ASSESSMENT OF EFFECTIVENESS OF SOCIAL AND ENVIRONMENTAL SAFEGUARDS IN THE REDD+ PILOT PROJECT IN KILOSA DISTRICT, MOROGORO, TANZANIA

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ABSTRACT

Climate change is regarded to be one of the global threats leading into increased temperatures, unreliable rainfall, unpredictable synchromes and storms. To date, efforts to reduce impacts of climate change rely on Reducing Emission through reducing Deforestation and forest Degradation (REDD+) initiatives. Effectiveness of REDD requires safeguards to encounter risks associated with REDD+ activities. Research studies on safeguards in Kilosa REDD+ pilot project are limited. This study assessed the effectiveness of social and environmental safeguards on REDD+ pilot project in three villages involved in the project. Both qualitative and quantitative data were collected. A total of ninety households were randomly selected from three villages. Content analysis was used to analyze qualitative data while SPSS version 16 computer program was used for quantitative data analysis. More than 94% of the respondents were found to experience positive impacts of REDD+ activities on community livelihood contrary to 5.6% who perceived differently. A proportional (60%, 56.7% and 16.7%) of the respondent in Chabima, Nyali and Dodoma isanga respectively reported that the status of safeguards is very good. It was found further that majority of the local community are aware of REDD+ initiatives and safeguard measures. Results on perception of REDD+ safeguards shown that 55.6%, 40% and 4.4% of the respondent reported that the safeguards are benefiting the local people; safeguards benefit the project and other reported nil respectively. It is therefore recommended that for successful implementation of REDD+ initiatives safeguards are needed to encounter the community livelihood to be explored and enhanced. Local community through safeguards should be assured on provision of appropriate incentives and stakeholders' consultation.

DECLARATION

I, Adolf Yanda, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original work done within the period of registration and that it has neither been submitted nor being concurrently submitted in any other institution.

_____ _____

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The above declaration is confirmed

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To all, I say be blessed!

DEDICATION

This work is dedicated to “The Beneficent”, He who gives blessings and prosperity to all beings without having disparity. His limitless capacity and abundance made this work possible and to my parents, Edson Yanda and Gaudensia Basigiye who showed me the way to school.

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LIST OF ABBREVIATIONS AND ACRONYMS

AWF	African Wildlife Foundation
CDM	Clean Development Mechanism
ENAREC	Environmental and Natural Resource Economics
CoPs	Conference of Parties
FGD	Focused Group Discussion
JGI	Jane Goodall Institute
IPCC	International Pannel of Climate Change
MCDI	Mpingo Conservation and Developmwnt Initiatives
MJUMITA	Mtandao wa Jumuia ya Misitu Tanzania
RED	Reducing Emission through deforestation
REDD+	Reducing Emission through Deforestation and forest Degradation plus
SLA	Sustainable Livelihood Approach
TaTEDO	Tanzania Traditional Energy Development and Environmental Organisation
TFCG	Tanzania Forest Conservation Group
TNRF	Tanzania Natural Resource Forum
UNFCC	United Nation Framework on Convention on Climate Change
URT	United Republic of Tanzania
WCST	Wildlife Conservation Society Tanzania
WWF	World Wide Fund for Nature
VNRC	Village Natural Resource Committee

CHAPTER ONE

INTRODUCTION

1.0 Background Information

Climate change is the global threat leading to increased temperatures, unreliable rainfall, unpredictable rains, storms, and rise in sea level which all have adverse effect on the living organisms and the environment (IPCC, 2007). Forests being a carbon sink play an important role for mitigation and adaptation to climate change through carbon sequestration (URT, 2002; 2009). Human activities particularly in tropical forests is estimated to contribute about between 17% and 20% of Global carbon dioxide emissions, resulting in accelerated global warming (Achard *et al.,* 2004; Gullison *et al.,* 2007; IPCC, 2007; Van der Werf *et al*., 2009).

Climate change impacts can is believed to significantly be reduced by having sound mitigation strategies, such as Clean Development Mechanism (CDM) and Reduced Emissions from Deforestation and Forest Degradation (IPCC, 2007). Kyoto Protocol provides conditions for developed countries to invest in emission reduction projects in developing countries through the CDM as a way to reach their goals of emission reductions with the help of tradable certified emission credits. Activities accepted under the CDM are afforestation and reforestation initiatives.

However, more efforts to mitigate climate change are under way to develop systems of payments for Reducing Emission from Deforestation and forest Degradation (REDD) in developing countries (IPCC, 2007; Gullison *et al.,* 2007; Skutsch, 2011; UNFCCC, 2010). Furthermore, REDD+ have gained momentum in international climate negotiations as a cost-effective way to reduce greenhouse gas emissions after the Kyoto Protocol in 2012

(Kajembe, 2013). Avoided deforestation as an emission reduction strategy, on the other hand, was excluded (URT, 2010). The discussions continued through CoP 14 in Poznan in late 2008. It was during this CoP that parties argued that REDD as first conceived could have a perverse incentive structure in the long term (Skutsch, 2011; Vatn and Vedeld, 2011).

REDD+ concentrates through reducing emissions from deforestation and forest degradation, fostering conservation, sustainable management of forests, and enhancement forest carbon stocks (IPCC, 2007). As an outcome of the United Nations Framework Convention on Climate Change (UNFCC), REDD+ is expected to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

REDD+ activities have the potentials to contribute to multiple social and environmental benefits to the environment and to some stakeholders including sustainable forest management and improve communities' livelihood (Forconsult, 2013). Notwithstanding the expected multiple benefits, communities whose livelihoods depend on the forests face social and environment impacts associated with the REDD+ initiatives (Mwayafu and Kisekka, 2012). Therefore, the need for deliberate efforts to address the social and environment impacts associated with the REDD+ initiatives has gained attention in international, national and local initiatives focused on REDD+ (UNFCCC, 2010). In line with ensuring that REDD+ activities do not cause negative social or environmental impacts, many international institutions have adopted environmental and social "safeguard" policies to help identify and reduce the possibility that their investments will cause harm to communities and ecosystems (Mwayafu and Kisekka, 2012).

Safeguards refer to policies and measures that aim to address both direct and indirect impacts on communities and ecosystems, by identifying, analysing, and ultimately working to manage risks and opportunities (Gullison *et al.,* 2007; UNFCCC, 2010; Murphy, 2011). Equally, REDD+ safeguards prevent and mitigate undue REDD+ harm to people and their environment, and to strive to develop benefits in the process (Gullison *et al.,* 2007 and UNFCCC, 2010). They take different forms, meaning and purpose for different stakeholders, such as governments, donors, financiers and investors, multilateral institutions, indigenous people and forest dependent communities, the private sector, and the civil society (UNFCCC, 2010 and Moss *et al.,* 2011). However, safeguards entail principles, standards, criteria, risk mitigation measures, strategic social, environmental assessments, and precautionary measures.

According to the Cancun Agreements in 2010, if safeguards are timely, appropriately and effectively designed and implemented, they can help REDD+ provide a suite of multiple benefits (UNFCCC, 2010). The implementation of the nine National REDD+ pilot projects are to gain experience, advance learning, action and the development of appropriate REDD+ policies in Tanzania and internationally (TNRF, 2012). REDD+ piloting in Tanzania seeks to build on the participatory forest management experience and to test ways to transfer benefits from the national government to communities managing forests. These approaches can also strengthen social and governance aspects of community-based natural resource management (Stuart-Hill *et al*., 2005).

According to Milledge (2009), REDD+ pilot project in Kilosa district focused on forest law enforcement, forest management and planning, reduced impact logging, expansion of forest reserves, agriculture modernization, modernization of wood energy supply, wildfire and pest management and payment for environmental services. These activities' implementation goes in line with a number of risks to both surrounding communities and

environment (IPCC, 2007). It require effective and appropriate safeguards to prevent and mitigate harm to communities and their surrounding environment, since extent of implementation of social and environmental safeguard is less known to majority of the REDD+ pilot projects in rural areas, it gives the rationale of this study to bridge the this gap.

1.1 Problem Statement and Justification of the study

The potentials of timely, appropriately and effectively designed and implemented REDD+ activities are significant to both social and environmental aspects (UNFCCC, 2010). Tanzania Forest Conservation Group (TFCG) and *Mtandao wa Jamiiwa Usimamizi wa Misitu Tanzania* (MJUMITA) are two conservation organizations which are undertaking REDD+ pilot project in Kilosa District (TFCG and MJUMITA, 2009). The project intended to make REDD + work for communities and forest conservation in Tanzania since 2009 as a pro-poor approach. It is aimed at generating equitable financial incentives to communities for sustainable conservation of Tanzanian forests as a potential carbon sink. In contrast, the implementation of REDD+ activities pose a number of potential risks to the environment and to some stakeholders, particularly the communities whose livelihoods depend on the forests, which require effective implementation of safeguards measures to ensure smooth and sustainable undertakings (IPCC, 2007; TFCG and MJUMITA, 2009; Mwayafu and Kisekka, 2012).

Despite the widely known merits and roles of social and environmental safeguards towards sustainable undertakings of REDD+ activities (IPCC, 2007; TFCG and MJUMITA, 2009; UNFCCC, 2010; Mwayafu and Kisekka, 2012; TNRF, 2012; Forconsult, 2013), still very little is known on the effectiveness of the employed social and environmental safeguards measures in REDD+ pilot projects including that at Kilosa district (Dyngeland and

Eriksson, 2011). The relevance and effectiveness of designed and implemented safeguards measures are therefore needed to be acknowledged for the sustainable implementation of REDD+ activities. This is due to the fact that most of the REDD+ pilot projects take place in poor rural areas where the livelihoods of the communities relatively depend on forest resources (UNFCCC, 2010; TNRF, 2012; Kajembe, 1994; Roe *et al.*, 2013). This study assessed the effectiveness of social and environmental safeguard on livelihood of the local communities and their surroundings.

The study findings are expected to widen understanding on the effectiveness of social and environmental safeguards towards sustainable REDD+ implementations. Since the earlier understanding on REDD+ pilot project safeguards (TFCG and MJUMITA, 2009), considered the integration of standards and safeguards into national policies and legislation, however, the effectiveness of social and environmental safeguards was not well addressed.

