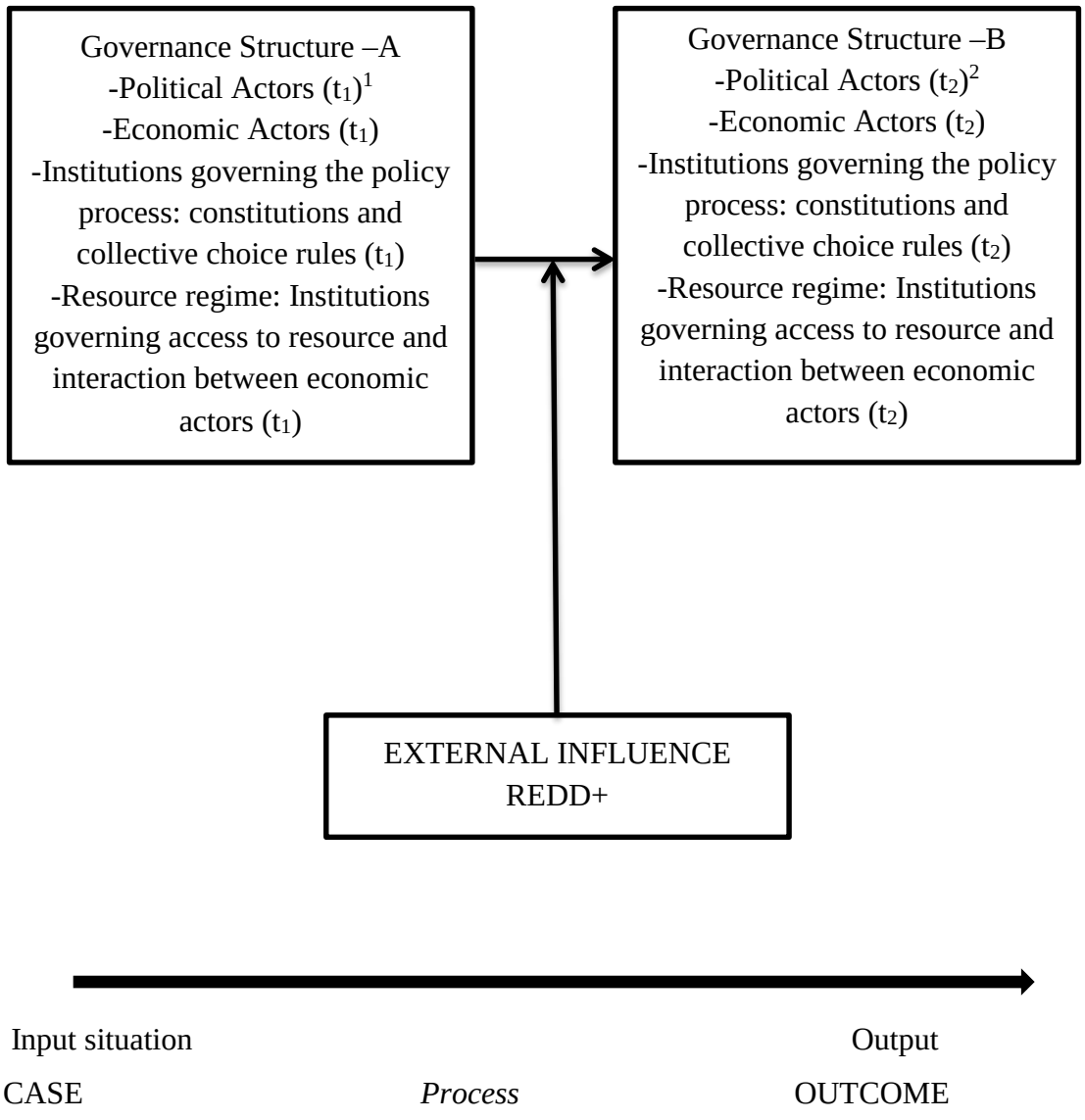

Figure 2: Modified framework for studying environmental governance systems.

(**Source**: Velded, 2002)

According to Vedeld (2002), participation can be seen as an instrumental and goal-oriented process, where key actors implement a particular resource regime and bring local change. The second perspective is the one in which local participation is seen as a right, where the main aim is to initiate mobilization for local and collective action, empowerment and institution building (Vedeld, 2002). Therefore, local participation has two sides one as a goal in itself and second as a means to reach other goals. And for the case of REDD+ it is important as; it aims to include local people or to reduce forest deforestation rate this depends on which sides the implementers were viewing local participation as means or right during the implementation phase.

2.2 Communities Attitudes about REDD

Attitudinal surveys have been used in many countries to assess the success of conservation programs, Fiallo and Jacobson (1995); Infield (2001), and it is hypothesized that, if high percentage of local residents having positive attitudes toward conservation it indicates forest conservation success. Community participation forms one of the potential building blocks for the efficiency of the Reducing Emissions from Deforestation and Forest Degradation (REDD) project. In order for local residents to cooperate with REDD, they must have a positive perception toward the forest conservation system and a positive attitude toward the forest conservation project (Ratsimbazafy *et al.*, 2012). However, Polido and Bocco (2014) asserts, that understanding, preventing and mitigating forest degradation at the local scale requires more than technical knowledge and perception by external agents such as agricultural advisors, foresters, government officials as well as development partners. Therefore, programs addressing forest degradation and conservation should not expect local communities to simply adopt suggested practices; rather they may support them to develop their own projects on the basis of their indicators and perception of forest degradation and conservation (Paré, 2008). Thus, the REDD implementing partners should not assume economic incentives that creates a value for standing forests will always translate into community's positive perception since the drivers of forest loss are strong, entrenched, and based on economic profitability and political advantageous activities (Agrawal and Gibson, 1999).

2.3 Participatory Forest Management

Participatory approaches in strategic planning and forest management were adopted relatively recently (in the 1980s) in developing countries compared to the traditional forest conservation management, and have become a central decision-making tool (Buttoud, 1999). Forest conservation generally used to be achieved through formally designating certain areas as reserves or protected forests. However, conserving forest diversity in the reserves, although crucial for credible conservation strategy, is not sufficient for protecting all the diversity because 92% of world's forests are outside formally protected areas (Lindenmayer *et al.*, 2006; Boffa *et al.*, 2008). This traditional conservation model pioneered in the USA has been replaced by the new approach of "participatory conservation" for several reasons. First, this approach is based on the recognition of the local communities' rights and increased integration of traditional knowledge and views in conservation policies (Colchester, 2004).

Traditional ecological knowledge has become relevant to contemporary sustainable resource management, understanding complex systems, and solving emerging issues like global and climate change (Ford, 2000 and Sen, 2005). Local knowledge of species decline and/or conservation is increasingly considered in forest conservation strategies Lykke (2000); Ouinsavi *et al.* (2005), even in rangeland and livestock forage plant management, Farooquee *et al.* (2004), as it is acquired over long periods of time. Such observations are important sources of information when developing sustainable management practices for natural resources in general, and forest ecosystems in particular (Stringer and Reed, 2007; Ssegawa and Kasenene, 2007; Tabuti and Mugula, 2007). Environmental NGOs have especially contributed to the advancement of local knowledge in international initiatives, such as the Convention on Biological Diversity (Dumoulin, 2003). Second, a remarkable attention has been given to the role of forests and forestry in poverty reduction strategies in recent years, as one aspect of the Millennium goals (UNDP, 2003). In general, forests and the forestry sector can contribute to poverty reduction by addressing subsistence and vulnerability, income generation, energy, as well as agricultural and rural development. In many developing countries, there is a high dependence of people on forest resources for multiple uses, Lykke (2000); Ræbild *et al.* (2007) however, this dependence may be crucial particularly for the very poor or landless farmers who often consume wild products to meet

their daily subsistence needs and to reducing the vulnerability to external shocks attenuate the need of consumption in time 21 of food scarcity (Shrestha and Dhillion, 2003).

Biodiversity conservation and poverty reduction can be effectively achieved by devolving ownership and management of forest resources to local communities, lifting excessive regulations over the use of forest resources, and increasing the political capital of the poor, which are the essence of participatory forest management. FAO (2001) highlighted the guidelines to allow the benefits to local livelihoods from people-centered forestry to include rights to access, control and use of forest and tree resources; more say in decisions over use and management of forest resources; reduced vulnerability, not only through secure forest resources but also political empowerment; income from forest goods and services; improved governance though more effective local institutions; partnership to enhance capacities; direct benefits from environmental services; and increased powers of negotiation.

The participatory approach of natural resource management and the concept of decentralization reforms in Africa took place over the last two decades (Ouedraogo, 2004). These reforms aimed to improve local management and development by transferring management responsibility and powers to local institutions (Ribot, 1999; Hermosilla, 2000). However, suitable conditions for more equitable and efficient management have not yet been established, Ribot (2003); Anderson *et al.* (2006) and the real incorporation of the local communities' priorities remains questionable (Ribot, 2001; Mwangi and Dohrn, 2008). For example, during for the past 15 years, several projects in forestry have been initiated in West Africa in cooperation with FAO, mostly focusing on fuel wood exploitation from the natural forests with local communities' participation (M.A, 2003). The results obtained in some forest exploitation areas by the project (from 2001 to 2004) are encouraging and in contrast with previous view of over-exploitation of natural forest McKee *et al.* (2005), while in some forest exploitation areas, such as Bougnounou-Nébielianayou, located in Burkina Faso, local capacities were reported improving in all aspects of the management including fire control, direct seedling, reforestation, extraction techniques, exploitation of non-wood products, and restoration of degraded soils. More generally, these experiences demonstrate that natural forest exploitation can contribute to poverty reduction strategies through income

generation and their diversification (exploitation of wood, raising, apiculture, fishing, market gardening) for the benefit of poor people (Munishi *et al.,* 2004).

2.4 Drivers of Forest Cover Changes

African forest and woodland vegetation types are occurring within the savanna biome, Menaut *et al.* (1995) and covers approximately 43% of the total area of the continent. They have been under exploitation for thousands of years as argued in, Murphy and Lugo (1986) due to their attractive environment, and consequently are the most threatened and less protected than other ecosystems (Mertz et *al.,* 2007). Tropical dry forests in Africa have often been preferred for human settlement for biological and ecological reasons: they are easier to cut for agriculture while, crop pests and weeds tend to be less aggressive, soils are often fertile, climate is more suitable for livestock as well as numerous food crops are more productive (Janzen, 1988). However, they are also subjected to disturbances such as cutting for charcoal and fuel wood, in addition to grazing and frequent forest fire (Savadogo, 2007). These disturbances constitute the major sources of forest and soil degradation in tropical Africa (Murphy and Lugo, 1995). Although, several studies in the past indicate that Africa is undergoing unprecedented forest degradation as a result of climate change and mainly change in land use activities (Lambin, 1999; Stephenne and Lambin, 2001; Darkoh, 2003).

Forests may be exploited for timber production, whereas grassland may be devoted to pastures, but in both instances land use is the main cause of changes in land cover. Land cover change can be classified as land cover conversion or land cover modification. Land cover conversion is the complete replacement of one cover type by another, whereas land cover modification refers to indirect changes that affect the character of land cover, but do not necessarily change its overall classification. Hence, land use is the modification of land cover type, an example of which would be the intensification of agricultural use (Wardell *et al.,* 2003). According to Veldkamp and Fresco (1996), land use is determined by spatial and temporal interactions between biophysical factors (e.g. soils, climate, vegetation and topography) and anthropogenic factors (e.g. population size and density, technology levels, economic conditions, the applied land use strategy, and social attitudes and values).

2.4.1 Economic Drivers

Economic activity is a consequence of human efforts to improve the quality of life, the outputs of which are determined by the number of natural resources (Nelson *et al.,* 2006). Although land use practices vary greatly across the world, the ultimate intention is largely the same; the acquisition of natural resources for immediate human needs, often at the expense of environmental conditions. By clearing tropical forests, practicing subsistence agriculture, intensifying farmland production, or expanding urban centers is changing the world's landscapes in pervasive ways (DeFries *et al.,* 2004). Globally, croplands and pastures are the largest biome on the planet, covering almost 40% of the land surface (Asner *et al.,* 2004). Most of the forest use practices, such as fuel wood collection, livestock grazing and road expansion; degrade forest ecosystems in terms of productivity, biomass, stand structures, and species composition, irrespective of whether such practices actually change the forested area (Foley *et al.,* 2005).

Furthermore, agricultural expansion is generally recognized as the primary economic driver of land cover changes in African dry ecosystems (IPCC, 2001; M. A., 2003; Carpenter *et al.,* 2006). Commercial wood fuel extraction adds into the economic drivers of land cover change, particularly in big town neighborhoods (Arnold *et al.,* 2006). Overall, the growth in human and animal populations, which in turn increases demand for food and forage crops, drives the expansion of cropland and pastoral land, respectively. On the other hand, Kuznets (1655) asserts that poverty and rapid population growth may pose a grim threat on the environment during the early stages of economic development, but this trend will be counteracted by later environmental quality improvements as incomes and living standards improve. However, this notion was highly criticized for overlooking species richness and the complex relationship between income per capital and environmental quality (Dietz and Adger, 2003).

