

**ECONOMIC CONTRIBUTION OF VILLAGE COMMUNITY BANKS IN  
CONSERVING FOREST RESOURCES: A CASE OF KAZIMZUMBWI AND  
PUGU FOREST RESERVES**

**RWEKAZA, GODLOVE DEODATUS**

**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN  
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## ABSTRACT

Village Community Banks aimed to reduce extreme poverty among community group members and enable members share knowledge on how to generate income which could be alternative sources of income rather than depending on illegal exploitation of forest resources for the economic purpose. This study aimed at assessing economic contribution of VICOBA in conserving forest resources. Multistage sampling technique was used to obtain 5 villages adjacent to both Kazimzumbwi and Pugu Forest Reserves. In the selected villages 23 VICOBA was selected by using Probability Proportional to Size (PPS), 230 respondents from selected VICOBA was sampled and 15 key informants were purposively selected. Primary data was collected using questionnaires and key informants interviews. Quantitative data were processed and analyzed using SPSS and Microsoft excel, in addition a binary logistic regression analysis was done to determine factors influencing VICOBA member decisions in exploit forest products. Results show that, VICOBA programme enable its members to engage in small business activities as alternative sources of income at 55% which reduce illegal exploitation of forest resources, also binary logistic model results reveal significant factors that were negatively influence VICOBA members decision in forest products consumption at  $P < 0.05$  are alternative sources of income, national conservation laws, access to credit, educational level and cultural believes, 44% of VICOBA members were aware in forest conservation through conservation education provided and engaged in conservation through reporting illegal activities and participating in environmental clubs. Finally, this study recommends promotion of community microfinance groups in societies which could be source of alternative income generating activities to reduce overdependence and overconsumption of forest resources.

## DECLARATION

I, Godlove Deodatus Rwekaza, 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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Godlove Deodatus Rwekaza  
(MSc. ENAREC. Candidate)

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Date

The declaration is hereby confirmed by:

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Dr. L. P Lusambo  
(Supervisor)

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Date

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## **DEDICATION**

This work is dedicated to my beloved parents, Mr. and Mrs Deodatus Rwekaza.

Their contribution as parents to my upbringing and education is highly appreciated.

Their love and care for me enable me to be who I am today. May God bless them, Amen.

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## LIST OF ACRONYMS

CBFM	Community Based Forest Management
CBO	Community Based Organizations
IEG	Integrative Environmental Governance
JFM	Jointly Forest Management
KFS	Kenya Forestry Services
MNRT	Ministry of Natural Resources and Tourism
NAFOMA	National Forest Monitoring and Assessment
NGOs	Non-Government Organizations
NMP	National Microfinance Policy
PPS	Probability Proportional to Size
ROSCA	Rotating Saving and Credit Associations
SACCOS	Savings and Credit Cooperative Societies
SEDIT	Social and Economic Development Initiatives of Tanzania
SPSS	Statistical Package for Social Science
TAFORI	Tanzania Forestry Institute
TAWIRI	Tanzania Wildlife Research Institute
TFS	Tanzania Forestry Services

URT	United Republic of Tanzania
VICOBA	Village Community Banks
VSLA	Village Saving and Loan Associations
WWF	World Wide Fund for Nature

## **CHAPTER ONE**

### **1.1 INTRODUCTION**

#### **1.2 Background information**

The concept of Village Community Banks (VICOBA) in Tanzania comes after establishment of microfinance operational in 1990s (SEDT, 2008). The microfinance serves as the tool for improving society livelihoods and empower individual person from economic dependence status to the independent status (Mshote, 2016). In this case government tried to convince commercial banks to support small and medium business so as to make sure microfinance benefits reach to the individual level (URT, 2017). Most common impacts of microfinance operation in developing countries include Tanzania are economic growth, poverty eradication and enabling the community to share business skills in manner that they can generate their income (Khavul, 2010).

The operation of microfinance in Tanzania highly increased up to the community level and this caused adoption of a tool called Village Community Banks (VICOBA) as a grassroots based lending scheme with improving the economy of the group members in 2000 and 2002 for Tanzania Island and Mainland respectively (SEDT, 2008). The operation of Village Community Banks provide alternative sources of income to the community members which reduce dependence on the natural resources including forest resources (SEDT, 2008). In Tanzania forest resources are widely spread all over the country and approximately 55% of Tanzania mainland is covered by the forest resources and this includes different forest types like miombo woodland across central and southern part, acacia woodland in northern part and others types are mangrove and coastal forest (MNRT, 2015). Blomley and Idd (2009) reports on the increase of human population results to over exploitation and deforestation of forest resources, which needs integration



of solutions including diverse topics such as poverty alleviation and alternative sources of income among community members to reduce human dependence on forest resources (MNRT, 2015). This study assessed economic contribution of Village Community Banks as poverty alleviation tool and alternative source of income in conserving forest resources in selected sites to add knowledge about economic contribution of Village Community Banks in forest resources conservation.

### **1.3 Problem statement**

Contribution of Village Community Banks in resources conservation is not well known. The study on contribution of village community banks in poverty alleviation by Ngalemwa (2013) shows inadequate information of VICOBA as alternative source of income for forest resources conservation and sustainability in Tanzania. Wild *et al.* (2008) reported the importance of microfinance institutions at community level in formulating capital among community members to establish small business and sustainable projects which reduce illegal exploitation of natural resources with less concern of VICOBA program. Struhsaker *et al.* (2005) reported an increase of human population which results to overconsumption of forest resources while strategies for conserving them are insufficient. Diversification of sources of income for poverty alleviation is among solutions proposed to reduce human dependence on forest resources (MNRT, 2015). However the contribution of VICOBA programme as alternative source of income in forest resources conservation is not known and to what extent helps people to engage in sustainable projects and alternatives income generating activities, therefore this study assessed economic activities generated by VICOBA programs and their relation to forest conservation. Specifically the study determined impacts of economic activities engaged by VICOBA members in forest conservation and factors influencing VICOBA

member decisions in forest resources exploitation and their awareness in forest conservation.

#### **1.4 Justification of the study**

The findings of this study provide useful information to policy makers including Ministry of Natural Resources and Tourism for effective policy reform for forest conservation while considering VICOBA programme as one of conservation tool through poverty reduction. Further, the findings are useful reference to other researchers who are interested to work further in forest conservation and add knowledge in conservation discipline.

#### **1.5 Objectives of the study**

##### **1.5.1 Main objective**

The main objective of this study was to assess economic contribution of village community banks in conserving forest resources in a selected sites adjacent Kazimzumbwi and Pugu forest reserves.

##### **1.5.2 Specific objectives**

The specific objectives of this study were to:

- i. assess economic activities formulated by VICOBA program linked to both forest conservation and society wellbeing
- ii. analyze factors influencing VICOBA members decision in exploiting forest resources
- iii. identify factors influencing VICOBA members awareness in forest conservation
- iv. examine engagement of VICOBA members in forest conservation activities

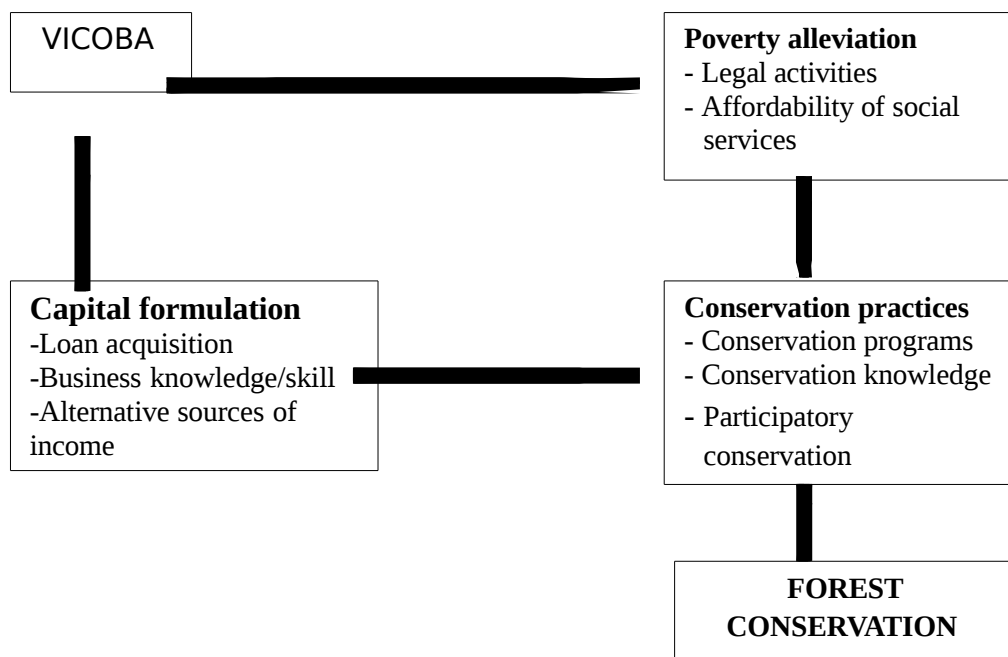
### **1.5 Research questions**

The study strove to answer the following questions:

- i. Are economic activities formulated by VICOBA program aid in forest conservation and society wellbeing?
- ii. What are factors drive VICOBA members in forest exploitation?
- iii. Are VICOBA members aware about forest conservation?
- iv. To what extent VICOBA members participated in forest conservation?