Besides, the findings are expected to provide a win-win situation between the local community and the REDD+ activities. In addition, the information obtained are expected to assist local government, extension workers, researchers, farmers, livestock keepers and other relevant stakeholders in the developing and promoting of REDD+ projects for the benefit of the next generation

1.2 Research Objectives

1.2.1 General objective

The main objective of this study is to assess the relevance and effectiveness of social and environmental safeguards to the REDD+ pilot projects.

1.2.2 Specific objectives

The specific objectives were:

i. To assess the impacts of REDD+ initiatives on livelihood of the local community
ii. To identify and assess the status of REDD+ safeguards in the study area.
iii. To examine the perception of local communities on the safeguards addressed by REDD+ pilot project

1.2.3 Research questions

i. What are the impacts of REDD+ activities on livelihood of the local community?
ii. What is the status of REDD+ safeguards on the study area?
iii. Is the local community happy with safeguards from REDD+ pilot projects?

1.2.4 Conceptual framework

The conceptual framework of this study assumes that people surrounding the forests under REDD+ pilot project are involved in REDD+ activities as mitigation measures to climate change. Upon their involvement, the pilot project through its activities requires social and environmental safeguard that takes into account the risks posed by the project, which eventually will results into appreciation of the right of the local community who depends on forest for their livelihoods and protection of natural forest and biodiversity. Finally, the effective implementation of theses safeguards will have positive impacts to livelihood and REDD+ initiatives (Forconsult, 2013).

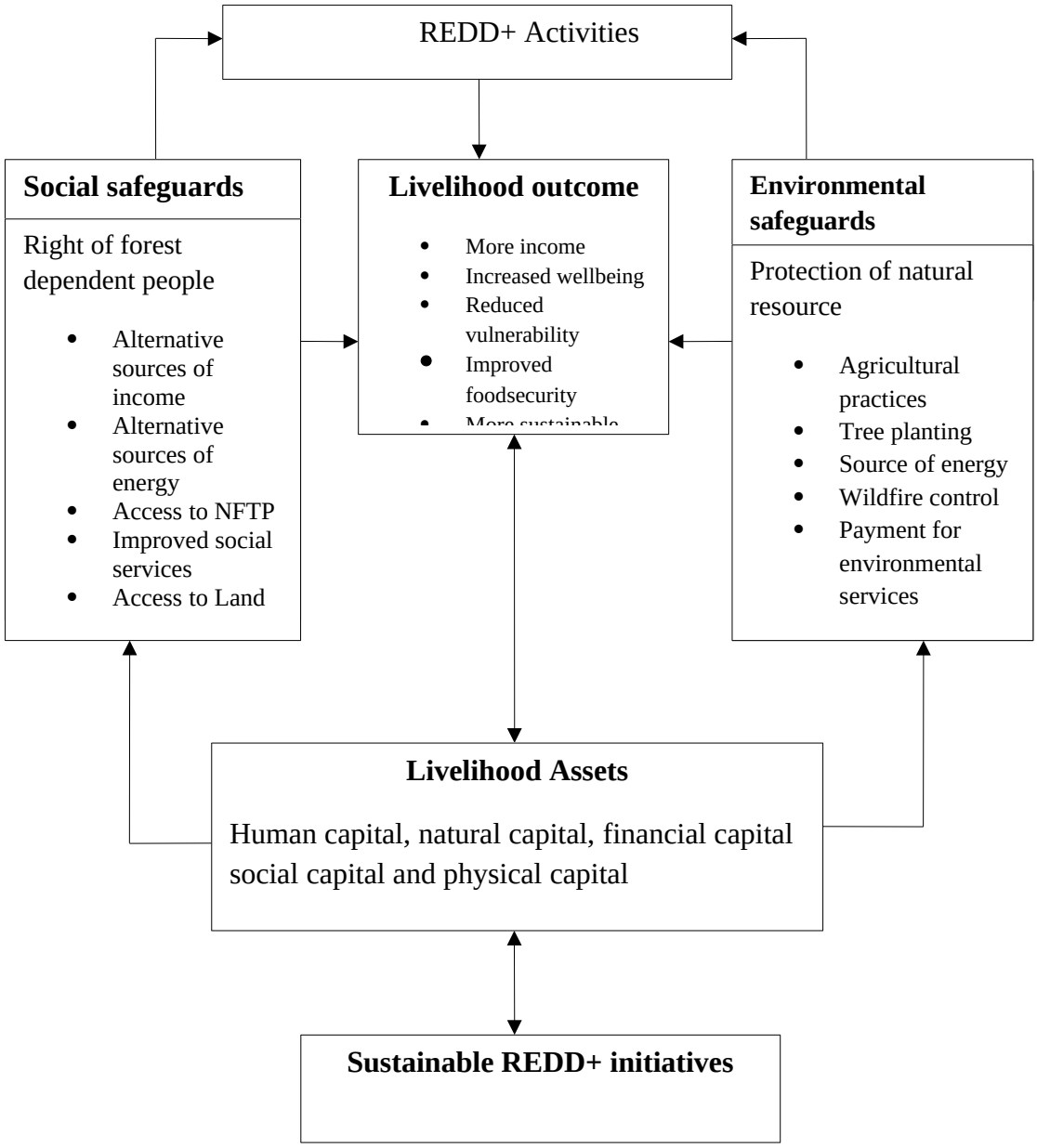

Figure 1: Conceptual Framework

Source: Adopted from Forconsult, 2013

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview on REDD+ activities

REDD+ has been a remarkably successful idea. Since Reducing Emission through Deforestation (RED) was launched at CoP11 and Reducing Emission through Deforestation and Forest Degradation plus (REDD+) was fully integrated into the global climate agenda at CoP13 in 2007 (UNFCCC, 2010), it has come to be regarded as potentially one of the most effective and efficient mitigation strategies available today. REDD+ is one of the climate change mitigating measures intended to be adopted in developing countries (IPCC, 2007; Angelsen and Wertz-Kanounnikoff, 2008). REDD+ initiatives were established after the Clean Development Mechanism (CDM) which had the similar focus in reducing emissions but the activities that were accepted under the CDM were afforestation and reforestation initiatives in the developing countries. Avoided deforestation as an emission reduction strategy, on the other hand, was excluded (UNFCCC, 2010 and URT, 2010). The scope of REDD + activities, including (i) reducing emissions from deforestation; (ii) reducing emissions from forest degradation; (iii) conservation of forest carbon stocks; (iv) sustainable management of forests and (v) enhancement of forest carbon stocks (IPCC, 2007; Skutsch, 2011; Vatn and Vedeld, 2011).

2.2 REDD+ Safeguards

Safeguards are broadly understood as policies, programme, activities and measures that are designed to protect against undesirable outcomes in specific project and programs such as REDD+ (IPCC, 2007; World Bank, 2011; Mwayafu *et al*., 2012; TNRF, 2012). The aim of safeguard is to address both direct and indirect impacts on communities and ecosystems, by identifying, analysing and ultimately working to manage risks and opportunities

(UNFCCC, 2010 and McDermott, *et al*., 2012). It is anticipated that if designed and implemented properly, safeguards can help REDD+ to provide multiple benefits. Safeguards should be considered at all stages of project design, implementation, monitoring and evaluation. Safeguards are important when dealing with REDD+ projects and programme because issues such as land and carbon rights, equitable benefits sharing, governance, gender mainstreaming, monitoring and evaluation and sustainable management of resources are pertinent at all levels (Boyd, 2002 and Campese, 2011). Therefore, effective information systems for safeguards are essential for a successful REDD+ mechanism (Murphy, 2011). Establishing internationally recognised social and environmental standards to guide national REDD+ policy and project design is critical to achieving effective, efficient and equitable social and environmental outcomes (Jagger *et al*., 2012).

2.3 Theories underlying perception of Local Communities on Safeguards to REDD+ Activities

REDD+ activities have the potential to deliver significant social and environmental co-benefits, though they pose a number of potential risks to the environment and to some stakeholders, particularly the communities whose livelihoods depend on the forests (IPCC, 2007; TFCG and MJUMITA, 2009). Most people are highly doubtful about REDD+ because of the possibility that it might restrict access and extraction rights to their land which have highly significant livelihood and cultural implications (Milledge, 2009: Jagger *et al.*, 2012) and has attracted significant discussions, particularly among local communities and civil society organizations (Milledge, 2009; Dyngeland and Eriksson, 2010). The biggest problem is that REDD+ is perceived as a ‘business as usual’ project, especially with the experience from PFM projects in the district and elsewhere in the country, which had put more emphasis on conservation measures, with little attention paid

to benefit streams that would improve the welfare of participating communities (Campese, 2011;TNRF, 2011; Kajembe *et al*., 2013). There is therefore a need for deliberate efforts to address the social and environment impacts associated with the REDD+ initiatives.

2.4 Theories Underlying Livelihoods

Livelihood is a combination of the resources used and the activities undertaken by a household for the material provisioning of its members (DfID, 1999). Resources consist of individual skills and abilities (human capital), land, savings and equipment (natural, financial and physical capital,) and formal support groups or informal networks that assist in the activities being undertaken (social capital) (Chambers and Conway, 1992).

Livelihood comprises of capabilities, assets (stores, resources, claims and access) and activities required for a means of living; A livelihood is sustainable when it can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long-term (DfID, 1999). Measuring the sustainability of a livelihood remains a challenge task for development practitioners as it requires the selection of suitable indicators and this can only be achieved with great skill and awareness of all the relevant factors.

2.4.1 Sustainable livelihood approach

The sustainable livelihoods approach (SLA) is a way to improve understanding of the livelihoods of poor people. It draws on the main factors that affect poor people's livelihoods and the typical relationships between these factors. It can be used in planning new development activities such REDD+ projects and in assessing the contribution of the existing activities if it have made to sustaining livelihoods. The SLA framework is

presented in schematic form which shows main components of SLA and how they are linked. In this study, safeguards expect to identify more effective ways to support livelihoods and reduce poverty (Carney, 1998).

2.4.2 Livelihoods Assets:

These are the assets on which livelihoods are built. They can be divided into five core categories;

Human capital

These are skills, knowledge, capacity to work, and good health that together enable people to pursue different livelihood strategies and achieve their livelihood outcomes. A household's level of human capital depends on household size, skill levels, education, leadership potential, and health status in which effective safeguards have to take into account for the local community surrounding the REDD+ pilot project. Human capital is necessary to be able to make use of the other four types of livelihood assets (DfID, 1999).