2.4.2 Institutional and Social Drivers

Forests are affected by socio-cultural, policy and institutional issues. In attempts to understand the effects of culture as a driver of ecosystem change, it is useful to see culture as the values, beliefs, and norms that a group of people share (Cotton, 1997). In this sense, culture conditions individuals' perceptions of the world, influences what they consider to be important, and suggests appropriate

or inappropriate courses of action, nevertheless, cultural differences have important impacts on direct drivers of land cover change (Nelson *et al.,* 2006). For example, cultural factors can influence consumption behavior (what, and how much, people consume out of forested areas) and may therefore be a particularly important driver of environmental change.

Socio-political drivers are those forces that influence the decision-making process, and include the quantity of public participation, the make-up of participants in public decision-making, and levels of education and knowledge as well as the role of the State relative to the private sector. Where public involvement in decision-making is concerned, recent trends towards democratic institutions have helped to empower local communities, women, and resource-poor households. However, the relationship between a country and its position and role in the global economy has also been connected to environmental degradation (Ehrhardt-Martinez, 1998). For instance, deforestation may result from three types of dependency: export or trade dependency, debt dependency, and an influx of foreign capital. Globalization has also been involved to underlie those processes that affect tropical forest change through, for example, expansion and liberalization of the markets, and agricultural intensification (Diouf and Lambin, 2001). In addition, institutional factors, such as land tenure and legislation, can lead to forest cover changes in tropical countries (Feder and Feeny, 1991; Reid *et al.,* 2000).

2.4.3 Review of Forest Cover Change Drivers

Boserup and Multhus theories of population were used in this study to explain the trends in forest and land cover changes. The choice of Mulhus and Boserup for this study was based on the relevance of their theories in explaining the changes and make predictions for the future. This study also acknowledges the contribution of population growth in to land cover changes; for instance, the major driver of forest degradation is the conversion of forested areas to agricultural purposes.this study assumes that this is pre-determined by the tremendously increase in population.

Multhus and Boserup theories explain the influence of population growth on forest and land cover change. The exact role of population growth as a major driver of environmental change is strongly debated, with neo-Malthusian and Boserupian theories dominating the discussion (Perz *et al.,*

2006). According to Malthus (1989), population growth is a function of agricultural productivity. This theory is founded on the potential for human population growth exceeding the capacity of the available resources to sustain it (Ehrlich, 1968). Indeed, population growth is considered as a major cause of increasing demands for food, fuel wood, fodder, and other ecosystem services (Perz *et al.,* 2005). Furthermore, people often face additional challenges when population growth is recorded, including low economic growth and limited means of income generation outside the utilization of local ecosystem services. Conversely, the theory of Boserup (1965) suggests that agricultural development is a function of population increase, resulting in changes to production methods and improvements in land fertility. Hence, population growth is seen as a cause of prosperity, and agricultural intensification is mainly due to technological improvements that sustain population growth. She formulated her theoretical understanding of the relationship between population growth and agricultural change on historical Europe (Ningal *et al.,* 2008). Due to periodic famines and plague in Europe prior to the 18th century, the population was not large enough for the long-term benefits of more intensive agriculture. For that reason, more intensive methods, such as irrigation, were used in a few more densely populated areas.

Boserup asserts that agricultural intensification, or the gradual change towards patterns of land use which make it possible to crop a given area of land more frequently than before is an important mechanism for increasing production. In describing this development, she states that small sparsely distributed populations use the land intermittently, with heavy reliance on fire to clear fields and fallowing to restore soil fertility in the wide-spread practice of slash and burn farming. However, rising population density requires production concentration (output per unit of land per unit of time) to rise and fallow times to shorten. Thus, a growing population can use land more frequently and increase output by substituting technological inputs such as fertilizer or irrigation for fallow to retain soil fertility. If Boserup's theory holds, one can expect the degradation of forest quality due to wide-spread shifting cultivation practices when population is low, albeit better potential for recovery of secondary forests on abandoned fallows. At higher population level, the practice of fallowing is negligibly existed, thus leading to permanent change of the forest cover or simply deforestation. This, in turn, results in loss of biodiversity. However, direct examination of

these theories remains elusive, despite their importance, largely because of the complexity of human interventions and their various effects on ecosystems (Luck, 2007).

However, Boserup is criticized for depicting agricultural intensification as a universal process cross-cutting all environments, but her model relied heavily on agro-ecological features of fire and fallow that are hardly universal; i.e., the relationship between production concentration and efficiency (output: input) may be quite variable among environments. Social context affects both the demands for agricultural products and the relative efficiency of different production methods, which in turn vary culturally. Another important aspect missing in her model is the role external economic systems play in shaping agricultural change through its effect on the cost of inputs and value of output beyond local energetic.

Above all the variation in farmers' ability to intensify agriculture as they wish or totally resorting into another alternative to intensification (mainly migration) is totally overlooked. Bilsborrow (2002), developed an alternative approach based on demographic-economic responses to migration. This recent approach emphasizes cultural and political factors when assessing population impacts on the environment (Perz *et al.,* 2005). Indeed, the importance of policy factors in land use change were illustrated in Veldkamp and Lambin (2001), who suggested that international environmental treaties, such as the Kyoto Protocol, may drive significant changes in global land use. This evolution of the land use concept has favored models that capture the inherent complexity of population dynamics more completely, while also allowing the analysis of future trends (Kummer and Turner, 1994; Veldkamp and Fresco, 1996; Stephenne and Lambin, 2001). For instance, the simulation model of land use change in the Sudano-Sahelian region (Stephenne and Lambin, 2004) identifies pastoral lands, together with natural vegetation and croplands, as the land use types that generate the population's basic resources. Nevertheless, Miles *et al.* (2006), reported that virtually all tropical dry forests are exposed to a variety of threats that are largely caused by human activities. Consequently, population growth and food production increases the pressure on ecological systems, and is a major environmental concern in tropical countries (Nagendra *et al.,* 2004; Wright, 2005; Etter *et al.,* 2006 and Pacheco, 2006).

3. RESEARCH METHODOLOGY

3.1 Description of the Study Area

This study was conducted in Kondoa District. The district is one of the five districts of Dodoma Region. Kolo hills is located in Kondoa district, Dodoma region in north-central Tanzania. Kondoa district lies between 5º 0' S and 35º 45' 0 E and consists of 28 wards[1]/sheia with a total population of 269,704 persons (Kajembe et al., 2012; NBS, 2013). Kolo Hills has a population of about 62, 000 from 14,000 households Five villages (Mnenia, Puhi, Kolo, Mitati and Kisese Disa) which are adjacent to Kolo Hills were included to participate in this study; Mitati and Kisese Disa opted out during the intervention while Mnenia, Puhi and Kolo were the pilot villages. Kolo Hills forest area, where the African Wildlife Foundation (AWF) is currently implementing a REDD pilot project titled Advancing REDD in Kolo Hills Forest (ARKFo) is a semi-arid zone typified by Miombo woodlands vegetation. The project area approximately covers an area of 56 291 hectares and includes 21 villages. The project area includes three government protected forest reserves; Salanka (8 337 ha), Isabe (4 249ha) and Kome (4 047 ha) as well as 5397 ha of community managed forests. (Campese, 2012).

The target project area coverers 19,924 hectares of community and 10,114 hectares of government land which are inside forest reserves. So in total adding the reference area and leakage belt, the total project area covers 71,632 hectares (Matilya, 2012). There are three government forest reserves; Salanga (8,337 ha), Isabe (4249 ha) and Kome (4,047 ha) all falling under the jurisdiction of Kondoa district council (AWF, 2012).

Out of 21 villages located in the project area, 15 of them are forests government land while in 6 are on community/village land. Villages which were selected for the study includes, Mnenia, Kolo, Puhi, Kisesedisa and Mitati. The first 3 completed without major problems were selected randomly, while the remaining 2 were selected purposely to give insights on the issues and sources of conflict and to better understand the variations between villages.

[1] Tanzania is administratively divided into regions, districts and then into sub-districts and further into wards/sheias. The wards are finally divided into streets for urban wards and villages for rural wards.

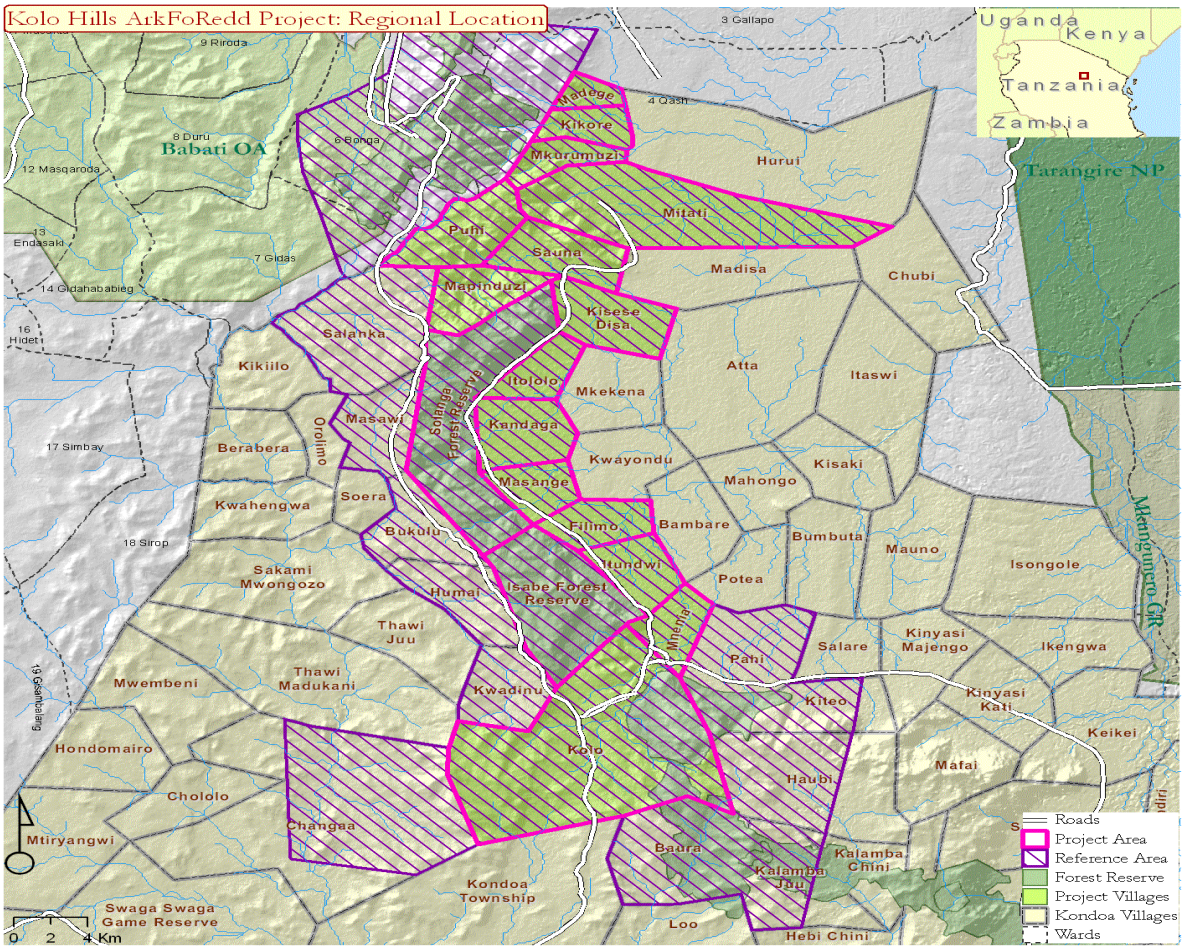

Figure 3: Location of project villages and government forest reserves

(Source: AWF, CAMCO, Kondoa District)

Table 2: Characteristics of Study Villages.

Source: Field Data collection 2014.

Village	Population (Census 2012)	Forest ownership	Forest condition	Stage in REDD + process	Experience (PFM with AWF and district since 2007)	Walking distance from the forest (mins)	Walking distance from local market (mins)	Distance from major external market (mins by car)
Mnenia	4046	Government	Above average	Completed	Yes	15	3	90
Kolo	4035	Has both government and community owned forest	Above average	Completed	Yes	10 (for both forests)	0	90
Puhi	2408	Community	Below average	Completed but not paid	No	35	15	30
Mitati	4912	Community	Below average	Opted out at land use planning	No	45	>60	35
Kisesedisa	3080	Government	Below average	Opted out at introduction meeting	No	15	10	45

As shown above in table 2, the villages population ranges between 2000 to 5000 dwellers. The forest in Mnenia is on government land, while Mitati and Puhi have forests on village land (community forest). Kolo has government forest but also has a village forest within its boundaries. 3out of 5villages selected for study villages completed the REDD+ process. But Puhi did not receive their trial payments because it did not meet the set criteria and the condition of its forest had worsened. In general, the forest conditions were better in villages that completed the REDD+ process than the others. Out of 5 only two villages, Kolo and Mnenia had previous experience working with AWF and the district on participatory forest management. Apart from Puhi and Mitati, the rest of the villages are within at most 15-20 minutes walking distance to the forest. The local markets are also close apart from Mitati where it takes more than an hour. The villages which completed the process successfully in my study (Mnenia, Kolo) requires at least an hour or two to reach Babati town which is the major external market(not so easy leakage). On the other hand, those that were not so successful (Puhi, Mitati and Kisesedisa) require less than one hour to reach the external market (Easy for leakage).

