EMPOWERING COMMUNITY LIVELIHOODS THROUGH MODERN BEEKEEPING: THE CASE OF UKOMBOZI GROUP IN KISONGWE VILLAGE, KILOSA DISTRICT, MOROGORO REGION

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER IN COMMUNITY ECONOMIC DEVELOPMENT OF THE OPEN UNIVERSITY OF TANZANIA

2013

CERTIFICATION

I certify that I have read the dissertation title “Empowering Community Livelihoods Through Modern Beekeeping: The Case of Ukombozi Group in Kisongwe Village, Kilosa District, Morogoro Region” for partial fulfillment of the requirements for the degree of Master of Community Economic Development and hereby recommend for the acceptance by the Open University of Tanzania.

Signature_____

Dr. Felician Mutasa

(Supervisor)

Date_____

STATEMENT OF COPY RIGHT

DECLARATION

I, EIiakim Enos, declare that this project report is my own original work, and that it has not been submitted to any other College or University for similar degree.

_____

Signature

_____

Date

DEDICATION

I would like to dedicate this work to my wife, Judith Nelson Mwasaga, who encouraged and supported me to undergo the programme. Also to my beloved daughters; Neema, Upendo and my beloved son Lusajo for their endurance, coherence, integrity and obedience during my study period. Others include my beloved late father Enos Mwalivale Kitumbika, late mother Nauti Nsuga Sanga.

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Special appreciation goes to the host organization, Tanzania Forest Conservation Group (TFCG) for their field work and financial support to enable the project to be implemented. I would also like to express my sincere thanks and appreciations to my fellow colleagues who made this task possible and real a learning journey.

Last, but not least, I would like to thank my family (my wife Judith, my son Lusajo and my daughters Neema and Upendo) for their endurance and allowing me to take time off them to complete this work, Often at the expense of their precious family time.

ABSTRACT

This dissertation is an outcome of the research study conducted and the project implemented in Kisongwe village, Lumbiji ward, Kilosa District, Morogoro Region. The Community Needs Assessment conducted in the village using participatory methods and tools like Questionnaire, Focus Group Discussions, and Documentary Reviews, came out with six major community needs which needed to be addressed. Empowering community livelihoods through modern beekeeping was established at the end of October 2011 as a priority project immediately after awareness raising and training of Group members at the start of October 2011.

The objectives of the project were mainly four; (i) To impart awareness and modern beekeeping husbandry skills for productivity improvement. (ii) Sensitization and training in entrepreneurship and business development skills for empowerment of marketing beekeeping products. (iii) Provision of 25 modern beehives and other beekeeping equipments and materials. (iv) To enhance cooperation among group members and strengthen institution.

Most of the major planned project activities were implemented and some are on routine or continuous basis like harvesting and processing of honey and beeswax also management of an apiary. Some products and outputs for the objectives have so far been realized and reported during project monitoring and midterm evaluation. Project implementation is going on well while monitoring and midterm evaluation have also been done and indicators for sustainability plan have been established.

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LIST OF ACRONYMS

BKAZ	Beekeepers Association of Zimbabwe
CAN	Community Need Assessment
CBO	Community Based Organization
CEDPA	Centre for Development and Population Activities
DBO	District Beekeeping Officer
FGD	Focus Group Discussion
GDP	Gross Domestic Product
HBA	Hurungwe Beekeepers Association
KBA	Kutsungirira Beekeepers Association
KTBH	Kenya Top Bar Hive
MCED	Masters of Community Economic Development
NBKP	National Beekeeping Programme
NBP	National Beekeeping Policy
NGO	Non Governmental Organization
NMB	National Microfinance Bank
PRIDE	Promotion of Rural Initiatives Development Enterprise
REDD	Reduced Emission from forest Deforestation and forest Degradation
SACCOS	Savings and Credit Cooperative Society
TFCG	Tanzania Forest Conservation Group
TTBH	Tanzania Top Bar Hive
UNDP	United Nations Development programme
VICOBA	Village Community Bank
WMA	Wildlife Management Areas.
ZFDT	Zimbabwe Farmers Development Trust

CHAPTER ONE

1.0 PARTICIPATORY NEEDS ASSESSMENT

1.1 Introduction

This chapter presents the findings of the Community Needs Assessment conducted in August 2011 in Kisongwe Village – Lumbiji ward, Kimamba Division, Kilosa District – Morogoro Region. Basically it tries to show how this project responded to a community's real need through participatory approach. It tries to respond to such questions as what was the real community concern and how was it addressed in the community's needs. It further portrays how the community and other stakeholders in the project area have recognized as a need and accepted it. The way in which the community was approached greatly influenced the sharing process. The findings are reported in five main sections with several respective sub subsections.

Section one is about the Community Profile which reveals the social, economic, political and cultural aspects of the community. This enabled to determine from the insiders point of view what activities are needed and can be supported. The assessment was carried out to give a clear picture of the conditions in the community. The second section is about the Community Needs Assessment conducted in January 2012 in order to know the various community needs which they would like to be addressed. In this section the Community Needs Assessment objectives, questions, methodology, research design, sampling techniques, data collection and analysis methods have been presented in detail.

The third section presents in depth details of the Community Needs Assessment findings. Nevertheless the research involved getting information and data through Focus Group Discussion (FGD), Questionnaire, Participatory Observations, and Documentary/Records

Review. Section four presents about the community needs prioritization where by six priority needs were observed and noted and were latter prioritized using preferential ranking and the outcome was; the need for viable income generating activities to address the prevalent income poverty was ranked as the first priority need followed by the need for availability of health facilities; Protection of Crops from destructive wild animals (vermin); improvement of village infrastructure; good village environmental outlook and lastly was good governance in the village. The last section presents the conclusion of the chapter which fundamentally was based on the interpretation of the analysed data.

1.2 Community Profile of Kisongwe Village

1.2.1 Location

Kisongwe is one of the two (2) villages in Lumbiji ward, Kimamba Division, Kilosa District, Morogoro Region – Tanzania. It is located North of Kilosa town.– distance from Morogoro town to Kilosa district is 100 km and 154 km to Kisongwe village via Mkata road. Its geographical coordinates are 9259000 to 9269000 North and 268500 to 289000 East. Kisongwe village is among of 164 villages of Kilosa District. The village was established before "ujamaa village operation" and registered on 16.11.1976, its registration No MG/KIJ/354

The village shares boarders with the following villages: Lumbiji in the north, Luwemba in North West, Munisagara in the west, Idete and Mfuluni in the south east, Ilonga in the South east Unone in North and Rudewa Batini in East. (Source: Kilosa District Council 2011)

1.2.2 Topography and Vegetation

The village terrain is generally undulating, with rolling plains and mountainous. A big part

of the village has woodlands vegetation, few river line forests and mountain forests, soil texture comprises of loam soil type with good drainage and geographically the village is of Achaean rock.

However as a result of high infiltration rate of permeable rocks and sandy loam, the village has ample amount of underground water in plain land which can be reached few meters below the surface.

1.2.3 Climate and Precipitation

The village is in the semi lowland highland zone. It has a bimodal rain seasons characterized by short rains in November to January followed by long rains from March to May, the mean annual rainfall is between 800 mm to 2500 mm. (source: Kilosa Meteorological station 2011).

1.2.4 Population

The village has a total number of 697 households with a total population of 3,467 people out of which 1,474 are males and 1,993 are females scattered in the 3 sub villages. These add up to the total population of Lumbiji ward of 7,352 people and that of Kilosa District of 626,618. people. (source: Kilosa district council 2011).

1.2.5 Administrative Structure

Kisongwe village divided into 3 sub villages named Kisongwe, Kilumbi and Mlenga. The village Administration comprises of the following (i) Village Chairperson Mr. Lauliani Mkuchu (ii) Village Executive Officer Mr. Fanuel Mganga (iii) Village Treasurer is village Executive Officer

The village is run by 25 Village council members including the chairperson. Under this there are 5 committees comprising of 5 members for each committee.

(i) Finance and planning committee (ii) security committee (iii) Health committee (iv) Land and natural resources committee (v) Education committee.

The committees normally meet once per week. The village council meets every month and the Village General Assembly (Meeting) usually is convened quarterly to approve issues discussed by the village council and committees.

The three sub-villages are administered by Chairpersons who report to the Village Chairperson and each sub-village has a number of ten cell leaders who deal with 10 households' issues under them. (Participatory Survey: August 2011).

1.2.6 Health Services

The village has no its own Dispensary, people depend on the Dispensary of Roman Catholic church located in nearby village for any case of treatment. When the patients' cases are complicated they are referred to Kilosa district hospital located 54 km from the village. According to the explanation of village executive officer, they have a plan to start making bricks for building village dispensary. (Participatory Survey: August 2011).

1.2.7 Education Services

i) Primary School Education

The village has two primary schools, one is not yet registered. Both schools experience number of problems including deficit of teachers, buildings, and teaching facilities. (Participatory Survey: August 2011).

ii) Secondary School Education

There is one Secondary School established 2010 in the village which cater for the

ward of Lumbiji. The school has 5 teachers, 3 classes, and has deficit of teacher's houses, office building and teaching facilities. (Participatory Survey: August, 2011)

1.2.8 Water and Sanitation

Just part of Kisongwe sub village has clean and safe water from pipes. The piped water was facilitated by Roman Catholic mission. The rest of the population in the village fetches water from rivers and natural wells. The regulations governing the use of water are loose, people get bath and wash clothes in rivers. Some households don't have toilets they help themselves in the bush which is very dangerous for health, during the rainfall season is likely to spread diseases e.g dysentery and typhoid. (Participatory Survey: August. 2011).

1.2.9 Transport and Communication Network

The road from Rudewa batini village to Lumbiji Roman Catholic mission passes through Kisongwe village. The road has been a cry of the people for long time, due the mountainous geography and poor maintenance, during heavy rain season road surface is washed away and cause transportation through vehicles to stop. The period this survey is conducted the District Council authority was renovating the road. Communication network obtained with difficulties in the village, only Airtel mobile phone service is available in few hinterland areas and there is no plan to implement the services in the village. (Participatory Survey: August, 2011).

1.2.10 Energy and Minerals

There is no alternative source of energy used in the village other than fuel wood. All households use fuel woods for cooking and warming themselves during cold period from

May to July and the charcoal is sold to Kilosa town. Concerning mining in the village is done in small scale by just guessing. Signs show the presence of minerals but no research has been done to assure availability of minerals in Kisongwe village. (Participatory Survey: August, 2011).

1.2.11 Agriculture and Livestock

In Kisongwe village basically consists of subsistence farmers. They cultivate mainly maize, beans, groundnuts, cassava, sunflower, cowpeas, millet, sugar cane, rice, bananas, and fruits in small scale such as oranges, guavas, and mangoes. The agriculture is practiced locally using hand hoes as result the output is low. In the efforts of raising income of the people, the district council has introduced the project of cultivating gingers, at the start farmers were supplied with free rhizomes of gingers for planting in their plots. But few local people adopted the project instead the Sambaa people from Tanga are leading to cultivate the crop in the village.

Livestock keeping is done in small scale such as keeping of goats, sheep, chickens and ducks. Pigs are kept in the village on religious ground most of people majority are Christians. Cattle are kept by Mang'ati tribe in three households southern part of the village. There are no dipping services, no vaccines and drugs available in the village, the cattle keepers look health services from Kilosa town. (Participatory survey: August, 2011).

1.2.12 Beekeeping

The village has a potential site for an apiary; most parts of the village are covered with miombo woodland vegetations followed by mountain forest. Few people in the village practice beekeeping using local beehives. People still use local experiences inherited from

the grandfathers for beekeeping. Though bee's products are in high demand, their production is still small in amount and low quality. (Participatory survey: August 2011).

1.2.13 Land

The village has abundant, fertile in low land, less fertile in areas with high slopes, and arable village land remained untouched suitable for the crops above mentioned and others. The land is staying idle due to lack of modern implements and inputs attributed by lack of capital among village members. (Participatory Survey: August, 2011).

1.2.14 Forestry

The village has five village community forests at Mesoning'ina, Mihande, Mikuvi, Paramahoe and Irangi. According to the Land Use plan team (2011) the total forest area estimated 5579.7 ha. However these forests are faced with the deforestation for shifting cultivation and degradation for charcoal burning, illegal timber extraction and bushfires.

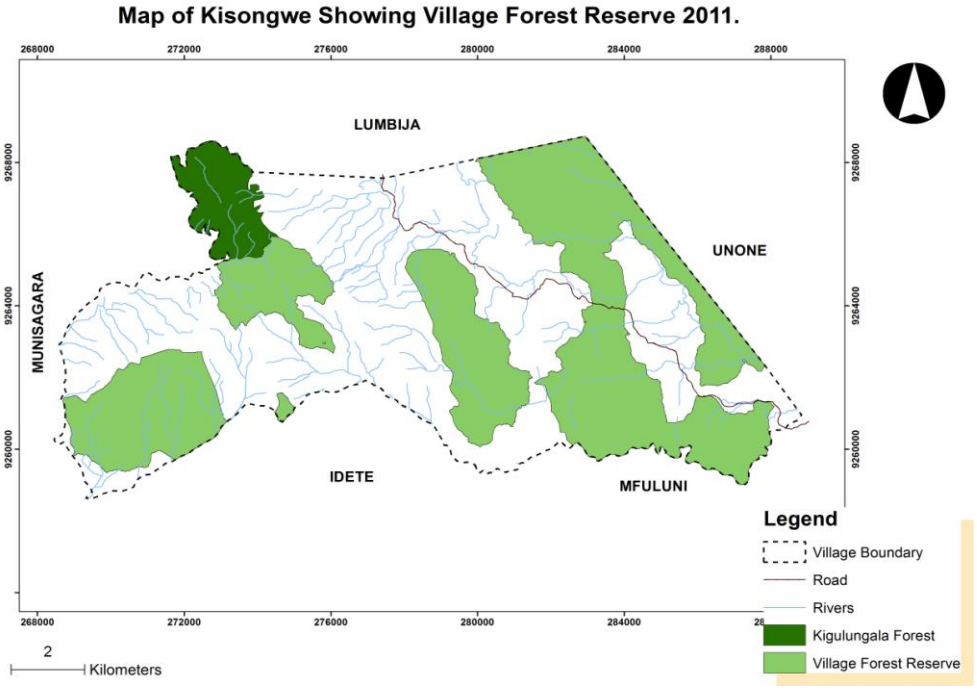


Figure 1: Map of Kisongwe showing village forests

Source: Participatory Survey: August,(2011).