Natural capital

Natural resource stocks are trees, land, clean air, coastal resources, etc upon which people rely on. Benefits of these stocks are both direct and indirect. For example, land and trees provide direct benefits by contributing to income and people's sense of well-being. The indirect benefits that they provide include nutrient cycling and protection from erosion and storms (DfID, 1999). Safeguards to be effective should take into account the natural resource stocks which have direct link with environmental conservation and entirely have influence to the livelihood of the local community near the project.

Financial capital

Defined within the Sustainable Livelihoods framework as the financial resources people use to achieve their livelihood objectives in which effective safeguards on REDD+ projects should address on how the local community can acquire the financial capital. Savings are

the preferred type of financial capital because they do not have liabilities attached and usually do not entail reliance on others. They can be held in the form of cash, bank deposits, or liquid assets such as livestock or jewellery. Credit obtained from either credit-providing organizations or informal money lenders represents a stock of financial capital.

Social capital

These are formal and informal social relationships (or social resources) from which various opportunities and benefits can be drawn by people in their pursuit of livelihood. These social resources are developed through investment in the following aspects: Interactions that increase people's ability to work together; Membership of more formal groups in which relationships are governed by accepted rules and norms; Relationships of trust that facilitate co-operation, reduce transactions costs and sometimes help in the development of informal safety nets amongst the poor. Benefits of social capital: Access to information, Access to influence or power and claims or obligation for support from others.

Physical capital

These are physical goods and facilities, both public and private, that supports livelihoods. Public physical capital, often called infrastructure, includes: Affordable transport systems, water supply and sanitation, facilities that make energy affordable and clean and good communications and access to information. Private physical capital includes: Shelter of adequate quality and durability, productive assets that enhance income (e.g. bicycles, rickshaws, sewing machines, and agricultural equipment), Household goods, utensils, and equipment (such as radios and refrigerators). Physical is often owned by individuals or groups. Some physical capital, such as larger agricultural equipment or processing units, can be accessed through rental or by paying a fee for the services used.

2.5 REDD+ Activities and their Potential Impacts on Forest and Local Community

In general, affects of REDD+ projects on livelihoods tends to depend on how much it restricts or facilitates productive activities (Smith and Scherr 2002; Wunder 2008). Projects that avoid deforestation while permitting some level of forest use, such as improved forest management generally provide more diverse livelihood benefits (Richards, 2011). However, many REDD projects involve a reduction in livelihood options. Due to their resource poor situation, the rural people sometimes depend on degraded resources and are therefore at risk of being negatively affected by REDD+ land use changes (Bond *et al*., 2009; Peskett*et al*., 2008; Smith and Scherr 2002). However, the risks due to REDD+ activities is encountered by appropriately and effectively implemented social and environmental safeguards.

2.6 REDD+ pilot Projects in Tanzania

There were nine REDD+ pilot projects supported by the Royal Norwegian Embassy, and implemented by civil society organizations and their partners. These projects cover many regions of Tanzania, and have diverse aims and approaches (Kibuga, and Samweli, 2010; TNRF, 2011). These are African Wildlife Foundation (AWF), Jane Goodall Institute (JGI), Mpingo Conservation and Development Initiative (MCDI), Care Tanzania (CT), Tanzania Forest conservation Group (TFCG), Community Forest Conservation network of Tanzania (MJUMITA), Tanzania Traditional Energy Development and Environmental Organization (TaTEDO), Wildlife Conservation Society of Tanzania (WCST) and WWF (World Wide Fund for Nature) are the organization implementing REDD pilot project. This study was conducted in Kilosa district where REDD+ pilot project is implemented by TFCG and MJUMITA.

CHAPTER THREE

METHODOLOGY

3.1 Description of the Study Area

3.1.1 Location of the study area

Kilosa is one of the six districts within Morogoro Region, its area is 14 245 km^2 making up about 20 per cent of the Region (KDC, 2010). The District lies between 6°S and 8°S, and 36°30'E and 38°E. It borders the Tanga Region to the North and Morogoro District to the East. In the South, it is bordered by the Kilombero District and part of Iringa Region (KDC, 2010). As in figure 2

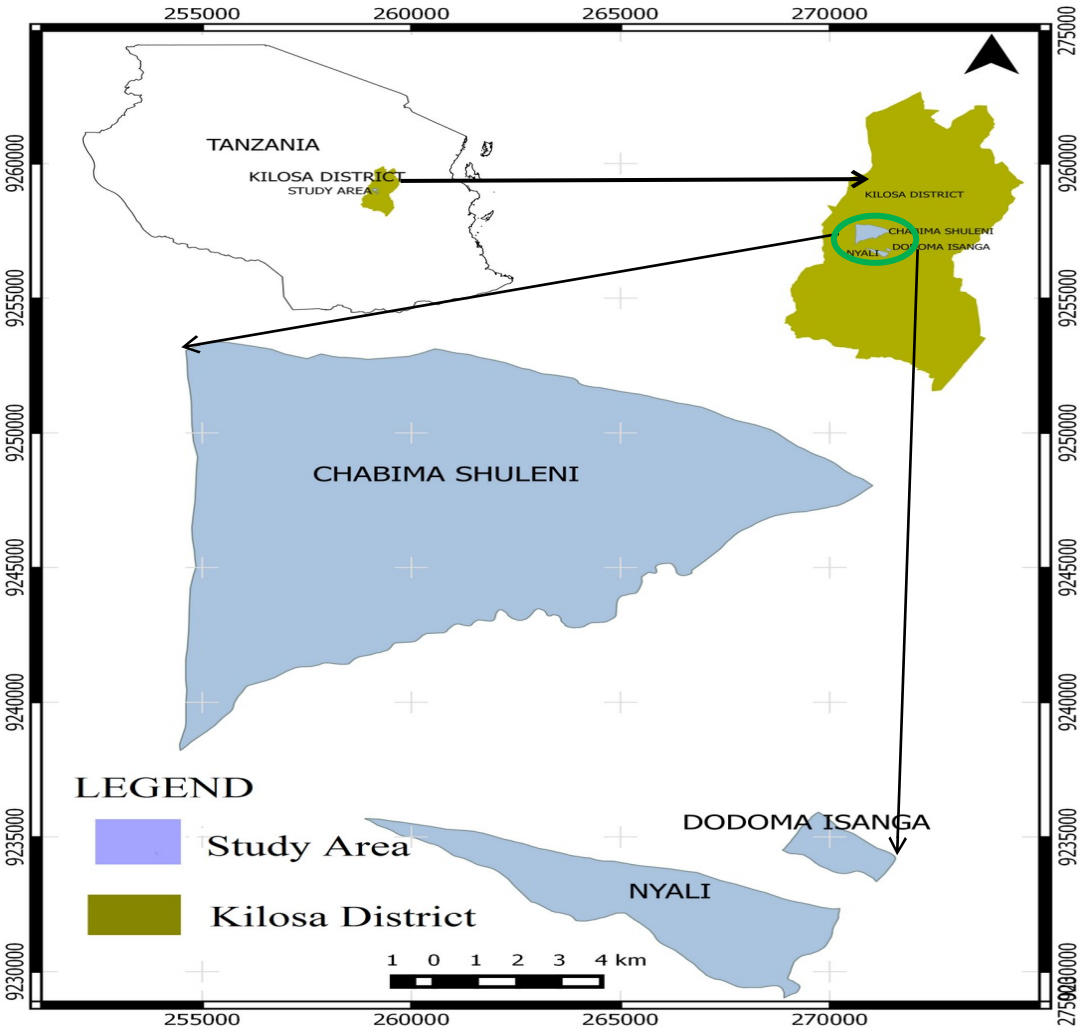

Figure 2: The Map of Kilosa District showing villages of the study areas

3.1.2 Climatic condition

The area is semi-arid with an average annual temperature of 25ºC Annual rainfall differs from 1000 mm to 1400 mm in the southern flood plains, 800 mm to 1100 mm in the North, to 1600 mm in the mountain forests (KDC, 2010).

3.1.3 Forest

Most of the forests are found on the western part of the District, particularly around the Eastern Arc mountain range, it includes forest reserves, public forests and community forests. The District has ten forest reserves covering an area of 106 983 ha All forest are centrally managed by the Forestry and Beekeeping Division. Community forests are found within villages while public forests are all forest outside the forest reserves, which are not controlled by villagers. These forests are exploited for various purposes such as poles, timber, firewood and charcoal which eventually increase carbon dioxide emission(greenhouse gas) but also used for hunting wild animals (Cecilie and Havard, 2011). The project covers 215 000 ha of forest and 51 000 beneficiaries across two biodiversity hotspots namely Lindi and Kilosa (TFCG and MJUMITA, 2009).

3.1.4 Economic activities

According 2012 National Census, population and housing census 2.8% of the population were employed by Government, 0.9% of engaged in livestock keeping, 0.08% of the population participated in fishing, 7.45% were involved in elementary occupation and others were 8.74%. Most people engaged in farming for both subsistence and cash. Livestock keeping is was of the important economic activity in the district, which included keeping cattle, goats, sheep, pigs, poultry and dairy cattle. More than 80% of people in Kilosa depend on agriculture (Maganga *et al*., 2007; Kilosa District Council, 2010; Kajembe *et al*., 2013) and with its demographic conditions, ranging from a plateau characterized by seasonally flooded plains and hills, to mountainous areas with altitudes

surpassing 2000 m, Kilosa District offers a variety of agro-ecological conditions for farming (Maganga *et al*., 2007).

3.1.2 Population

The population of Kilosa District is 438 175 (URT, 2012). The District has three major ethnic groups; (Wa) Kaguru in the North, Sagala in the Central zone and Vidunda in the South. However, many people from other ethnic groups have migrated to the area over the last decades.