3.1.1 Population and Human Activities

Kondoa District has a population of 269 704 people (136 518 male and 133 186 female). There is an average household size of 4.8 persons per household (URT, 2012). People around this area depend almost entirely on agriculture with some animal husbandry for their livelihood: The agricultural crops cultivated include maize, sweet potatoes, millet, finger millet, legumes, soya, sunflowers and cassava and these crops are grown as a mono-crop and sometime inter-cropped while common domestic animals in this area include goat, cattle and donkey. People in this area also harvest forest goods like firewood, poles, medicinal herbs, wild mushrooms, wild fruits and wild vegetables to supplement their daily livelihoods. Therefore, as climate change continuing to threaten the agricultural sector; the focus is now changing rapidly to exploitation of forest goods and services for livelihood gain such as charcoal production, logging as well as bee hiving, which adds pressure on the forest eco-system (Mdemu, 2012).

3.2 Research Design

Cross-sectional research design was used in this study. The design allows data to be collected at a single point in a time (Olsen, 2004). This design was chosen on the basis of its merits in involving groups of people who differ in the variable of interest, but share other characteristics such as socio-economic status, educational background and ethnicity; it allows researchers to look at numerous things at once, e.g. Age, income and gender. They often used to look at the prevalence of something in a given population, while it does not involve manipulation of variables. A cross-sectional design is also suitable for describing characteristics that exist in a population and in examining the relationship among variables (Bailey, 1994).

3.3 Sampling Procedures

A purposive sampling of five villages (opted in: Mnenia, Puhi, Kolo and opted out: Mitati, Kisese Disa) was done based on accessibility and proximity to the Kolo hills forest. Simple random sampling technique was used to select a total of 150 household and from each; a household head or spouse to the household head was enumerated during the survey as they are the decision makers for the households in the utilization of forest goods. Therefore, from 82 randomly selected households in opted-in villages 31 households belonged to Mnenia Village while, 30 and 31 were in Kolo and Puhi Villages respectively. On the other hand, 68 households were also randomly selected from two opted-out villages whereas, 40 were in Mitati and 28 Kisese Disa.

3.3.1 Sample Size

According to Kothari, (2004) the following sample determination formula was used to generate a sample size to be used in this study.

$$n = \frac{z^2pq}{d^2} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

Where:

n =sample size in the study area when population > 10 000.

z = Standard normal deviation, set at 1.96 (2.0 approximate) corresponding to the 95% confidence interval level.

p = Proportion of the target population (50% if population is not known).

q = 1.0 – p (1-50) (1-0.5) = 0.5

d = degree of accuracy desired, (set at the 95% equivalent to 0.05)

Therefore:

$n = \frac{(2)^2(0.5)(0.5)}{(0.05)^2}$ = 4 (0.25)/0.0025 = 400

Based on the above formula, the sample size for this study was supposed to be 400 respondents, but due to limitations in time, fund and other resources 38% of the cases were selected for this study. Therefore, 150 respondents were decided to participate in this study, the selection of 150 respondents was based on the fact that a sample of 30 respondents, according to Bailey (1994) irrespective of the population size is bare minimum for a study in which statistical analysis is to be done while, Kumar (2005), asserts that a sample size of between 80 and 120 respondents is suitable for rigorous statistical analysis. This has vindicated the choice of 150 cases for this study.

3.4 Data Collection and Tools

This study used only primary data. According to Kothari (2004), primary data are first-hand information that are directly collected by the researcher from original sources and assembled specifically for the research project at hand. Data was collected in February 2014 through qualitative and quantitative methods. For qualitative structured with closed and open questions were used in 5 villages. 75% of the respondents were randomly selected from the village attendance sheet of REDD+ meetings and 25% randomly selected from village list (those who did not attend the REDD+ meetings).

3.4.1 Household Survey Questionnaire

Primary data were collected using the structured questionnaire containing both open and closed-ended questions. Closed-ended questions were used because they ensure uniformity of responses and were easy to code and amenable to statistical analysis. Closed-ended questions were simple to answer as respondents were able to provide answers quickly due to the fact that the provision of alternative replies helped to make clear the meaning of the questions. On the other hand, open-ended questions such as *"others...please specify"* were used because they permit free responses

from the respondents, whereby respondents were able to explain, comment or qualify their responses without being limited to certain stated alternatives. However, open-ended questions were used barely, Kothari (2004) asserted that open-ended questions are difficult to handle, interpret, compare and are subjected to interviewer bias. At this juncture, attention was also paid to make the schedule informative in the sense that covered all necessary information needed and the logical flow of questions was maintained throughout the questionnaire development.

Lastly, the questionnaire was verbally administered by the researcher. The reason behind emanates from Kumar (2005); Kothari (2004) assertions that personally administered questionnaires are applicable to rural populations in developing countries. Furthermore, the questionnaire was used on its following merits: firstly, presenting all the respondents with the same standardized questions yields uniform and consistent responses; secondly, it is potential when respondents are scattered over a wide geographical area and lastly, a questionnaire is the better choice as it guarantees anonymity. In this regard it should be noted that anonymity ensures protection of the subjects' identities, interests and their future well-being: if the study is about issues that respondents may feel reluctant to discuss with an investigator, a questionnaire may be the better choice as it ensures anonymity (Kumar, 2005). Additionally, focus group discussions and key informant interviews with District executives, village executives, AWF staffs and members of village natural resource committee were used to collect qualitative data.

3.5 Data Processing and Analysis

Before data analysis, editing and coding of the data was done to make the data amenable to analysis. Quantitative data was analyzed using Statistical Package for Social Sciences (SPSS). Both descriptive and inferential statistical analysis was performed: Descriptive analysis including frequencies, percentages, means, and standard deviations as well as maximum and minimum values were calculated and used to summarize data into understandable and meaningful form. Furthermore, a chi-square test was used to establish the relationship between socio-demographic characteristics of the respondents and their awareness of the REDD+ (specific objective one), while a Likert scale of ten Likert statements was used to capture how the local community perceive REDD+. Additionally, an Independent Sample T-test was used to compare perceptions of the

respondents from opted-in and opted-out Villages (specific objective two). Objectives three and four were analyzed descriptively.

4. RESULTS AND DISCUSSION

Before presenting the identified institutional and organizational changes initiated by AWF, I would like to show the table that describes/elaborates the Actors, rights and duty structures and institutional framework for implementing REDD+ from international level to local level so that it becomes easier to asses/evaluate AWF adjustments and initiatives in Kondoa pilot project (ARKFo).

4.1.1

Table 3: Actors, rights and duty structures and institutional framework for implementing REDD+

Actor structure	Rights, duties and responsibilities	Regulations
International level		
Norwegian Ministry of Foreign Affairs(MFA)	Funding the project; Assisting AWF in financial management by training and offering technical advice	Contract between AWF and MFA
National level		
Vice President's office; Division of Environment	Formulation and regulation of environmental policy; Coordination, monitoring and implementation of environmental policy	Environmental Management Act 2004; National Environmental Policy 1997
Forest and Bee keeping division in the Ministry of Natural Resources and Tourism (FBD-MNRT)	Formulation and execution of all legislation within forestry and beekeeping; Managing forest resources including collecting revenues;• Rehabilitating degraded areas;• Providing extension services	National Forest and Beekeeping policies of 1998; Forest Act 2002 and Beekeeping Act 2002
National Land Use Planning Commission	Preparing regional physical land use plans; Formulation of land use policies; Set standards, norms and criteria for sustainable management of land	Land Use Planning Commission Act No.6 of 2007

Sub-national level		
Regional Administrative Secretariat	Linking ministries and departments to District Councils; Facilitating the work of district councils by for example providing them with information and guidance and reporting back to the FBD-MNRT	Regional Administrative act 1997; Local Government (Miscellaneous Amendments) Act 2006
District Council	Formulating supervising and implementing forest management programs; Making bylaws and approving bylaws from village councils; Protecting the environment by regulating production activities; Guiding and advising village councils in the making of land use plans; Solving land related conflicts that have failed in lower levels	Local Government (District Authorities) Act 1982, Local government (Urban authorities) Act 1982; Village Land Act 1999; Local Government (Miscellaneous Amendments) Act 2006
District Natural Resource Office	Coordinating REDD+ activities e.g. land use planning; Providing technical support and policy guidance; Participating in training and capacity building for communities; Monitoring forest management programs; Ensuring that national regulations and district bylaws are abided with; Collecting revenue and patrolling for illegal use	Regional Administrative Act 1997; Local Government Reform Policy 1998; Forest Act 2002
Local level		
AWF	Implementing REDD+ by coordinating all partners involved and	Contract between AWF and MFA

	managing funds; Building capacity of local communities, district officials and civil society on REDD+; Providing lessons to support development of national policies;, Reporting to the MFA about the effectiveness, impacts, risks and lessons	
Consultants	Capacity building and technical advice	Contract between AWF and MFA
Ward Development Committee	Ensuring implementation of decisions, policies and development schemes of the district council by coordinating, supervising activities and disseminating information; Formulating and submission to the village councils or to the district council, of proposals for the making of by-laws	Local Government (District Authorities) Act 1982, Local government (Urban authorities) Act 1982; Local Government (Miscellaneous Amendments) Act 2006
Village Natural Resource Committees (for community forests)	Managing village forest reserves; Reporting to the village assembly on its management of the village land forest reserve and taking account of the views of the village assembly; Preparing forest management plans	Forest Act 2002
Inter-village Natural Resource Committee – JUHIBECO (for	Managing forest reserves in villages that share government forests; Reporting to the village assemblies on its management of the forest reserve and taking account of the views of the	Forest Act 2002

government forests)	village assembly; Preparing forest management plans	
Village Councils	Planning, coordinating and implementing tasks and programs that contribute to the social and economic development in the village ('such as REDD+'); Negotiating and participating in joint forest management agreements other village councils, persons or organizations by establishing joint village land use agreements; Making bylaws by presenting proposals to the village assembly and thereafter submitting them to the district council for approval; Making proposals to village assemblies for demarcation, management and use of communal lands; Solving conflicts over village land; Creating village land forest reserves; Establishing village natural resource committees for managing forest reserves	Local Government (District Authorities) Act 1982, Local government (Urban authorities) Act 1982; Village Land Act 1999; Land Use Planning Commission Act 2007; Forest Act 2002; Local Government (Miscellaneous Amendments) Act 2006
Village Assemblies	Supreme policy and decision making authority of the village	Local Government (District Authorities) Act 1982, Local government (Urban authorities) Act 1982; Village Land Act 1999; Local Government

		(Miscellaneous Amendments) Act 2006
Villagers	*Duties* Implementing management plans; Assisting in the enforcement of rules or forest management by-laws *Rights* They have rights to enter, occupy, use and harvest produce of the forest jointly with other villagers in accordance with the terms forest management plan, by-laws, rules, agreements or customary practices; The right to exclude non-members of the village land from forest reserve unless they have obtained a license; They have a duty to pay tax or other levy imposed by the village council to assist in meeting costs of managing and developing the village land forest reserve; Cannot transfer any existing rights within the village land forest reserve to a non-member. They have a duty to comply with any decisions of the relevant authorities such as the village council	Forest Act 2002

(Source: Field Data**)**

4.2 Institutional and Organizational Changes After REDD+ Introduction

This section presents the identified institutional and organizational changes that were adjusted by the AWF prior and post to the REDD+ pilot project in Kolo hills, Kondoa District. The process includes starting point when AWF approached the villagers through Free-Prior-Consent. As well as establishment of natural resource committees at village level, introduction of alternative income generating activities, formulating the by-laws as well as establishing land use planning.

Collaborations or interactions' between AWF and Kondoa communities started at the proposal development stage in 2009 with an introductory meeting with the village councils. On these meetings, district and village leaders were given the first information about the proposed project, they gave their consent/approval and promised to inform the communities at their respective village assemblies and consult AWF about the village decisions (which they did). After the project got initial funds for trial payments, AWF launched REDD+ in January 2010 in an official ceremony where the district, WARD, village leaders and Member of Parliament from Kondoa district was invited. The information about the project were given to the attendances and all questions were answered by AWF. Then, AWF met with the village councils in a second round for an introductory meeting. If a particular council agreed with the proposals from AWF, they called a general assembly where AWF and public officers introduced the idea to ordinary villagers. At the village assembly, AWF and the district officials explained about environmental conservation, climate change, how REDD+ could help to mitigate it, what the contribution and benefits of the villagers could be as well alternative income generating activities. If the village assembly accepted the project, they would decide to join or not by voting.