1.2.15 Financial Services

There are no Banking services in the village, few villagers financially wealth follow financial services to Kilosa town where there are financial institutions such as NMB, FAIDIKA, SACCOS, BAYPORT and PRIDE. Even VICOBA is not yet implemented in the village, there are two women groups dealing with poultry keeping and beans cultivation as income generating activities (IGAs) they are getting loan from Kilosa District Women Fund. (Participatory Survey: August, 2011).

1.2.16 Ethnicity

The major dominant ethnic group in Kisongwe village is the Kaguru who constitute about 85% of the entire population of the village, the rest are, Hehe, Gogo Sukuma, Pogoro, Lugulu, Mang'ati and Sambaa. Most of the village residents are Christians. (Participatory Survey: August, 2011).

1.2.17 Security

The village has a security committee under it there are trained Mgambo and Sungusungu soldiers. Their main duty is to enforce village by laws and maintain peace and order. The challenge is that, Mgambo training was last conducted in the village in 1995; those in the service are now old. (Participatory Survey: August, 2011).

1.2.18 Market

People get their needs from monthly auctions famously known as ''MINADA'' which function twice per month in Ilonga and Rudewa Batini village. These markets meant a meeting point where people sell their local products including farm products, animals, clothes and other goods and buy their needs from businessmen from nearby towns. (Participatory survey: August 2011)

1.3. Community Needs Assessment

Community need assessment is a procedure carried out with the purpose of collecting, organizing and analyzing information available at the local level on the community status in order to intervene with the project to overcome the problem.

The community Needs Assessment was conducted by the researcher in collaboration with Ukombozi Group members, Kisongwe Village Chairperson, Village Executive Officer, the three Sub village leaders, several influential people and village community which covered several key issues. It however targeted at identifying stresses, source of stresses and community assets.

Several participatory methods were applied to collect data from the respondents /community members and other stake holders as elaborated in Data collection methods section below. The process involved collecting data with the community by applying coherently selected participatory methods and relevant survey tools. Some of the interviews were purposefully conducted to targeted stakeholders like local beekeepers and further substantiated by some secondary data from Kilosa District Council (Natural Resources Office) and Literature review.

The results of the assessment would guide future action toward planning. The participatory approach was applied to ensure the community's ownership of the process and to design an intervention which would effectively address the identified needs through preferential ranking as per community's needs. The assessment focused on what was not performing well in the community, the causes or sources of stress that maintained the problem in its position; it also highlighted the assets available in the community which could be explored to address the source of stresses.

1.3.1 The Community Needs Assessment Objectives

The overall objective of conducting the participatory needs assessment was to collect information from the community so as to identify needs, stresses and concerns within the Kisongwe Community. It also attempted to establish its causes and effects and the existing opportunities or assets which could be utilized to reduce or ameliorate the negative prevailing scenarios. The findings from the assessment enabled the researcher to prioritize the identified community needs/concerns through preferential ranking which in the final analysis led to the formulation and design of the project specifically to address the identified priority need.

The specific objectives of the Community Assessment were to;

(i) Identify the major socio-economic problems the community is facing.

(ii) Determine the existing sources of community livelihoods.

(iii) Identify the community needs and design a development project which would address the prioritized community need/concern.

1.3.2 Research Questions

(i) What are the existing major community problems in your area?

(ii) What are the main sources of community livelihoods available in the community?

(iii) What should be done in order to solve these problems?

In the course of conducting the assessments, a questionnaire with both open ended and closed ended questions were used.

1.3.3 Community Needs Assessment Research Methodology

(i) Research Design

Descriptive survey was applied in conducting the study whereby the qualitative and quantitative together with Participatory Rural Research methods were deployed. The

methodology enabled the researcher and local community to establish local conditions to facilitate planning for an intervention. Qualitative method which involved participatory method was used to collect the primary information on the community by using relevant tools/instruments. Quantitative method was used to collect primary data through household survey by using questionnaires which were prepared and pre-tested.

(ii) Sampling Techniques

Since it was not possible to cover the whole population in the village, random sampling was applied. A total of 45 households were sampled and interviewed. The sample selected in relation to the total population statistically well represented the views of remaining majority. The sample size was considered adequate enough to provide a representative sample for the 697 households of Kisongwe village. It was chosen to cover the whole targeted area and to check for consistency of the information collected. Purposive sampling was applied to get village community leaders, Ukombozi group leaders as well as other influential people and local beekeepers. In view of that the Village Chairperson, Village Executive Officer, the Ukombozi Group Chairperson and Secretary, the District beekeeping officer, Ward Executive Officer and four other members of the Ukombozi Group were sampled. The Researcher used simple random sampling to get 45 community members from all the three Sub villages. Hence the total number of respondents during assessment was 45.There were no potential biases of respondents' responses as the sample was representative of the total population.

(iii) Data Collection Methods

The discussed four methods bellow were used in collecting data during conducting survey on Community Needs Assessment in Kisongwe village in August 2011.

(a) Questionnaire

This is a survey tool/instrument that gathers data over a large sample. It covers a wide area and has no bias on the side of the Surveyor and the respondent. It was used to solicit socio- economic information that might govern the households in addressing the problem.

A questionnaire with twenty five (25) questions was administered to 45 household respondents. The questionnaire was pre-tested to seven respondents before actual use for data collection and amendments were made as regards to clarity, times spent for interview. It also helped to know the questions that looked sensitive and needed more probing or clarifications. It was designed in such a way that it captured a wider context of the community characteristics.

(b) Focus Group Discussions

One Focus Group Discussion comprising of ten (10) people was conducted with different segments of the Group and community members from the village. Participants were of the same socio economic group and have similar background. It enables people with different views to discuss their differences, challenge assumptions and come to a collective understanding of the needs of the community. By exploring issues together from the start, communities start to own the development intervention. Semi structured discussions concerning the study were carried out. The researcher facilitated the discussion guided by a set of questions concerning the study. There were questions to stimulate the discussion and the purpose was to obtain in depth and rich information on concept, perception and ideas of the group by applying the group dynamic approach:

During Focus Group Discussions the members were given opportunity to prioritize the major problems which are prevalent in the area .Group members of the discussion were given opportunities to give their opinions regarding particular questions in discussion.

Focus Group Discussions encourage all participants to offer ideas and opinions during group interview process. However the Focus Group Discussion enabled the Researcher to learn more of the situation of the area of study with regard to participatory assessment and to get clarifications and more understanding of the findings obtained in the questionnaire, documentary reviews.

(c) Observations

This is a qualitative data collection method that requires direct observation of activity behaviour, relationship, phenomena network or process in the field. It is a classical method of social science inquiry where eyes are used rather than ears. In other words it is an accurate noting and watching of the phenomenon as it occurs in nature with regard to causes and effects of mutual relations. The process of observation has been of great assistance in the field and through interpretation and linkage of data obtained from other methods. The surveyor becomes an active functioning member of the culture under study. The surveyor participates in any activity appropriate to the status which is assumed. Respondents become more comfortable with the researcher. It gives the researcher an intuitive understanding of what is happening.

(d) Documentary Review

It was conducted by going through documents in the village, at District level and ministerial level. Such documents included the Kilosa District Investment Profile, Morogoro Region Environmental Profile and Morogoro Region Socio-Economic Profile.

1.3.4 Study Limitation

(i) Some respondents could not provide their true information during the interviews because they regarded some of the questions as sensitive.

(ii) The questionnaire was long, rigorous and detailed in availing credible information.

(iv) Prevalence of illiteracy among respondents posed a great limitation during the survey.

(v) The study only captured the circumstances which prevailed at the time of survey.

1.3.5 Validity and Reliability

In an attempt to ensure and maintain reliability, the questionnaires and the relevant interview guides were pre tested to few respondents from the Ukombozi group before the actual data collection exercise. This also ensured that the survey instruments used were relevant and could give the information and data that are both realistic and reliable. Validity refers to the accurate presentation of the internal and external results or literally it means reality and truth of results obtained. While reliability is about stability of data gathered using the survey instruments and is a necessary but not sufficient condition for validity. For that case the reliability and validity of the results were ensured by:

(i) Keen selection of the sample which was conducted in order to get the sample generalization. Selection of the true sample increases the researcher's ability to draw valid conclusion.

(ii) Involving competent Survey Assistants who collected data from the respondents.

This survey focused at gathering information and comparing the status before and after the project intervention.

1.3.6 Data Analysis

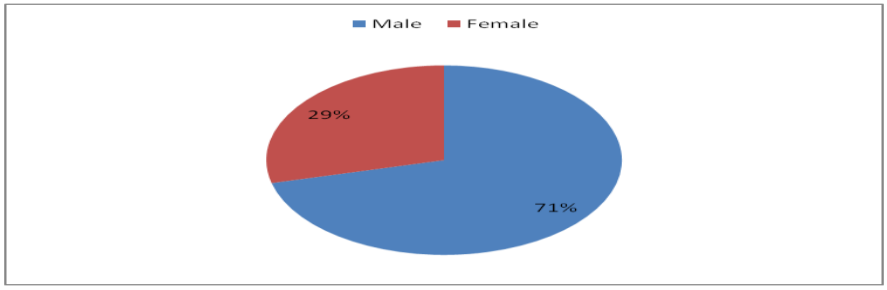
The qualitative data from Focus Group Discussion, Questionnaire and participants' observation were analyzed using Microsoft Office Excel 2003. Process involved here were data entering, editing and analysis. Variables were constructed according to the questions used in the research. The researcher generated frequency column chart and pie chart which showed percentages (%) and then interpretation of the structured questions processed.

(i) Community Needs Assessment Findings

(a) Gender of Respondents

The results as shown in the figure 2 below indicates that among the survey respondents, majority were males who constituted 71% and females comprised of 29 %.This reflects that more number of males were interviewed than females almost twice of the respondents interviewed were males

Figure 2: Gender of Respondents



Source: Field findings, August 2011.

(b) Age of Respondents

The result shown in pie chart figure 3 below most of the survey respondents were aged between 28-40 years (35%) followed by those aged between 41-59 years(29%) and the age group aged between 18-27 (27%).This shows that majority were adults and manpower for production can conduct income generating projects helpful for reduction income poverty.

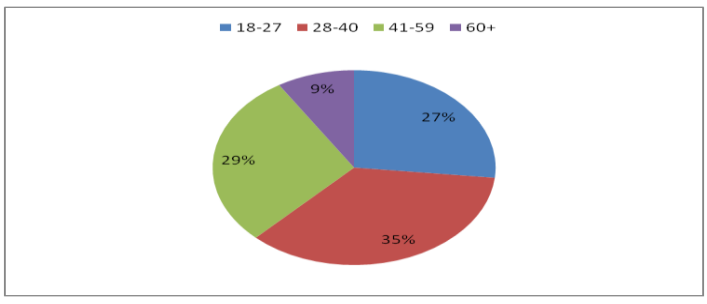


Figure 3: Age of Respondents

Source: Field findings, August 2011.

(c) Marital Status of Respondents

Figure 4 reveals that Majority of the surveyed respondents were married constituted (91%) and singles were only (7%), widows were (2%) and there were no divorced. This indicates that, majorities were people with family responsibilities and had sufficient knowledge with their environment.

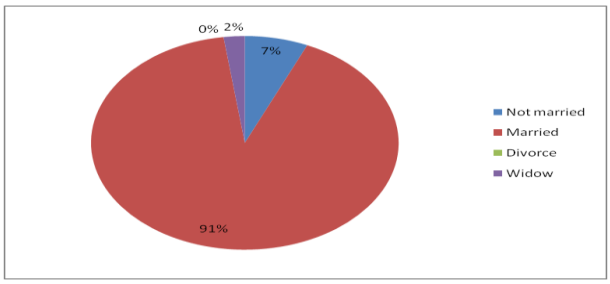


Figure 4: Marital Status of Respondents

Source: Field findings, August 2011.

(d) Education Level of Respondent

In figure 5 shows that most of the respondents have completed primary school education (80%) followed by those who have informal education (16%) i.e never attended any formal education and finally those attained secondary school education is 4% of the respondents. Findings showed that most of the people in the area have attained primary school education due to Lumbiji primary school built by the Roman Catholic Church during the colonial era 1939. Given the level of education of the respondents they can run the project and follow the sensitization and training

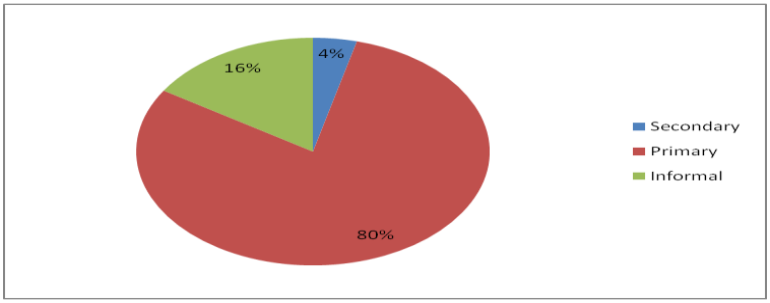


Figure 5: Education Level of Respondents

Source: Field findings, August 2011

(e) Major Community Problems

In figure 6 reveal that low income among the community was mentioned by all respondents 45 followed by diseases mentioned by 35. Crops destructive wild animals was mentioned by 30 respondents, poor infrastructure were mentioned by 25 while environmental degradation were mentioned by 22 respondents, finally poor governance were mentioned by 10 respondent.