3.2 Why Kilosa District?

The study was conducted in three villages namely Chabima, Nyali and Dodoma Isanga in Kilosa District, the selection of the village was based on the fact that they participate in REDD+ pilot project. It is well gifted with REDD+ pilot project since 2009 (TFCG and MJUMITA, 2009). Most of the forests in Kilosa district are found on the western part particularly around the Eastern Arc mountain range and the major causes of deforestation within district are forest clearing for agriculture and plantations, timber production, poles harvesting and bio-mass for energy consumption (Burgess *et al.,* 2009 and Cecilie and Havard, 2011). More than 80% of people in Kilosa depend on Agriculture and forest resources for their livelihoods (KDC, 2010; URT, 2012; Kajembe *et al.*, 2013). Restricting access on natural forests due to REDD+ activities, requires effective and proper implementation of social and environmental safeguards for sustainability of REDD+ initiatives in minimizing the carbon dioxide without compromising people's livelihood.

3.3 Methods

3.3.1 Research design

The study employed a cross sectional research design. Under this design, data of interest were collected simultaneously, examined once (Babbie, 1990; Bryman and Bell, 2011). Considering the study, the time available for conducting the study as well as financial resources available, only three villages namely Chabima, Dodoma Isanga and Nyali participating in REDD+ pilot project were selected from the list of villages participating in REDD+ activities as a sampling frame. In this study, a questionnaire was the main technique for data collection and supplementary information were captured by checklist during focused group discussion and key interview discussion. Data collected was useful for the purpose of describing the effectiveness of social and environmental safeguards on REDD+ pilot project in Kilosa District, Morogoro.

3.3.2 Sampling and sample size

Purposively, all villages participating in REDD+ pilot project in Kilosa district were identified. Random sampling procedure was used to obtain the three study villages. The village register of the three selected villages were used as the sampling frame for random selection of sampling units which was households. In each village, at least 5% of the total households were sampled as a sample size as reported by Boyd *et al.* (1981) provided that the sample size of 30 respondents in each village are the bare minimum. According to the nature of the study and time availability to carry out the study, a sample size of 90 households was selected for interview. Household is most appropriate unit of measurement when assessing the standard of living in the society (Lynch, 1994).

3.4 Data Collection and Analysis

Objective 1: To assess the impacts of REDD+ activities on livelihood of the local community

Primary data was collected by using semi structured questionnaire (Appendix 1), Focused Group Discussion checklists (Appendix 2), Key informants checklist (Appendix 3) and direct observation to obtain detailed information on the impacts of REDD+ activities on livelihood of the local community. To both objectives 1, 2 and 3 secondary data were obtained from Kilosa District Offices, TFCG and MJUMITA and National agricultural Library (SNAL). Online databases and documents were also visited as shown in the reference list. An attempt was also made to revisit unpublished literature and reports in the Projects and others relevant matters of this study.

Data collected were REDD+ activities, impacts of RED+ activities both positive and negative impacts on livelihood and environment.

Data analysis: Data collected under this objective were coded and entered into SPSS version 16 computer program for analysis whereby descriptive statistics such as frequencies, mean and cross tabulation were used to present results ready for interpretation and qualitative data were analyzed by using content analysis in which recorded dialogue with respondents was broken down into smallest meaningful units of information for easy interpretation

Objective 2: To identify and assess the status of REDD+ safeguards in the study area

Primary data was collected by using semi structured questionnaires, and checklist which guided a researcher during Key informant interview and Focused Group Discussion.

Information on safeguards collected was identification of safeguards, opinions, implementation of safeguards.

Analysis of data, quantitative data obtained by the semi structured questionnaire were coded and entered into SPSS version 16 computer program for analysis. The analysed data were presented by descriptive statistics such as cross tabulation, percentages, mean and charts. Qualitative data was analysed by using content analysis in which recorded dialogue with respondents was broken down into smallest meaningful units of information.

Objective 3: To assess the perception of local communities on the safeguards addressed by REDD+ pilot project

Primary data was collected by using semi structured questionnaire and checklist to obtain both qualitative and Quantitative data on perception of the local community on safeguards addressed by the REDD+ pilot project. Information collected was based on perception, awareness, knowledge, understanding and opinion from the local community on the Safeguards addressed by the REDD+ pilot project.

Data analysis: data collected were coded and then entered into SPSS version 16 program for data analysis. Descriptive statistics such as mean, frequency, percentage and cross tabulation were used to present results after analysis. Furthermore, a logistic regression analysis was used to predict factors that influence variation on perception of the respondents on REDD+ safeguards. A logistic regression equation was presented as shown below

General equation

$$\text{Logit } [p(x)] = \log\left[\frac{p(x)}{1-p(x)}\right] = Z_i = a + \beta_1 X_1 + \beta_2 X_2 + \beta_2 X_2 \ldots + \beta_n X_n + \varepsilon_i \ldots\ldots (1)$$

Specific equations

$P_i = ¿$

$(1-P_i ¿ = (benefit\, the\, projrct) = (0) = \frac{1}{1+e^Z} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$

The ratio of equation (2) and (3) you get equation (4) ie odd ratio which is the ratio of the probability that safeguards benefits people or state otherwise.

$$\frac{P_i}{1-P_i} = \frac{1+e^{z_i}}{1+e^{-z_i}} = e^z \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.. (4)$$

Now if you take the natural log of equation (iii) above you obtain logit model (L_i)

$$L_i = ¿ \left(\frac{P_i}{1-P_i} \right) = Z_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. (5)$$

Where:

$$Z_i = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots \beta_n X_n + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$$

P_i = probability of the respondent to perceive the REDD+ safeguards benefits people within the village

α = the y intercept (constant);

β_s = regression coefficients;

X_S = independent variables (age, income, level of education of the respondent, gender, marital status and household size);

e = natural logarithm base (2.718);

$\varepsilon_i = ¿$an error term;

Variables and assumptions:

To operationalise the objectives, various variables and assumptions were developed and used as follows:

Dependent variable

Perception of the respondents on REDD+ safeguards was a binary dependent variable (Y_i). Thus REDD+ safeguard having different benefits including access to incentives, new knowledge of conservation, improvement of livelihood and payments for environmental services; were considered as dependent variable$(Y¿¿i)¿$. The respondents who were perceiving to accrue benefits from REDD+ safeguards were considered to accept $(Y¿¿i=1)¿$, while those who did not perceive to accrue benefits from REDD+, were considered $(Y¿¿i=0)¿$

Hypothesised outcome for independent variables

The independent variables were socio-economic factors of respondents (Age, income, marital status, household size, education level, and gender). Coefficient β_0: In the model represents autonomous odd ratio i.e. the value of odd ratio when the independent variables are assumed to be equal to zero. It is expected that at the absence of all independent variables the probability of the respondent perceiving to accrue benefits from the Project will be higher. The odd ratio will be positive and thus the expected sign of coefficient β_0 is positive.

Goodness of Fit model

For regression models with a categorical dependent variable, it is not possible to compute a single R squared statistic that has all of the characteristics of R square in the linear regression model, so three approximations were computed instead. The following methods were used to estimate the coefficient of determination:

- **The Likelihood Ratio Test**
- The logistic-regression model, fit by the method of maximum-likelihood

- ***Cox and Snell's R square*** was based on the log likelihood for the model compared to the log likelihood for a baseline model. However, with categorical outcomes, it has a theoretical maximum value of less than 1, making it difficult to interpret even for a "perfect" model.
- **The *Nagelkerke R square:*** The *Nagelkerke* modification that does range from 0 to 1 is a more reliable measure of the relationship. *Nagelkerke's R2* will normally be higher than the *Cox and Snell* measure. *Nagelkerke's R2* is part of SPSS output in the 'Model Summary' table and is the most-reported of the R-squared estimates.

3.5 Generalization of the Study Findings

The study was conducted in only 3 villages out of 13 (Appendix 3) involved in REDD+ pilot project at Kilosa District in Morogoro region. However, the findings can be generalized beyond the three villages involved in the study provided they are in the same district in one project. It is therefore considered that the implementation of the study will be applicable to other villages involving in REDD+ pilot project in Kilosa District and elsewhere in Tanzania with similar situation.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSIONS

4.1 Respondent Characteristics

Different household characteristics were considered in this study. The study characteristics included, sex, age, marital status, household size, education level and sources of income.

4.1.1 Sex

Findings in Table 1 indicate that majority of the respondents (66.6%) were male and 35.6% were female indicating that more males attend events in the village compared to females. This finding suggests that majority of the households in the study area are male-headed. According to Johanson (2001) in most cases males are the ones who make major decisions such as use of income despite the fact that women contribute significantly to production.

4.1.2 Age (years)

The findings in Table 1 indicate that, 31.1% of the respondents were in age group of 31 to 40 years revealing that majority of the respondents fall under that category. These are therefore be expected to participate more actively in REDD+ activities and only 12.2% of the respondents were in age group of 21 to 30 years indicating a possibility that youths are migrating to urban areas. Generally, the findings indicate the significant proportion of the respondents were in the active age for agricultural activities. Age influences experience, wealth and decision making. All these have effects on adoption of intervention. Rezvanfar, *et al*. (2009) observed that age is likely to have impact on the adoption of new intervention and also Fernandes (2000) observed that young people migrate to urban areas which may lead to low involvement is implementation of projects in the villages.

4.1.2 Marital Status

The findings in Table 1 show that, the highest proportions of the respondents interviewed were married (78.2%) while 21.8% covered other categories. The findings reflect that, most of the grown up household are in marriage relationship. Married respondents are likely to be more productive due to the increased labour force. According to Bwalya (2005) married farmers have wider spreading of labour throughout the year hence enhanced implementation economic interventions.

4.1.3 Level of education

About 90% of the respondents attended primary education followed by those with secondary education. These findings suggest that most of the local communities that are involved in REDD+ activities had a modest level of education. Formal education is an important factor in making various decisions in daily life. According to Kalineza *et al*., (2002) and Rogers (2003) farmers who are knowledgeable are more likely to adopt new innovations compared to those who are not knowledgeable. Education is argued to be one of the strongest determinants of household income and has a big bearing on household decisions made by household head (Word Bank, 1996). Furthermore, in theory, education is expected to improve productivity in all spheres of activities including agriculture and conservation activities.

4.1.4 Household size

As summarised in Table 1, it shows that more than 50% of the total respondents had households with 4 to 6 people whereas only 23.3% of the total respondents had household with 1 to 3 people. In general, the majority who had the household size between 4 to 6 people was within the national average household size which is approximately 5 per household (URT, 2013). This observation implies that most of the households had number

of people within the average of 5 per household suggesting high labour availability for implementation of economic activities. According to Kangalawe (2006) labour shortage resulted in construction of ‘ngoro’ pits with small dimensions and low quality compared to pits which were constructed using adequate labour force. Furthermore, family size is also an important factor in determining the extent to which labour is available in any economic activities and it reflects household’s ability to access food, health services and other basic needs, this implies that, the households with a large number of family sizes are likely to utilize more forest resources and agricultural land.