### **1.6 Conceptual framework of the study**

Figure 1 explains conceptual framework of this study. Researcher (2017) reported that conceptual framework is an analytical tool with structure of assumptions, principles and rules that shows the way ideas are organized to achieve research purpose. This study is based on the assumption that VICOBA activities influence forest resources conservation, the study assumes that factors like loans provisions, business knowledge, capital formulation and economic program initiated by village community bank members will influence community to engage in sustainable business projects and alternatives income generating activities rather than depend on forest resources hence forest resources conservation, while availability of individual wellbeing has got indirect relationship with forest resources conservation. The framework shows a set of independent variables with direct relationship with forest resources conservation like legal activities, social wellbeing and loan acquisition while forest resources conservation regarded as dependent variable.



**Figure 1: Conceptual framework of the study**

## 1.7 Limitations of the study

### 1.7.1 Lack of willingness to disclose economic activities information

Some respondents were not willing to provide their economic activities information due to the fear of insecurity and tax collection inspection in spite of the researcher's effort to explain the purpose of the study. However this gap was minimized by manipulating the questionnaire and the way of asking which made respondents to provide their information indirectly.

### 1.7.2 Writing skills barrier

During the study, writing barrier was experienced whereby mostly of respondents in the area were not able to fill questionnaire, and this gap was minimized by using trained assistants to ask them questions and help them to fill questionnaire.

## **CHAPTER TWO**

### **2.1 LITERATURE REVIEW**

#### **2.2 Micro finance**

Microfinance is the operational tool established in Tanzania in 1990s with the concept of women empowerment and poverty alleviation, the microfinance serve for the tool of improving livelihood of the society and empowers women from economic dependence status to the independent status (NMP, 2017). The importance of microfinance in developing country is to stabilize the economy among the citizens for sustainable economic development (Khavul, 2010). The microfinance operation offers the individual person to seek capital for the simple interest rate and enable them to initiate and create new economic activities which are innovative Ocasio (2012).

In Tanzania the “microfinance sub-sector operate in two types of financial service providers namely (i) formal microfinance service providers such as banks and financial institutions; Savings and Credit Cooperative Societies (SACCOS); microfinance companies, financial NGOs, Government Funds and Programmes; and (ii) community financial groups such as Community Based Organizations (CBOs), VICOBA, Village Saving and Loan Associations (VSLAs), Rotating Saving and Credit Associations (ROSCAs), money lenders, and other financial related service providers” by NMP (2017).

The emphasise of microfinance basing on encouragement of individual person to engage in different economic activities to reduce over exploitation of natural resources like water, Land and forest for the poverty alleviation (SEMIT, 2008). Not only Microfinance operation suit for the poverty alleviation but also it suit for the environmental sustainability, the operational of microfinance favor for the proper programs to support

environmental and natural resources conservation according to the study of Microfinance and environmental sustainability at selected sites in Tanzania and Kenya (Wild *et al.*, 2008).

### **2.2.1 Microfinance as the social capital for the conservation**

The concern of microfinance is to build social capital in terms of economy among members, Pretty and Smith (2004) notes that “social capital ensure relationships of trust, reciprocity and exchange, common rules, norms and sanctions, and connectedness in groups, which are necessary elements for shaping individual action to achieve positive biodiversity outcomes”, this rises concern that microfinance operation can provide alternative source of income generation instead of much utilizing available resources hence resources conservation. The study of microfinance and environmental suitability at selected site of Tanzania and Kenya (Wild *et al.*, 2008) analyze the importance of considering microfinance in environmental and natural resources conservation due to fact that member of the microfinance programmes are involving in sustainable projects which reduce environmental and natural resources degradation.

### **2.3 VICOBA structure and operation**

Lucas and Akarro (2016) noted that, in Tanzania the Village Community Bank was effectively function in September 2002 by Social and Economic Development Initiative of Tanzania (SEMIT), under the cooperation of other international organization including CARE. The VICOBA are structured by chairperson, secretary, the treasury, key holder and discipline masters as the leaders while others are members, the functions of the group is to save for the loans and business initiatives, The members of the groups contribute their shares accordingly to their time of agreement, and after time they collect all money and divide among them depending on the share of each member.

### **2.3.1 Why study VICOBA?**

SEDIT (2008) reported VICOBA<sub>s</sub> as one of the community financial group program apart from Village Saving and Loan Associations (VSLAs), Rotating Saving and Credit Associations (ROSCAs) and Community Based Organizations (CBOs) which gave simple procedures to operate, and this program spread all over the country up to the villages areas and shows high adoption by community members compare to others community financial groups.

### **2.3 Natural resources conservation**

The natural resources which are available within surroundings there of both renewable resources like air and forest, and non renewable resources which includes natural gas, coal, wildlife and minerals (Barjoveanu *et al.*, 2010). Braat and De Groot (2012) noted that for the conservation of the natural resources the optimal and efficiency utilization of them should be well undertaken and human dependence over them should be well reduced. In Tanzania effective measures in the natural resources are initiated to ensure the resources are utilized for the present and future generation, different strategies established by the government such as promoting biodiversity conservation includes forestry for the sustainability by MNRT (1998). The natural resources conservation aspects in Tanzania has been driven to the participatory natural resources management planning by involve community in conservation so as to rise conservation aspects among people for the successful natural resources conservation (Blomley and Idd, 2009).

### **2.4 Natural resources sustainability**

Smith and Lant (2010) notes that the resources sustainability refers to the proper uses of resources to meet present and future generation needs, the resources sustainability operate

under the ecological sustainability conditions which are renewable resources must be consumed no faster than the rate at which they regenerate. Nonrenewable resources must be consumed no faster than renewable substitutes for them can be put into place. Pollution and wastes must be emitted not faster than natural systems can absorb them, recycle them, or render them harmless.

The environmental and natural resources sustainability are simultaneously aspects, As the human population increase the rate of natural resources and environmental consumption increases the most strategies for conserving the environment and natural resources for the sustainable uses is to involve the community and people living with so as to provide participatory approach of both environment and natural resources conservation for the present and future generation by EIG (2008).

### **2.5 Forest resources and its functions**

Carandang (2005) reported that “Forests are crucial for the well-being of humanity, they provide foundations for life on earth through ecological functions, by regulating the climate and water resources, and by serving as habitats for plants and animals. Forests also furnish a wide range of essential goods such as wood, food, fodder and medicines, in addition to opportunities for recreation, spiritual renewal and other services”, due to this the studies for conserving forest resources offer much knowledge in formulating strategies for conservation.

Although forest resources offer beneficial products the land use plan for these resources must be strategically managed so as to ensure existence of the forest resources and its products (Gustafsson *et al.*, 2012). Also efficiencies strategies for conserving forest



resources are inevitable due to increase of human dependence on the forest resources (Carandang, 2005).

## **2.6 Forest conservation problems**

(Ferraro *et al.*, 2011) reported that forest conservation hindered by poverty worldwide and suggests that for successfully forest conservation there is need of improving society wellbeing by reducing poverty, much exploitation of forest resources for economic results to failure of forest conservation. (Hedge and Enters, 2000) Indicates that expansion of people economic activities such as agriculture activities, charcoal processing and wood fuel harvesting hindering forest conservation and for the seed of overcome these there must be effective measures to overcome this cost of forest conservation through solving conservation problems.

## **2.7 Strategies for managing forest resources**

IEG (2008) reported that the need of conserving forestry is worldwide, different intervention raised by the group to ensure many countries are contribute in forest resources management. The concern of managing forest was raised in three pillars which are harnessing the potential of forests to reduce poverty, sustainable economic development integration, protecting vital local and global environmental services and values. The strategies for managing these forest was based in national support of forest regal and policies reforms, supporting the community level in forest rights, decentralize the forest resources to the community and improving their livelihood.

Although many countries adopted different strategies for forest management the mostly common adoption is decentralizing the forest resources to the community and improving their livelihood through participatory forest resources management, Blomley and Idd

(2009) notes that in Tanzania participatory forest management strategy in managing forest resources shown up great impact of resources management while rise concern of people in managing the resources, this strategy of managing resources allow government and community collaboration in managing the resources as the result to adopt two mechanisms which are Joint forest management and Community based forest management to ensure forest resources are effectively and efficiency managing.

Not only in Tanzania but also in Kenya the participatory forest management shown high impacts in managing the resources, KFS (2015) state the participatory forest management help in rising forest conservation concern among community result to the positive forest conservation achievement and due to this the participatory model allows to form community forest which should have a traditional association with a forest for purposes of livelihood, culture or religion and must have full registration in forest management apart from Community based forest management and joint forest management.

#### **2.7.1 Community based forest management**

The community based forest management facilitate the means through which the community including villages to be given ownership rights and provided with the authority and management responsibilities for implementing conservation plans while enforcing roles which prohibiting uncontrollable uses of forest resources by MNRT (2009).