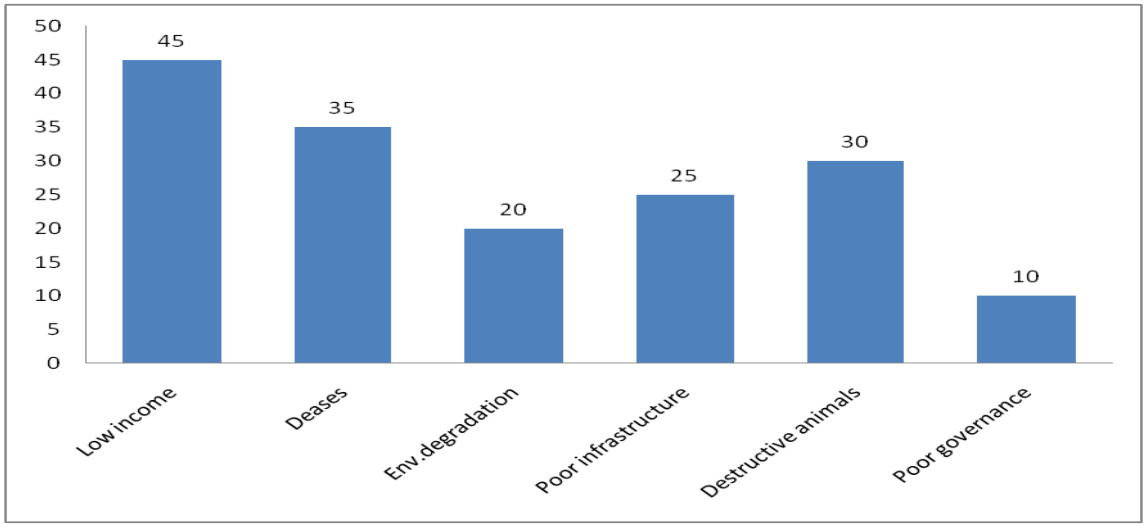


Figure 6: Major Community Problems in the Village

Source: Field findings, August 2011

(f) Opportunities Available in the Village

From the findings in figure 7, the major opportunity which was pinpointed by many respondents was land (39 respondents) followed by water for irrigation (30 respondents) followed by presence of forests(29) followed by manpower (23) and finally leadership. The village has enough land which can support them with agriculture also there are many water streams coming from the upper land useful for irrigation in the lower land. The village is covered with woodland forests in large part, apart from providing trees for timber, charcoal making, firewood and others also can be useful for beekeping as scheme for generating income mean while conserving the forest for biodiversity

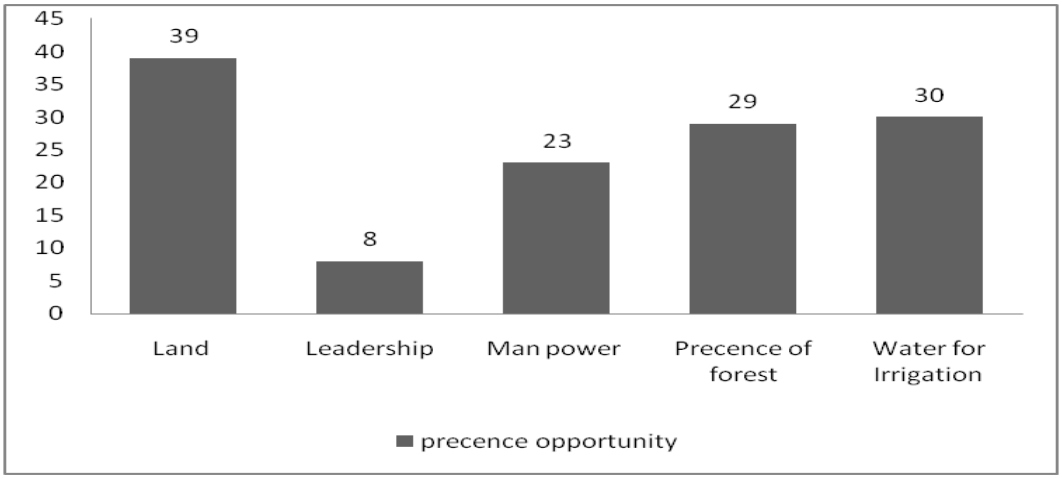


Figure 7: Opportunities Available in the Village

Source: Field findings, August 2011

(g) Major Sources of Live lihoods

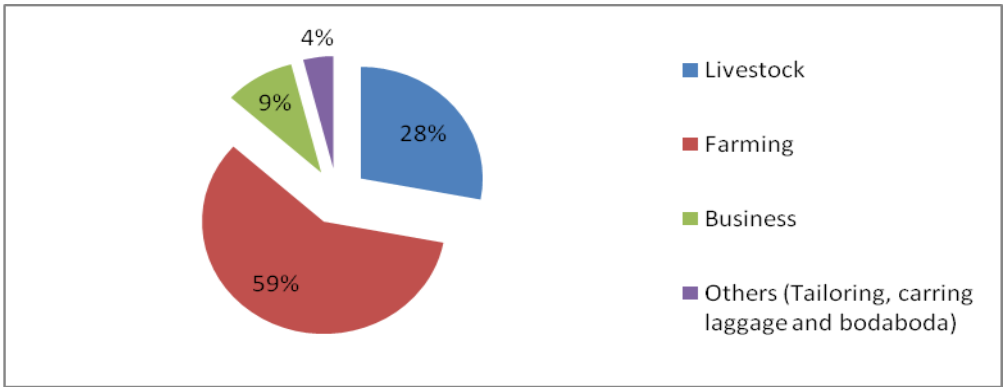


Figure 8: Major Sources of Live lihoods

Source: Field findings, August 2011

The survey findings revealed that the major source of livelihood/income was farming 59% and in fact is the major pre occupation of village community. Those engaged in livestock keeping constituted 28% of the respondents, in the survey showed that the entire community term small animals in small scale like goats, pigs and chickens are kept almost every household. Those who carried business were 9% and those who carried other

activities like tailoring and carrying luggage constituted only 4% of the respondents. Given the nature of the major pre occupation being farming these people can easily tune to modern beekeeping due present ample woodland forests and utilize incomes from farms to expand their individual schemes

(h) Main Crops in Kisongwe village

The survey revealed that the major cultivated crop is beans was pinpointed by all respondents (45). This crop is used as cash and food crop. The second crop is maize pinpointed by 39 respondents. The crop is cultivated mainly for food purposes. The third crop is groundnuts mentioned by 26 respondents, the crop is used as cash crop. Cassava pinpointed by 21 respondents, the crop mainly used for food. Ginger is a cash crop pinpointed by 10 repondents , ginger has been introduced by district council in the area for raising the income of the community because water for irrigation and suitable soil for production of the crop is available. Other crops pinponted by few respondents are rice, banana, sugar cane and millet. The problems noted generally, the crops are not giving the maximum product due to climate change. Farmers now days experience drought and sometimes rainfall come out the calender season and sometimes the rainfall exceed amount. Another problem facing the community concerning their crops are the wild destructive animals (vermine). The ward agricultural extension officer is not available always to visit their farms for advices, may be due to extended area and lack of transport facilities. When they asked about the market for their products, they responded no problem, the buyers coming from Kilosa town follow them house to house to buy. The price of crops is negotiable but the farmers are the one losing.

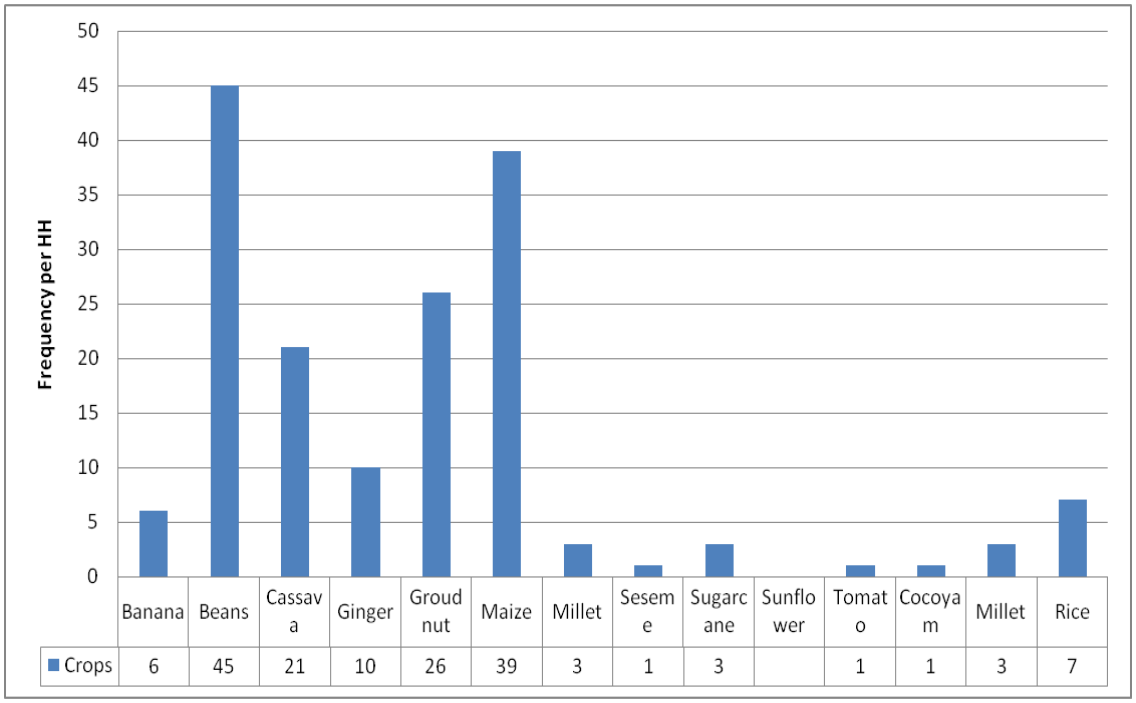


Figure 9: Main Crops in Kisongwe Village

Source: Field findings, August 2011

(j) Level of Income per Month

According to the column chart below figure 10, majority of the respondents earn the income per month between Tshs 100,000 – 199,999 (18 respondents) followed by who mentioned to be earning an income of between Tshs.200,000-299,999 (12 respondents) and about 8 respondents mentioned to be earning an income below Tshs 99,999 and very few respondents earning income of shs 300,000 and above per month. This is an indication that there is lack of viable income generating avenues. Given more alternative income avenues these people are potentially position to exploit more income opportunities.

When asked how they spend their income most of the respondents mentioned that, they direct for buying clothes, domestic uses, save for treatments, paying school fees, and preparation of farming implements for next season. The figure indicates that men have

higher income than women; this is the unequal distribution of income within the community. Therefore women depend on men to satisfy their different needs.

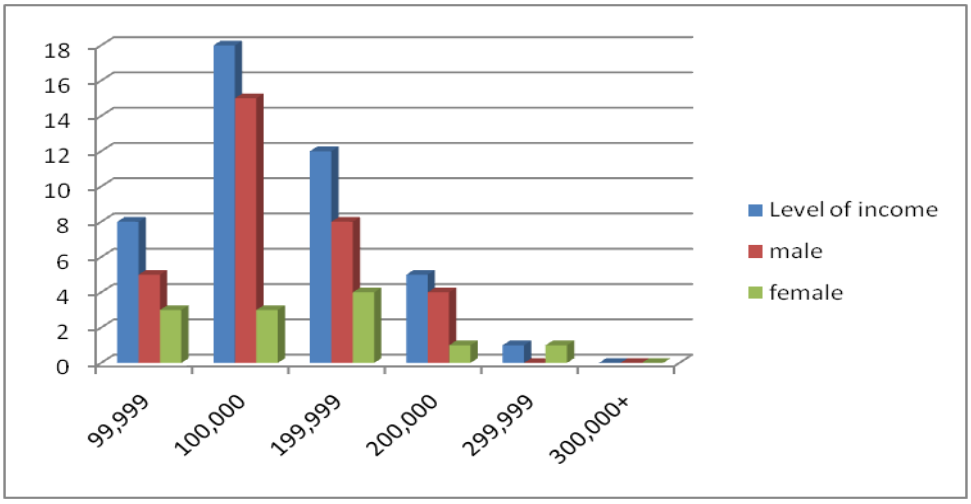


Figure 10: Level of Income per Month

Source: Field findings, August 2011

(m) Beekeeping Respondents

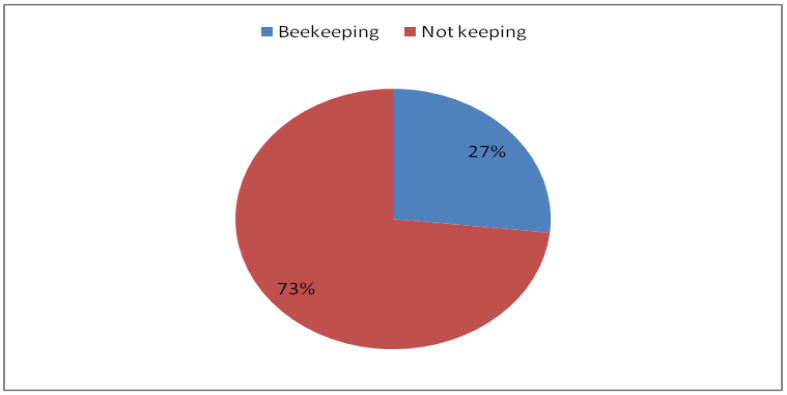


Figure 11: Beekeeping Respondents

Source: Field findings, August 2011

The pie chart below figure 11 reveal that, 73% of repondents do not practice beekeeping and 27% only of the repondents practice beekeeping localy. There is a need to creat awarness to the community about beekeeping. The 27% of the respondents are practicing

traditional beekeeping, having few local hives ranging from 1- 16 maximum per individual.

(n) Knowledge of beekeeping

In figure 12 about 56% of the respondents practicing beekeeping they gained knowledge of beekeeping from their grandfathers or fathers who were beekeepers i.e inherited knowledge. 25% of respondents got knowledge of beekeeping from relatives. The remaining 19% of respondents got knowledge from their own initiatives. When asked apart from knowledge gained traditionally, they have never attended any formal training concerning beekeeping.