Table 1: Demographic characteristics of the respondents in Nyali, Chabima and Dodoma Isanga village in Kilosa District

characteristics	Nyali (n=30)	Chabima (n=30)	Dodoma Isanga(n=30)	Average
Sex				
Male	46.7	76.9	70	66.4
Female	53.3	23.3	30	35.6
Age				
21-30	20	10	6.7	12.2
31-40	33.3	26.7	33.3	31.1
41-50	13.3	33.3	723.3	23.3
51-60	13.3	20	26.7	20.0
Above 60	2	10	10	13.3
Marital status				
Single	6.7	0	0	2.2
Married	70	70	96.7	78.9
Widower	10	20	0	10.0
Widow	10	3.3	0	5.6
Divorced	3.3	6.7	0	3.3
Education level				
No education	16.7	3	0	6.7
Primary	76.7	93.3	100	90.0
Secondary	6.7	3.3	0	3.3
College	0	0	0	0
Family size				
1-3 persons	23.3	13.3	30	23.3
4-6 persons	53	43.3	50	48.9
7-9 persons	23.3	43.3	16.7	27.8

4.2 Economic Characteristics of the Respondents

4.2.1 Sources of income

4.2.1.1 Main sources of income and diversification

About, 77.8% of the respondents depend on agriculture whereas 11.1% of the respondents depend on livestock keeping. Similarly 11.1% engaged in both agriculture and livestock keeping as a source of income. The main crops which cultivated in the study area were rice, maize, banana, sesame seeds and varieties of vegetables. Crop farming is the main income generating activities for most household in the study area and livestock keeping seems to be the last one. Plate 1 indicated the some cultivated crops in study area. These findings are similar to those of URT (2001); Kashuliza *et al.* (2002); and Majule (2008). The authors in their study found that in Tanzania rain fed agriculture continues to be the main economic activities for most of rural people.

Plate 1: Crop agricultural practices

Other sources of incomes are presented in Table 2, the sources of income include local alcohol brewing, food vendering, bricks making and fishing in the nearby rivers.

Table 2: Sources of household income of the respondents in the study area

Sources of income	Nyali (n=30)	Chabima (n=30)	Dodoma Isanga(n=30)	Average scores
Main sources				
Crop	80	66.7	88.7	77.8
Livestock keeping	6.7	20	6.7	11.1
Mixed farming	13.3	13.3	6.7	11.1
Other source				
Small business	23.3	53.3	36.7	37.8
Causal labour	20	23.3	40	27.8
Gift from relatives	20	16.7	6.7	14.4
No others	36.7	6.7	6.7	20
Sub total	100	100	100	100

The occupation of an individual can greatly affect utilization of forest resources. For instance, households that devote much of their time in agricultural areas for cultivation as compared to those doing other activities such as formal and informal employments are likely to effect the environment differently.

4.2.2 Livelihood Assets

4.2.2 .1 Assets

As summarised in Table 3, respondents under the study area had different assets, 86.7% of the respondents own bicycle, 88.9% own house built with burnt bricks. Other asset indentified were radios, mobile phones and house with cement floor and motorcycles. This implies that most of the villagers spend more time in their farms where the means of transport was only bicycles. However, they do not have access to TV hence they only use radio to access information on REDD+ initiatives. Furthermore households in villages use

trees to burn bricks which is not environmentally friendly. REDD+ activities need to consider the right of local people in accessing forest product for their livelihood.

Table 3: Proportion of respondent asset in the study area

Assets categories	Nyali (n=30)	Chabima (n=30)	Dodoma isanga (n=30)	Average scores
Car	0	0	0	0
Motorcycle	6.7	3.3	6.7	5.6
Bicycle	86.7	73.3	100	86.7
radio	60	70	86.7	72.2
House with cement floor	6.7	10	10	8.9
House with burnt bricks	96.7	80	90	88.9
Mobile phone	33.3	53.3	50	45.6

4.2.3 Livestock keeping

On average 53.3% of the respondents own chicken while 53% of the respondents own sheep. Other livestock owned by the respondents were goat, ducks, cattle and only few own pigs. The finding implies that people in Nyali, Chabima and Dodoma Isanga have varieties of livestock as sources of income and food. They engage also in raising livestock to support their life instead of depending only on forest resources and agriculture. According to URT (2005) agriculture, including livestock is of central importance to livelihoods, providing income and employment to about 80% of the population.

Table 4: Households livestock

Livestock categories	Nyali (n=30)	Chabima (n=30)	Dodoma Isanga (n=30)	Mean scores
Cattle	13.3	3.3	3.3	6.6
Goat	73.3	26.7	60	52
Sheep	160	36.7	60	53
Pig	6.7	16.7	0	7.8
Donkey	23.3	13.3	0	12.2
Chicken	60	33.3	66.6	53.3
Ducks	30	63.3	36.7	43

4.2.4 Households income

As reported in Table 5, regarding the income of respondents in Nyali, Chabima and Dodoma Isanga villages, 21.1% of the respondents in the study area have income ranging from TZS 250 000 to 500 000 and 62.2% of the respondents have income ranging from TZS 500 001 to 750 000 whereas 16.7% of the respondents have income level ranging from TZS 750 001 to 1 000 000. The average level of income of the households in the study area was TZS 64 100. At this level, 83.3% of the respondents live below the average income level. This implies that most of the household have similar sources of income and benefits accrued from the project are beneficial to majority of the local people.

Table 5: Income of the respondents in Nyali, Chabima and Dodoma Isanga villages in Kilosa District

Income level	Nyali (n=30)	Chabima (n=30)	Dodoma Isanga (n=30)	Average score
250,000-500000	33.3	10	20	121.1)
500001-750000	146.7	73.3	66.7	(62.2)
750001-1000000	0.2	16.7	13.3	16.7
Total	100	100	100	100

4.2.2 Impact of REDD+ activities on Livelihood of the local community

The analysis on REDD+ activities shows that 66% of the respondents agreed that REDD+ activities have impact on their life whereas 27% of the respondents argued the activities to have no impact on their daily life (Fig. 3). This observation shows that majority of the respondents experienced different level of impacts since REDD+ pilot project commenced. Other studies reported that most of the local people are highly doubtful about REDD+ because of the possibility that it might restrict access to their land which have high significant livelihood and cultural implications (TFCG, 2012). Furthermore, REDD+ activities have the potential to contribute to multiple social and environmental benefits to the environment and to improve communities' livelihood.

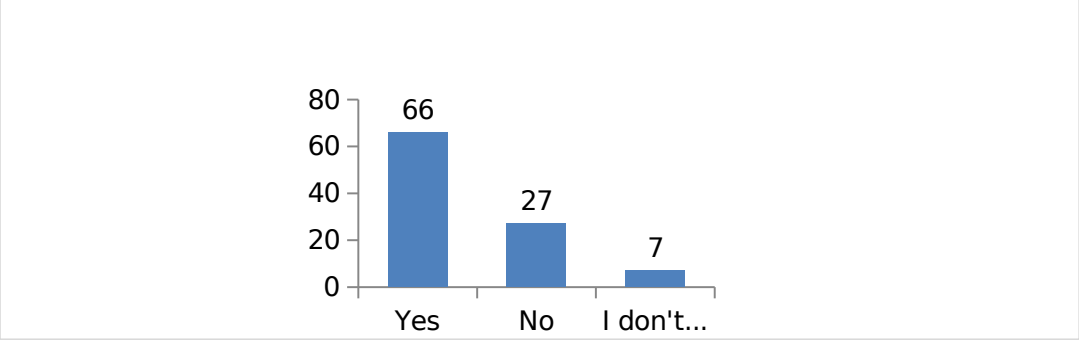

Figure 3: Perception of the respondents on the impact of REDD+ activities in the study area

4.2.2.1 Positive impacts of REDD+ activities on livelihood of the local community

Findings in Table 6 show a number of positive impacts of REDD+ activities that have influence on the sustainable livelihood of local people in the study area. The sustainable livelihoods approach (SLA) is a way to improve understanding of the livelihoods of poor people. For the community to achieve their livelihood, sustainable forest management need to be achieved.

4.2.2.1.1 Access to forest products

Table 6 indicate that, 70% of the respondents reported to have access to forest products as a means of sustaining their life though reduced access to livelihood asset especially natural asset attributable to REDD+ initiatives which was also reported by Abdallah *et al*. (2012). Furthermore, the findings reveal that due to REDD+ activities most of the respondents agreed that forest products and non-forest products increased though people are not restricted to access the products from the forest. As is in many cases in rural areas in Tanzania, forests have a significant role in securing rural livelihoods (Majule *et al.* 2010).

However, in line with findings in Figure 4 show that 56% of the respondents have access to fire wood, 11% of the respondents access poles from the forest the same as charcoal makers (11%), and 4% of the respondents have access to timber products. This shows that most of the local people have high access to forest products in the forest area. This is the major challenge in implementing the REDD+ program because majority of the households still depend on forests for fire wood. The findings are in line with Kaale (1998) who found that fuel wood is the major source of energy for cooking for majority of the Tanzanians.