#### **2.7.2 Joint forest management**

Blomley and Idd (2009) noted that „JFM was largely adopted as a means to secure local support for forest conservation and followed similar strategies in other parts of the world such as India and Nepal”. The mainly objectives was to Increase benefits sharing to the

rural communities based on sustainable natural resource management in Tanzania. The mostly important of these Jointly forest management to the community involves generating income activities and introducing learning aspects to the community, Community freedom to take decision according to their priorities in forest resources, livelihood improvement and introducing learning aspects to the community (Blomley and Ramadhani, 2006).

## **2.8 Alternative income sources versus conservation**

Langholz (1999) Stated that “a fundamental tenet of conservation and development is that providing alternative income opportunities to local residents near protected natural areas will lead to fulfillment of biodiversity objectives” this implies that provision of alternative sources of income to the local people adjacent to the conservation area could reduce pressure on the biodiversity destruction. Conservation of biodiversity can be well achieved through developing alternative sources of income; this could be means to help people in engaged with legal and other economic actives rather than much exploring of natural resources by Brown (2002).

## **CHAPTER THREE**

### **3.1 RESEARCH METHODOLOGY**

#### **3.2 Description of the study area**

The study was conducted in five villages adjacent to Kazimzumbwi and Pugu forest reserves namely Kazimzubwi, Bomani, Kisarawe sokoni, Pugu station and Pugu kajiungeni as indicated in Figure 2 , Both forest reserves are located Coast region in Kisarawe district while small portion of Pugu Forest Reserve in Ilala district of Dar es salaam region.

##### **3.1.1 Kazimzumbwi forest reserve**

The Kazimzumbwi Forest reserve is a forest reserve allocated in Kisarawe district, Coast Region in Tanzania about 20 km south west of Dar-es-Salaam. It covers about area of 4865.5 ha at an altitude between 120 and 300 meter above sea level.

##### **3.1.2 Pugu forest reserve**

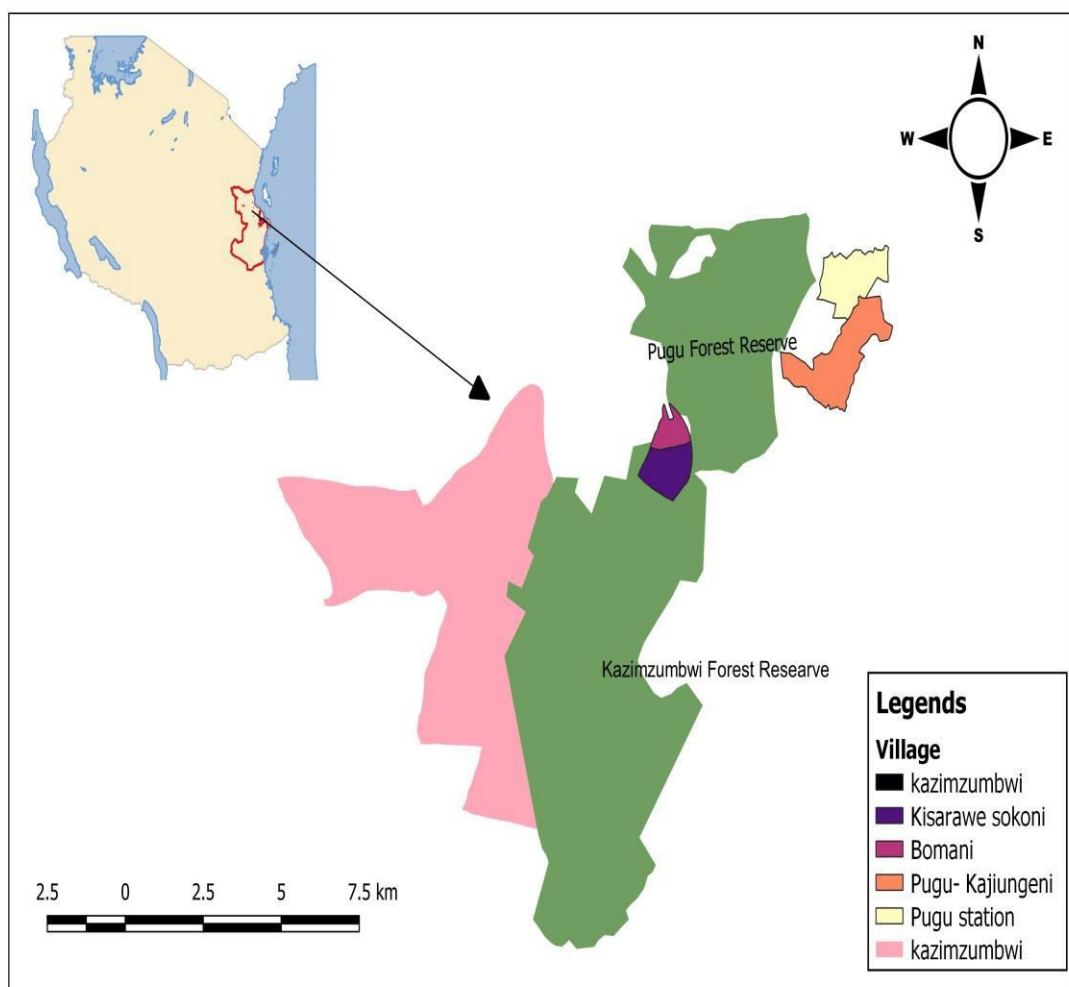
The Pugu Forest reserve is a forest reserve allocated in Kisarawe district, Coast region in Tanzania in the Pugu hills and some part in Ilala District, Dar es Salaam adjacent to the Kazimzumbwi Forest reserve. It covers the area of about 2410ha with altitudinal range between 100 and 305 meter above sea level.

##### **3.1.3 Reasons for selecting study area**

The study was carried at selected communities adjacent to these forest reserves due to fact that the reserves are considered to have large number of endemic species of animals and plants which need to be conserved (Malugu, 2007).

### 3.1.4 Target population of the study

Kothari (2004) notes that “population is the entire group of people, things or phenomenon of interest that a researcher wishes to study”. The population of this study included all people engaged in VICOBA programme living in the communities adjacent to Kazimzumbwi and Pugu forest reserves.



**Figure 2: Map to show villages adjacent to Kazimzubwi and Pugu forest reserves**

### 3.2 Research design

A Cross-sectional research design was used whereby data was collected at a single point in time. This design can be used for descriptive statistics as well as determining relationship between variables (Bailey, 1994; Babbie, 1999 and Kothari, 2004).

#### 3.2.1 Sampling procedure

A multistage sampling technique used to obtain the study participants from ward level to village level, 3 wards was selected randomly which were adjacent to both forest reserves and from selected wards, 5 villages were selected randomly which were Kazimzubwi, Bomani, Kisarawe sokoni, Pugu station and Pugu kajiungeni. In the selected villages, number of VICOBA groups selected for the study was done by Probability Proportional to size as table 1 shows.

#### 3.2.2 Sample size determination

From selected VICOBA, number of respondents involved in the study was obtained after derive the following formula which results to 230 respondents, and this formula considered being appropriate due to time and costs (Lushakuzi *et al.*, 2017).

$$n = \frac{\Sigma N}{1 + \Sigma N(e)^2} \dots\dots\dots (1) 1$$

Where n= Sample size

$\Sigma N$  = Total population size

$e$ =level of precision which is 0.05 (5%), and this level of precision considered to be appropriate one due to fact that its stable level of precision and accuracy in survey study to give appropriate sample size.

**Table 1: Number of VICOBA and population size used to determine sample size**

Village	VICOBA <sub>s</sub> name	Population size (N)
Bomani	Tumaini	20
	Wajane	23
	Faraja	18
	Tupendane	24
	Chawaki	16
	Umoja	19
	Kisarawe sokoni	Mapinduzi
Upendo		23
Ujamaa		15
Wema		28
Amani		24
Pugu kajiungeni	Kwetu	20
	Kilimani	24
	Omolo	27
	Uchumi	20
	Mipango	24
Pugu kajiungeni	Darajani	25
	Mawingu	26
	Nguvu	18
	Chemchem	28
	Mapambano	29
Kazimzubwi	Chimbo	25
	Ujirani	28
	Upendo	20
<b>5</b>	<b>23</b>	<b>ΣN=541</b>

### 3.3 Justification of studying VICOBA

Targeted population of this study were only VICOBA members, because this study needs only to explore understanding of people involved in community microfinance specifically VICOBA in relation to forest conservation, also this study focused only on VICOBA so as to bring new ideas of poverty alleviation dealers in relation to forest conservation and to open debates for future studies in comparing VICOBA and non VICOBA members with regards to forest conservation.

### **3.4 Data collection**

Both primary and secondary data were collected for statistical analysis and instruments such as questionnaire survey, interviewing, field observation and literatures review were used.