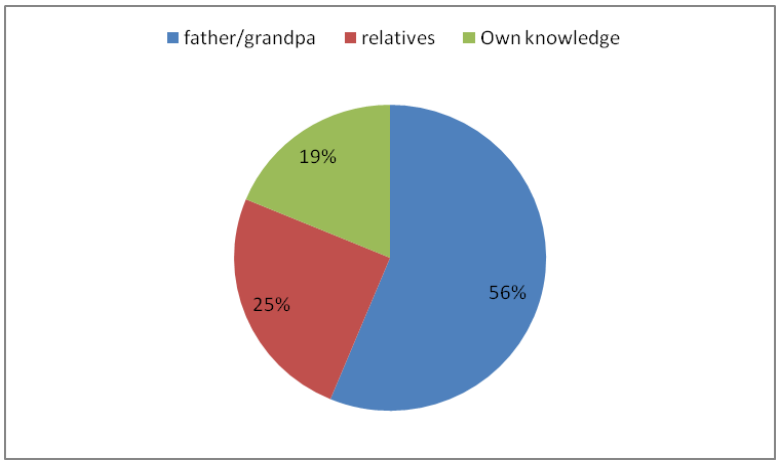


Figure 12: Knowledge of Beekeeping

Source: Field findings, August 2011

(o) Purpose of Honey Production

The pie chart below figure 13 reveal, the honey produced locally 50% of respondents pinpointed is used as food and medicine. About 22% of respondents mentioned honey is produced for purpose of food and business. Generally the respondents pointed out that, amount of honey produced is very small in quantity, mainly is consumed at home and small amount sold to local traditional healers to use for medicine.

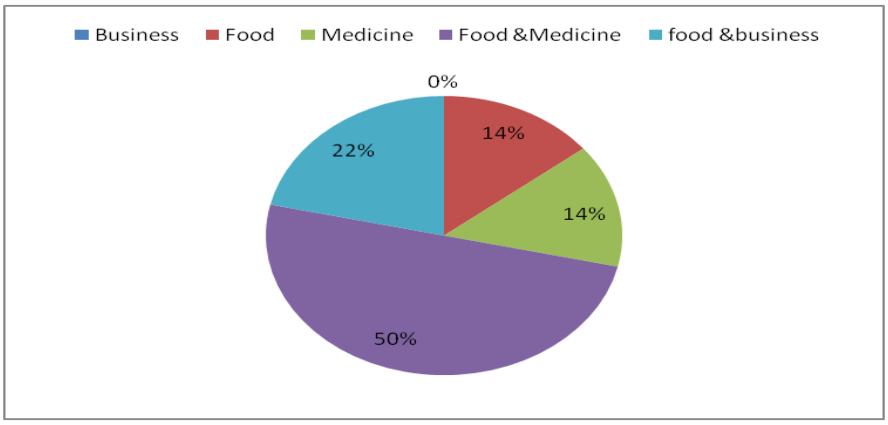


Figure 13: **Purpose of Honey Production**

Source: Field findings, August 2011

(p) Challenges for Beekeeping

In figure 14 shows that About 45% of repondents mentioned that animal called honey buger some times tilt the hive lid and still the honey combs. Insects like red ants were mentioned by 22% of respondents are the enemy of bees when ambush the hive, bees find a way to abscond . About 22% of respondents pinpointed that bush fire occur every year during dry season due to un managed woodlands. About 11% of repondents pinpointed delay of bees to colonize the hive**.**

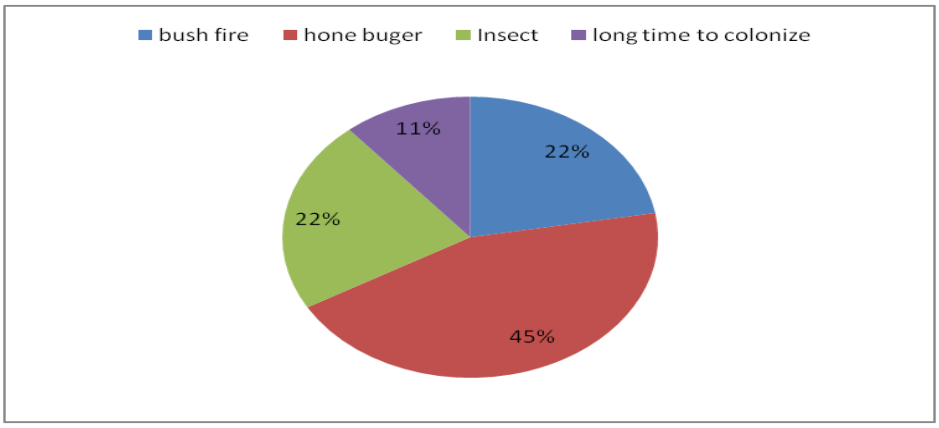


Figure 14: Challenges for Beekeeping

Source: Field findings, August 2011

(q) preference of Beekeeping

In figure 15 about 60% of repondents answered that, they prefer beekeeping. About 29% of repondents are not sure with what to do. More beekeeping awareness is required to convince such people. 11% of respondents don't like beekeeping , want to continue with other generating income schemes.

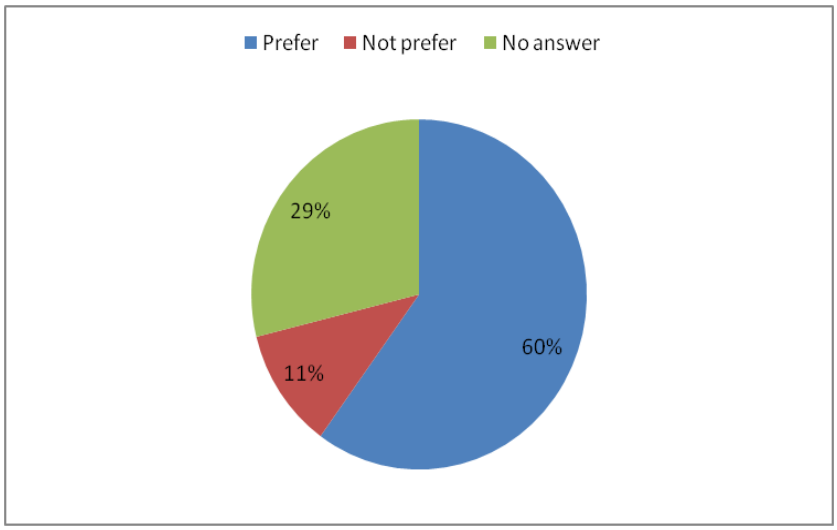


Figure 15: Preference of Beekeeping

Source: Field findings, August 2011

(r) Obstacles for Beekeeping Practice

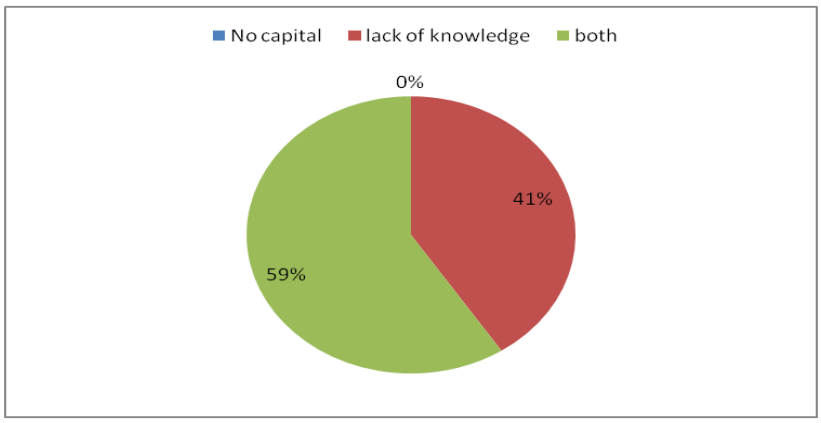


Figure 16: Obstacles for Beekeeping Practice

Source: Field findings, August 2011

The pie chart below figure 16 reveal that 59% of repondents lack both knowledge of beekeeping and capital for implementation of the scheme. About 41% of respondents mentioned that didn't have knowledge of beekeeping due to lack of beekeeping extension services.

(s) Relationships between Beekeeping and Forest Conservation

The pie chart figure 17 below reveals that about 32% of the respondents mentioned that when beekeeper hang hives in forest takes care to prevent bushfire from burning hives consequently forest protection. About 29% respondents mentioned that bees get raw materials for honey production from forest therefore forest supply raw material for bees. About 27% of respondents mentioned that hives are placed in forest therefore forest is used as an apiary. About 1% of respondents pinpointed that in the case bees are collecting nectar from flowers do cross pollination. About 11% of respondents answered that they don't know the relationship between forest conservation and beekeeping

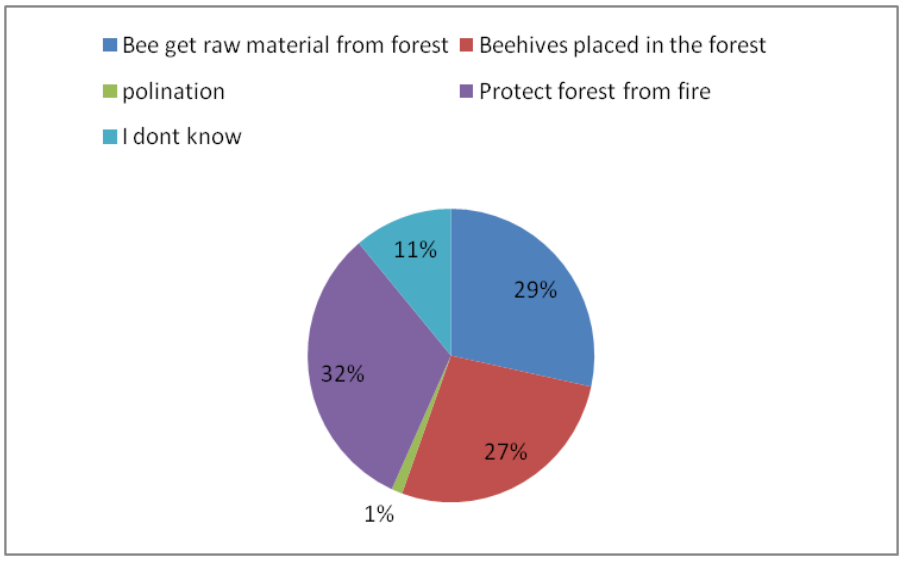


Figure 17: Relationships between Beekeeping and Forest Conservation

Source: Field findings, August 2011

1.3.7 Community Needs Prioritization

During community Needs Assessment conducted in August 2011 a number of community needs were mentioned and were prioritized in order to come up with one most pressing need which required to be addressed through a project which had to be designed by major stakeholders. The preferences were placed on a piece of paper and the UKOMBOZI GROUP members ranked the items. Preferential ranking (ranking by voting) technique was applied in prioritizing the needs and this allowed the researcher to determine quickly the major needs or issues of the community and enabled the priorities of different individuals to be easily compared. Focus Group Discussion conducted also came up with almost the same high ranked needs. The major community needs/concerns are as indicated in the table below. The results of preferential ranking exercise based on prioritized needs were as indicated below.

Table 1: Community Needs Prioritization by Preferential Ranking

S/N	Community needs	Score	Position
1	Village environmental degradation.	3	5
2	Unavailability adequate health facilities.	6	2
3	Poor infrastructure.	4	4
4	Lack of viable income generating activities.	8	1
5	Poor governance in village.	2	6
6	Crops destructive wild animals.	**5**	3
	TOTAL	**28**	-

Source: Participatory Survey August (2011)

Therefore, the community collectively agreed that, the need for viable income generating activities was the major community need. Unavailability of adequate health facilities was the second followed by crops destructive wild animals, poor infrastructure, environmental degradation and eventually poor governance in the village. The community observed and

had in mind that their main concern is having viable income generating activities which could be addressed through establishment of modern beekeeping scheme so as to meet the basic socio-economic obligations and thus improve their livelihoods.

1.3.8 Conclusion

The needs assessment process was conducted in Kisongwe village with the overall intention of identifying various pressing community needs by applying participatory research methods. From research when analysed, the findings revealed that community had low level of education as majority of them completed primary education and others informal education an indicator of poverty. In the village opportunities are there such as suitable land for agriculture, water for irrigation, forests, enough manpower and others still are underutilized. Majority depend on farming using hand hoes whose crop output is very minimal ,also low income earning was singled by majority as the major concern of the community which intensify failing to meet some socio-economic basic needs.

The presence of forest opportunity through beekeeping is underutilized it has revealed few beekeepers using traditional ways of beekeeping. The quality and quantity of honey produced is very low and is most used for food and medicine as revealed in the findings. In order to boost the income of the community extension on modern beekeeping scheme is required.

CHAPTER TWO

2.0 PROBLEM IDENTIFICATION

2.1 Background to Research Problem

This chapter examines in depth the various community needs which were identified in the previous chapter as being the most pressing community problems and were latter prioritized to come up with one major need and as a community problem which had to be addressed by a development project jointly and unanimously agreed and designed by all major stakeholders.

Kisongwe village community is facing a number of problems which were identified when conducting Community Needs Assessment. The priority needs were observed through participatory assessment and the adoption of preferential ranking (ranking by voting) was used to prioritize the needs which negatively affect the community. The exercise was conducted using the Focus Group Discussions which started by a brainstorming session to elicit about six major community problems that the village community was facing and which needed to be addressed.