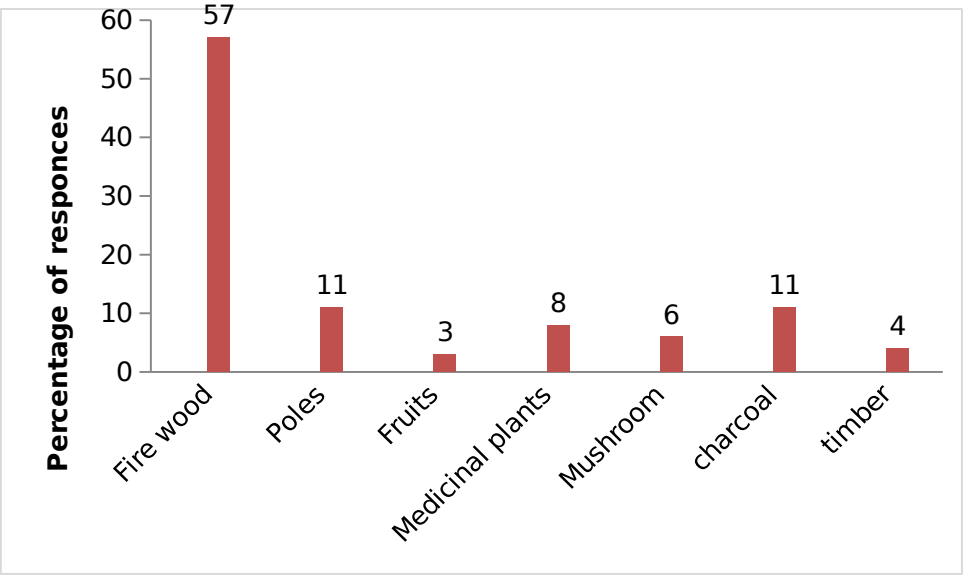

Figure 4: Indicates the accessible products from the forest

4.2.2.1.2 Availability of wild animals

Findings in Table 6 indicate that there was an increase in wild animals because of REDD+ activities through forest management that have resulted to habitat of many wild animals. As summarised in Table, approximately 6, 71% of the respondents argued that since the REDD+ pilot project was launched in Kilosa District, the number of wild animals especially monkey species has increased together with Hares, Dickdick, hyenas and some edible animals that are hunted for supporting their daily basic needs but before the Project it was very rare to find them. It was also reported that these wild animals' reach their houses places especially those living closer to the forest area under the pilot project. Majule *et al.* (2010) reported that through increased wild animals and other natural products as well as increased biodiversity tourist activities will be established and this will attract tourism to visit the area and eventually bring income to the communities and the governments to enhance well-being of the local community.

4.2.2.1.3 Capacity building/ education

About 64.4% of the respondents reported that REDD+ has provided knowledge to the local people about REDD+ activities and people attended different seminars, workshops and village meeting**.** Personal observation reveals that most of the local people in the study area are informed and are aware of the REDD+ activities. The proportion of responses in Nyali, Chabima and Dodoma Isanga village were 50%, 70% and 73% respectively of which most of them acquired knowledge from the projects through seminars, workshops and village meeting. Involvement of local community in the projects has enabled them to acquire different skills and knowledge that has influenced means of sustaining their life. According to Kalineza *et al*. (2002) and Rogers (2003) people who are knowledgeable are more likely to experience new innovations compared to those who are not knowledgeable. Below is the picture disclosing the involvement of local community in REDD+ activities.

Plate 2: Awareness Creation meeting on REDD+ initiatives Source: TFCG Technical Report 2011

4.2.2.1.4 Improvement of infrastructure and other social services

Findings in table 6 shows that 73.3 % of the respondents reported that the project has improved infrastructure in the villages by building village offices in Nyali, Chabima and Dodoma Isanga village were among the beneficiaries from the project. In Chabima village local community through carbon payment trial had managed to build a dispensary which will increase access of health services and later on reduce extreme use of medicinal plants which are carbon sink. The results show that REDD+ activities have multi-benefits to both local people and environments. Furthermore respondents reported that they expect more benefits from the project because they have devoted their forest areas which were benefiting their daily life and for that case the project will be responsible for their life and their environment.

Plate 3: Village infrastructures (office and improved road)

4.2.2.1.5 Restoration of degraded forest area

Human activities such as charcoal making, firewood collection and shifting agriculture has been reported to be the driving forces of forest degradation in most area. But findings in Table 6, indicate that 54.4% of the respondents reported that degraded forest area are now recovering simply because people are not encroaching the forest area for agriculture or

settlement as it was before. In Nyali, Chabima and Dodoma Isanga villages the responses on restoration of the degraded forest area were 56.7%, 46.7% and 60% respectively. This observation reveals that REDD+ pilot project has achieved the objectives while be benefiting the local people. Majule *et al*. (2010) reported that REDD+ entails conservation and this means that the forest will be already under means of land use plan and in this case land will be protected from degradation which will lead to increase in number biodiversity and richness in species.

Plate 4: Areas planned to plant tree; Source: field 2014

4.2.2.1.6 Alternative income generating activities

Findings in table 6 show that about 54.4% of the respondents reported that REDD+ activities have encouraged the other ways of generating income, and most of these sources are environmentally friendly. During the study activities like charcoal making were reported to be very high but further they reported that activities like beekeeping, home garden for vegetation together with small business were high promoted by the project leaders and already people are benefiting from such activities. The proportion of responses in Nyali, Chabima and Dodoma Isanga village were 53.3%, 50% and 60% respectively for those who perceived that the pilot project has supported people engaged in the other source of income which are environmentally friendly. The findings from this study show that,

people in the villages under project they have adopted other ways of generating income and for supporting their basic needs for their life.

Table 6: The positive impacts of REDD+ activities in the study area

Impacts	Nyali (n=30)	Chabima (n=30)	Dodoma Isanga (n=30)	Average scores
Access to forest products	63	86.3	60	70
Availability of wild animals	70	73	70	71.1
Capacity building/ Education	50	70	73	64.4
Access to social services	73	63.3	83.3	73.3
Restoration of degraded forest area	56.7	46.7	60	54.4
Alternative income generating activities	53.3	50	60	54.4

4.2.2 Negative impacts of REDD+ activities on Livelihood of the local people

The findings in Figure 5 indicate major problems that the local people have started to experience, include increase of living cost, increase of wild animals and low production of crops since 2009 when the pilot project commenced.

4.2.2.1 Increase in living cost

The findings in Figure 5 indicate that 39%, 33% and 31% of the respondents in Nyali, chabima and Dodoma Isanga village respectively reported that REDD+ activities in the village have changed the living cost. The reasons reported were unavailability of charcoal for domestic use which has accelerated the increase in price of kerosene and other foods sold in the market. The findings also show that, charcoal making which was the main source of energy to majority of the housheols is now prohibited despite the fact that it is still taking place although in a relatively lower rate. As a result of these interventions the prices for charcoal, timber, firewood and other forest products have escalated which makes

it difficult for low income groups to afford for their basic use. This finding is similar to observation made by Forconsult, (2013). Furthermore respondents added that before the project started people had shifting cultivation by encroaching the forest area looking fertile soil, but currently the alternative for cultivation is limited due to restriction from the Project.

4.2.2.2 Increased wild animals

Findings in figure 5 indicates that about 32% 38% and 32% of the respondents in Nyali, Chabima and Dodoma Isanga village respectively reported that wild animals have increased if compared to past before REDD+, due to changes in forest condition, forest are now inhabited more by wild animals more compared to the past. Unfortunately, the wild animals were destroying crops in the farm especially during morning and evening time when no one are not in their farm. This is very big challenge which lowers the total harvest from the farm. People in Chabima village argued that the intervention from project has lowered their total harvest compared to the past before the inception of the project.

4.2.2.3 Low production of crops

In Figure 5, the findings show that, 29%, 29% and 37% of the respondents in Nyali, Chabima and Dodoma Isanga villages reported that crop production has decreased and was still decreasing due to the facts that there were more animals and birds in the forests that destroy parts of their crops before harvesting. The findings reveal that after REDD+ activities were introduced more animals have inhabited in the forest and eventually they started to graze on farms, Crops raided were Maize, finger millets, pumpkin and banana plants which are mostly cultivated by majority of the villagers. Generally, mammals like monkeys, and other species of bird are now available in the forest.

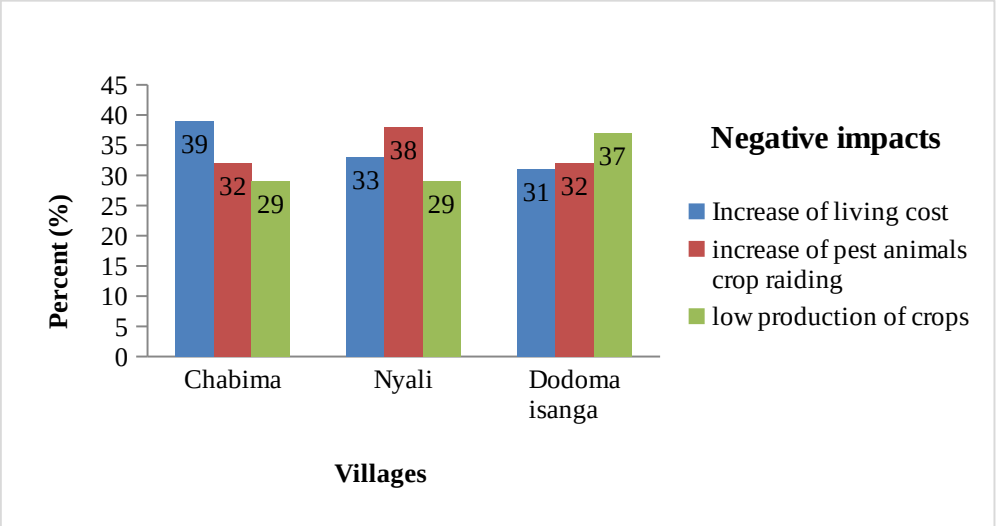

Figure 5: The negative impacts of the REDD+ activities in the study area.

4.3 Identification and Assessment Safeguards in the Study Area

4.3.1 Safeguard per Kilosa REDD+ pilot project

The findings in table 7 indicate the list of safeguards implemented in Kilosa REDD+ pilot project. Kilosa REDD+ pilot project operates with a number of REDD+ safeguards which are recognized at the global level. This observation was also reported by Roe *et al.* (2013) and Forconsult. (2013) that safeguards implemented at pilot project level are concurrent with the international safeguards addressed by UNFCCC. The need for deliberate efforts to address the social and environment concerns associated with the REDD+ activities was a concern of the project and this has necessitated the design of REDD+ safeguards covering both social and environmental issues. Other studies reported that, safeguards are not new in human rights and environmental protection policies (Moses *et al.*, 2011).