#### **3.4.1 Primary data**

Kothari (2004) noted that primary data are information collected by researcher from the field directly to answer objectives of the research study, primary data of this study were collected as follow;

##### **3.4.1.1 Questionnaire survey**

Semi- structured questionnaire (Appendix 1) was used to obtain primary data; the method was used to obtain information on the different economic activities formulated as the results of capital from VICOBA, Impacts of the economic activities on the forest conservation. Also, the technique was used to obtain VICOBA members views on the remarkable contribution of VICOBA program as the alternative sources of income toward forest conservation. The survey was conducted in Kiswahili and translated into English for better analysis.

##### **3.4.1.2 Interviews with key informants**

Checklist of questions (Appendix 2) was used to guide interview with key informants. In this study key informants included Village Development Officer (VDO) one from each village (n = 5), Village Cooperate Officer (VCO) one from each village (n = 5) and Village Chairperson one from each village (n = 5), so a total of 15 key informants were involved and interview key informants aimed at obtaining more information on issues



concerning VICOBA members awareness on forest conservation, and collected data used to supplement those collected through questionnaires survey.

#### **3.4.1.3 Field observation**

Personal observation in the field was done for the purposes of cross checking some of the information obtained through questionnaire especially on the economic activities engaged by VICOBA members.

#### **3.3.2 Secondary data**

Secondary data generally refers to general information obtained from the other information"s sources like literatures with the studies which has been done in the same discipline (Kothari, 2004). Secondary data of this study was collected through relevant literature reviews (published and unpublished documents). Other relevant sources used were Kisarawe Forest Agency District office, internet and Sokoine National Agriculture Library.

#### **3.3 Pilot study**

Preliminary survey was conducted to pre-test the questionnaire before final administration to ascertain validity and reliability of the questions where 30 VICOBA members were randomly selected for questionnaire pre-testing. Adjustment was done accordingly where it was necessary. This helped to understand the study population variability and selection of procedure for administering the research instrument.

#### **3.4 Data analysis**

Data obtained from questionnaire were summarized, edited and coded. Qualitative data analysis method was content analysis while quantitative data were analysed by descriptive

and inferential statistics. The analysis of quantitative data was done with the help of Statistical Package for Social Science (SPSS) and Microsoft excel.

#### **3.4.1 Content analysis**

The information from key informants were broken down into meaningful units of information and grouped according to the study objectives and discussed to develop themes and tendencies to ascertain values and attitudes of respondents.

#### **3.4.2 Descriptive statistical analysis**

Information on different economic activities, business ownership and importance of conserving forest resources were analysed descriptively into frequencies and percentages.

#### **3.4.3 Binary logistic regression model**

Binary logistic regression model is suitable when modeling variable with two alternative outcomes (Green, 2002), such as whether VICOBA members are much exploring forest resources or not. Information on the factors influencing VICOBA member's decisions in forest resources exploitation was collected by using questioner indicated appendices 1, part D5 whereby the binary dependent variable was 1 if VICOBA member exploring forest resources and zero (0) if not, information on alternative sources of income, national conservation laws, access to credit, educational level, cultural believes, family size, gender, age and marital status was collected as independent variables to see if they influence decision in forest resources exploitation and its analysis was done by using Binary logistic regression which is multivariate.

Qualitatively the relationship between occurrences of event depends on several variables (Mfinanga, 2014), therefore the following formula was adopted in analyzing factors influencing VICOBA member's decision in forest resources exploitation.

$$P = \frac{e^{-Z_i}}{1 + e^{-Z_i}} = \frac{e^{Z_i}}{1 + e^{Z_i}} \dots\dots\dots(2)$$

Logistic regression uses the logit function in calculating the probability in the form of:

$$\text{Logit}(P) = \ln\left(\frac{P}{1-P}\right) = Z = \beta_0 + \beta_1 X_1 + \dots + \beta_K X_K + e_i \dots\dots\dots(3)$$

The binary logistic model for VICOBA member decision in forest resources exploitation specified as follow,

$$P_i \text{Prob}(Y_i = 1) = \frac{e^{-(\beta_0 + \beta_1 X_{1i} + \dots + \beta_K X_{Ki})}}{1 + e^{-(\beta_0 + \beta_1 X_{1i} + \dots + \beta_K X_{Ki})}} \dots\dots\dots(4)$$

Similarly,

$$P_i \text{Prob}(Y_i = 0) = 1 - \text{Prob}(Y_i = 1) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_{1i} + \dots + \beta_K X_{Ki})}} \dots\dots\dots(5)$$

Where;

$P_i$  = probability that Y takes the value 1 if the respondent is exploring forest resources and then  $(1 - P_1)$  is the probability that Y is 0 if respondent is not exploring.

$e$  = Natural logarithm which is 2.718.

$\beta_0$  = Intercept of the model i.e. the constant term of the model when the effect of the independent variables is held at zero.

$\beta_0 - \beta_k$  = Independent variable coefficients showing the marginal effects of the unit change in the explanatory variables on the dependent variable. The marginal effects were used in prediction equations on decision in resources exploitation.

K= Total number of independent variables.

$X_1-X_k$  = Explanatory variables,

Independent variables can be explained as,

### **Alternative source of income ( $X_1$ )**

Those who are earning alternative sources of income can be easily to consume substitute products or resources rather than depending much in forest resources consumption. It is therefore expected that alternative sources of income can affect person decision in forest resources consumption.

### **National conservation laws( $X_2$ )**

Conservation laws help in guiding person toward both forest exploitation and conservation, It is expected that those who follow conservation laws having high chance to be aware with forest conservation and less exploring forest resources for consumption with regard of conservation laws.

### **Access to credit ( $X_3$ )**

This variable was meant to find out if access to credit form VICOBA influencing one's decision in forest consumption. It's expected that access to credit from VICOBA can be one of capital formulation source for the people to access substitute products instead of much depend on forest resources.

### **Educational level of respondent ( $X_4$ )**

Those with formal education were expected to have high knowledge about forestry and can avoid over consumption of forest resources for its conservation.

**Cultural believe (X<sub>5</sub>)**

This variable was meant to find out if cultural believe has any influence in one decision for exploring forest resources; this was measured by respondent cultural perspective in conservation. This variable was recorded as a dummy variable with 1 if a person culture influences forest resource consumption and 0 if otherwise. It expected that cultural believe can help person to conserve forest resources through minimal utilization of it.

**Family size(X<sub>6</sub>)**

Those with large family were expected to have high exploitation on forest resources (products), this variable meant to determine its influence in consumption of forest resources.

**Gender of respondent (X<sub>7</sub>)**

Gender of respondent is very important factor that influence person in forest utilization, it was expected that more of female in area compare to male can cause forest degradation because of wood collection

**Age of respondent (X<sub>8</sub>)**

Age influence someone decide for forestry consumption, it was expected that elders are more aware in forest conservation will less consumption of it compare to youth. This was checked to find out if it has any influence in forest resources consumption.

**Marital status of respondent (X<sub>9</sub>)**

Marital status is very important factor that influence person in forest resources consumption, It was expected that more of marriages and people living together the consumption over forest resources increased.

## **CHAPTER FOUR**

### **4.1 RESULTS AND DISCUSSIONS**

#### **4.2 Respondents social demographic and economic characteristics**

Table 2, shows respondent's distribution according to their social demographic and economic characteristics which determine whether individuals in a particular study are true representatives of the targeted population by White *et al.* (2008) and these social demographic and economic characteristics are mainly measured by respondent's age, gender, marital status, educational level and place of birth variables.

##### **4.2.1 Age of respondents**

Age structure of the study population determine dynamics in the past and ability of population to engage in different economic activities (Ngalemwa, 2016), age affects population life style and population behavior in future in relation to human survival. Findings from the study (Table 2) shows that 55.7% were aged between 31-50 years which is more than half of respondents (n = 230), and 33.9% of respondents aged between 18-30 years which is over quarter of respondents and 9.1% aged between 51-60 while 1.3% aged above 60, this shows that VICOBA took people with energy and aged enough to respond questions. In survey study respondents aged above 18 are capable in responding questions by Nanai (1993), also these results implies that VICOBA program involve people who are more active in production activities lather than elders who are less productive in the society, this has implication in forest conservation whereby more energy people can be economic well off in dealing with other economic activities lather than illegal exploitation of forest resources.

#### **4.2.2 Gender of respondents**

Gender of the study population is the basic variable in classifying ability of respondents to deal with the specific economic activities. Table 2, shows most of respondents were women over 82.6% and only 17.4% were men. These results resemble with Kihongo (2005) and Lucas and Akarro (2006) who observed that mostly men do not involve in community microfinance programs especially VICOBA due to thought that these programs were established only to empower women. These results implies that VICOBA program can help mostly of women who are the major cause of charcoal utilization to be economic independent and be able to afford other sources of energy lather than fuel energy which could results to forest degradation.