Low income mainly due to non availability of sustainable income generating activities was prioritized as the major community problem and it also had negative impact or some cause to the other six priority problems

Table 2: Problems, Causes, Effects and Assets

Problem	**Causes**	**Effects.**	**Assets**
1.Environmental degradation	(i)Deforestation due to timber and charcoal burning (ii)Shifting agriculture (iii)Poverty leading to unsustainable resource utilization	(i)Desertification (ii)Soil erosion/ gullies (iii)Loss of biological diversity (iv)Depletion of ozone layer	i)Harness Non Timber Forest Products (ii)Village natural resources Committee
2. Low Income	**(i)**Inadequate income generating activities (ii)Bad weather due to unreliable rain pattern (iii) Lack of entrepreneurship and business skills (iv)Non accessibility to micro financial institutions.	**(**i)Low purchasing power (ii)High illiteracy (iii)Low crop output due to less inputs (iv)Less capital for business creation	(i)Availability of human capital (ii) Cultivation of drought resistant crops (iii) NGOs volunteering to offer skills (iv)Establishment of VICOBA and SACCO**S**
3. lack of health services	(i) Lack of dispensary building (ii) lack of medicines and drugs (iii)Lack of medical staff .	(i)Increased morbidity and mortality rate	(i) Government plans to support building dispensary (ii)Government plans to supply medicines and drugs (iii)Government plans to allocate medical staff
4.Poor infrastructure	(i) poor road maintenance	(i) Difficulties in crop	(i) Government plans to allocate budget to

Problem	Causes	Effects.	Assets
	(ii) lack of road network in village (iii) poor bridges	transportation to market. (ii) crops fetch low price due to high transport cost (iii) increased income poverty (iv) poor accessibility to health services	maintain the road and bridges. (ii) villagers mobilize themselves to expand road networking.
5.Poor governance	(i) selfishness (ii) poor vision (iii) poor of motivation (iv) corruption	(i) poor trust to village leaders (ii) segregation of people (iii) poor mobilization of people (iv) slow development in the village	(i) Government plans to train on good governance. (ii) NGOs volunteering to offer training on good governance.
6. Crops destructive wild animals	(i) lack of techniques to scare animals (ii) presence of forest near farms	(i) Crop product reduced (ii) More time spend to scare animals unnecessarily. (iii) Increased more poverty	(i) District natural resources department plans to train techniques to scare wild animals. ii) NGOs volunteering to offer training on techniques to scare wild animals

2.2 Problem Statement

Despite the fact that Kisongwe village has ample land, forests and water flow from upland for irrigation, the resources present are not utilized to the maximum. Communities rely on food crops to be used as cash crop which still yield low income. Livestock keeping is in very low scale and the livestock termed do not give them enough income to satisfy their needs. Several times they experience low income earnings and grinding poverty to such an extent that they even fail to meet essential social and economic obligations. Income poverty (poor livelihood) was singled out as the main problem by a number of community concerns such as limited sustainable income generating activities compounded by lack of or limited entrepreneurial and business management skills and knowledge. Thus the result of that contributes to poor community livelihood situation and definitely leading to unemployment and poverty crisis.

The community of Kisongwe village depend on food crops to earn cash mainly from beans. The Kilosa district council has taken some efforts to introduce ginger as the cash crop to boost the income of the community, but few farmers have adopted establishing the crop. The farmers cultivating the crop some are Sambaa people from Tanga who knew the benefits of the crop from the start and few early adopter local people. Although the crop is fetching high price, never the less the impact is yet to be felt by the community most likely because it is being conducted at small scale and few people. Research is needed to find out, why the production of ginger is still low.

Income is very crucial if physiological needs are to be met in sustainable manner. However income is only generated by few individuals who have an opportunity to take part in economic activities. And it is possible to save only if there is an adequate level of income. Improving livelihood opportunities of the community is therefore an essential

prerequisite for self sustained poverty reduction strategy. Poor people have considerable productive potential which can be mobilized by means of self help approaches. Modern bee keeping was generally identified and ranked as a priority income generating activity which is economically viable, technically feasible, and environmentally friendly acceptable by the Kisongwe village community.

2.3 Project Description

The project focus was to empower community through modern beekeeping for income generation and forest conservation: The Case of Ukombozi Group in Kisongwe Village, Kilosa District, Morogoro Region – Tanzania; is a participatory local project aimed at empowering community through modern beekeeping for income generation at Kisongwe village. Beekeeping has the potential to contribute greatly to food security and income generation especially to poor rural people. Modern beekeeping was identified during community needs prioritization and was ranked as a priority income generating activity also a feasible project for the Kisongwe village community, given the fact that formal employment opportunities are limited in the village.

The project aimed also to attract other community members with negative perception about beekeeping industry to start beekeeping and hence self employed. The target community or beneficiaries were expected to participate in the project implementation by attending fully in the trainings covering on awareness of beekeeping, modern hives, site selection, placing of hives in the site, bee products processing and marketing.

It is the trust of the project that as per change theory developed by Lewin's which emphasizes on motivation and readiness as precondition for an individual or a group to change, the community will change because they have shown this from time of

participatory assessment and community needs assessment. According to Lewin's change modal of unfreezing, changing and refreezing ''if an individual or group is not motivated and ready for change, use of driving force won't be successful because the driving force toward change often produce an immediate counterforce to maintain the equilibrium.''

Therefore, through training on beekeeping awareness, using modern beehives and processing bee products and marketing, beekeepers will have to be empowered in modern beekeeping as generating income activity hence will improve their income and forest conservation.

2.3.1 Target Community

The project is meant to serve and empower the livelihood opportunities of the community members of Kisongwe village in Lumbiji ward, Kilosa District - Morogoro region. Modern beekeeping has the potential to contribute significantly to food security, income generation, medicine and nutritional status especially to poor rural people. The first target group is the 28 members of Ukombozi Group based in Kisongwe village. Secondly latter on the project would be extended to other people who are residents of the village and even other surrounding villages in Lumbiji ward. Tanzania Forest Conservation Group (TFCG) is the host and will support cost for training, supply of beekeeping equipments and modern hives called Tanzania Top Bar Hives (TTBH). On the other hand the following criteria are to be adhered to and the project will involve.

(i) People with an interest with beekeeping practices.

(ii) Beneficiaries proving their long term commitment to live in the project location and not those likely to leave for urban areas in search of better opportunities.

(iii) People with commitment to work in the group.

(iv) People with willingness to promote long term sustainability, accountability and transparency during project implementation, monitoring, review evaluation and reporting.

The 28 group members of Ukombozi to be sensitized and trained and utilize local resources to attain their objectives. The direct beneficiaries would benefit from better health and living standard through income from the improved management of the beekeeping.

2.3.2 Stakeholders

Stakeholders are people affected by or can influence the impact of an activity/project. They can be individuals, groups, community or an institution. Stakeholder groups are made up of people who share a common interest such as an NGO, or community. Such groups often contain many sub groups. These subgroups may be affected by the project in different ways and some sub groups may have a lot more influence on the impact of the project than others.

(i) Stakeholders Analysis.

It is a helpful tool to identify stakeholders and relating the nature of their stake, roles, and their interest. The following are the benefits of identifying the stake holders:

(a) Improve the peoples understanding of the needs of those affected by the problem

(b) Reveal how little we know as outsiders, which encourages those who do know to participate

© Identify potential winners and losers as a result of the project

(d) Reduce or hopefully remove potential negative project impact

(e) Identify those who have the rights, interests, resources, skills and abilities to take part in, or influence the course of the project

(f) Identify who should be encouraged to take part in the project planning and Implementation.

(g) Identify and reduce risks which might involve identifying possible conflicts of interest and expectation among stakeholders so that conflict is avoided.

It is done when possible projects are identified and is reviewed at later stages of the project cycle to check that the needs of the stakeholders are being adequately addressed.

2.3.3 Project Goal

The overall project goal is to empower Kisongwe village community livelihoods by improving productivity, raising income, employment opportunities and knowledge through modern beekeeping.

2.3.4 Project Objectives

The project anticipates achieving the following objectives.

(i) Impart awareness and modern beekeeping husbandry skills for productivity improvement.

(ii) Sensitization and training in entrepreneurship and business development skills for empowerment of marketing beekeeping products.

(iii) Provision of 25 modern beehives and other beekeeping equipments and materials.

(iv) Enhance cooperation among group members and strengthen institution.

Table 3: Analysis of Stakeholders Involved in the Project.

Stakeholder	**Roles of the stakeholder**	**Concerns**	**Expectations**	**Assumptions**
Ukombozi Group	Key project implementers	Income poverty reduction and improved socio-economic status of the community	Contribute to improved community livelihood opportunities of the village	Positive cooperation among members
District beekeeping Officer	Provide advisory and extension services to project including monitoring and backstopping	Community empowerment on modern beekeeping and management	Modern beekeeping production increase through extension and advisory services	Continued project support for sustainability
Carpentry and other supplier of beekeeping equipments.	Production of hives, protective gears for harvesting honey, equipments for processing bee products and packaging materials.	Improved productivity of honey and wax in quantity and quality	Contribute to more productivity and improved livelihoods	Continued supply of hives and beekeeping equipments
TFCG organization	Support funds for the project	Community adopts the project.	Community income and livelihoods improved hence forest and biodiversity conservation.	Continued sustainability of the project.
Consumers	Buy and consume honey and other products from bees.	Availability of honey and other products of bees at the right time, place, price, quality and quantity.	Improved health and nutritional status	Stable price and constant supply of honey and other products of bees.
CED Student	Provide technical assistance through training and advisory services	Achievement of outputs, specific objectives and overall project goal	Improved productivity for beekeeping to ensure maximum yield.	Good cooperation among major stake holders

2.3.5 Host Organization-TFCG Profile

Tanzania Forest Conservation Group (TFCG) is a Tanzanian non-governmental organization hosting the project. TFCG was established in 1985. With over 20 years of experience promoting the conservation of the Eastern Arc and coastal forest biodiversity hotspot in Tanzania. The organization headquarter is based in Mikocheni- Dar es Salaam.

In Kilosa district, TFCG is running a project named "REDD (Reduced Emission from Deforestation and Degradation) for Communities and Forests". The project aiming at reducing greenhouse gas emissions from deforestation and degradation in Tanzania in ways that provide direct and equitable incentives to communities to conserve and manage forests sustainably. Out of 164 villages in Kilosa District, the REDD for Communities and forests project is working under 13 villages in which Kisongwe is among. The area covers the forests with high biodiversity value in the Eastern Arc.

(i) The Organization's Vision

TFCG envisage a world in which Tanzanians and the rest of the humanity enjoy the diverse benefits from well conserved, high biodiversity forests.

(ii) The Organization Mission Statement

The Tanzania Forest Conservation Group is working to "conserve and restore the biodiversity of the globally important forests in Tanzania for the benefit of present and future generations".

(iii) The Organization Administration

TFCG is led by a voluntary committee of dedicated professionals with a commitment to forest conservation. The committee members include representatives from other NGOs, donors, private sector and government. On ground, the team of professional foresters and

biologists guide the implementation of the organization forest conservation strategies. TFCG's secretariat includes 6 officers based in head office in Dar es Salaam and full time staff based in field projects.

(iv) Partnership and Financial Support

TFCG works in close cooperation with other stakeholders including the Government, the forest-close communities, the private sector and other NGOs within and foreign countries.

(v) The Organization Programmes

TFCG has five Programmes as follows:-

(a) Participatory Forest Management

This programme is achieved through training, dialogue and empowerment, individual and local institutions provided with skills and capacity to sustainably manage the forests around them.

(b) Research

TFCG is committed for improving the knowledge and understanding of Tanzania's forests and how they can most successfully be conserved.

© Environmental Education

TFCG prepare and provide environmental education materials to schools, professionals and communities. Also run environmental education programmes through media**.**

(d) Livelihood Support

TFCG provide more sustainable livelihood options for people living near

forests. Enable to reduce their dependence on activities that destroy the forests and provide more profitable alternatives**.**

(e) Advocacy

TFCG is constantly advocating for improvements in forest governance and policy at local, national and international levels.

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CHAPTER THREE

3.0 LITERATURE REVIEW

3.1 Introduction

The chapter provides the information on literature review under three aspects of theoretical, empirical and policy literature review related to earlier initiatives that have been made in various places concerning empowering community through beekeeping. Theoretical literature review was undertaken from sources like books, web sites and report from intermediaries so as to review on general perspectives concerning beekeeping, while empirical literature review provided literature which resemble to this project and show how other researchers approach similar projects. It provides lessons that can be incorporated to our project. Policy review provided opportunity to revisit regional and national designed to provide a framework to the project and provide clear guidelines in fostering community economic development initiatives in the community

3.2 Theoretical Literature Review

3.2.1 History of Beekeeping

Beekeeping, the practice of artificially maintaining honey bee colonies, is one of the oldest forms of food production. Formally known as *apiculture*, beekeeping is thought to have been practiced as early as 13,000 BC. The ancient Egyptians were particularly skilled in the art of beekeeping, since they considered honey to be an important part of their diet.

In other literature find that bees and honey have featured extensively in culture and mythology throughout history. Cave drawings found in Spain dated around 6000 BC depict honey gatherers climbing trees to harvest honey from wild bees. These are thought

to be some of the earliest illustrations of humans risking life and limb to obtain honey. Similar drawings have also been found in India, Africa, Asia and Australia.

3.2.2 Some Studies of Bee's Behaviour Carried Out.

Much has been learned about the behavior of insects, including bees, in recent years. Practical discoveries of bee behavior made our beekeeping of today possible.

(i) Pheromone

Ribbands (1953) define 'Pheromone' as a substance secreted by an animal that causes a specific reaction by another individual of the same species on the other side Gary (1974) define pheromone as the chemicals that bees and other insects produce that influence, or direct, behavior of other bees. Now many bee behavior activities can be explained as the effect of various pheromones. Honey bee colony is a social pattern or organization, probably associated with a "social pheromone." It causes the bees to collect and store food for later use by other individuals. Individuals within the colony communicate with each other but not with bees of another colony. Certain bees in the colony will sting to repel an intruder, even though the act causes their death. All of these, and perhaps many other organizational activities, probably are caused by pheromones.

(ii) Looking for Domicile

According to Lindaur (1961) when the swarm emerges from its domicile and settles in a cluster on a tree, certain "scout bees" communicate to it the availability of other domiciles which has been discovered in survey. The various scouts perform their dances on the cluster to indicate the direction, distance, and desirability of the domiciles. Eventually, the cluster becomes united in its approval of a particular site. Then the swarm moves in a swirling mass of flying bees to it.

(iii) Cleaning of the House

Certain waste material accumulates in a normal colony. Adult bees and immature forms may die. Wax scales, cappings from the cells of emerging bees, particles of pollen, and crystallized bits of honey drop to the floor of the hive. Intruders, such as wax moths, bees from other colonies, and predators, are killed and fall to the floor. Worker bees remove this debris from the hive (Haydak ,1963.)

(iv) Colony Odor

According to Ribbands (1953) the colony odor is different from the other colony, colonies odor cannot be combined into one hive without the bees fighting and killing one another. This odor probably results from a combination of endogenous (pheromone or pheromone like) materials and exogenous (food) materials in each hive and seems to be recognizably different for every colony. Queen substance is produced in glands in the queen's head. The alarm or sting pheromone also may be a complex of pheromones. When a bee stings, other bees in the immediate vicinity also try to sting in the same place after transferring its venom, pheromones secreted during the attack. However, honey bees are able to sting only once. Because stingers contain barbs and are attached to the worker's intestines, they detach from the stinging bee's body after attacking a victim. Smoke blown onto the area seems to neutralize this effect.