Table 7: Safeguards per Kilosa REDD+ pilot project identified during the study

List of safeguards identified per REDD+ pilot project in Kilosa district.	
1	Establishing village land use plans in each village involving in REDD+ pilot project.
2	Recognition of local people's rights
3	Establishing environmental friendly alternative income generating activities
4	Integrating gender in REDD+ activities
5	Recognition of local people's land use rights
6	Recognition of rights of the marginalized and vulnerable people
7	Involvement of local communities during decision making

Source: MJUMITA Office, 2014

During the study, the researcher and the project staff concluded that the safeguards in the project are there to minimise the risk which may be posed by REDD+ activities and this observation also is in line with URT (2013) who argue that while REDD+ activities have the potential to deliver significant social and environmental co-benefits; they pose a number of potential risks to the environment and to some stakeholders, particularly the communities whose livelihoods depend on the forests. The argument is also supported by Roe *et al.* (2013).

Plate 5: Discussing with coordinator of Nyali and Chabima villages

Field observation reveal that majority of the villagers were not aware on the term safeguards until explanations were provided which was very challenging concern to the researcher. However, project staff reported that these safeguards were not a big deal to them as they do not expect to cause deliberately consequences to the local people and the environment.

4.3.2 Status of safeguards in Kilosa REDD+ pilot project

Findings in Table 8 have shown that about 61.1% of the respondents in the study area reported that safeguards addressed by the project are very good in the sense that they appreciate the implementation. In this context 60%, 56.7% and 66.7% of the respondents were from Chabima, Nyali and Dodoma Isanga villages respectively, who observed that the status of safeguards is very good. Furthermore, respondents reported that the safeguards are good in which the responses by village shown in table 8 are as follows 33.3%, 30% and 28.9% in Chabima, Nyali and Dodoma Isanga respectively. However, respondents reported that the status of the safeguards was poor as follows; 6.7%, 13.3% and 10% in Chabima, Nyali and Dodoma Isanga village respectively. The main reasons for those who report poor status of the implemented safeguards argued that REDD+ initiatives has no direct benefits to the local community who are involved in REDD+ initiatives, implementation of safeguards is very poor and conservation is very expensive compared to the benefit accrued.

Table 8: Responses on the status of safeguards in the study area

Name of Villages	Very Good	Good	Bad	Mean	Standard deviation
Chabima (n=30)	60	33.3	6.7	1.467	0.629
Nyali (n=30)	56.7	30	13.3	1.563	0.728
Dodoma Isanga (n=30)	16.7	23.3	10	1.433	0.6789

Furthermore, participants from Nyali, Chabima and Dodoma Isanga village reported that REDD+ safeguards will have good impact in long term and it will be a benefit to those who will engage directly in the project. One of the benefits reported during the discussion was that, people will be in a position to get employment and other income generating activities like beekeeping. This observation is in line with Majule *et al*, (2012) study who reported that REDD+ initiatives will increase employment opportunities in the area and this together with other benefits will bring about reduced poverty in the area.

4.4. Perception of the Local Community on REDD+ Safeguards

4.4.1 Awareness of respondents on safeguards

In this context, the researcher was concerned about the level of awareness of respondents on safeguards per pilot project in Kilosa District. Findings in Table 7 indicate that, on average 58.9% of the respondents were aware on safeguards, in this context 60%, 56.7%, and 60% respondents were from Nyali, Chabima and Dodoma Isanga village respectively and while in average of 41.1% of the respondents were not aware and based on the village level only 43.3%, 40% and 40% of the respondents were from Nyali, Chabima and Dodoma Isanga village respectively. The findings reveal that awareness creation on REDD+ safeguards were promoted to the local community which eventually became familiar to community members. However, this variation of awareness was controlled by having access of detailed information about REDD+ initiatives. It can be deduced that a reasonable number of the respondents were aware on the safeguards which indicate the project commitment in stakeholder consultation and engagement from the beginning.

Moreover, the results show a statistically significant difference in the awareness of the respondent across the villages ($\chi^2 = 29.960$; df = 2; p = 0.041).

Table 9: Awareness of respondents on safeguards in Nyali, Chabima and Dodoma Isanga villages in kilosa district

Response	Nyali (n=30)	Chabima (n=30)	Dodoma isanga (n=30)	Average score	χ^2	sig
Yes	60	56.7	60	58.9	26.96	0.041**
No	40	43.3	40	41.1		
Total	100	100	100	100		

Key:.*statistical significant at p< 0.05 level

4.4.3 Perception of respondents on Safeguards

With regards to the perception of the respondents on safeguards in the study area, The findings in Table 10 indicate that 55.6% of the respondents perceive that the existing safeguards are befitting the community with the fact that, from the projects the villages have managed to build village offices and dispensaries, 40% of the respondents believe that the safeguards benefits the project because they do not feel tangible benefit to the local community and only 4.4% of the respondent stated nothing about the safeguards. This observation indicates that there is a need of making people more aware on the issues of REDD+ activities to make feeling attached to the project. This observation was also revealed by Kajembe, *et al.,* (2013) who recommended that with regard to REDD+, emphasis should be placed on designing equitable, effective and efficient projects that will provide alternative means of livelihood. Moreover, the results show a statistically

significant difference on the benefits of safeguards across the villages (χ^2 = 25.08; df = 2; p = 0.011).

Table 10: Perception of the respondents on safeguards in the study area

Perception	Nyali (n=30)	Chabima (n=30)	Dodoma Isanga (n=30)	Total Average score	χ^2	df	Sign.
Benefiting the people	53.3	60	53.3	55.6	25.08	2	0.011**
Benefiting the project	40	33.3	46.7	40			
I don't know	6.7	6.7	0	4.4			
Total	100	100	100	100			

Note: ** significant at p< 0.05

Furthermore in the study area, respondents argued that the benefits were supposed to be identified and also beneficiaries from the project should be specified to avoid conflict before the project commence effectively. Inspite of showing positive perception to majority of the respondents on the safeguards addressed by the project but still more emphases were recommended for future achievement.

4.4.3.1 Factors influencing perception on REDD+ safeguards

The logistic regression results in Table 11 show a positive coefficient (parameter of estimate) of the independent variables (Education, Household size and income) implying high probability of positive impacts of the project on their life. However, Sex, Age and marital status coefficient was negatively predicted implying negative impacts.

Table 11: Socio-economic factors influencing perception of the respondents on REDD+ safeguards

	B	S.E	Wald	df	Sig	Exp(B)
Sex	-0.951	.476	3.997	1	0.0460	0.386
Age	-0.021	.279	0.006	1	0.0390	0.979
Marital	-0.458	.332	1.898	1	0.1680	0.633
Education	0.140	.620	0.051	1	0.0220	1.150
Income	0.121	.160	0.056	1	0.0480	1.720
Household size	0.199	.072	0.235	2	0.0080	1.821
Constant	2.809	2.34	1.442	1	0.2300	16.585

Note:** statistically significant at 0.05 level, Exp (B)= e^B where e=2.71818 and B= regression coefficient which stand for the odds ratio of probability success of the probability of failure. Wald statistics = $B/(SE)^2$

[Hosman and Leweshow test (chi square = 26.07, df= 8 and P= 0.0128), -2log likelihood= 97.568, Cox and Snell R square = 0.196 and Nagelkerke R square = 0.269)]

4.4.4.1 Sex

Results in Table 11 indicate that sex of the respondents is negatively correlated and statistically significant at 5% level of significance on REDD+ safeguards. The odds ratio of the sex of the respondent was 0.386 implying that increase on male or female respondents in the study area will increase the chance of negative perception of the respondents on the REDD+ safeguards addressed by the project.

4.4.4.2 Age

Results in Table 11 indicate that age of households was negatively correlated and not significant at 5% level of significance on REDD+ safeguards. Table 11, also shows that the odds ratio of age of the respondent was 0.979 which implies that an increase of age of respondent by one year is likely to decrease the level of respondent to perceive positively on safeguards by multiplicative factor of 0.979. This means that an increase in age

decreases the probability of the extent the respondent to perceive positively on REDD+ safeguards. This observation is in line with Din, (2011) who argued that, Age has an influence to existence of perceiving new interventions whereby young people are more active to participate in activities and are expected to work hard to sustain the contour life as it requires active labour than old age

4.4.4.3 Marital status

The results in Table 11 indicate that marital status was negatively correlated and not significant at 5% level of significance on REDD+ safeguards. Results in Table 12 reveal that the odds ratio of marital status was .633 implying that one unit increase of marital status is likely to decrease the level of respondent to perceive positively on the REDD+ safeguards or other projects. Similar observations were reported by Mnkabenga (2012) when assessing the effect of payment for environmental services on land use practices. This could be due to the fact that, large percent of the respondents, who are single, widowed and divorced did not highly perceive positively on the benefit of the project to their life.

4.4.4.4 Education

The influence of education of the respondents on perceiving the benefits of REDD+ safeguards shows positive correlation. Results in Table 11 indicate that education level of the respondents was positively correlated and significance at 5% level of significant on REDD+ safeguards and the odds ratio of education level of the respondents in the study area was 1.150 implying that an increase in one unit of level of education of the respondent in the study is likely to increase the chance of perceiving REDD+ safeguards positively. This implies that people with education are more likely to adopt new intervention that have

befits to both the environment and to their livelihood. The observation are comparable to that of Waritu, (2007) who found that the more the farmers are educated the more the adoption in conservation activities. Moreover, Malisa, (2009) found that low education is related to obstacle to access information and hence poor adopted in conservation activities.

4.4.4.5 Income

The results presented in Table 11 indicate that income of the respondents was positively correlated and statistically significant at 5% level of significant on perceiving REDD+ safeguards that benefits the local community. The odds ratio of income of the respondents in the study area was 1.720 which reveals that increase in one unit of household income of the respondent in the study area is likely to show high level of positive perception on REDD+ safeguards. This observation implies that respondents with more income perceive positively compared to poor people on REDD+ safeguards addressed by the project. This could be due to the facts that, majority of the respondents have similar sources of income.

4.4.4.6 Household size

The findings as summarised in Table 11 indicate that, the influence of household size of the respondents was positively correlated and statistically significance at 5% level of significant on perceiving REDD+ safeguards that benefits the local community. The odds ratio of household size of the respondents in the study area was 1.821 implying that for every unit increase of the household size it is likely to increase influence by 1.821 times on perceiving that REDD+ safeguards benefits to the local community by a multiplicative factor of 1.821. This is implying that the larger the family size the more labour is available to participate in the project Example environmentally practices on the farm requires substantial labour and so the farmer decision to accept such a project may be influenced by the availability of family labour provided by the house hold size. The results are in line

with Amsalu and Jan de (2007) who found household size to have a significant and positive effect on determinants of adoption

CHAPTER FIVE

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

The experience from Kilosa REDD+ pilot project reveals that many people in the villages depend on forests for their livelihoods, Based on the findings of this study, study concludes that, safeguards as per the Kilosa REDD project design are very effective due to the fact that majority of the respondents experiences positive impacts which signify safeguards are very effective in the study area and are in line with the international safeguards as agreed at the Cancun meeting. Majority of the local communities are aware on the REDD+ initiatives which was accelerated by awareness creation at the initial stage.