Out of 21, two villages (Kisesedisa and Itololo) opted out at the village assemblies during this stage. Athough Itololo was not in my study of five villages. During the FGD I found out that Puhi also experienced problems because some few village leaders from the council disagreed with the idea during their second village council meeting with AWF however they did not raise their concerns openly in this meeting. Instead, they silently refused to invite the villagers to meet with AWF. This prompted the District Commissioner to write a letter to the Village Chairman asking

him to cooperate. Even then, our interviews with the village members both in focus group discussions and surveys revealed that residents of Puhi had insufficient information about REDD+ due to their village chairman own intentions.

4.2.3 Establishment of Villages Natural Resource Committees

Post to the establishment of the AWF REDD+ pilot project in Kolo hills, Kondoa natural resource committees were initiated at village level. Although since the early 1990s there were committees (Village social services committees) responsible for forest and environment in general but the committee was overloaded with a lot of duties and most of them were dormant and not active enough to protect forests from being damaged by either way. However, prior to the introduction the REDD+ pilot project these committees were merged to have a village natural resource committees and strengthened. The committee structure is comprised of fourteen members of which six are security guards and the rest ordinary villagers and the committee is led by chairperson and secretary and all members are selected by the general assembly. The role of the committee among others includes educating the community on environmental conservation methods and benefits, preparing action plan on how the community can get easily fuel wood energy from the forests in a sustainable manner, to enforce the by-laws enacted by the general assembly as well as emphasizing on tree planting in the homestead. One villager was quoted saying *"at the beginning there were no payment issued to us but we thank the AWF for considering rewarding us with allowance, though small but it gives a reason to continue protecting our forests"*

4.2.1 Introduction of Alternative Income Generating Activities

Apart from the consent, land use planning and payments, income generation[2] and enforcement activities were also components of REDD+ implementation. However, unlike the first three, the latter did not involve the entire community. Income generation for example involved groups of demonstration farmers who self-selected themselves into activities of their choice

[2] Although Kisesedisa opted out, AWF continued to work with them on this component

Scarcity of forest eco-system goods and services which served as livelihood sources to forest dependent communities in Kondoa is an inevitable outcome of the introduction of the REDD+ pilot project. However, that was well taken care of by the AWF which capacitate and assist the community in identifying the alternative source of livelihoods (income generation activities). Therefore, the alternative livelihoods sources introduced among others were farmers groups (farmer field school), conservation agriculture, sustainable stove making, bee keeping groups and livestock keeping (local chicken), tree seedling and planting trees in the home stead, sustainable charcoal making as well as sustainable brick making. These livelihoods options were in some villages established in order to reduce the dependency in forest good for livelihoods. In support of this one focus group discussant was quoted saying *"the project was well introduced to us, all villagers were informed and decided freely to join the project we were informed that our access to forests will be restricted however there will be plans in introduce alternative livelihoods sources and sustainable harvesting of forest eco-system good and I see that working now" Discussant from Kolo.*

4.2.4 Formulating the By-Laws

For the sake of protecting the forests for carbon sequestration there must be restrictions to limit people's access to forest areas therefore, to succeed its effective implementation AWF and the village natural resource committees formulated the by-laws. The by-laws among others, introduced patrol in the villages by using the security guards, introduced fines and penalties to any person that will trespass to the forest without permission and other illegal forest activities for instance, the by-law has imposed a 50000 Tanzanian shillings for any illegal lumbering activities and charcoal making and 5000 Tanzanian shillings for collecting fuel wood without permission, on the other hand, the by law has enacted a special day for collecting fuel wood in respective villages that is Saturday and Sunday every week however, upon permission through either a letter or permission card from the committee any person is allowed access to forests irrespective of the allocated days. Before, REDD the rules were not harsh to reduce illegal forest uses and the state owned forests were considered open access. So the rates of illegal activities in the forest were very high. Also by-laws on LUP which will be explained in LUP.

4.2.5 Introduction of Land Use Planning

The villages which accepted the AWF REDD+ project continued by electeng 2 representatives each, a male and female to the Village Land Use Planning team (VLUM) appointed by villagers. The VLUM team worked with a technical committee from the district council. The process began with training of the VLUM teams and village leaders on land use planning and REDD+ concepts. The VLUM, technical land managers and village leaders first surveyed the villages and then demarcated and subjected to different uses for instance forests reserves, agricultural areas, fuel wood collection areas, cemeteries as well as residential areas was allocated to different zones. Allocation of these zones was done by the village council; members of village natural resource committees, AWF personnel and any other villager who was willing to participate were invited. Post this process village councils prepares a draft for new proposed village boundaries including the size of forested areas to be identified as REDD+ forests as well as preparing for the by-laws to make this agreed land use planning bind. For village forests, bylaws were drafted by Village Council, and then approved by the general assembly. For villages bordering government forests, each Village Council drafted bylaws, they were approved by village assemblies and signed by the inter-village council (JUHIBECO). Mandated by the law to enable joint management of forests, JUHIBECO was composed of two elected representatives from each of the villages bordering with the government forests.

After the bylaws were ready and the demarcation complete, land use plans were prepared by the PLUM team, taken to village general assemblies for approval and then sent to the District Council for comments and approval. They were then forwarded to the Ministry of Lands for gazettement.

AWF prior to the introduction of the REDD+ intervention emphasized on the Participatory Forests Management (PFM) through which all villages land was surveyed and subjected to different uses. In support for this one villager was quoted during FGD saying *"Any villager was allowed access to participate in the land use planning, and we are happy about it since prior to REDD+ there was no proper land use practices no land was identified as for settlement nor cemetery and this is the good thing about AWF REDD+ pilot project" Village official from Mnenia*.

4.3 Socio-demographic Characteristics of the Respondents

The environmental/forest management is predetermined by a number of socio-demographic characteristics of a particular place. These include age, education, sex and family size among others. For instance, age is highly celebrated with the use of forest resources. It is at the active labour age that someone can rely heavily on forest resources. Mugarura (2007) asserts that due to lack of agricultural land among youth they have turn to forest as their main livelihood option by making charcoal and timber. He argued that forest eco-system forms one of the alternatives for youth when their agricultural activities failed to meet their anticipations. Therefore, in relation to REDD + intervention these characteristics are discussed in details below.

4.3.1 Age

Results from the study reveal that, the mean age was 46.2 years while, 24 and 80 years were the minimum and maximum ages respectively. On the other hand, 31.3% of the respondents were aged between 41 and 50 years and 22% were at the category of 51-60 compared to 10.7% of the respondents between 21 and 30 years. From the findings above it can be noted that although youth did not constitute a major part of the sample decided for this study but the implication is if the young generation did not get enough land for agriculture the remaining valuable livelihood option might escalate the illegal forest uses where there is restrictions or rather cause leakage n unprotected forests nearby them (Table 1).

4.3.2 Sex

Results as presented in Table 1 indicate that majority 65.3% of the respondents involved in this study were male compared to 34.7% female. Female respondents were few compared to male which shows an economic and social differentiation in the community. It can be noted that this might have been influenced by culture or some of the religious beliefs. For instance in many Muslim societies such as that of Kondoa women are culturally not allowed to engage with visitors prior to their spouses' consent (Haapanen and Mhache, 2013). The researcher has noted men's reluctance to let their wives being enumerated in their absence. This had directly affected women participation in this study. On top of this, many societies in Tanzania are patriarchal where heads of households are normally men, therefore, male are having greater opportunity to be targeted

compared to their counterpart. In relation to e use of forest services this dominance portrayed by men implies that women part of experience might have been overlooked since women are more affected if REDD+ would mean reduction in some of the forest products such as fuel wood, wild vegetables and fruits.

4.3.3 Marital Status

Results in Table 1 further indicate that majority 88% of the respondent involved in this study were married while, just few 4.7% were single and 2% were separated.

4.3.4 Household Size

Household size ranged from 1 to 13 persons per household while the mean household size was 6 persons however, this finding is slightly different from that of 2012 Tanzania housing and population census which reported an average household size of 5 members in Kondoa district (URT, 2012). On the other hand, more than half 54.7% of the household involved in this study had between 5 and 9 members while more than quarter 32.6% had below four (<4) members, compared to 12.7% above ten (>10) members per household. Lui *et al.* (2009) acknowledge that there is a significant association between the household size and the extent to which forest ecosystem goods are extracted: he argued a place where there is big household size experiences severe forest and land degradation compared to where household size is low. Similar observation was reported by (Mugarura, 2007).

4.3.5 Education Level

Education is important items in every aspect of human life; its lack may lead to the society to suffer a number of developmental and environmental setbacks (Manonga, 2013). From Table 1 it can be noted that, majority 87.4% of the respondents had primary education (82.6% and 4.7% primary education 7 and 4 years respectively) while, 6% had no formal education. Similar finding was reported in Agea *et al.* (2011), who asserted that, such education status is typical of many rural areas in Tanzania and sub-Sahara Africa in general. These results suggest that although, majority of the inhabitants are literate they cannot afford formal employment therefore, their livelihood

options are limited to agricultural activities and animal husbandry but as the impacts of climate change escalate, the promising option will always be extraction of forest eco-system goods and services such as wild fruits, vegetables, honey, poles, firewood, charcoal and medicinal plants for both commercial and home use purposes. This can impact the REDD demarcated forests and therefore distorts the whole meaning of conservation if people are not trained of improved farming and animal husbandry practices nor sustainable forest harvests.

4.3.6 Main Occupation

Results as presented in Table 1 reveal that majority 76% of the respondents involved in this study were practicing agriculture while, less than quarter 20.7% were practicing both agriculture and animal husbandry, just few 3.3% had reported engaging in petty trading. It can be noted that majority were farmers and livestock keeper occupations that are lamented by many to put pressure on sustainability of forest ecosystem. For instance, Lui *et al*. (2007) holds that, in developing countries residents are often converting forests into agricultural land and intensively cultivate land without supplying additional nutrients in some cases for more than 100 years. Therefore, soil degradation with the resulting decreases in crop yields and greater food insecurity hastens conversion of remaining forests to agriculture and grazing purposes.

Table 3: Socio-demographic characteristics of the respondents (n=150)

Table 4: Social demographic characteristics of respondents

Variable	Category	Frequency	Percent (%)
Age	*21 - 30*	*16*	*10.7*
	31 - 40	34	22.7
	41 - 50	47	31.3
	51 – 60	33	22
	> 60	20	13
	Total	**150**	**100**
Sex	Male	98	65.3
	Female	52	34.7
	Total	**150**	**100**
Marital Status	Single	7	4.7
	Married	132	88
	Divorced	1	0.6
	Separated	3	2
	widowed	7	4.7
	Total	**150**	**100**
Household Size	< 4	49	32.6
	5 - 9	82	54.7
	10 & >	19	12.7
	Total	**150**	**100**
Education	Primary (7 years)	124	82.6
	Primary (4 years)	7	4.7
	Secondary	10	6.7
	No formal education	9	6
	Total	**150**	**100**
Main Occupation	Farming	114	76
	Petty trading	5	3.3
	Farming and livestock	31	20.7
	Total	**150**	**100**

4.2.7 Size of Agricultural Land Owned

The agricultural land owned ranged from 0.5 to 24 acres. The majority 64% of the respondents owned < 5 acres compared to more than quarter 28.6% who owns 5.5 to 10 acres. Relatively, just few 3.3% had reported owning > 17 acres. Despite the discussion above an independent sample t-test was used to compare sizes land owned between pilot and control villages. The results indicate that there were slight differences for the pilot (Mean=5.0, Standard Deviation= 2.8) and control villages (Mean= 6.1, Standard Deviation= 5.0). Therefore, a t-value (-1.639) and a degree of freedom (148) were statistically insignificant (p=0.103) implying that there was no statistically significant differences in land size owned between participated/ pilot and not participated villages.

Table 5: T-test between participated and not participated villages

Categories	**Village status**				**Total**	
	Participated villages/Pilot		**Not Participated Villages**			
	n	**%**	**n**	**%**	**n**	**%**
< 5	53	64.6	43	63.2	96	64
5.5 - 10	27	32.9	16	23.5	43	28.6
11 - 16	1	1.2	5	7.3	6	4
>17	1	1.2	4	5.8	5	3.3
	n = 82		**n = 68**		**n = 150**	

T-test results: t= -1.639, df= 148 and p= 0.103

4.3 Community's Awareness of REDD+ Initiative

4.3.1 Awareness

Table 2 shows that, a majority (92%) of the respondents involved in this study were aware of the REDD+ intervention. However, this study assumes that, this awareness should not be translated into hundred percent understanding of the REDD+ since the respondents failed to give robust replies when asked about what the intervention is all about. On the other hand, 32.6% and 23.2% of the respondents at the age categories of 41 - 50 and 51 – 60 years respectively, reported to be

aware of REDD+ compared to 33.3% and 25% their counterpart between 31 and 40 and 21 to 30 years respectively. Nevertheless, a Chi-square test revealed that there was no statistically significant influence (χ^2 = 5.279 and p>0.05) of age on awareness of REDD+.

A majority of 66.7% male respondents were reported to be aware of the REDD+ initiative compared to 33.3% female. On the other hand, half 50% of both male and female respondents reported to be unaware of the intervention. The above results suggest that men were more aware compared to the counterpart. This might be attributed by the fact that men are always actively participating in village general assemblies and other village meetings than their counterpart. However, a Chi-square test revealed that there was no statistically significant influence (χ^2= 1.354 and p>0.05) of respondents sex on awareness of the REDD+ initiative. Similar observation was made in Sylvander (2010) who asserts that men are considerably more often acquainted with REDD+ compared to their female counterpart.