(v) Cause of Temper

The term "temper" of bees refers to their inclination to sting. Temper of bees commonly has been controlled with smoke. Just why and how smoke affects bees is unknown, even though it has been used by beekeepers worldwide for hundreds of years. The following brief instruction might help beekeepers with limited experience: Smoke the entrance gently enough to force guard bees inside, raise cover, smoke gently. Smoke bees only

when they fly up from combs toward hands and face. Move slowly and deliberately. Break propolis seals between hive bodies and frames slowly and evenly (Lindaur, 1961)

(vi) Colony Morale

"Colony morale" generally refers to the well-being of the colony. If the morale is good, the bees are doing what is desired of them, including increasing the colony population, making honey, and pollinating flowers. Many factors affect colony morale. For example, if the queen is removed from a colony during a honey flow, the daily weight gains immediately decrease, although the bee population for the next 3 weeks is unaltered. Also, when a colony is preparing to swarm, the bees practically stop gathering pollen and nectar. Improper manipulations or external environment also affects colony morale. A colony has good morale when the maximum numbers of bees are making the maximum number of flights to gather nectar and pollen (Lindaur'1961).

According to von Frisch (1955), when a bee returns from a foraging trip and dances, she also communicates the kind of "plant" or "flower" on which she was foraging by releasing the perfume of the flower through nectar regurgitation or from nectar aroma on body hairs. Von Frisch (1955) also discovered that bees recognize and are guided to flowers by different colors but are unable to communicate these colors.

(Vii) Age Levels of Bees Correlated With Work Habits.

According to Haydak (1963) under normal conditions, all ages of bees are in the hive and, in general, the bee's age determines its daily activity. In response to special needs of the colony, however, bees are capable of altering the division of labor according to age. Young bees feed larvae, build comb, and ripen nectar into honey in a rather definite sequence. After about 3 weeks, they become field bees. If many field bees are killed by

pesticides, young bees go to the field at a younger age to get necessary chores accomplished.

(viii) The Performance of Colonies

Genetically, we found that some bees produce more honey than others, but we do not know why. The individual bee may collect more because of its own genetic inheritance. The colony may store more honey because of the queen's inherited ability to lay more eggs, resulting in a greater total population of bees in the hive, or because the bees are inherently longer lived

Attractive nectar or pollen, or both, can be important in ensuring pollination of bee-pollinated crops. Nectar and pollen availability in plants can be accidentally eliminated by breeding. When this occurs, there is a loss of a potential honey crop, but more important can be the loss of a seed or fruit crop because the plant no longer attracts pollinators. On the other hand, the foraging area of a colony may comprise several square miles; honey bees flying 2.5 miles in all directions from a single hive have access to 12,500 acres. This characteristic and the fact that honey bees distribute themselves well over the area within flight range are important in locating and harvesting available nectar and pollen. (Libbands, 1953)

(ix) Control of Foraging

A major crop pollination goal is to control foraging bees and get them to more effectively visit and pollinate crops; conversely, we would like to repel them from areas where there is danger from insecticides or where they endanger people. Work with other insects – both social and nonsocial – indicates that this might be accomplished some day by chemical and physical means. There is considerable evidence that different plant species produce

varying attractant compounds associated with their nectar and pollen. Bees are highly attracted to the scent of recently extracted honeycomb and to the scent of honey being extracted or heated. Obviously, chemical scents of certain flowers and to some extent scents incorporated in the collected honey are attractive to bees or associated with available food (Haydak, 1963).

(x) Other Behavior Activities of Bees

(a) The drone

The time of day that drones fly in search of a mate depends on many factors, such as the geographic location, day length, and temperature. Drones usually fly from the hive in large numbers between 11 a.m. and 4:30 p.m. Morning or early afternoon flights may last 2 or 3 hours. Later flights are shorter. When out of the hive, drones congregate in “mating areas,” which may serve to attract virgin queens. These areas usually are less than 100 feet from the ground and seem to be associated with land terrain.

(b) Queen

The virgin queen becomes sexually mature about 5 days after emergence. She is relatively quiet in the morning and most active in the afternoon. She may begin her mating flights 5 or 6 days after emergence and go on a number of flights over several days. Mating with 8 to 12 drones will stock her spermatheca with 6 million to 7 million sperm. She will begin to lay eggs in 2 to 5 days and may continue for years.

A young, fully mated queen rarely lays drone eggs before she is several months old. After that time, she controls the sex of the offspring by laying either fertilized or non fertilized eggs.

Worker bees occasionally kill their queen. More frequently, they will kill a newly introduced or virgin queen. To do this, 15 or 20 worker bees collect about her in a tight ball until she starves.

3.2.3 Livelihoods Creation From Beekeeping

According to the accepted definition originally developed by Chambers and Conway (1992): "A livelihood comprises the capabilities, assets and activities required for a means of living. A livelihood is sustainable when it can cope with, and recover from, stresses and shocks and maintain or enhance its capabilities and assets, both now and in the future, while not undermining the natural resource base.

Beekeeping is a useful means for strengthening and creating people's livelihoods because it both uses and creates a range of different capital assets. Successful beekeeping can be achieved by drawing upon all of the five categories of capital asset; human, physical, financial, social and natural.

(i) The Five Types of Capital Assets

(a) Social capital

Needed for beekeeping: help from families, friends, networks. Membership of groups, access to wider society, market information, research findings.

(b) Human capital

Needed for beekeeping:, knowledge, skills, personal attributes like good health and strength, marketing expertise.

(c) Natural capital

Needed for beekeeping: bees, a place to keep them, water, sunshine, biodiversity, environmental resources.

(d) Financial capital

Needed for beekeeping: cash, savings, access to credit or grants.

(e) Physical capital

Needed for beekeeping: tools, equipment, transport, roads, clean water, energy, buildings.

3.3 Empirical Literature review

3.3.1 Beekeeping Sector Perspectives

Beekeeping in Tanzania plays a major role in socio-economic development and environmental conservation. It is a source of food (e.g. honey, pollen and brood), raw materials for various industries (e.g. beeswax candles, lubricants), medicine (honey, propolis, beeswax, bee venom) and source of income for beekeepers. It is estimated that the sector generates about US$ 1.2 million each year from sales of honey and beeswax (MNRT, 1998) and employ about 2 million rural people. It is an important income generating activity with high potential for improving incomes, especially for communities leaving close to forests and woodlands. Beekeeping also plays a major role in improving biodiversity and increasing crop production through pollination (Mwakatobe, A. R: and Mlingwa, C: August 2005).

(Kihwele et al 1999; MNRT, 2004) further more explain that beekeeping offers a great potential for development and is comparatively less demanding in terms of investment, labour and time. Increased government revenue through levies and taxes, improved biodiversity conservation and enhancing environmental resilience

Beekeeping in Tanzania is carried out using traditional methods that account for 99% of the total production of honey and beeswax in the country. Approximately 95% of all hives are traditional including log and bark hives. Others are reeds, gourds, pots etc. During the

colonial and early independence period the production of bee products was higher than what we have now and was among the important non-wood products from the forests with a higher contribution to the national GDP and international trade (Kihwele, 1991). However, today the industry has declined in exports to an insignificant level despite of its high potential.

Tanzania (i.e. then Tanganyika) was an important source of beeswax during the Germany colonial period (Ntenga, 1976). The production of beeswax from Tanzania increased from 320 to 905 tons during 1906 to 1952. Honey was estimated at an annual average production of 10,000 tons, all consumed locally (Smith, 1958). Following independence in 1961, a marketing organization of honey and beeswax was formed. According to Ntenga (1976), Tanzanian exports averaged 368 tons of beeswax and 467 tons of honey. During the 1996/97 period, the 2 annual exports dropped to 359 tons of beeswax and 2.46 tons of honey (Tanzania Customs Department, 1997).

According to Seegeren (1996), in 1984 world honey export totaled 270,000 tones of which 60% came from the tropics. Prices varied between US $ 0.7 and 2.5 kg-1. Beeswax, which, among other things, is used in the manufacture of cosmetics, candles, foundation sheets for hives, medicines and polishes, had a good and very stable market. In 1990 world market prices varied between US$ 2 and 3 kg-1. Beeswax production varies from 0.2 to 0.5 kilograms hive-1 year-1 when frames are used and 0.5 to 2 kilograms hive-1 year-1 when the honey is pressed and all combs are melted. In Tanzania traditional beekeeping is credited for almost all production of honey and beeswax

(Mwakatobe, 2001). Besides playing wider domestic roles in the bees and bee-products industry in Tanzania, beekeeping is also a good source of foreign exchange earnings. The

information currently available indicates that during the year 1996/1997, Tanzania exported 359 tons of beeswax and 2.46 tons of honey worth US$ 1,019,020 and US$ 2,058 respectively (BDP, 2005; Tanzania Customs Department, 1997). Several authors (Kihwele & Bradbear, 1989; TFAP, 1988; Mlay, 1997) have estimated that the production of bee products could increase by 50%, if its potential could be optimally exploited.

The development of beekeeping activities for income generation and forest management is hindered by poor transport infrastructure and marketing systems for bee products (Kihwele *et al,* 2001; Ngaga *et al,* 2005). Improved marketing of bee products will ensure increased income and food security at household and national levels thereby achieving the national and UN development millennium goals of poverty reduction and natural resource management (UN, 2005)

3.3.2 Beekeeping for Income Generation in East Africa

Beekeeping in East Africa is mostly carried out using traditional methods. In these methods, beehives are made out of logs, bark, reeds, gourds and pots among other materials. The enterprise is quite adaptable to various environments and circumstances although farmers are unable to access better markets due to the poor quality and low quantity of honey produced. Much of the honey produced in Kenya, Tanzania and Uganda is sold locally for honey beer and wine production while some of it is consumed locally as industrial honey in confectioneries and pharmaceutical industries.

In Uganda, according to the Ministry of Agriculture, Animal Industry and Fisheries report; about 1.2 million beekeepers are active, with 700,000 beehives colonized countrywide.

Many of the beekeepers lack the necessary skills for effective production of honey and do not have resources to acquire better equipment. In spite of this, sizeable quantities of honey are produced in the districts of Bushenyi, Soroti, Gulu, Nakasongola, Kabarole and the West Nile region. On the other hand, Kenya's honey production in the Rift Valley region continued to fall in the past years due to destruction of forests and diminishing land sizes (Africa News Network, 2007). According to UNDP (2008) however, honey production by trained farmer groups in Kenya increased from 2.0 tons in 1997 to 30 tons in 2005. According to Jiwa (2009) most communities that have been engaged in beekeeping have been using traditional hives. These beehives while being very cheap to manufacture or to acquire produce only small volumes of crude honey only once or twice a year. The poor harvesting techniques used by beekeepers, generally lead to impregnation of the honey with smoke and other suspended particles that irreversibly destroy the colour, smell, texture and taste of honey. The harvesting almost always results in the cutting of all the honey combs and the destruction of the entire colony. The beekeeper then has to wait until the next swarming season to catch bees and start all over again.

Furthermore Jiwa (2009) explain, in the late 1960s, the ministry of Agriculture, the International Bee Research Association (IBRA) and Oxfarm collaboration on the development on what they considered would be 'appropriate' for the Kenyan environment. The result of this joint effort is the now infamous Kenya Top Bar Hive (KTBH). The hive has improved the productivity of honey and beeswax and has helped to improve the income levels of the rural poor people.

In Tanzania, there are about 9.2 million honeybee colonies with a production potential of about 138,000 tonnes of honey and 9,200 tonnes of beeswax per annum. Using average prices for the year 2003 of US $1 per kg of honey and US $ 2 per kg of beeswax, these are

worth US $ 138 million and US $ 18.4 million, respectively. (NBP,2004) . Several authors (Kihwele & Bradbear,1989; TFAP, 1988; Mlay, 1997) have estimated that the production of bee products could increase by 50%, if its potential could be optimally exploited.

3.3.3 Beekeeping in Zimbabwe

The country is divided into 5 ecological regions with the 5th being the driest region. Apiculture is most pronounced in regions 3 up to 5 of Zimbabwe. Apiculture is most prominent in the low rainfall areas which receive on average 450-600mm per annum. Estimated 21,000 beekeepers scattered throughout the country, they have representation in the form of associations.

Apiculture falls under Ministry of Environment and natural resources management. Apiculture well developed in Manicaland, Masvingo, MashonalandWest, MashonalandEast, MashonalandCentral, Midlands and some parts of MatebelandSouth. Ordinary rural farmers having an average of 1-4 beehives for subsistence and up to 300 for very few commercial farmers. Most of the hives are traditional ones and few are modern hives but now farmers are shifting to modern hives that means elangstroth and Kenya Top Bar Hive. About 75% of hives are traditional and 25% are modern one.[2]

(i) Honey Production and Marketing

Honey processing plants set up in Mash West and Manicaland. Production estimated at 150 tonnes harvested between November and August and April May. Each farmer having 5-10 hives harvesting 5-10 litres per hive per season unprocessed. Farmers are processing bee wax into candles, wax, soap, Vaseline at household level on small scale. Most of the honey consumed locally, mainly supplied to the supermarkets, sold by the road side, some

of the farmers are batter trading the honey for maize and other household commodities. Currently there is a 60% unmet market demand from pharmaceuticals and supermarkets.[2]

(ii) Associations Mobilizing Farmers

The NGO sector in collaboration with stake holders of the sector are assisting farmers in form of trainings, market linkages and organizing them into associations. Some of the associations are as follows: Bee keepers Association of Zimbabwe (BKAZ) this has 6,000 members carter for small scale farmers, Hurungwe Beekeepers Association (HBA) has about 3,500 members, others Kutsungirira Beekeepers Association (KBA) and Zaka Beekeepers association. Zimbabwe Farmers Development Trust (ZFDT) is acting as bulk point.

(iii) Challenges

There is no a vibrant beekeepers association therefore development prosper slowly. Sometimes the colonies are absconding due to predators and wildfires because of lack of woodland management. Farmers lack enough capital because the financial intuitions cannot give loans for the sector. The farmers are not taking apiculture as a business.

(iv) Opportunities

There is enough forage that is conducive for apiculture in the country. The demand for honey is very high the country is facing shortage of 60% of honey. The policies are in place to protect the environment and conducive environment for apiculture. Apiculture has been identified as a poverty alleviation sector by most donor communities.