Safeguards implemented by the pilot project seem to have significant contribution to their livelihood despite the fact that still more effort is required for sustaining the project and the life of the local community. The data reported here will be used as benchmark to monitor the progress of the pilot project on the effectiveness of the safeguards in Kilosa REDD+ pilot project.

5.2 Recommendations

The view of the above findings and conclusion, the study recommends as follows

- REDD+ initiatives should devise mechanism to ensure that benefit from project are tangible and visible to the local people.
- Investment on REDD+ policies should basically count on the livelihood of the marginalised people to avoid isolation in community.

- More opportunities of the local people to generate their income should be acknowledged by the REDD+ policy and empower rural enterprise developments which contribute significantly to households' income in the area.
- Local communities and District Council Officials should own the project which will in turn ensure sustainability of the REDD+ project activities in the area.

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APPENDICES

Appendix 1: Questionnaire for the head of the households

SECTION A: Background Information

1. Name of the respondent.....

2. Name of the ward..... Name of the Village.....

3. Sex of respondent: 1=Male, 2= female [ ]

4. Age of respondent..... Respondent household size.....

5. Marital status: 1= single, 2=married, 3=separated, 4= widow [ ]

6. Respondent level of education: 1=no education, 2=primary education, 3=secondary education, 4=college and above [ ]

SECTION B: Social economic activities

7. What is your main source of income (main occupation)?

1. Crop production 2. Livestock keeping 3. Crop production and livestock keeping 4. Salaried Employment [ ]

8. Are there any other sources of income apart from the mentioned above? 1.Yes 2.No [ ]

if the answer is Yes mention.

them.....
.....

9. Is REDD+ pilot project have any contribution to your sources of income? 1. Yes 2. No [ ]

If the answer is Yes mention specifically which one and how are they involved.....
.....
.....

10. How long have you being here in your village?

a) 1-5 years b) 6-10 years c) 11-20 years d) above 20 years [ ]

11. Main reason for coming in the village

a) Marriage b) Agriculture c) Pastoralist d) business e) Employment f) employment [ ]

12. Do you own land or plots of land near the forests under REDD+ pilot project? 1.Yes 2.No[ ]

13. How did you acquired it ? .....

14. What is the size of the land you own?

1.0-4 acres, 2. 5-8 acres, 3. 9-15 acres, 4. Above 15 acres [ ]

14. Which economic activities do you carry in that piece of land /plot?

a) Agriculture b) Livestock keeping c) Tree plantation d) Settlements e) Other economic activities- specify [ ]

15. Does implementation of REDD pilot project changed the size of your land? 1. Yes 2. No [ ] if the answer is 1, did they compensated you? 1. Yes 2. NoIf the answer is yes. How?.....

15. Do you have access to the forests resources around your village? 1. Yes 2. No

16. How do you get access?

1. Permit from the authority
2. Illegally [ ]

17. What kind of forest product do you collect from the forest?

Product	**No of bags/ bundles(kg)**	**Estimated cost**
Fuelwood		
Timber		
Poles		
Medicine		
Honey		
Mushroom		
Fruits		
Vegetable		
Wild animals		
Other (Specify)		

SECTION C 1: IMPACTS OF REDD+ ACTIVITIES ON THE LIVELIHOOD OF THE LOCAL COMMUNITY

18. What are REDD+ pilot project activities do you know....., ...
.....
....

19. Do the REDD+ activities you have mentioned in qn 18 have positive impacts in your daily living? a) Yes, b) No [ ]

Mention those positive impacts.....
.....

20. Do the REDD+ activities have negative impacts in your daily living? a) Yes, b) No [ ]

Mention those negative impacts.....
.....

What measures does the management of REDD+ pilot project takes to ensure that no negative impacts?.....
.....

21. What are the major activities of REDD+ pilot project in your villages to ensure you benefit from the project?

1. Environmental education [ ]
Specify.....

2. Providing agricultural incentives [ ]
Specify.....

3. Employment [ ]
Specify the kind of employment and the amount paid.....

4. Building social services [ ]
Specify.....

22. Which activities are you allowed conducting in the forests under REDD+ pilot project?

1. Collect firewood, 2. To collect medicinal plant, 3. Charcoal making, 4. Cultural activities (specify.....) [ ]

23. Are you satisfied with the limitation of accessing the forest land in supporting your daily life?

1. Yes, 2. No

24. Where do you report your claim in case of unsatisfied condition from the Project management?

1. Village leaders, 2. Court, 3. Member of Parliament, 4. Nowhere to report (why?) [ ]

25. Do you get information on the progress of REDD+ pilot project? 1. Yes, 2. No [ ]

26. If yes, how do you get information

1. During seminars, 2. Workshops, 3. Through village meeting, 4. Involved in decision making [ ]

27. After how long does the project management provide information to the local community for their benefit?

1. After some days, 2. One week, 3. After two weeks, 4. After a month 5. After some months [ ]

28. What are the major problems that normally occur in your village?.....
.....

29. What are the direct benefit provided by the REDD+ pilot project in supporting you in case there is disasters (problems) in your villages?.....
.....

SECTION C 2: HOUSEHOLD INCOME CHARACTERISTICS.

30. Fill the table below to obtain the total income of the household (mean per capital expenditure on basic need item).

Items	**Amount per month)**	**Percentage of total expenditure**
Food		
Clothing		
Energy		
Rent		
Health		
Transport		
Education		
Total		

31. What was your main source of income in the last two years? (Arrange in order of priority)

Sale of food crops=1 Sale of cash crops=2 Sale of livestock and its products =3 Charcoal making=4 Wage employment =5 Other forest based income generating activities =6 Remittance =7 Others (specify)…….

32. Please indicate the asset you have.

Asset Numbers Year	**Number**	**Use of asset**
1 Car		
2 Motorcycle		
3 Bicycle		
4 Radio		
5 Radio cassette		
6 House with corrugated iron sheet		
7 House with Cement floor		
8 House with burnt bricks or cement		
Telephone (Cell phone)		
TV		
Others (Specify)		

33. Please indicate livestock/poultry you own

Type	**Number**
Cattle	
Goat	
Sheep	
Pig	
Donkey	
Chicken	
Ducks	
Other (Specify)	

SECTION D: Perception of the local community on social and environmental safeguards

34. Are you aware of any social and environmental safeguards being practiced in REDD+ pilot project in your area? If Yes go to question 33 and if NO skip the remaining other questions.

35. How do you perceive the safeguards implemented by the REDD+ pilot project?

i) Very good
ii) Good
iii) Bad

36. What is your opinion on these safeguards addressed by the REDD+ pilot project.....
.....

SECTION E: The existing social and environmental safeguards of the study area

37. What are the social and environmental safeguards that are addressed to you by the REDD+ pilot
project?.....
.....
.....

38. What is the status of safeguards implemented by REDD+ pilot projects in Kilosa district?

i) Very Good
ii) Good
iii) bad

39. What is the significance of having these safeguards in the pilot study in your daily life?.....
.....

40. At what level do the safeguards addressed by REDD+ pilot projects support forests conservation?

a) Low b) Medium c) Maximum d) I don't know [ ]

Explain ……..

41. Does the REDD+ pilot project have any mitigation measures toward negative impacts dues to its activities?

a) Yes b) No [ ]

What are those measures?

.....

42. Do the safeguards addressed by the project consider gender issues during implementation? a) Yes b) No. If the answer is no why?.....

43. Are the REDD+ safeguards successful since it was implemented by the project? a) Yes b) No. [ ] whatever the case

explain.....

.....

44. What is your opinion to the REDD+ pilot project with respect to the safeguard addressed?

45. Do the safeguards improve the environmental management activities? a) Yes b) No .[ ]

State how

Appendix 2: Interview guideline for Key informants and FGD

A. Village leaders

1. How many forest reserves are in your village?
2. What are the conditions of forests in the village?
3. What is the role REDD+ in forest conservation in the village?
4. What are other organizations dealing with environmental conservation in the village?
5. How aware are villagers on REDD+ initiatives?
6. How do villagers participate in REDD+ activities?
7. What Benefits do village/villagers get from REDD+ project?
8. How can you describe your relation with REDD+ project

a. Agricultural officers

1. The contribution of REDD+ project to agricultural activities of the local communities
2. Number of households land displaced due to expansion of forest reserves under pilot project
3. The relationship between the villages and REDD+ authority

b. Forest officers

1. Impacts of human activities on the forest reserve under REDD+ pilot project
2. Strategies of safeguards in handling the impacts of Human activities
3. Do REDD+ safeguards takes into account the livelihood of the local community? How?
4. Does the safeguards implemented managed to control forest degradation? What are the alternative sources of forest if people were depending on them to support their living?

c. Livestock officers

1. Which animals are raised by the local communities as a means of generating income
2. How do you control them from grazing in the forest under REDD+ pilot project
3. Does REDD+ project have any contribution to the livestock keeping?

d. REDD+ pilot project authority

1. What are the social and environmental Safeguards are addressed by the REDD+ pilot project?
2. How do safeguards contribute to the livelihood of the local community?
3. Do the safeguards identify real work under natural setting? If Yes, how has people received?
4. Have you received claim from the local community about the addressed safeguards?
5. What indicators could show that safeguards are successful on achieving the livelihood of the local community?
6. Is the REDD authority involving local community in decision making? a) Yes b) No. at which level

Appendix 3: List of villages participating in REDD+ pilot project as the conservation strategies

S/N	Village Name participating in REDD+ initiatives
1	Chabima
2	Mfuluni
3	Ibingu
4	Dodoma isanga
5	Mkadege
6	Idete
7	Nyali
8	Masugurujuu
9	Masuguruchini
10	Ilonga
11	Munisangore
12	Kasongwe
13	Lumbiji
14	Lunenzi