#### **4.2.3 Marital status of respondents**

Table 2, shows marital status of respondents, where by 50.4% were married, 23.9% were single, 13.5% were divorce, 8.7% were widow/widower and 3.5% were separated. These results concur with Ngeremwa (2013) who observed that mostly of VICOBA members are in marriage with extended family. Maselle, (2009) noted that marriage is the factor associate with the poverty and determine welfare of the society and affordability of life, however, Brown (2010) argue that marriage is the major source of large number of people in the family, and large number of people in the family or place while they are still poor can cause illegal exploitation of natural resources including forest resources, Kihongo (2005) shows that VICOBA program aid in poverty alleviation and improving welfare of people. The results of the study shows large number of VICOBA members over 50.4% was married and according to Maselle (2009) marriage is the key factor which determine welfare of people, this implies that large number of VICOBA are welfare well-off and difficult to them to engage in illegal activities including illegal extraction of forest resources.



#### **4.2.4 Educational level of respondents**

Also findings in Table 2, shows that mostly of respondents (37.8%) were primary educated while 25.2% attended secondary school, 18.7% adult education, 7.8% college, 5.2% universities, 3% advance level and 2.2% vocational training. Education determines people behavior, life style and opportunities to access information (Telema *et al.*, 2005). The findings of this study found that large number of VICOBA members were primary educated over 37.8% of the respondents and only 5.2% had primary education this implies that there is need of providing extension education concerning conservation knowledge among community microfinance including VICOBA so as to adopt conservation innovation.

#### **4.2.5 Respondents place of birth**

Place of birth influence people awareness in seeking opportunities for economic activities and determine cultural aspect for the people in conserving natural resources. The results in Table 2, shows that 57.8% were born in the villages surrounding forest reserves and 42.2% were born outside the villages surrounding forest reserves but they migrate to those villages surrounding forest reserves. The results indicates that number of VICOBA members (97) migrate to the villages surrounding forest reserves is closely to the number of VICOBA members born in the villages surrounding forest reserves, this means people are highly migrate to the areas near to forest resources and these VICOBA programs aid in stabilize economy of those people in dealing with alternative economic activities lather than exploitation of forest resources.

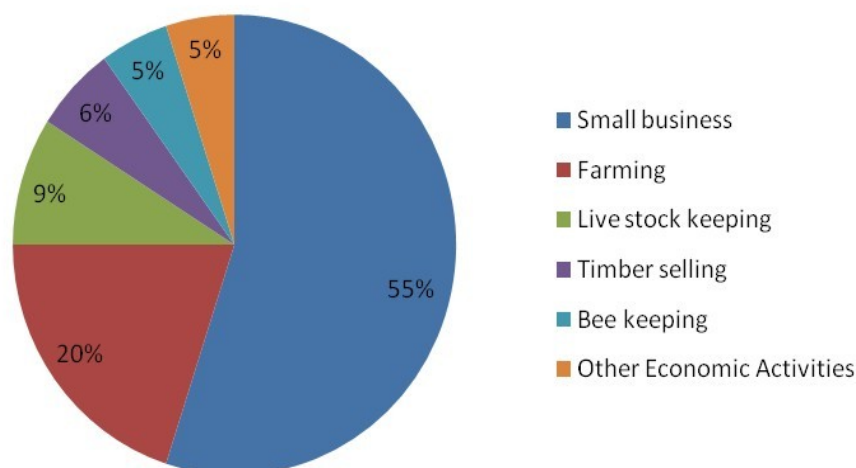
**Table 2: Respondent's social demographic and economic characteristics (n=230)**

<b>Characteristics</b>	<b>Category</b>	<b>Frequency</b>	<b>Perce</b>
<b>Respondent's age</b>	18-30	78	33.
	31-50	128	55.
	51-60	21	9.
	Above 60	3	1.
<b>Respondent's gender</b>	Men	40	17.
	Women	190	82.
<b>Respondent's marital status</b>	Single	55	23.
	Married	116	50.
	Divorced	31	13.
	Widow/Widower	20	8.
	Separated	8	3.
<b>Respondent's education level</b>			5
	Basic primary	87	37.
	Form 1- 4	58	25.
	Advance level	7	3.
	College	18	7.
	Vocational training	5	2.
	Adult education	43	18.
	Universities	12	5.
<b>Respondent's place of birth</b>	Inside village	133	57.
	Outside village	97	42.

### **4.3 Major economic activities formulated by VICOBA programme**

Results shows that VICOBA program aid people in engage into different economic activities. Figure 3, shows different economic activities whereby 55% of VICOBA members engaged in small business, 20% engaged in farming, 9% engaged in live stock keeping, 6% engaged in timber selling, 5% engaged in bee keeping and 5% engaged in other economic activities. These results implies that VICOBA program facilitate people into different activities which are mostly environmental friendly. Over 55% of respondents are engaged in small business rather than 20% and 9% who engaged into farming and livestock keeping respectively which attract much destruction of forest resources, this means VICOBA members are less dealing in economic activities which can be source of forest destruction. Also responses on economic activities formulated by VICOBA in

relation to forest conservation and society wellbeing narrated in sub section 4.3.1 and 4.3.2 respectively.



**Figure 3: Economic activities engaged by VICOBA members (n=230)**

#### **4.3.1 Economic activities formulated by VICOBA in relation to forest conservation**

The major target of VICOBA program is poverty alleviation. According to Scherr (2000) reducing poverty can be major factor of conserving natural resources from illegal exploitation including forest resources. The findings in Table 3, shows that majority of VICOBA members agree that this program help them to engage into different economic activities and results to economic stabilization which reduce illegal activities over forest resources, the results of the study shows that over 75.7% of VICOBA members agree that economic activities as the results from VICOBA program aid in reducing much dependence on forest products like wood consumption while 24.3% of respondents disagree.

This implies that VICOBA help in forest conservation by 75.7%, also findings shows that this program help in reduce much dependence on forest resources by providing loan over 47%, Business skills over 28%, formulating sustainable projects over 15% and controlling illegal activities over 11%, also this means that large number of VICOBA members receive loan and business skills as alternative source of income lather than exploring forest resources.

**Table 3: Response of respondents in economic activities formulated by VICOBA linked to forest conservation (n = 230)**

<b>Characteristics</b>	<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
Economic activities formulated by VICOBA aid in forest conservation	Yes	174	75.7
	No	56	23.3
How VICOBA help its members In relation to forest conservation	Loan provision	109	47
	Business skills	61	28
	provision		
	Formulating sustainable projects	35	15
	Controlling illegal activities	25	11

#### **4.3.2 Economic activities formulated by VICOBA in relation to society wellbeing**

Society wellbeing is regarded as key factor which determine influence of people in natural resources dependence Scherr (2000). According to Nayak (2014) poor society cause much degradation of both environment and natural resources due to much dependence on it. There are many variables which determine society wellbeing including level of income, affordability of basic needs (food, shelter and clothes) and ability to adopt innovation toward positive altitude. The findings of the study shows that VICOBA program aid its members in income improvement by 76.5% and to afford basic needs by 88.3% and also due to economic activities results from VICOBA, 84.3% able to afford alternative sources of energy including electricity, gas and solar energy. This implies that VICOBA help in improving society wellbeing and reduce much dependence on forest resources like wood fuels.

**Table 4: Response of respondents in economic activities formulated by VICOBA in relation to society wellbeing (n = 230)**

<b>Characteristics</b>	<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
VICOBA functions in income status	Improving income	176	76.5
	Lower income	54	23.5
VICOBA aid in affordability of basic needs (food, shelter and clothes)	Yes	203	88.3
	No	27	11.7
VICOBA aid in affordability of alternative source of energy(electricity, gas and solar energy)	Yes	194	84.3
	No	36	15.7

#### **4.4 Factors influencing VICOBA member's decisions in forest resources exploitation**

Based on specific objective two, factors influencing VICOBA members decision in exploring forest resources were analyzed by using Binary Logistic model, factors which included in this model were alternative source of income, national conservation laws, access to credit, educational level, cultural believes, family size, gender, age and marital status and were analyzed descriptively in Table 6.

##### **4.4.1 Goodness of fit for the model**

Table 5 indicates Hosmer and Lemeshow test of goodness of fit with the P value of 0.060, this means the model it is considered to be desirable due to facts that P- value is greater than 0.05. According to Archer *et al.* (2006) when the Binary logistic model found that P- value is greater than that of 0.05 at 95% C.I it indicates that the model has no evidence of lack of fit. Cox & Snell R-Square and Nagelkerke coefficient of determination ( $R^2$ ) of the model indicates amount of variation in the dependent variables are between 0.632 and

0.810 and this suggesting that between 63.2% and 81% of the variability is explained by the set of variables.

**Table 5: Hosmer and Lemeshow Test**

Chi-square	Df	Sig.
14.966	8	.060

**Table 6: Logistic regression results for factors influencing VICOBA member's decision in exploring forest resources**

Variable	$\beta$	S.E	Wald	df	Sig.	Exp(
A.S.INCOME	-2.603	1.16	4.558	1	.025*	.
National laws	-3.988	1.66	6.014	1	.020*	.
Access to credit	-.040	1.50	3.99	1	.002*	.
Educational level	-2.020	1.70	2.342	1	.012*	.
Cultural believes	-.132	1.81	4.009	1	.042*	.
Family size	.063	1.52	5.089	1	.022*	10.20
Gender	28.003	1.25	.000	1	.735	2.11
Age(1)	-13.013	8.11	.000	1	.888	.
Age(2)	-9.091	8.11	.000	1	.888	.
Age (3)	-10.080	8.11	.000	1	.888	.
Marital	-0.986	3.80	.109	1	.657	.
Constant	-32.700	1.924E	.000	1	.888	.