A Chi-square test further revealed that there was no statistically significant influence (χ^2=4.999 and p>0.05) of marital status of the respondents on awareness of REDD+ whereby, 89.1% and 4.3% of the married and widowed respondent were aware while, 75% and 16.7% of the married and unmarried respondents reported to be unaware.

84.1% and 7.2% of the respondents completed primary (7 years) and secondary education correspondingly reported to be aware of the intervention when compared to 25% and 66.7% of the respondents primary (7 years) education and with no formal education respectively who reported to be unaware of the REDD+. Despite the discussion above, a Chi-square test revealed that there was statistically significant influence of respondent's educational status on awareness of the REDD+ intervention at χ^2 of 9.497 and p<0.05 (Table 2). Similar observation was reported by Jeremiah *et al.* (2014) in their study conducted in Kilwa, Tanzania. They recorded high awareness of among citizens however, they asserted that education level plays an important role in determining the extent of awareness in all REDD+ scenarios. Therefore, acclaimed that education

and training related to REDD+ should be disbursed to reach a substantial number of citizens irrespective of their educational status.

Furthermore, results presented in Table 2 reveal that, a majority 74% and 22.5% of the respondent practicing farming and both farming and animal husbandry respectively were aware of the intervention while, 91.7% and 8.3% of the respondents practicing farming and petty trading claimed to be unaware. However, a Chi-square test revealed that there was no statistically significant influence (χ^2=4.095 and p>0.05) of the respondents' occupation and awareness of REDD+ intervention in Kondoa District

Table 6: Cross-tabulation of demographic characteristics and awareness (n=150)

Variable	Categories	Aware		Unaware		χ^2	P-value
		n	%	n	%		
Age	21 - 30	13	9.4	3	25	5.279	0.260
	31 - 40	30	21.7	4	33.3		
	41 - 50	45	32.6	2	16.7		
	51 – 60	32	23.2	1	8.3		
	> 60	18	13	2	16.7		
Sex	Male	92	66.7	6	50	1.354	0.196
	Female	46	33.3	6	50		
Marital status	Single	5	3.6	2	16.7	4.999	0.287
	Married	123	89.1	9	75		
	Divorced	1	0.7	0	0		
	Separated	3	2.2	0	0		
	widowed	6	4.3	1	8.3		
Education	Primary (7 years)	116	84.1	8	66.7	9.497	0.023**
	Primary (4 years)	10	7.2	0	0		
	Secondary	6	4.3	3	25		
	No formal education	6	4.3	1	8.3		
Occupation	Farming	103	74.6	11	91.7	4.095	0.129
	Petty trading	4	2.9	1	8.3		
	Farming and livestock	31	22.5	0	0		
Land size (acres)	<5	9	9.6	85	90.4	1.382	0.710
	5.5 - 10	3	6.7	42	93.3		
	11 - 16	0	0	6	100		
	>17	0	0	5	100		

*Note: ** (Significant at 95% confidence interval)*

4.3.2 Source of Information about REDD+

Respondents were asked to state how they came to be aware of the REDD+. Table 3 shows that more than half 54.3% of all the respondents who testified to be aware of REDD+ reported that they come to know about the initiative through Non-Governmental Organizations (NGO) in their respective villages (AWF). More than a quarter of people (26.1%) testified that they became aware of the intervention through village meetings while just a few (19.6%) heard about REDD+ via media such as radio and television. Highly reliance on village meeting and NGOs vindicate the Kovacevic (2010) assertion, that progress in raising awareness about REDD+ in forest communities has been hampered by misinformation and confusion, with many campaigns using complex images, unknown jargon and a heavy reliance on printed publications while, what tends to happen is that the publications just sit in the village offices.

4.3.3 Respondents Views of What REDD+ is all about

To capture whether awareness is translated into knowledge about REDD+ the respondents were asked to state what the intervention is all about. Results therefore, as presented in Table 3 indicate that majority 81.88% of the respondents stated that REDD+ initiative is all about environmental conservation, while 7.97% and 5.07% stated that the intervention is about forest conservation and reduction of carbon emissions respectively, compared to very few 1.44% who reported that REDD+ is about land use planning.

Table 7: Source of information and knowledge about REDD (n=138)

Source of information	**n**	**%**
Village meetings	36	26.1
Medias (TV & Radios)	27	19.6
Non-Governmental Organization	75	54.3
Total	**138**	**100**
Knowledge about REDD+	**n**	**%**
Environmental conservation	113	81.88
Forest conservation	11	8
Climate change initiative	5	3.6
Reducing carbon emissions	7	5.07
Land use planning	2	1.44
Total	**138**	**100**

4.4 Community attitudes toward REDD+ Initiative

To capture community's attitudes towards the Reducing Emissions from Deforestation and Forest Degradation (REDD) a Likert scale of ten statements was used. Respondents were asked to gauge their responses into one of the following grades against each Likert statement; strongly agree, agree, uncertain, disagree and strongly disagree. A five point Likert Rating Scale (LRS) were graded as follows: Strong Disagree = 5; Disagree = 4; Uncertain = 3; Agree = 2; Strong Agree = 1. In order to draw clear results the scale was merged into three Likert rating scale as follow: Disagree =1; Neutral = 2 and Agree = 3. Thus, from the five Likert rating scale 1 and 2 were merged to form 1 and 4 and 5 were merged to form 3 while 3 was changed to be 2. Finally, the general attitude of all respondents was presented after computing the average percentages for the agreed, uncertain and disagreed.

Therefore, results as presented in Table 4 revealed that more than half 66.6% of the respondents agreed that REDD has assisted people in developing conservation measures and people's rights were well observed in REDD+ implementation respectively. Furthermore 58.7% of the respondents agreed with the statement that REDD has facilitated over-exploitation of non-REDD forest, 49.3 and 47.8 percentages agreed with assertion that REDD has increased illegal use of forest and reduced the quantity of forest ecosystem good and services correspondingly. On the other hand, 53.6% of the respondents disagreed that REDD displace people from their land while, 32.6 and 28.3% also disagreed with the statements that REDD has improved peoples' knowledge on environmental conservation and REDD has restricted peoples' access to forest respectively. Comparatively, 23.1 and 18.1% of the respondents were uncertain with the statements that REDD has reduced the quantity flow of forests eco-system goods and services and REDD has facilitated over exploitation of non-REDD forests among others.

Table 8: Community's attitudes toward REDD (n=138)

S/n.	Statement	Disagree		Uncertain		Agree	
		n	%	n	%	n	%
1	The level of community involvement is high in REDD+ implementation	35	25.3	38	27.5	65	47.1
2	REDD has improved people's knowledge on environmental conservation	45	32.6	27	19.6	66	47.8
3	REDD has helped reducing forest fire outbreaks	31	22.4	31	22.4	76	55.1
4	REDD assisted people in developing conservation measures	28	20.3	18	13	92	66.6
5	People's rights are well observed in REDD implementation	31	22.4	15	10.9	92	66.6
6	REDD restricted people's access to forest areas	39	28.3	30	21.7	69	50
7	REDD has reduced the quantity of forest ecosystem goods and services flow	40	28.9	32	23.1	66	47.8
8	REDD has increased the illegal use of forest	40	28.9	30	21.7	68	49.3
9	REDD activities displace people from their land	74	53.6	20	14.5	44	31.9
10	REDD facilitate over exploitation of non-project forests	32	23.2	25	18.1	81	58.7

4.4.1 The Overall attitudes about REDD

Figure 1 shows that more than half 52.1% of the respondent who reported to be aware of the REDD+ initiative had positive attitudes while more than quarter 28.6% had recorded negative attitude when compared to 19.3% uncertain. This findings are very impressive as they suggest that a good number of people living adjacent to REDD pilot areas are perceiving the intervention positively however, still something has to be done to ensure that majority perceive the initiative fairly. Similar findings were reported by Sutta and Silayo (2014); Jeremiah *et al.* (2014); Yahya *et al.* (2012); Ratsimbazafy *et al.* (2012); Sylvander (2010); Mngumi *et al.* (2003), who all asserted that the community is willing to take part in forests conservation initiatives only if they hold positive perception and attitudes about them.

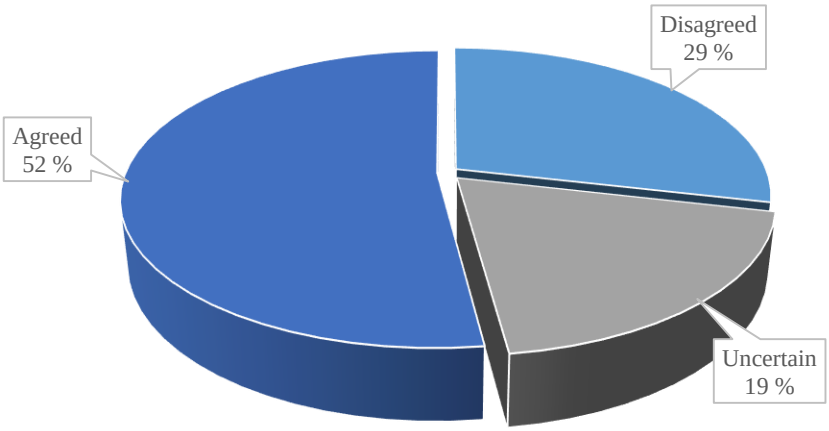

Figure 4: Overall attitudes about REDD

4.4.2 Comparison of attitudes between Opted out and Pilot Villages

In order to compare whether the control and pilot villages in their attitudes about REDD+, an independent sample T-test was used. The results in Table 5 indicates that, there was statistically significant differences in the scores for the pilot (M=4.2, SD=1.3) and control villages (M=2.2, SD=0.84) whereby a t-value of 2.89 and a degree of freedom of 8 were statistically significant (p=0.02) implying that there was statistically significant differences in attitudes between respondents from the control and pilot villages. These results suggest that village decision whether to or not implement the REDD+ intervention really does have an effect of how its dwellers will perceive the initiative.

Table 9: Independent sample t-test results

Village REDD+ implementation status	Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
	n	F-value	P-value	t-test	Degree of freedom	P-value	Mean	Standard deviation	Lower	Upper
Pilot	76	1.691	0.196	2.887	8	0.020 **	4.2000	1.3038	0.4024	3.5976
Control	62			2.887	6.817	0.024 **	2.2000	0.8367	0.3528	3.6472

*Note: ** significant at 95% confidence interval*

4.5 Forest Eco-System Goods as Livelihood Sources Post REDD+

4.5.1 Forest Goods and Services Accessibility

Communities in the study area indicated that they all depend on natural ecosystems to supply a range of services for their survival and well-being. Studies such as Monela *et al.* (2001); Anglisen and Kaimowitz (1999) and Sunderlin *et al.* (2008) done in Africa have reported that over two thirds of the continent's 600 million people rely on forest eco-system goods and services, either in the form of subsistence uses or as income generating activities for selling a wide range of timber and non-timber forest products. However, due to introduction of the REDD+ pilot project they are no longer able or free to acquire these goods and services from the Kolo Hills forest as it used to be. Therefore, to capture their access to forest products respondents were asked the state the status of availability of various forest eco-system goods and services such as fuel wood, charcoal, timber, poles, wild fruit and vegetables, medicinal plants (herbals) as well as pasture and land for agriculture.

Firewood constitutes the major source of cooking energy in developing world for instance, a study conducted in India revealed that more than 853 million people use firewood for cooking (Maikhuri *et al.,* 2001; FSI, 2011). Therefore, results as presented in Table 6 revealed that majority 60.7% of

the respondents lamented that the status of fuel wood availability has decreased compared to 28.7 and 10.7% who reported no changes and increased respectively. Despite the discussion above a chi-square test revealed that there was statistically significant differences (χ^2= 20.989 and $p<0.01$) between the pilot and control villages in accessing fuel wood from forest eco-systems with the control villages enjoying a considerable access to fuel wood. Similar results was reported by Mertz *et al.* (2012); McKee *et al.* (2004) and Monela *et al.* (2001), who have acknowledged the significant role that forest eco-system plays in enhancing the livelihoods of people living adjacent to forested areas however, they asserted that the introduction REDD+ initiative restricted access to forests thus, reducing their livelihood options. Furthermore, majority 82.7% of the respondents reported that the status of charcoal availability has decreased when compared to 15.3% and just few 2% reported that the status has remained the same and increased respectively. However, a Chi-square test revealed that there was no statistically significant differences (χ^2= 1.559 and $p>0.05$) in status of charcoal availability between the two categories of surveyed villages. In their study conducted in India, Nayak *et al.* (2013) argued that, people living in forest fringe villages depend upon forest for a variety of goods and services. These includes collection of edible fruits, flowers, tubers, roots and leaves for food and medicines; firewood and charcoal for cooking (some also sale in the market); materials for agricultural implements, house construction and fencing; fodder (grass and leave) for livestock and grazing of livestock in forest; and collection of a range of marketable non-timber forest products therefore, any attempt to deny their access to forests will jeopardize their livelihoods and well-being status.