(v) Practicing Beekeeping as Way of Environmental Protection

Beekeeping is an alternative source of livelihoods replacing tree harvesting for income and crop cultivation that degrade wet lands, forests and the river banks. Farmer groups

mobilized by ASARECA piloting modern beekeeping project in Lushoto- Tanzania now harvest and sell honey and related products for household income part of which is reinvested into other activities.

In Tanzania, deliberate campaigns to plant fruit and other useful tree species have been initiated. Selected tree species including Calliandra flower that remain green throughout the year providing nectar for bees as well as restoring degraded soils are promoted In Madagascar, the president Mark Ravalomanana in September 2003 committed to increase protected areas from 1.7 million to 6 million hectares. Now Madagascar is attempting to reduce poverty and increase areas under conservation. Beekeeping has potential to play an important role in these processes, both for poverty alleviation and conservation of natural environments

3.4 Policy Review

The beekeeping sector in Tanzania has been managed without a policy since 1949 during colonial era (by then Tanganyika) when it was officially formed as department under Agriculture. Man socio-economic developments and environmental changes which are taking place together with macroeconomic policy reforms implemented in Tanzania and increased concern on environmental conservation for sustainable development of the beekeeping industry have necessitated formulation of beekeeping policy which takes into account the role of inter sectoral cooperation and coordination.

The Government of Tanzania developed the National Beekeeping Policy (NBP) in 1998. The overall goal of the National Beekeeping Policy is to enhance the contribution of the beekeeping sector to the sustainable development of Tanzania and the conservation and management of its natural resources for the benefit of present and future generations. NBP

encourages active participation of all stakeholders in establishment and sustainable management of bee reserves and apiaries, promoting beekeeping-based industries and products and promoting sustainable management of beekeeping in cross sectoral areas for ecosystem conservation and management.

To enable effective implementation of the NBP, the National Beekeeping Programme (NBKP) and the Beekeeping Act No. 15 of 2002 has been put in place. The National Beekeeping Programme (NBKP, 2001) is an instrument designed to put into practice the NBP with emphasis on stakeholders participation in the planning, management, ownership and sustainable utilization of bee resources for poverty eradication, improved biodiversity development and environmental conservation. The Beekeeping Act No. 15 of 2002 was enacted by Parliament in April 2002. Its main objectives are: (i) To make provisions for the orderly conduct of beekeeping; (ii) To improve the quality and quantity of bee products; (iii) To prevent and eradicate bee diseases and bee pests, and (iv); To improve revenue collection.

The National Forestry Policy Provides opportunities for beekeepers to practice beekeeping in forest reserves also the Wildlife Policy of Tanzania, 1998, encourage beekeeping activities to be carried out in Wildlife Management Areas (WMA) by involving local communities. With special permission from the Director of Wildlife beekeepers are allowed to carry out beekeeping in game reserves and game controlled areas.The Village Land Act 1999 is one of the most important legislative texts that support community based natural resources management (Wily, 2003). It empowers the community at local level (village) recognizing it as the appropriate representative structure to implement natural resources management. In view of this, through village land use management system beekeepers can be allocated land for beekeeping development.

Our main challenge now is to use this enabling environment created by the Policy, Programme and legal framework to encourage Tanzanians and other investors to take up beekeeping so that they can benefit in terms of income, poverty reduction and conservation of environment.

3.5 Literature Review Summary

Through reading the literature showed that honey is used widely as a source of food, raw materials for various industries, medicine, also source of income for beekeepers and other business people. The literature furthermore revealed that, the beekeepers are not well informed. They lack appropriate beekeeping knowledge, capital and reliable market for honey and beeswax produced, due to that obstacles beekeeping husbandry has not taken seriously as business.

The government has not done enough to support the beekeeping sector though has some promising policies about beekeeping. The Beekeeping Act no 15 of 2002 which make provisions for the orderly conduct of beekeeping, improve the quality and quantity of bee products, prevent and eradicate bee diseases and Bee pests and to improve revenue collection is not enforced well to all stakeholders. The extension services to beekeepers in the country is a big problem, most of beekeepers use traditional ways of beekeeping due to lack of enough extension staff and reading materials.

CHAPTER FOUR

4.0 PROJECT IMPLEMENTATION

4.1 Introduction

Participatory assessment was conducted early in August, 2011 where both quantitative and qualitative methods were used during data collection ended up by the community identifying and prioritizing the lack of entrepreneurship as main cause of the income poverty that is facing the community and hence the need to address it. Therefore after interaction, members of the group agreed to plan a project where income generating activity groups would be trained on modern beekeeping and entrepreneurship skills. This priority was most supported with group members because in their village there is great potential of woodland forests for beekeeping.

This chapter gives detail of the actual work done in implementing the project which includes the planned activities and the outcomes. It shows how the different partners, Ukombozi group members beneficiaries of the project, TFCG host organization, Kilosa district beekeeping officer as facilitator, Lumbiji ward extension officer and CED researcher student participated in the execution of the project on empowering the community livelihoods through modern beekeeping in Kisongwe village. During the implementation of the project every part were actively participated in order to archive the expected goal.

4.2 Output and Products

Since the commencement of this project, we expected the following outputs and products:

4.2.1 Output

(i) 26 group members trained on modern beekeeping and entrepreneurship skills.

(ii) 25 beehives placed in the apiary

(iii) The group provided with various beekeeping equipments and materials.

(iv) Some hives colonized by bees.

(v) Group constitutional/ bylaws developed

4.2.2 Products

In connection to output mentioned there were three times honeys harvested and sold. In all three harvests, a total of 245 litres of honey sold at Tshs 7000/= and 10,000/= per litre. 24.5 kg of beeswax sold at Tshs 5000/= and 8000/= per kg.

4.3 Project Planning

There are various ways of approaching the planning for the project implementation; however for this project the following procedure was involved.

(i) Identification of various activities and sub activities of the project. This involved establishing a Work Breakdown Structure (WBS) for each activity. An estimate was made as to the possible time / duration for its completion. This was conducted on participatory basis involving all stakeholders which were identified during project planning phase.

(ii) Sequencing the identified project activities. Concurrent and consecutive project activities were established and arranged on the basis of their logical and practical sequence.

(iii) Preparation of the Gantt chart template (Activity Schedule) .This enabled us to consider when the project activities will happen and for how long. It is viewed as a flexible document which could be altered if new circumstances arise. It helps to look at the sequencing of activities because some activities

would depend on others being completed first. The activity schedule was used to monitor the progress of the project.

(iv) Responsible people (Actors). Project responsible people were indicated to oversee the implementation of each activity.

However it is noted that the project planning stage is considered as the most critical, since the right decisions are imperative for the project to succeed.

4.3.1 Implementation Plan

Basically it describes how the project was carried out in an attempt to achieve project outputs, objectives and the overall goal. In the implementation process the project fundamentally involved four key stakeholders namely, Ukombozi Group members as a project implementers and beneficiaries, TFCG as host organization, CED student researcher, Lumbiji ward Extension officer and Kilosa district beekeeping Officer as facilitators.

i) Ukombozi Group members mobilized themselves to participate trainings and implementation of project activities.

ii) The CED student was responsible for sensitization, training and advises on Entrepreneurship, Business development skills and monitoring implementation of the project.

(iii) Kilosa district beekeeping officer provided training and advisory on improved beekeeping husbandry skills and general beekeeping management.

(iv) Ward extension Officer facilitated formulation of the group constitution

(v) TFCG organization supported funds for all trainings and procurement of beekeeping facilities. The roles, responsibilities and resources needed for each stake holder are summarized in table 4.

The project anticipated to implement a number of activities which focused at accomplishing of the predetermined objectives. The major project activities included the following.

(a) Meeting with Ukombozi Group members for familiarization, project identification and design.

(b) Conducting of Community Needs Assessment; in order to get an overview of the community needs and to have the self defined priorities and identification of the development project in order to address or tackle the prioritized development problem.

© Project design and formulation; this involved carrying out further survey into people affected by the problem. It focused at stakeholder analysis, problem analysis, action planning, log frame analysis and budgeting.

(c) Sensitization and training of the primary stakeholders on beekeeping husbandry in terms of types of beekeeping, advantages and disadvantages of types of beekeeping, , improved or modern beekeeping beehives, facilities used in beekeeping, management of bees, harvesting of honey, processing bees products.

(d) Sensitize and training of primary stakeholders on entrepreneurship and business development skills to empower management of beekeeping enterprise and marketing bees products.

(f) Develop group constitution which will act as tool for group identification.

(g) Procurement of modern beehives (TTBH) manufactured from the carpentry.

(h) Procurement of beekeeping facilities such as honey harvesting protective gears(overall, Veil, hat, gloves and gumboots), containers (plastic buckets, bawls, iron pots) bee smoker, hive tool, knives, harmers, galvanized wires, plies, honey strainer, sisal ropes, bees bate (wax) etc.

(i) Bating and Placing/ hanging beehives in forest.

(j) General management and care of the beehives in apiary.

(k) Record keeping for dates the beehives colonized.

(l) Harvesting honey

(m) Processing and packaging of honey and beeswax

(n) Selling honey and beeswax

(o) Monitoring and evaluation

(p) Reporting

Table 4: Implementation plan Schedule

S/N	Activity	2011					2012		Resources/Inputs	Responsible people
		Aug	Sep	Oct	Nov	Dec	Jan	Feb		
1.	To meet with Ukombozi group for familiarization aimed at conducting Can and project identification								Personnel, Fund, Stationery	MCED student, group members, Village community, and influential people.
2.	Conduct Community Needs Assessment.								Personnel, Fund, stationery and transport.	CED student and Survey Assistants
3.	Project Design and Formulation								Funds and stationery	CED student and group members.
4.	Procurement of beehives (TTBH) and beekeeping equipments								Funds and transport	TFCG project manager, DBO and MCED student
5.	Sensitization and training in beekeeping husbandry skills.								Personnel, venue, fund, training materials, equipment, food and refreshments	Facilitator (DBO), MCED student
6.	Sensitization and training in entrepreneurship and Business development skills								Personnel, venue, fund, training materials, food and refreshment.	MCED student
7.	Develop group constitutional which								Personnel, stationeries,	Facilitator, (ward extension officer)

	will act as tool for group identification.								venue, guide line, food and refreshment	MCED student and group members
8.	Bating and Placing/ hanging beehives in forest								Personnel, wax and galvanized wire.	Group members, MCED student and DBO.
9.	General management and care of apiary.								Personnel and time	Group members,
10.	Record keeping for dates beehives colonized								Personnel, note books.	Group members.
	Honey harvesting								Harvesting equipments, personnel.	Group members, MCED student & DBO
	Honey processing and packaging								Processing equipments & Packaging bottles	Group members, MCED student & DBO
	Honey selling/marketing								Market, transport, advertizing commodity.	Selected group members and MCED student
11.	Project Monitoring								Personnel, fund, stationery and time	Group members, MCED student, DBO.
12.	Project evaluation								Personnel, fund, Stationery and time	TFCG project Manager.
13.	Writing report								Personnel, fund, stationary and time	MCED student
14.										

Table 5: Project Logical Framework Matrix

Intervention Logic	**Performance Indicators**	**Means of Verification**	**Assumptions/risks**
Goal: Kisongwe village community livelihoods empowered by improving productivity, raising income, employment opportunities, and gaining knowledge through modern beekeeping.	55% of Kisongwe village community's livelihood empowered through modern beekeeping by Feb 2012.	Reports, records and household survey data available at Ukombozi Group.	Good cooperation and participation in project implementation among various stakeholders.
Objective 1: Impart awareness and modern beekeeping husbandry skills for productivity improvement to 28 group members by Oct 2011.	(i)Number of trainings conducted. (ii)Number of participants attended. (iii)Type of training conducted.	(i)List of participants. (ii)Training plan and time table. (iii) Training materials. (iv)Training evaluation report. (vi) Training manual	(i)Participants' positive willingness to attend the training. (ii)Participants apply skills and knowledge inculcated.
Output 1: 28 Group members trained in beekeeping husbandry skills to improve productivity by October 2011	Number of people sensitized and trained in modern beekeeping skills.	i)Training report. (ii)List of participants. (iii)Training manual	Group members participation.
Activity 1:1 Meet with Group members for sensitization in order to conduct CAN, Project identification and training.	Number of meetings conducted with group members. .	Minutes of the meetings available at Group.	Good reception from Group members and full participation
Activity 1:2 Conduct Community Needs Assessment	Number of CNA meetings and methods used.	Community Needs Assessment report.	Positive community attitude towards CNA and problem identification

Intervention Logic	Performance Indicators	Means of Verification	Assumptions/risks
Activity 1:3 Project design and formulation	Number of meetings during project design and formulation.	Minutes of the meetings and the project write up	Positive cooperation among the community members.
Objective 2: Sensitization and training in entrepreneurship and business development skills for empowerment of marketing beekeeping products to 28 group members by October 2011.	i)Number of trainings conducted. (ii)Number of participants attended. (iii)Type of trainings	(i)List of participants. (ii)Training plan and time table. (iii) Training materials. (iv)Training evaluation report. (vi) Training manual	i)Participants' positive willingness to attend the training. (ii)Participants apply skills and knowledge inculcated
Output 2: 28 Group members trained in entrepreneurship and business development skills to empower marketing beekeeping products.	Number of people sensitized and trained in entrepreneurship and business development skills	(i)Training report. (ii)List of participants. (iii)Training manual.	Group members participation.
. **Objective 3:** Provision of 25 modern beehives and other beekeeping equipments and materials to members of a group by October 2011.	Quantity of beehives and other beekeeping equipments and materials supplied.	(i)Beehives, equipments and materials received by group members. (ii) Record kept by group.	Proper care and use by group members.
Output 3: 25 modern beehives and other beekeeping equipments and material provided to group members.	Quantity of beehives and other beekeeping equipments and materials supplied.	(i)Beehives, equipments and materials received by group members. (ii) Record kept by group	Proper care and use by group members.
Activity 3.1: Procure of modern beehives for Ukombozi group.	Number of modern beehives procured	Record on the number of modern beehives procured.	Availability of beehives from carpentry.
Activity 3.2: Procure harvesting honey protective gears	Quantity of procured harvesting honey protective	Record on the list of procured harvesting	Availability of the items from suppliers.