A.S INCOME means Alternative sources of income

**Key****(a) Model summary**

\* = Significant at 0.05;

LL = -2 log likelihood = 118.466;

Cox & Snell R-Square = 0.632; Nagelkerke R- Square = 0.810

Hosmer and Lemeshow test: Chi-square =14. 966, df = 8; p = 0.060

**(b) Table features**

$\beta$  = logistic coefficient or unstandardized logit coefficient, S.E = Standard error of the estimate, Wald = Wald statistic is squared ratio of the regression coefficient ( $\beta$ ) of a particular independent variable to its standard error, df = degree of freedom, Exp ( $\beta$ ) = odds ratio indicates the effect size of individual independent variable in the model.

#### 4.4.2 Interpretation of the model results

Table 6, shows Logistic regression results for factors influencing VICOBA members decision in exploring forest resources, it shows that factors which significantly influence VICOBA members decisions in exploitation of forest resources are alternative sources of income, national conservation laws, access to credit, educational level, cultural believes and family size while other factors such as age, gender, marital status were insignificantly.

##### 4.4.2.1 Alternative sources of income

Table 6, shows that alternative sources of income obtained by VICOBA members were significantly influencing their decision in exploring forest resources. The coefficient of alternative sources of income was 0.025 less than 0.05 and this means statistically significant was at  $P < 0.05$  probability level with the negative  $\beta = -2.603$ . This implies that, due to alternative source of income obtained by VICOBA members they have less chance in forest resources consumptions were by odd ration for forest resources exploitation decreases by factor 0.052 if VICOBA members obtain alternative sources of income. These results resemble to the study of Bunnefeld *et al.* (2011) indicates that availability of alternative sources of income among community members reduce over consumption and much dependence on natural resources hence natural resources sustainability. The findings of the study means that availability of alternative sources of income among VICOBA members help to reduce forest resources consumption such as fire wood and wood materials for construction which could results to forest resources conservation.



#### 4.4.2.2 National conservation laws

National conservation laws influence VICOBA member's decision in exploitation of forest resources. Table 6, indicates the coefficient of national conservation laws was statistically significant at  $P < 0.05$  probability level with the negative  $\beta = -3.988$ . This implies that adoption of national conservation laws among VICOBA members reduce chance of depending on forest consumption, odd ratio of consuming forest resources is decrease by a factor 0.02. These results concur with that of Benjaminsen and Bryceson, (2012) which suggest that application of laws in conservation could rise awareness among people and reduce much exploitation and utilization of the natural resources.

#### 4.4.2.3 Access to credit

Table 6, shows that access to credit among VICOBA members influence significantly in forest resources exploitation. The coefficient of access to credit was statistically significance with P value 0.002 which is  $P < 0.05$  probability level with the negative Beta ( $\beta = -0.040$ ). This implies that access of credit among VICOBA members make them to have less consumption over forest resources where by odd ratio of consuming forest resources decreased by factor of 0.827 due to access of credit among VICOBA members. These results means that access to credit could be sources of people to consume in substitute products rather than forest products.

#### 4.4.4.4 Education level

Table 6, indicates that education was statistically significance influence VICOBA members decision in exploitation of forest resources at  $P < 0.05$  probability level. Negative Beta ( $\beta = -2.020$ ) implies that those with high education have lower chance in much consumption of forest resources, odd ratio of being educated over forest resources

consumption decrease by 0.623, this means members with better education can chose better way of consuming substitute resources (products) lather than consuming forest resources (products) and reduce illegal exploitation of forest resources.

#### **4.4.4.5 Cultural believes**

The results revealed that cultural believes was statistically significant at  $P < 0.05$  probability level in influencing VICOBA members decision in forest resources as Table 6, shows. The negative coefficient ( $\beta = -0.132$ ) implies that those who follows traditional and cultural believes have lower chance of getting in forest consumption. Cultural believes decreases forest exploitation by factor of 0.806. The results reflect that cultural believes emphasize people to leave the forest resources as it is, because forestry is the gift from GOD and may help in protecting people from natural disaster including earth quakes.

#### **4.4.4.6 Family size**

Also results in Table 6, shows that family size was statistically significant influence VICOBA members decision in forest resources consumption at  $P < 0.05$  probability level with the positive Beta ( $\beta = 0.063$ ), this implies that the greater number of people in family could results to over consumption of forest resources. The odd ratio of consuming forest resources due to family size increased by 10.203. This means the large number of family size the more consumption of forest resources which could results to forest resources depletions.

#### **4.4.4.7 Gender of respondents**

The influences of gender to the VICOBA member"s decision in consuming forest resources

were found to be insignificant (Table 6). This might be due to the facts that in the study area it was observed that majority of respondents were women who engage in VICOBA program, this can make them having same overview on the forest resources consumption with the regard of their gender.

#### **4.4.4.8 Age of respondents**

Results in Table 6 show that age was insignificant in explaining VICOBA member's decision in consuming forest resources. This might be due to the fact that all VICOBA members are adult age above 18 years which does not distinguish them from different age below 18 years.

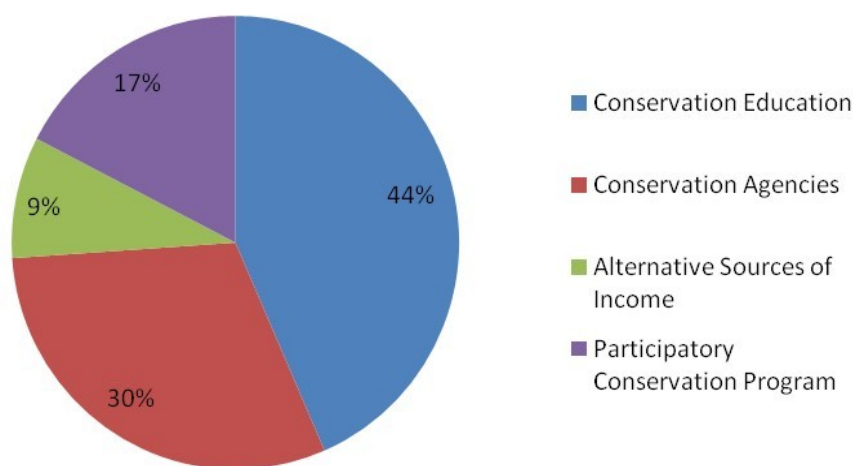
#### **4.4.4.9 Marital status**

The results reveal that marital status was insignificant in explaining VICOBA members' decision in consuming forest resources (Table 6). This might be due to the facts that married people have much responsibilities which make them not relying on one resource and unmarried ones are free consume on different natural resources.

### **4.5 Factors influencing VICOBA member awareness in forest conservation**

Based on specific objective three, figure 4 shows some factors that were perceived to influence VICOBA members awareness in conserving forest resources. The findings of the study shows that (44%) of respondents were motivated in conservation due to conservation education provided, this results resemble to that of Kruse and Card (2004), which states that adoption of conservation education among people could help to convert people mind altitude toward positive conservation altitude. (30%) of respondents were aware about conservation due to the presence of conservation agencies (WWF, TFS, and TAWIRI) which perform some conservation activities with the community collaboration,

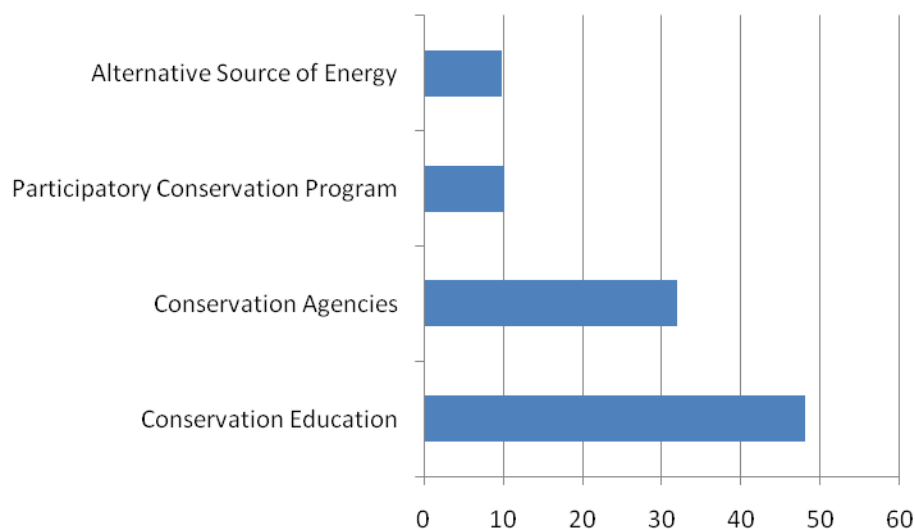
also 9% of respondents indicates that conservation awareness influenced by access of alternative sources of energy, this implies that if there is alternative sources of energy without educates people on importance of conserving forestry it could do nothing with the VICOBA members awareness in conservation. Also participatory forestry conservation shows to influence member"s awareness by 17% this means by involving them directly in conservation activities it could be easy to adopt those conservation activities.