Furthermore, Table 6 shows that more than half 54.6% of the respondents reported that the status of timber availability in their respective villages has remained the same while less than half 43.3% had claimed decrease in timber availability compared to 2% who reported increase in timber availability. Nonetheless, the status of timber availability did not differ significantly (χ^2 = 6.481 and $p>0.05$) between pilot and control villages as revealed in a Chi-square test. Although majority had reported that availability of timber has remained the same this study assumes that, timbers are not used more often unless there is construction therefore, it was hard for the respondents unless those in logging industry to state the trends in timber and poles availability. This finding

contradicts with that of Barath-Kumar *et al.* (2011) which reported that conservation initiatives have facilitated the increase in demands for timber and timber products than unprotected forests can provide.

On the other hand, more than half 56.6% of the respondents had lamented that the status of wild fruits and vegetables availability has decreased a considerable 42.6% had reported no changes and just few 0.7% had reported increase. Nonetheless, there was statistically significant differences (χ^2= 35.252 and $p<0.01$) between the surveyed villages with the control villages enjoy the considerable flow of wild fruits and vegetables than their counterpart as revealed in a Chi-square test. Furthermore there was no statistically significant differences in medicinal plants (Herbals) availability among the surveyed villages (χ^2=1.339 and $p>0.05$). Agea *et al.* (2013), in their study conducted in Uganda reported that the forest conservation initiatives in place has resulted into reduction of varieties of wild and semi-wild food plant traded in Bunyoro-Kitara food markets. Additionally, all 100% of the respondents who were engaging in animal husbandry (n=31) had reported decrease in in availability of areas for pasture and fodder.

Table 10: Status of forest eco-system goods and services availability

Variable	Village	Availability Status						χ^2	p-value
		Decreased		No changes		Increased			
		n	%	n	%	n	%		
Fuel wood	Pilot	63	42	12	8	7	4.7	20.989	0.000***
	Opted out	28	18.7	31	20.7	9	6		
Charcoal	Pilot	71	47.3	12	8	0	0	1.559	0.090
	Opted out	53	35.3	47	31.3	3	2		
Timber	Pilot	32	21.3	47	31.3	3	2	6.481	0.669
	Opted out	33	22	35	23.3	0	0		
Poles	Pilot	24	16	53	35.3	5	3.3	8.416	0.762
	Opted out	19	12.7	41	27.3	8	5.3		
Vegetable and fruits	Pilot	68	45.3	14	9.3	0	0	35.252	0.000***
	Opted out	17	11.3	50	33.3	1	0.7		
Medicinal plants	Pilot	43	28.7	32	21.3	7	4.7	1.339	0.720
	Opted out	21	14	45	30	2	1.3		
Pasture and fodder	Pilot	24	77.4	0	0	0	0	1.539	0.943
	Opted out	7	22.6	0	0	0	0		

*Note: ***Significant at 99% confidence interval*

4.5.2 Emerging Livelihood Alternative Sources

Prior to scarcity of forest eco-system goods and services which served as livelihood sources to forest dependent communities in Kondoa, respondents were asked to state their alternative sources for their livelihoods and well-being. Therefore, Figure 2 shows that all 100% of the respondents reported that their livelihood depends on agriculture as they have little access to forests after the introduction of the REDD+ initiative, while 35.1% reported that their livelihoods depend on other activities like motorcycle services (Bodaboda), illegal charcoal production, illegal logging as well as mobile money services (Tigo Pesa, M-Pesa and Airtel Money). On the other hand, 31.3 and 24.6% had reported food vending and selling tree seedling respectively while, 21.6% of the respondents reported that their livelihood options were limited to mud brick production compared to just few 13.4% charcoal stove making. These results indicate that forest dependent communities in Kondoa have coped to some extent with scarcity of forest eco-system goods and services as the result of REDD+ intervention. However, the question of concern shall remain whether these alternative livelihood options will hold people from illegally harvesting forest goods and the extent

to which REDD+ projects will bring benefits in the long run especially with regard to ensuring the livelihoods of forest dependent communities (Fox *et al.*, 2011; Mertz, 2009).

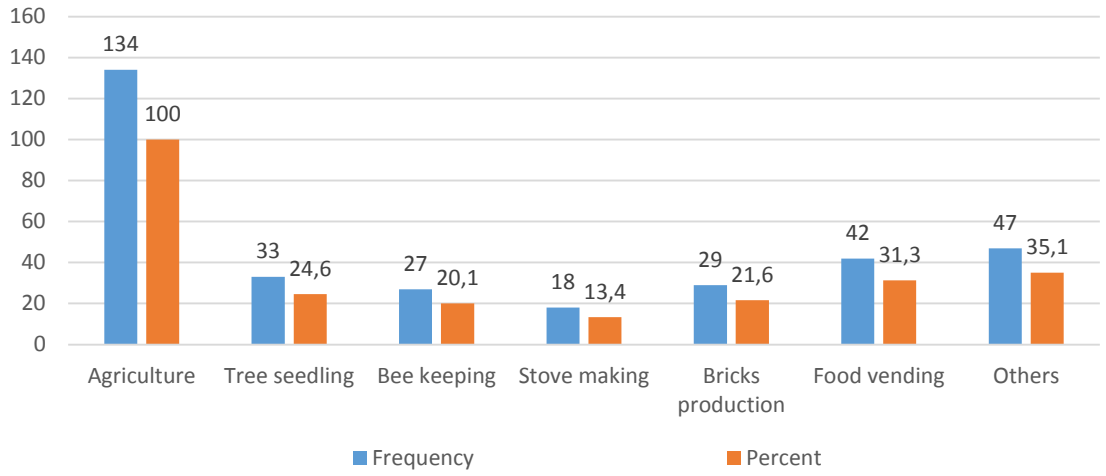

Figure 5: *Multiple Responses*: Alternative Livelihood Source (n=134)

4.6 Challenges in REDD+ Implementation

REDD+ has the potential to achieve significant co-benefits, over and above reducing carbon emissions. These include alleviating poverty, improving governance, and protecting biodiversity and other environmental services (Angelsen *et al.*, 2009). Some challenges are still associated with the REDD+ implementation, therefore to capture these challenges respondents (only from the pilot villages) were asked to mention them and later on a multiple response set was constructed whereby the most mentioned challenges are considered and reported as potential. Results in Table 7 revealed that majority 80.5% of the respondents had reported illegal harvest of forest goods and services. For instance several studies such as Mbow *et al.* (2012); Mwampamba (2012) have reported that huge parts of African forests do not have a strict management plan and if any the application is rather chaotic, with the demand of forest goods escalating, forest dependent community will force free access to forest resources where strict management is at place and therefore illegally harvest and degrade forests.

A considerable 68.3% share of the respondent lamented that local people's participation is still low and 39% had reported that low awareness among forest dependent community in Kondoa is

yet another obstacle in implementing the REDD+ initiative, although it was reported earlier that a majority of the respondent were aware of the intervention but this study assumed that was general awareness which is not yet translated into hundred percent understanding of what exactly REDD+ is all about. According to Mwampamba (2012); Luwuge *et al.* (2011), weak campaigns to raise awareness about the value of forests, poor dissemination of forest policies and absence of simple language policy translations for broader dissemination have resulted in little awareness of forest conservation initiative at local levels and therefore, constrainng peoples' willingness to participate in REDD+ implementation. On the other hand, poor village government commitments scored less 32.9% compared to 58.5% leakage as potential challenges in REDD+ implementation. Hufty and Haakenstad (2011), for REDD+ intervention to yield the anticipated results there must be almost hundred percent of all stakeholder's commitment which is current not at place and recommended for reinforcing institutional and governance capacities as well as ensure institutional coherence among government institutions so that REDD actors at the local and community level would be seen as monitoring and enforcing mitigation strategies effectively together.

Table 11: Challenges in REDD+ Implementation (n=82)

Challenges	**Frequency**	**Percent**
Illegal forest harvest	66	80.5
Awareness	32	39
Poor government commitment	27	32.9
Local people involvement	56	68.3
Leakage	48	58.5

Note: Multiple response

5. CONCLUSION AND RECOMMENDATIONS

The overall objective of this study was to assess the effectiveness of the AWF pilot project for REDD readiness in Kondoa District, Tanzania by taking a case of Kolo-Hills. The study has drawn the following conclusions.

5.1 Conclusion

Extraction of forest eco-system goods and services in one way or the other is influenced by a number of socio-demographic characteristics of the respondents such as age and sex among others. Findings have indicated that the minimum and maximum ages were 24 and 80 respectively, and almost half of the respondents were in an active labor force age. The study concludes that land use plans proposed by REDD and other stakeholders must consider the increase in population and demarcate enough land for future agricultural activities as it is the only promising livelihood option for the majority of rural dwellers.

A majority (92%) of the respondents had reported to be aware of the REDD+ initiative as environmental and forest conservation tool as well as climate change mitigation initiative. It was observed that, this awareness was not translated into full participation of the respondents in REDD+ implementation as also the considerable percent of respondents from the control villages claimed to be aware. Additionally, NGO especially AWF was identified as the potential source of information about the initiative which calls for REDD+ implementing partner to various awareness raising mechanisms like television documentaries, Radio programs among other to ensure that the good news reach a substantial number of people especially those living in rural areas adjacent to forests.

More than half of the respondents had a positive attitude towards the REDD+ initiative with a majority of them acknowledged that the initiative has helped in reducing the frequency of forest fire outbreaks and that their rights were observed in implementing the intervention. However, there was slight statistically differences in perceptions among the respondents from the opted in and out villages as revealed in an independent sample t-test results.

Forests harness a large potential for livelihood based activities for the forest dependent communities anywhere in the world, however, the introduction of REDD in Kondoa has deprived people of access to forests thus, limiting their livelihood options. Results indicate that there were scarcity of most forest eco-system goods compared to prior REDD+ intervention, however, only the availability status of fuel wood and wild fruits and vegetable were statistically significant ($p<0.01$). Furthermore, this study has identified agricultural activities, tree seedling production, bee keeping as well as brick production among others as the emerging alternative sources of livelihoods in Kondoa District.

Lastly, it was revealed that illegal forest harvests, low awareness among local people, poor government commitment and leakage among others, constitutes potential challenges towards REDD+ implementation in Kondoa. This study conclude that REDD+ initiative has potential to prove its self an appropriate tool for reducing carbon emissions and forest degradation plus enhancement of carbon and sustainable management of forests as well as enhancing the livelihoods of forest dependent communities if these challenges are addressed.

5.2 Recommendations

In respect to the above conclusion, the study has the following recommendations to the project and environmental stakeholders.

Local communities have a high level of awareness on the deforestation problem, its impact and the contribution of forests to the climate change, this study therefore, acclaims that the government, REDD+ implementing partners and all stakeholders at large to scale-down the pace of awareness raising campaigns by using different medias and disseminating the simplified language education and information material for the local people to understand the concepts irrespective of their education level, this will clear the doubts and misconception of forest dependent communities about what REDD+ is all about and provide them with proper information thus, enhancing their perceptions and participation in REDD+ activities.

With such a huge population depending on forest for subsistence livelihood in Kondoa, this study recommends that the strategies for controlling forest degradation need to be focused on reducing the dependence by creating alternative livelihood opportunities that will compete against the desires for forest degradation to the forest dependent communities, providing alternative technologies to reduce the gap in demand and supply of forest products and making the community adopt sustainable harvesting practices. Linking the two, REDD+ and alternative livelihood improvement activities will ultimately reduce pressure on forests producing an increase in forest cover in future.

Participatory forest management (PFM) is widely promoted in Tanzania. Even though it has often failed to create monetary benefits to the communities, it has done a lot in terms of forest conservation. The existing PFM schemes greatly improve the possibility of REDD+ to succeed in the Kolo hill forests by for instance, reducing transaction costs and facilitating the benefit sharing process. Therefore, this study recommends that for REDD+ to succeed PFM should be at the center of the concern where by the two groups (community and REDD+ implementing partners) should take part in forest development activities such as creation of nurseries and plantations to limit deforestation. It is also imperative that the community shares in the economic benefits that accrue from the forest resource such as employment in the forest to give them a reason to collaborate in the conservation efforts.

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APPENDICES

Appendix 1: Household Questionnaire

Questionnaire No._____

A. Basic information

A: I. Interview

Village:	Questionnaire number:
Place of interview:	Name of interviewer:
Starting time:	Finishing time:
Date:	

A.II. Interviewee

1. Sex of respondent (Tick the box in accordance with the given answer. Do so the whole way through when responses are organized in boxes like below)

0=Male	1=Female

2. Age of respondent: _____years

3. Education (Number of years in school)_____years

4. Marital status

1.Single	2.Married	3.Divorced	4.Separated	5. Widowed	6.Cohabiting

5. Main occupation: *(multiple answer)* Where (A) corresponds to the main occupation and increasing letters in order of importance.