**Figure 4: Factors influencing VICOBA member awareness in forest conservation (n =230)**

Furthermore, Figure 5, shows majority of key informant 48% (n = 15) was reported that provision of conservation education has highly influenced not only to the VICOBA members but also large number of people to be aware about forest conservation, this means that provision of conservation education can cause majority of people living adjacent to natural resources to be aware with the importance of having those resources.

Similarly to the presence of conservation agencies was also reported to have highly influence among VICOBA members awareness in forest conservation by 32%, Probably because these conservation agencies performs their duties with regard of improving community live hood. 10.2% of key informants reported that participatory conservation programs aid in conservation awareness but the problem with this is not highly influence in conservation awareness as provision of conservation education do, probably because people consuming much time in conservation participation by action rather than engage in income generating activities. Lastly, 9.8% of key informants reported that access of alternative sources of energy influence in conservation awareness, this also implies that without educating people in importance of conserving forest resources they could not aware about conservation even if there is alternative sources of energy.



**Figure 5: Factors influencing VICOBA member awareness in forest conservation by key informants (n=15)**

#### **4.6 Engagement of VICOBA member in activities linked to forest conservation**

Based on specific objective four, Table 7 shows engagement of VICOBA members in activities directly linked to forest conservation. The findings of the study shows that majority of VICOBA (61.7%) engage directly in forest conservation by reporting on events which may results to forest degradation (forest burning, illegal charcoal making and illegal harvesting of timber and fuel wood) to the authorized institutions, whereby 64.3% of VICOBA members participate in forest conservation by engaged in conservational clubs which emphasize much in environmental and natural resources conservation, In term of directly allocating fund in conservation activities from VICOBA groups it"s found to be poor where by 88.3% of respondents respond on no fund allocated directly in conservation from VICOBA, this implies that operational of VICOBA focus on improving members live hood rather and shows that VICOBA has got indirect functions in conservation by donating in conservation activities but aid in improving society wellbeing which could be easily for the members to adopt conservation altitudes. But 51.3% of respondents were initiates programs for environmental care like tree planting and protecting water bodies sources. Generally these results implies that involvement of VICOBA members in forest conservation can be successfully if there is emphasize in making them participating in conservation programs and extension rather than making them to provide money for conservation.

**Table 7: Engagement of VICOBA member in activities linked to forest conservation**

<b>Characteristics</b>	<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
Initiating programs for environmental care (Tree planting & protecting water bodies sources)	Yes	118	51.3
	No	112	48.7
Report on events linked to forest degradation	Yes	142	61.7
	No	88	38.3
Allocation of fund for conserving environment	Yes	27	11.7
	No	203	88.3
Participating in environmental clubs	Yes	148	64.3
	No	82	35.7

## **CHAPTER FIVE**

### **5.1 CONCLUSIONS AND RECOMMENDATIONS**

#### **5.2 Conclusion**

The study indicates that, success of forest conservation largely depend on improving livelihood of communities especially living adjacent to forest resources and based on specific objective one it was revealed that VICOBA program aid its members to engaged with small business and alternative generating income activities which are environmental friendly rather than engaged in activities which could results to forest resources destruction.

Involvement of people in the VICOBA program made them able to acquire loans, sharing business skills and formulating sustainable projects and encouraged into different economic activities rather than depend on forest resources as the source of their income and this contributed in forest conservation.

Based on specific objective two the study establishes that factors revealed to have negative influence on VICOBA member"s decisions on forest resources consumptions were alternative sources of income, national conservation laws, access to credit, educational level and cultural believes. This means that in order to reduce overconsumption and overdependence of forest resources and allow forest resources regeneration these factors have to be addressed properly while family size were found to have positive influence on consumption of forest resources (Products), this indicates that large number of people (population increases) in the family could results to overdependence and overconsumption of forest resources which may brings to forest



degeneration and therefore there must be strategic ways of controlling number of people in the family.

The study also establishes that, factors that influencing VICOBA members awareness in conservation based on specific objective three were conservation education, presence of conservation agencies (WWF, TFS and TAFORI) and participatory conservation programs, also specific objective four revealed that VICOBA program have indirectly contribution in forest conservation activities with the less concern of allocating funds for conservation activities.

### **5.3 Recommendations**

- i. Alternative sources of income and generating activities should be promoted especially in the communities adjacent to forest resources in order to reduce much dependence on forest resources for economic purposes.
- ii. Community microfinance groups among community members in villages adjacent to forest reserves should be encouraged as it could be used as a potential mean of acquiring loans and business skills to engage in alternative income generating activities.
- iii. Proper planning and intervention to integrate forestry conservation and economy, conservation activities must lie parallel with the improvement of people livelihood and therefore Ministry responsible for tourism and natural resources should formulate proper strategies which integrate conservation while improving economy among community members.

- iv. Since this study focused only on VICOBA and communities adjacent to Pugu and Kazimzubwi forest reserves, this study suggest that future studies should address on valuation of community microfinance performance with the regard of natural resources conservation in order to find out how much these community microfinance institutions not only VICOBA but also SACCOS, CBOs, VSLAs, and ROSCAs contribute in natural resources conservation.

## REFERENCES

- Barjoveanu, G., Cojocariu, C. and Robu, B. (2010). Integrated assessment of wastewater treatment plants for sustainable river basin management. *Environmental Engineering and Management Journal* 9(9): 1251 – 1258.
- Bartlett, J. E., Kotrlík, J. W. and Haggins, C. C. (2001). Organizational Research: Determining appropriate sample size in survey research. *Information Technology, Learning, and Performance Journal* 19(1): 43 – 50.
- Benjaminsen, T. A. and Bryceson, I. (2012). Conservation, green/blue grabbing and accumulation by dispossession in Tanzania. *Journal of Peasant Studies* 39(2): 335 – 355.
- Blomley, T. and Ramadhani, H. (2006). Going to scale with participatory forest management: early lessons from Tanzania. *International Forestry Review* 8(1): 93 – 100.
- Blomley, T. and Idd, S. (2009). *Participatory Forest Management in Tanzania. Lessons Learned and Experiences to Date*. Ministry of natural Resources and Tourism, Dar es Salaam, Tanzania. 71pp.
- Braat, L. C. and De Groot, R. (2012). The ecosystem services agenda: Bridging the worlds of natural science and economics, conservation and development, and public and private policy. *Ecosystem Services* 1(1): 4 – 15.
- Brown, K. (2002). Innovations for conservation and development. *Geographical Journal* 168(1): 6 – 17.
- Brown, S. L. (2010). Marriage and child well-being: Research and policy perspectives. *Journal of Marriage and Family* 72(5): 1059 – 1077.
- Bunnefeld, N., Hoshino, E. and Milner-Gulland, E. J. (2011). Management strategy evaluation: a powerful tool for conservation?. *Trends in Ecology Evolution* 26(9): 441 – 447.

- Carandang, A. P. (2005). *Forest Resource Assessment-National Forest Assessment: Forestry Policy Analysis*: Food and Agriculture Organization, Philippine. 34pp.
- Gao, J. and Tian, M. (2016). Analysis of over-consumption of natural resources and the ecological trade deficit in China based on ecological footprints. *Ecological Indicators* 61: 899 – 904.
- Greene, H. (2002). *Econometric Analysis*. Pearson Education. Upper Saddle River, New Jersey. 802pp.
- Gustafsson, L., Baker S. C., Bauhus, J., Beese, W. J., Brodie, A., Kouki, J., Lindenmayer, D.B., Asko, L., and Messier C. (2012). Retention forestry to maintain multifunctional forests: a world perspective. *BioScience* 62(7): 633 – 645.
- Hegde, R., and Enters, T. (2000). Forest products and household economy: a case study from Mudumalai Wildlife Sanctuary, Southern India. *Environmental conservation*, 27(3), 250-259.
- IEG (2008). *Environmental Sustainability*. The International Bank for Reconstruction and Development, Washington DC. 84pp.
- KFS (2015). *Participatory Forestry Management Guidelines*. Kenya Forest Services Agency, Nairobi. 163pp.
- Khavul, S. (2010). Microfinance: Creating opportunities for the poor. *Journal of Academy of Management Perspectives* 24(3): 58 – 69.
- Kihongo, R. (2005). Impact assessment of Village Community Bank (VICOBA). A microfinance project Ukonga Mazizini. Dissertation for Award of MSc Degree at Open University of Tanzania, 98pp.
- Kothari, C.R. (2004). *Research Methodology. Methods and Techniques*. (2<sup>nd</sup> Ed.), Age International Ltd., New Delhi. 418pp.