1.Agriculture	2.Forestry	3.Hunting	4.Fishing	5.Other (Mention)

If 1-4, GO TO 6

If others please specify: _____

6. Number of family members_____

7. House roofing type?

1= iron sheet	2=mat/leaves

8. Housing contract

1.Owner	2.Tenant	3.Not owner but exclusive use rights

9. Size of agricultural land used by the household_____(Specify measuring unit)

B. General Knowledge and Views on the Project

1. Have you heard about the REDD+ project launched in your area?

0=No	1=Yes

2. What is the project about?

_____

_____

Who (which organization) is responsible for the project?

_____

(If they do not say AWF, inform that this is the responsible organization and remember to ask/ inform later if you are uncertain which organization they refer to

3. Did you know about this organization before the REDD+ project was introduced?

0=No	1=Yes

If No GO TO question 6

4. If you knew the organization (AWF), explain your previous attitude towards it:

_____

_____

5. a. How do you then summarize your previous attitude?

1. Very negative	2. Negative	3. Indifferent	4. Positive	5. Very positive

5. Who else are involved in the REDD+ project (tick only relevant boxes)

1.village government	2.District council	3.Central Government	4.Foreign governments	5.Other NGOs

6. Do you know who is paying for the project? (If they do not know write 'Do not know'? Otherwise write down the name(s) they propose)

_____

7. General community perception/attitude about the REDD+ intervention
(Please gauge each likert statement and tick your appropriate gauge against each statement)

Key: 5-Strong disagree, 4-Disagree, 3-Uncertain, 2-Agree and 1-Strong agree

Sn.	**Statements**	**5**	**4**	**3**	**2**	**1**
1.	The level of community involvement is high in REDD+ implementation					
2.	REDD has improved people's knowledge on environmental conservation					
3.	REDD has helped reducing forest fire outbreaks					
4.	REDD assisted people in developing conservation measures					
5.	People's rights are well observed in REDD implementation					
6.	REDD restricted people's access to forest areas					

7.	REDD has reduced the quantity of forest ecosystem goods and services flow					
8.	REDD has increased the illegal use of forest					
9.	REDD activities displace people from their land					
10.	REDD facilitate over exploitation of non-project forests					

C. The Free Prior and Informed Consent (FPIC) process

C. I Participation in meetings

1. Your village has decided to join the REDD+ project. Three meetings were organized before the village decided to participate. Did you or any of your family members attend any of these meetings

The introductory meeting:

0=No	1=Yes

Specify who attended_____

The sub-village meeting

0=No	1=Yes

Specify who attended_____

The village assembly meeting

0=No	1=Yes

Specifywhoattended_____

If the respondent did not attend any meetings, GO TO 16 (in this section C)

2. Were these meetings held at a time and place where it was easy for you to attend (outside peak agricultural seasons, no other obstacles etc.)?

0=No	1=Yes

2a.Explain_____

_____

_____

3. What is your overall impression of these meetings?

1. Very bad	2. Bad	3. Satisfactory	4. Good	5. Very good

3a. How do you then summarize your overall impression of these meetings?

C. II Information

4. Do you feel that the information offered at the meeting was clear and sufficient for village members to decide whether to participate in REDD or not?

1. Information was very poor	2. Information was poor	3. Information was satisfactory	4. Information was good	5. Information was very good

If answering 4 or 5 GO TO 4a

If answering 1 or 2 GO TO 4b

If answering 3 GO TO 5

4a.If information was good or very good, explain

_____

_____

GO TO 5

4b.If information was poor/very poor, what do you think was the main problem(s)?_____
_____

5. Who was the most important source of information?

1. AWF	2. Other villagers	3. Public officers	4. Others

If 1-3, GO TO question 6

If 4, GO TO 5a

5a. What were the (se) other sources: _____

6. Did you have access to information from any independent sources?

0=No	1=Yes

If No, GO TO question 7

6a. What were these independent information sources?

_____
_____

7. Did you yourself search for independent information about REDD+?

0=No	1=Yes

If No, GO TO question

7a. What source(s) was (were) this?

_____
_____

7b. Did these sources influence your attitude to the REDD+ project? If so, in what way?

C. III Discussions

8. Did villagers participate actively in asking questions at the meetings?

1. Not at all	2. A few questions	3. Many questions

9. How were these questions handled at the meetings?

1. Not discussed	2.Briefly discussed	3.Discussed quite a lot	4.Extensive discussions

10. Do you consider the meetings to be open to villager's views?

1. Not open at all	2. Somewhat open	3. Very open

10a. Explain your answer

_____

_____

_____

11. Did villagers offer proposals at the meeting concerning the way the REDD+ project **should be organized**?

1. No proposals	2. A few proposals	3. Many proposals

If 1, GO TO question 13

12. Were any of these proposals taken into account by the REDD+ project responsible?

0=No	1=Yes

If No, GO TO question 12b.

12a. What do you consider to be the most important proposal(s) taken into account concerning the way the REDD+ project **should be organized**?

_____

_____

_____

12b. What do you consider to be the most important proposal(s) **not** taken into account concerning the way the REDD+ project **should be organized – if there were any**?

_____

_____

_____

13. 1 Did villagers offer proposals at the meeting concerning the **content of the REDD+ project**?

1. No proposals	2. A few proposals	3. Many proposals

If 1, GO TO question 15

14. 1 Were any of these proposals taken into account by the REDD+ project responsible?

0=No	1=Yes

If No, GO TO question 14b.

14a. 1 What do you consider to be the most important proposal(s) taken into account concerning the **content of the REDD+ project**?

_____

_____

_____

14b.1 What do you consider to be the most important proposal(s) **not** taken into account concerning the **content of the REDD+ project – if any such proposals**?

_____

_____

_____

15. Was there any disagreement at the meetings you attended?

0=No	1=Yes

If No, GO TO question 16

15a. What was this disagreement(s) about?

_____

_____

_____

15b. Who was the disagreement between?

_____

_____

(Be especially aware if the disagreement(s) was between villagers themselves or between villagers and (AWF)

15c.Was the disagreement resolved?

0=No	1=Yes

If No, GO TO 15e

15d.How was the disagreement(s) resolved?

_____

_____

_____

_____

(Note that if more than one issue, you will need to take one by one. You must clarify which issue the resolving concerns)

GO TO 16

15e. How has the fact that a disagreement(s) was not resolved been handled?

_____

_____

_____

_____

_____

_____

_____

_____

_____

(Note that if more than one issue, you will need to take one by one. You must clarify which issue the comment concerns.)

16. Did you discuss the REDD+ project with fellow villagers outside of the formal meetings?

0=No	1=Yes

If No, GO TO 17.

16a. Which were the most important topics you discussed?

GO TO C IV

_____

_____

_____

_____

17. Can you explain why you did not discuss the REDD+ project with fellow villagers?

_____

_____

C. IV Decision-making

If the respondent did not attend the general assembly go to question 22 in this section C.IV

18. At the general assembly, the villagers decided to participate in the REDD+ project. In what way was that decision made?

_____

_____

19. Do you think everybody felt free to take whatever position they wanted concerning establishing the REDD+ project?

0=No	1=Yes

If Yes, GO TO question 20

19a. Why do you think they did not feel free to do so?

_____

_____

_____

20. Did anyone participating in the meeting disagree publicly on participating in the REDD+ project?

0=No	1=Yes

If No, GO TO question 21

20a. Do you know why they disagreed?

_____

_____

20b. Was their disagreement taken into account in any way?

_____

_____

20c. Do you think it was a problem for the village that they disagreed, or do you think it was good?

20d. Were there many dis- agreements?

0=No	1=Yes

21. Do you disagree with participation in the REDD+ project?

0=No	1=Yes

If No, GO TO question 25

21a. Why do you disagree?

_____

_____

21b. Did you voice that argument at the general assembly meeting?

0=No	1=Yes

If YES, GO TO question 25

22. You did not participate in the village assembly meeting. Was there any particular reason for that?

_____

_____

23. Do you agree with the decision made by the general assembly to participate in the REDD+ project

0=No	1=Yes

If Yes, GO TO question 25

If No, GO TO 24

24. Why do you disagree with the decision?

_____

_____

_____

25. Do you consider REDD+ to be good or bad for the village?

1. Very bad	2. Bad	3. Satisfactory	4. Good	5. Very good

If response is 1 or 2 GO TO 25a.

If 3, GO TO section D.

If 4 or 5, GO TO question 25b.

25a. Why do you think it is bad or very bad?

_____

_____

GO TO section D

25b. Why do you think it is good or very good?

_____

_____

D. The process of introducing payments

In this section the main focus is to see how payments were introduced in villages, how the villagers were informed about the payment system, if villagers had enough time to discuss about the issues and decide whether to consent. In relation to the latter it is important to reveal how the decision about the format of payments was achieved.

D. I Participation in meetings

1. Did you or any of your family members participate in any meetings concerning payments?

0=No	1=Yes

Specify who attended_____

2. Were this/these meeting(s) held at a time when it was easy for you to attend (outside peak agricultural seasons, no other obstacles etc.)?

0=No	1=Yes

If not participating in any meetings, GO TO section DIV.

2.1 How did you get information about this/these meeting(s)?

_____

_____

_____

3. What is your overall impression of this/these meeting(s)

1. Very bad	2. Bad	3. Satisfactory	4. Good	5. Very good

3.a Summarize your attitude

_____

_____

_____

D. II Information

4. Do you feel that the information offered was clear and sufficient for village members to decide on the form of payments?

1. Information was very poor	2. Information was poor	3. Information was satisfactory	4. Information was good	5. Information was very good

If answering 4 or 5 GO TO 4a

If answering 1 or 2 GO TO 4b

4a.If information was good or very good, explain

_____

_____

_____

GO TO 5

4b.If information was poor/very poor, what do you think was the main problem(s)?

_____

_____

_____

5. Who was the source of information on the issue of payment formats?

1. AWF	2. Other villagers	3. The forest officers	4. Other public officers

5.1 Do you think the information provided by the source was enough?

1.Not enough	2.Satisfactory	3.Enough	4.Very enough

If answering 1-2, why do you think it's so?

_____

_____

_____

6. Did you have access to an independent source of information on payment before accepting implementing REDD+ in your area?

0=No	1=Yes

If No, GO TO 7

6a.What independent information sources?

_____

_____

7. Did you yourself search for independent information about payment before accepting REDD+?

0=No	1=Yes

If No, GO TO 8 in section D.III

7a.What source(s) was (were) this?

_____

_____

D. III Discussions

8. Did villagers participate actively in asking questions in this/these meetings about payment?

1. Not at all	2. A few questions	3. Many questions

If No, GO TO 13 (in section D.IV)

8a. What were this/these questions about?

_____

_____

_____

9. Did this/these questions get answered at the meeting?

1.Not answered	2.Somewhat answered	3.Answered	4.All answered

10. If answered 1 and 2 did that result in disagreement?

0=No	1=Yes

If No, GO TO 13 (in section D.IV)

10a. Between who was this/these disagreement?

_____

_____

_____

10b. What was the disagreement about?

_____

_____

_____

11. Were all the disagreements resolved at the meetings?

1.None were resolved	2. A few were resolved	3.Most were resolved	4.All were resolved

If answering 3 or 4, GO TO 13 (in section D. IV)

12. Are villagers ok with the unresolved disagreement as they already accept payment? Or (why do you think villagers accept the payment while there are unresolved disagreements?)

_____

_____

_____

D. IV Decision-making

13. In this/these meetings villagers agreed to accept payment from implementing REDD+ in your area, how was that decision achieved?

_____

_____

_____

14. Did all villagers agree with the decision made?

1.Disagreed	2.Somewhat disagreed	3.Agreed	4.All agreed

14a. If answering 1 or 2 why do you think still payment was made?

_____

_____

_____

15. Do you think everybody felt free to take whatever position on payment, they wanted concerning joining the REDD project?

0=No	1=Yes

If Yes, GO TO question 17

16. In your opinion, was this pressure towards a specific group or all the villagers as a whole?

0=To a specific group	1=To all the villagers

16a. If it was biased towards a specific group, who was this? (tick all relevant options)

1. Women	2. Men	3. Landless	4. Landowners	5. The poor	6. Others

16b. Why do you think they did not feel free to take the position they wanted?

_____

_____

17. Did anyone participating in the meetings disagree publicly on payment from participating in the REDD+ project?

0=No	1=Yes

If No, GO TO question 18

17a. In your opinion was the disagreement mostly by a specific group or all the villagers as a whole?

By a specific group=0	By all the villagers=1

If 1, GO TO 17c

17b. If by a specific group, who were these? (Tick all relevant options)

1.women	2.men	3.landless	4.landowners	5.The poor	6.The rich	7.Others

17c. Do you know why they disagreed?

_____

_____

17d. Was their disagreement taken into account in any way?

_____

_____

17e. Do you think it was a problem for the village that they disagreed, or do you think it was good?

_____

_____

_____

D.V Income generation projects

14. Is there any income generation project made for your village?

0=No	1=Yes	Explain your answer

If No, Go to 17

14b. Are you familiar with the contents of this project?

1=No	2=Somewhat	3=Completely	Explain your answer

15. Is there any part of that project that you disagree with?

0=No	1=Yes	Explain your answer

16. Did you participate in making of this project?

0=No	1=Yes	Comment on your participation

17. Is your household involved in any income generation projects promoted by AWF?

0=No	1=Yes

If No, GO TO question 20

17a. Which one is it? (Tick all that are applicable)

1.Beekeeping	2. Poultry	3.Stove making	4.Hoticulture	5.Other

18. Have you benefited in any way from this/these projects?

0=No	1=Yes

If Yes GO TO18b

18a. Why do you think you have not benefited?

_____

_____

Go to 19

18b. Explain how you have benefited

_____

_____

_____

19. Did you choose which type of programme to participate in or was the choice made by someone else?

1.It was made by someone else	2.I made the choice myself	3.I made a choice collectively with fellow villagers

19a. Who made the choice?

1.AWF	2.State officers	3.Village leaders	4.Other villagers	5.Others	6.I do not know

19b. Are you satisfied with their choice?

1.Very dissatisfied	2.Somewhat dissatisfied	3.Somewhat satisfied	4.Very satisfied

GO TO section E

20. You are not involved in any income generating projects of the REDD project. Why is that?

_____

_____

_____

E. Knowledge and perception of the bylaws set for participating in the project

1. How would you rate your knowledge about the rules of participating in REDD?

1. I do not know any of them	2. I know a few of the rules	3. I know most of the bylaws	4. I know all the bylaws

If answering 1, GO TO 6

2. Can you mention some of the most important bylaws?

_____

_____

_____

_____

3. Do you follow these bylaws?

1. Not at all	2. I follow some of them	3. I follow most of them	4. I follow all of them

If 1, GO TO 5

4. Please, explain how these bylaws influence your livelihood?

_____

_____

_____

GO TO 6.

5. Please, explain why you do not follow the bylaws at all

_____

_____

_____

_____

_____

(Here, the enumerator should point out some of the most important bylaws to the respondent who knows none of bylaws and those which may not have been mentioned for those that know some of the bylaws).

6. How would rate the effectiveness of the rules in reducing deforestation in your area?

1. No impact	2. Low	3. Medium	4. High

If 3 and 4, GO TO 7

6a. Can you suggest other ways or rules which you think might be better?

_____

_____

_____

_____

7. What is your impression of the bylaws?*(Here the enumerator should ask the respondent of their perception on some of the rules specifically).*

1. Very negative	2. Negative	3. Indifferent	4. Positive	5. Very positive

7.a. Please motivate your response

_____

_____

_____

F. Land Use Planning and Right of Ownership

1. How was the land use planning carried out in your village?

_____

_____

_____

2. To what extent were YOU involved?

_____

_____

3. What percentage of land/forest in your village has been demarcated for REDD so far?

_____

_____

4. What type of land has been demarcated for REDD– i.e, type of forests (biology) and ownership (reserved land, village forests, general land etc.)

_____

_____

_____

5. Do you think that the land demarcation has left the village with sufficient land to engage in other activities like agriculture, collection of fuel wood and other NTFPs?

_____

_____

6. Are you happy with the way their forest land was demarcated? For example the size of forest land left for use and distance from their village.

_____

_____

7. What uses of land have to be reduced or stopped due to REDD?

_____

_____

8. Who in the village are eligible to receive a certificate for their land?

_____

_____

9. Are these certificates an incentive for villagers to participate in REDD?

_____

_____

10. What role did you as community members play in the land use planning process?

_____

_____

11. Are you satisfied with the way your forest land was demarcated for different purposes?

_____

_____

G. Questions to be Asked in Villages Opted not to go Along

1. How do you evaluate the processes of introducing REDD in your area.

_____

_____

2. Were you given sufficient information and time to make an informed decision on whether or not to participate in REDD?

_____

_____

3. What measures were put in place to ensure that?

_____

_____

4. Were you free to voice your opinions on the best ways you think concerning whether your village should participate in REDD?

_____

_____

5. Do you think that any particular groups or individuals influenced the process in their own favor at the expense of others?

_____

_____

6. Are there any conflicts that arose in the community during the process? Between who and what were the conflicts about?

_____

_____

7. What was extent of discussions about REDD outside the formal village meetings and can you say that these discussions had any impact on the final decision by the village NOT to participate in REDD?

_____

_____

8. In your own opinion, what do you think were the main reasons for your village to reach a final decision of NOT participating in REDD?

_____

_____

_____

H. Observations

Additional comments from the interviewee

_____

_____

_____

Appendix 2: Interview Guide for Key Informants

INTERVIEW GUIDES FOR INTERVIEWS WITH RESOURCE PERSONS

The role of these sections (interviews with resource persons) is to give us factual answers about the structure for administration of forest resources at local level. The sections also explore the interactions between the actors and how these interactions are impacting on REDD. It also highlights how the establishment and running of the REDD process has taken place.

Please note that interviews with resource persons should be done before the Focus group discussions.

Members of the natural resource committee

1. Can you explain the administrative structure of the committee?
2. How are members elected/ appointed to the positions?
3. What is the role of the committee in relation to activities of the REDD project.
4. How often do you hold meetings and who are invited to these meetings? On average how many people attend?
5. How was the land use planning carried out in your village? To what extent were the villagers involved?
6. What percentage of land/forest in your village has been demarcated for REDD so far?
7. What type of land has been demarcated for REDD– i.e, type of forests (biology) and ownership (reserved land, village forests, general land etc.)
8. Do you think that the land demarcation has left the village with sufficient land to engage in other activities like agriculture, collection of fuel wood and other NTFPs?
9. Is your community happy with the way their forest land was demarcated? For example the size of forest land left for use and distance from their village.
10. What uses have to be reduced or stopped due to REDD?
11. What is your motivation to serve as committee members? Are you compensated in any way?
12. How would you describe the relationship between the committee and AWF as well as the district government officials?

13. Do you think that the village members trust and have good relationship with the district officials as well as those of AWF?
14. Are all community members including women, youth and the elderly are participating in the REDD process?
15. Are community members following their previous rules or do you think that you have switched to the new rules in the village bylaws. Can you explain some of the old rules that are still being followed in your village if any? Are these in conflict with the new rules?
16. What systems are in place to ensure that the rules are followed -i.e. how are the new rules enforced?
17. Do you think that the REDD processes (decision to participate, LUP, payments, formulation of byways etc) have been open, free and well informed to your community.
18. Do you feel that REDD has created or reduced land related conflicts? Please explain.
19. Can you describe which conflicts have been reported to your committee related to land use in particular as a result of REDD activities. How have these conflicts been handled?
20. Do you think that REDD has improved or negatively impacted on people's standards of living?
21. How is the village preparing to take over the project after the AWF project expires? Do you think that you are well prepared for this task?

Village chair/Village council

1. Describe the relationship and interaction between AWF with the members of the village.
2. Describe the relationship and interaction between the district or central government forest departments and members of the village.
3. In what ways has the introduction of the REDD program affected these relationships. For example have the relationships improved or worsened due to conflicts arising from the introduction of REDD?

4. How have these relationships influenced the process of introducing REDD in your area -i.e. have the relationships become better or worse as a result of the implementation of REDD?
5. Are all community members including women, youth and the elderly are participating in the REDD process?
6. Do you think that the land demarcation has left the village with sufficient land to engage in other activities like agriculture, collection of fuel wood and other NTFPs?
7. Has REDD created or reduced land related conflicts? Please explain.
8. Can you describe which conflicts have been reported to your committee related to land use in particular as a result of REDD activities. How have these conflicts been handled?
9. Do you think that REDD has improved or negatively impacted on people's standards of living?
10. Are community members following the old formal rules or do you think that you have switched to the new rules in the new village bylaws. Can you explain some of the old rules that are still being followed in your village if any?
11. Are there any new norms or forest practices that are being done due to REDD?

AWF Field coordinator

1. Describe the relationship and interaction between AWF with the members of the village.
2. Describe the relationship and interaction between the district or central government forest departments and members of the village.
3. Describe the relationship and interaction between AWF and the district or central government forest departments
4. In what ways has the introduction of the REDD program affected the relationships mentioned under 1-3. For example have the relationships improved or worsened due to conflicts arising from the introduction of REDD?
5. How have these relationships influenced the process of introducing REDD in your area -i.e. have the relationships eased or stalled the implementation of REDD?

6. In the land use planning process, what type of land has been demarcated for REDD– i.e., type of forests (biology) and ownership (reserved land, village forests, general land etc.)
7. Who in the village are eligible to receive a certificate for their land? How many people have received their land certificates so far?
8. Are these certificates an incentive for villagers to participate in REDD?
9. Can you explain how the village bylaws have been formulated? What roles have various actors, such as district officials, community members, AWF had in this process?
10. Are there any new forest practices or norms that are being established due to REDD?
11. How are the incomes generating activities being carried out at village level? Are these activities having any real impacts in the lives of the communities?
12. Are the income activities used as a payment for following rules on REDD or are they geared to mere improvement of people's livelihoods?
13. We understand that some payments have been made. Can you explain how this was done? What criteria did you follow in distributing the money? Was it linked to building up of carbon stocks; measures taken to protect forests or other?
14. Have these REDD processes mentioned above met any resistance or conflicts from some groups? How have you handled these?
15. Apart from the meetings organized by TFCG, are there any other forums outside these meetings which have influenced the establishment and running of the REDD process?

Appendix 3: Focus Group Discussion Schedule

FGD with community members

1. How do you evaluate the processes of introducing REDD in your area.

*Here we want to understand people's perception of the various processes. For example are they satisfied or dissatisfied in any way? What components do they find was introduced and decided upon (referring to the **process**) most satisfactory or dissatisfactory*

- FPIC /Provision of information prior to deciding
- Payments
- Land use planning/land demarcation
- Formulation of village bylaws
- Income generation projects

2. Were you given sufficient information and time to make an informed decision on whether or not to participate in REDD? What measures were put in place to ensure that?

This question is related to the FPIC process. We want to know how the information about REDD was given to them and if was sufficient to enable them make an informed decision. We also want to understand if there was sufficient time given to them before they decided.

3. Were you free to voice your opinions on the best ways you think concerning whether your village should participate in REDD?

This question also aims at understanding the FPIC process, in particular how and to what extent the community has been involved in the REDD process. For example were the discussion open (non-coerced) and were ideas of the community concerning REDD taken into account by TFCG and MJUMITA as well as the district officers? Did they feel intimidated, forced or coarsen to make certain decisions or not to submit their ideas? And if so what did they do about it? It may be necessary for the interviewer to point out to them each process as the community may have participated differently in each process.

4. Do you think that any particular groups were excluded from voicing their views in the process of establishing REDD in your village? For example attending meetings, formulating the village bylaws for forest use , Land use planning etc

This question aims at highlighting the power dynamics in the processes of introducing and establishing REDD. Here our focus should be to understand whether all social groups (ethnic, gender, religious, wealth, political, age) have been given equal chance to engage in the process. Also why and how they were excluded.

5. Do you think that any particular groups or individuals influenced the process in their own favor at the expense of others?

This question also aims to highlight the power dynamics in the processes. Our focus here should be to understand how and whether any social groups are using their power to achieve their own interests. We want to understand who are the more advantaged (the more powerful actors) and disadvantaged (weaker actors) and what each group is doing to ensure that they benefit from the REDD+ project. Note that influence by specific groups could be related to specific components of the program. This should be separately explored

6. Are there any conflicts that arose in the community during the process? Between who and what were the conflicts about?

7. How have they been handled?

Each process should be explored separately

8. What was extent of discussions about REDD outside the formal village meetings and can you say that these discussions had any impact on the final decision by the village to participate in REDD?

Several factors affecting the REDD process may not necessary have been discussed in the village meetings organized by AWF. A lot of debates may have been elsewhere like in religious organizations, political arenas, women's groups, in people's households etc. Thus, this question aims to understand to what extent these discussions are affecting the process.

9. Describe the way REDD has affected the way you use/ manage your land and forests? Are you happy with the changes?

Our aim here is to understand the implication of REDD on people's livelihoods and what their perception is on this.

Questions on specific components to community members

Income generation

10. Have the income generating components of the project such as the agricultural activities like beekeeping had any real impact in terms of economic improvements to community members? Do you consider these benefits to be equally distributed or concentrated among some?

The aim here is to find out if people perceive REDD to be economically good for them and if the benefits they get from it cover their costs of not using or reduced use of the forest

Land use planning

11. What role did you as community members play in the land use planning process? Are you satisfied with the way your forest land was demarcated for different purposes?

Inform about the categories established if participants do not mention them themselves

Rules governing forest and land use

This section explores the community's knowledge, perception and implication as well as changes in rules, norms and practices governing forest use. It also aims to find out if people can distinguish between the old and new rules and which of these are being followed.

12. What were the rules governing forest use before the coming of REDD.
13. What were the new rules governing forest use in REDD.
14. Is there any conflict between the old and new rules?
15. Are community members following their previous rules or have you switched to the new rules?

16. Are you familiar with the provisions in the new village bylaws? What do you think about the process through which these bylaws were made?
17. To what extent have you been involved in the formulation of the village bylaws? In general, are you satisfied with the provisions of the bylaws?
18. What implications do the new village bylaws have on your livelihoods?