- Kruse, C. K. and Card, J. A. (2004). Effects of a conservation education camp program on campers' self-reported knowledge, attitude, and behavior. *The Journal of Environmental Education* 35(4): 33 – 45.
- Langholz, J. (1999). Exploring the effects of alternative income opportunities on rainforest use: Insights from Guatemala's Maya Biosphere Reserve. *Society and Natural Resources* 12(2): 139 – 149.
- Lucas, J. and Akarro, R. R. J. (2016). Some Factors Associated with Operations of Village Community Banks for Poverty Alleviation in Tanzania. A Case of Ilala District, Tanzania. *International Journal of Management and Economics Invention* 2(09): 748 – 758.
- Lusambo, L.P. (2009). Economics of Household energy in Miombo Woodlands of Eastern and Southern Tanzania. Thesis for Award of PhD Degree at, University of Bangor, UK, 493pp.
- Lushaki, S.S., Killagane, K., and Lwayu, G.I. (2017). Village Community Banks (VICOBA) and members' business sustainability: Case of Kunduchi ward at Kinondoni district in Dar-es-salaam. *International journal of Business Marketing and Management* 2(03): 60 -70.
- Malugu, I. O. (2007). Resource-use conflicts and management challenges for Pugu and Kazimzumbwi forest reserves in Kisarawe and Ilala districts, Tanzania. *Discovery and Innovation* 19(2): 149 – 174.
- Maselle. A. E (2009). Rural household characteristics and poverty. Dissertation for Award of MA Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 102pp.

- Mesencho, S. E. (2013). An assessment of the potential of ecotourism and community based natural resource management as a rural development strategy with special reference to Isimangaliso Wetland Park. Thesis for Award of PhD Degree at Nelson Mandela Metropolitan University, Arusha, Tanzania, 135pp.
- MNRT (1998). *Wildlife Policy of Tanzania*. Government Printers, Dar es Salaam, Tanzania. 72pp.
- MNRT (2015). *National Forest Resources Monitoring and Assessment of Tanzania Mainland*. Government Printers, Dar es Salaam, Tanzania. 106pp.
- Mshote, E. F. (2016). The effect of saving and credit facilities on migrants and non migrants gendered livelihood options in Ilula Urban Centre. Thesis for Award of PhD Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 165pp.
- Nanai, N. A . K. (1993). Peasants' participation in community development project. Its implication in laying strategies for participatory extension. Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania 138pp.
- Nayak, P., Oliveira, L., and Berkes, F. (2014). Resource degradation, marginalization, and poverty in small-scale fisheries: threats to social-ecological resilience in India and Brazil. *Ecology and Society* 19(2).
- Ngalemwa D. M. (2013). Contribution of village community banks to income poverty alleviation in Rufiji delta. Dissertation for Award of M.A Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 79pp.
- NMP (2017). *National Microfinance Policy of Tanzania*. National Microfinance Policy, Dar es Salaam, Tanzania. 51pp.
- Ocasio V. M. (2012). Role of microfinance institutions in financial deeping, economic growth and development. Thesis for Award of PhD Degree at Colorado State University, Fort Collins, Colorado, 165pp.

- Pretty, J. and Smith, D. (2004). Social capital in biodiversity conservation and management. *Conservation Biology* 18(3): 631 – 638.
- ReSearCher, N. (2017). Use of theoretical and conceptual frameworks in qualitative research. *Nurse Researcher* 21(6): 34 – 38.
- Scherr, S. J. (2000). A downward spiral, Research evidence on the relationship between poverty and natural resource degradation. *Food Policy* 25(4): 479 – 498.
- SEDIT, (2008). A tool for community from poverty “MKUKUTA”. In: *National Policy Dialogue on MKUKUTA, per Annual Consultative Meeting*. 19 – 20<sup>th</sup> November 2008, Blue Pearl Hotel, Ubungu Plaza, Dar es Salaam, Tanzania. pp. 1 – 11.
- Smith, E. T. and Lant, C. (2010). Water resources sustainability. *Water Resources Update* 86pp.
- Struhsaker, T. T., Struhsaker, P. J. and Siex, K. S. (2005). Conserving Africa’s rain forests: problems in protected areas and possible solutions. *Biological Conservation* 123(1): 45 – 54.
- Telama, R., Nupponen, H. and Piéron, M. (2005). Physical activity among young people in the context of lifestyle. *European Physical Education Review* 11(2): 115 – 137.
- URT (2017). *National Microfinance Policy*. Ministry of Finance, Dar es Salaam, Tanzania. 50pp.
- White, D. D., Virden, R. J. and Van Riper, C. J. (2008). Effects of place identity, place dependence, and experience-use history on perceptions of recreation impacts in a natural setting. *Environmental Management* 42(4): 647 – 657.
- Wild, R., Millinga, A. and Robinson, J. (2008). *Microfinance and Environmental Sustainability at Selected Sites in Tanzania and Kenya*. 102pp.

## APPEINDICES

### Appendix 1: Questionnaire for VICOBA members

#### A: General Information

Questionnaire No..... Name of Respondent.....

Date of interview..... Time to start interview.....

Village..... VICOBA name.....

Ward ..... District.....

Region.....

#### B: Personal Details (Put √ for the appropriate answer)

##### B1: Age

(1) 18-30 (2) 31-50 (3) 51-60 (4) above 60

##### B2: Gender

(1) Male (2) Female

##### B3: Marital status

(1) Single (2) Married (3) Divorced (4) Widow/widower (5) Separated

##### B4: Level of education

(1) Non formal (2) Adult education classes (3) Basic primary (4) Secondary (form 1-4/5-6) (5) Vocational training (6) College (Diploma/Certificate) (7) University (first degree/second degree/third degree)

##### B5: Place of origin/birth

(1) In this village (2) Out of this village



**C. To Assess Economic Activities Generated by VICOBA Program (VICOBA Members)**

**C1:** Is VICOBA program aid in capital formulation? (Put ✓ for the selected answer)

- (1) Yes (2) No

**C2:** What are economic activities are engaged by VICOBA members as influence of VICOBA program.

- (1) Small business  
(2) Farming  
(3) Live stock keeping  
(4) Timber selling  
(5) Bee- keeping  
(6) Others

**C3:** Are economic activities formulated by VICOBA aid in forest conservation?

- (1) Yes (2) No

**C4:** How VICOBA helps in relation to forest conservation as generating alternative source of income tool?

- (1) Loan provision  
(2) Business skills provision  
(3) Formulating sustainable projects  
(4) Controlling illegal activities

**C5:** What are VICOBA functions in income status?

- (1) Improving income (2) Lower income

**C6:** VICOBA aid in affordability of basic needs (food, shelter and clothes)?

- (1) Yes (2) No

**C6:** VICOBA aid in affordability of alternative sources of energy (electricity, gas and solar energy)?

- (1) Yes (2) No

**D. Factors Influencing VICOBA Members Decision in Forest Resources Consumption**

(Put √ for the appropriate answer)

**D1:** Knowledge on the term forest conservation (What do you understand by the term “forest conservation“?) (1) Very good (2) Good (3) Fair (4) Poor

**D2:** When did you start in engaged with VICOBA?

**D3:** Are you consuming forest resources?

(1) Yes (2) No

**D4:** If mentioned above no why?

**D5.** What factors influence your decisions in forest resources exploitation?

SN	Factor	Yes	No
1	Alternative source of income		
2	National conservation laws		
3	Access to credit		
4	Educational level		
5	Cultural believes		
6	Family size		
7	Gender		
8	Age		
9	Marital status		

**E. Factors Influencing Vicoba Members Awareness in Forest Conservation**

**E1.** What factors influence your awareness in forest conservation?

SN	Factor	Yes	No
1	Conservation education		
2	Assess to alternative sources of income		
3	Presence of conservation agencies (WWF, TFS, TAWIRI & TAFORI)		
4	Participatory conservation programs		

**E: Engagement of Vicoba Members in Activities Linked to Forest Conservation**

**E1:** Are you participating in initiate programs for conservation care (tree planting, and protecting water bodies)

(1) Yes            (2) No

**E2:** Are you report on events linked to forest degradation?

(1) Yes            (2) No

**E3:** Is VICOBA allocating fund for forest conservation?

(1) Yes            (2) No

**E4:** Are you participating in environmental clubs?

(1) Yes            (2) No

**“Thank you for your cooperation”**

Time the interview ends.....Time spent.....

Interviewer remarks: Was the initially selected respondent substituted? 1 = Yes; 2 = No []

If yes, what was the reason for substitution?

1 = Refused to be interviewed; 2 = Person not available; 3 = others (specify).....

## **Appendix 2: Checklist for Key Informants**

### **1.1 Background Information**

Date.....

Respondent No. -----

Full Name-----

Age-----

Sex----- (1, Male 2, Female)

Education level-----

Position-----

### **1.2 Official Information**

1. What are the economic activities affecting forest resources?
2. What are the alternative sources of income programs initiated to reduce human dependence on the forestry resources?
3. What is the effectiveness of VICOBA in conserving forest resources?
4. What are the method used in educate people in conserving forest resources?
5. What is the trend of illegal activities hindering forest conservation?
6. What are the events reported by community members linked to forest degradation?

**“Thank you for your cooperation”**