Intervention Logic	Performance Indicators	Means of Verification	Assumptions/risks
and other facilities used in beekeeping.	gears and other facilities used in beekeeping.	honey protective gears and facilities.	
Activity3.3: Transport of beehives and other beekeeping equipments to Kisongwe village.	Number of Beehives and other beekeeping equipments transported.	(i)Beehives, equipments and materials received by group members (ii) list kept by the group.	(i) Transport availability. (ii) Road accessibility.
Activity 3.4: Bating and placing/ hanging of beehives in forest	Number of bated beehives placed in forest.	List of bated beehives	beehives colonized by bees.
Activity 3.5: Proper management and care of an apiary	Number of visits to an apiary and tasks carried.	Records kept by the Group regarding the management of apiary.	Positive participation of group members.
Activity 3.6: Record keeping for dates beehives colonized and activities .	Number of beehives colonized by bees.	Records kept by the Group regarding the management of apiary.	Bees attracted and free from enemies.
Activity3.7: Harvesting of honey	Number of hives with ripe honey.	Record kept by the group	Positive participation of group members,
Activity 3.8: Processing and packaging of honey and beeswax.	-Total litres of honey processed and packed. -Total Kg of beeswax processed.	Record kept by the group	Availability of packages
Activity 3.9: Selling of honey and beeswax	-Total litres of honey sold -Total Kg of beeswax sold	Record kept by the group	Market price stability
Objective 4: Enhance cooperation among group members and strengthen institution.	Positive cooperation spirit among the group members raised.	Attendance register and group reports .	Positive participation of group members

Intervention Logic	Performance Indicators	Means of Verification	Assumptions/risks
Output 4: Cooperation among 28 group members and strengthening institution enhanced.	i)Number of group members participated. (ii) Number of meetings conducted	(i) list of participants (ii) minutes of the meetings conducted.	Positive participation of group members
Activity 4.1 Develop group constitutional to act as tool for group identification	Number of group members involved in developing.	(i) list of participants (ii) minutes of the meetings conducted. (iii) Draft of group constitution	Acceptance of the constitution.
Activity 4.2 Facilitate registration of a group at district level.	Certificate of registration	Minutes of meetings, list of group members, Letter of registration request	Availability of constitution.
Activity 4.3 Monitoring, evaluation and reporting of project activities and impact.	The established monitoring, evaluation and reporting system.	Monitoring, evaluation and reports available with the Group.	Stakeholders' participation in project monitoring and evaluation

4.3.2 Project Inputs:

These are financial resources and services necessary for carrying out activities. Normally are supposed to be stated in specific and measurable terms. Some inputs used during implementation of this project includes training venue, training materials like flipcharts, , masking tapes, maker pens, note books, train facilitation allowances, beekeeping equipments like beehives, galvanized wires sisal ropes, hammer, plies, protective bee suits, bee bate (wax), bee smokers, cooking iron pots.

Table 6: Major Project Inputs

S/N	Inputs	Unit	Quantity	Unit cost	Amount in Tshs
1.	flipcharts	Per flipchart	5	10,000	50,000/=
2.	Marker pens	Per box	5	8500	42,500/=
3.	Masking tapes	Per tape	10	500	5,000/=
4.	Note books	Per note book	40	1500	60,000/=
5.	Pens	Per pen	40	500	20,000/=
6	Beehives (TTBH)	Per hive	25	80000	2,000,000/=
7.	Hive tools	Per tool	2	5000	10,000/=
8.	Galvanized wires	Per kg	15	5000	75,000/=
9.	Sisal ropes	Per piece	6	5000	30,000/=
10.	Harmers	Per harmer	2	4000	8,000/=
11.	Plies	Per plies	2	4000	8,000/=
12.	Protective bee suits	Per suit	4	85000	340,000/=
13.	Plastic buckets	Per bucket	5	5000	25,000/=
14.	Plastic bawls	Per bawl	2	3000	6,000/=
15	American cloth	Per metre	5	5000	25,000/=
16.	Honey strainer	Per metre	5	5000	25,000/=
17.	Bees bate	Per kg	1	5000	5,000/=
18.	Cooking iron pots (30 litres)	Per pot	2	60000	120,000/=
19.	Bee smokers	Per smoker	2	20000	40,000/=
	TOTAL PUTS				**2,894,500/=**

4.3.3 Staffing Pattern

The Ukombozi group has not attempted to employ any paid staff due to lack of funds. The project is run under the support of Group Executive Committee led by the Chairperson. The Secretary is the Chief Executive of the group and supervises day to day group duties including project supervision and keeps all group and project records. The Treasurer keeps all group and project financial records. However the members of the group implement the day to day activities jointly and sometimes on rotational basis.

4.3.4 Project Budget

The major part of budget, for the project implementation came from TFCG the host organization. The Ukombozi group members contributed 6.5% of the budget to procure five beehives and two cooking iron pots from their own sources. The Kisongwe village council volunteered venue used for training free of charge. The project budget is as shown in table 7.

Table 7: **Project Financial Budget**

S/N	Items/Particulars	Cost analysis	Total amount	Local contribution	Other sources
1.0	**Introduction Meeting.** **1.1:** Fuel cost from Moro to kisongwe and return. 1.2: Accommodation allowance to CED student. 1.3: Subsistence allowance to CED student.	60 litres x 2000/= 1Person x5000/= x1day 1Person x 20,000/= x 1 days	120,000/= 5000/= 20,000/=		120,000/= 5,000/= 20,000/=
2.0	**Conducting CNA.** 2.1: Accommodation allowance to Research Team. 2.2: Subsistence allowance to Research Team.	2People x5,000/= x 5 days 2Peoplex20,000/= x5 days	50,000/= 200,000/=		50,000/= 200,000/=
3.0	**Project Design and Formulation.** 3.1: Subsistence allowance to participants.	30 People x5,000/= x1 day	150,000/=		150,000/=
4.0	**Sensitization and Training on**				

S/N	Items/Particulars	Cost analysis	Total amount	Local contribution	Other sources
	Beekeeping and Entrepreneurship skills				
	4.1 Facilitator's (DBO) allowances	1 person x 35000/=x 5 days	175,000/=		175,000/=
	4.2 CED student allowance's	1person x 20000/= x 8days	160,000/=		160,000/=
	4.3 Stationeries	Summed from table above	177,500/=		177,500/=
	4.4 Training hand outs	30 x 5000/=	150,000/=		150,000/=
	4.5 Group members allowances	30people x 5000/=x 8days	1,200,000/=		1,200,000/=
	4. 6 Food and beverages				
	(i) soda	30 people x 700/= x 8days	168,000/=		168,000/=
	(ii) food	30people x 3000/= x 8 days	720,000/=		720,000/=
	(iii) drinking water	30 people x 500/= x 8 days	75,000/=		75,000/=
5.0	**Develop Group Constitution**				
	5.1 Ward Extension Officer	1person x 35000/= x 2days	70,000/=		70,000/=
	5.2 CED student allowance's	1person x 20000/= x 2days	40,000/=		40,000/=
	5.3 Group members allowances	30people x 5000/=x 2days	300,000/=		300,000/=
	5.4 Food and beverages				
	(i) soda	30 people x 700/= x 2days	42,000/=		42,000/=
	(ii) food	30people x 3000/= x 2 days	180,000/=		180,000/=
	(iii) drinking water	30 people x 500/= x 2 days	30,000		30,000/=

S/N	Items/Particulars	Cost analysis	Total amount	Local contribution	Other sources
6.0	**Procurement of Beehives (TTBH)**	25 beehives x 80000/=	2,000,000/=	400,000/=	1,600,000/=
	- **Transport cost**	Lumpsum	184,000/=		184,000/=
7.0	**Procurement of Equipments and other Facilities.**				
	7.1 Hive tools	2 tool x 5000/=	10,000/=		10,000/=
	7.2 Galvanized wire	15kg x 5000/=	75,000/=		75,000/=
	7.3 Sisal ropes	6 pieces x 5000/=	30,000/=		30,000/=
	7.4 Harmers	2pieces x 4000/=	8,000/=		8,000/=
	7.5 Plies	2pieces x 4000/=	8,000/=		8,000/=
	7.6 Bees bate (wax)	1kg x5000/=	5,000/=		5,000/=
	7.7 Bee protective suits	4 sets x 85000/=	340,000/=		340,000/=
	7.8 Plastic buckets	5 pieces x 5000/=	25,000/=		25,000/=
	7.9 Plastic bawls	2pieces x 3000/=	6,000/=		6,000/=
	7.10 American cloth	5 m x 5000/=	25,000/=		25,000/=
	7.11 Honey strainer	5m x 5000/=	25,000/=		25,000/=
	7.12 Bee smokers	2 pieces x 20000/=	40,000/=		40,000/=
	7. 13 Cooking iron pots (30 litres)	2 pieces x 60000/=	120,000/=	120,000/=	
8.0	**Record Keeping.**				
	8.1 purchase of record books	2 pieces x 5000/=	10,000/=		10,000/=

S/N	Items/Particulars	Cost analysis	Total amount	Local contribution	Other sources
9.0	**Processing of Honey and Beeswax** 9.1 procurement of packaging containers	200 pieces x 500/=	100,000/=		100,000/=
10.0	**Monitoring and Evaluation** 10.1 Monitoring 11.2 Evaluation	 Lump sum Lump sum	 200,000/= 150,000/=		 200,000/= 150,000/=
11.0	**Report Writing** 11.1 Typing services 11.2 Photocopying 11.3 Binding	 250pgs x 500/= 250pgs x 100/= 4 sets x 10,000/=	 125,000/= 25,000/= 40,000/=		 125,000/= 25,000/= 40,000/=
12.0	**Contingency 5%**		377,575/=		377,575/=
	GRAND TOTAL		**7,961,075/=**	**520,000/=**	**7,441,075/=**

4.4 Project Implementation

This part provides a description of actually implemented project activities by August 2011.The implemented activities were among those which were planned during project design phase. Many of the planned activities was actually implemented, even activities needed more time example harvesting , processing, packaging and selling were fulfilled as the report for submission took time due to personal problems. This section is divided into two major subsections; project implementation report and the project implementation Gantt Chart which shows when the actual implementation of activities happened and for how long.

4.4.1 Project Implementation Report

This subsection gives a detailed implementation of the project activities which have been conducted. The detail in this subsection compares the planned project activities in table 4 with justifiable remarks for each implemented activity. The actual implementation of the planned activities started as anticipated and as reflected in table 8 below of the Gantt chart. The following activities have been conducted and some have been accomplished and some are still going on.

(i) Meet with Ukombozi group for familiarization aimed at conducting CAN and project identification

Meeting was held by Ukombozi Group members and other stakeholders; was for one day during August 2011 this was as part of entry point for familiarization and way forward preparing baseline or community needs assessment exercise and project design.

(ii) Conduct Community Need Assessment

The Community Needs Assessment was conducted for five days in the month of August 2013 with the aim of identifying various pressing needs within the community. The identified needs were prioritized by using preferential ranking method and income poverty due to lack of viable income generating activities was ranked as a priority number one out of six most pressing needs.

(iii) Project Design and Formulation.

Project Design and Formulation was done in September 2011 this followed immediately after conducting Community Needs Assessment and identification of the priority needs. It was collectively decided that there was need for design and formulation of .a project which could address the identified most pressing community problem. "Empowering community livelihood opportunities through modern beekeeping," was a designed and formed project.

(iv) To Procure Modern Beehives and Beekeeping Equipments

This activity was carried in the month of September 2011 after project design and formulation of the project. The objective is to equip the community with modern beekeeping equipments so as to improve the productivity in terms of quantity and quality of beekeeping. 25 modern beehives and other equipments were procured.

(v) To Sensitize and Training on Beekeeping Husbandry Skills.

Training on beekeeping husbandry skills was conducted for 5 days in the month of October 2011, it was facilitated by DBO. The objective was to equip the community with new skills of beekeeping in order to improve productivity and increase the income of the house hold. 26 members of Ukombozi group were trained new knowledge of beekeeping.

During training participants were very eager to know about modern beekeeping. 2 members of Ukombozi group did not attend the training.

(vi) To Sensitize and Training in Entrepreneurship and Business Development Skills

This training was facilitated by MCED student conducted in three days in the month of October 2011 as part of capacity building aimed in empowering management of enterprises and marketing the products to get the income for eradicating poverty in household. The participants were trained on how to search markets for different products of beekeeping such as honey, beewax, candles ect. The target was to train 28 members of Ukombozi group but only 26 participants acquired the knowledge management of enterprises and marketing beekeeping products.

(vii) To Develop Constitution and Register the Group.

Developing group constitutional was facilitated by Lumbiji ward extension officer in October 2011. The objective of developing constitution is to bring the identity and unity of the group. The members participated were active contributing their ideas in developing the constitution. The samples of constitutions from other groups acted as tool to guide in formulation. After two days the draft was ready developed and taken to Kilosa district for registration of the group. After six months the group was registered as Community Based Organization (CBO).

(viii) To Bate Hives and Hanging in Apiary.

The activity of bating and hanging the hives was conducted in November, 2011 after training on the beekeeping husbandry skills. The knowledge gained in the workshop was applied in the field; the activity to complete took four days bating the hives. The bated beehives were hanged under tree branches in the identified sites with good qualities of

apiary. Bees wax was used as bate because attract the bee colonies faster than other types of bates. Up to August, 2012 out of 25 hives 21 behaves were colonized.

(ix) General Management and Care of an Apiary

The management of apiary is ongoing task throughout project life time, was initiated immediately after hives were hanged in forest by November 2011. The aim is to make sure the bees enter the hives to achieve the intermediate goal of the project. Management and care of an apiary usually includes taking precaution of wildfires, enemies of bees also bating again where colonize of bees has delayed. Since the hives hanged it was found some of the hives delayed to be colonized, it was repeated bating. Also in October 2012 the wildfires happened when the dry season was intense, the group members went to check if the firebreak around the apiary is clear.

(x) Record Keeping

Record keeping of project activities and the dates of bees has colonized the hives started after implementation of the project. Record is kept to enable monitoring and evaluation of the project. Every activity done and events happening in the apiary site is recorded by the group members.

(xi) Harvesting of Honey.

Harvesting of honey for Ukombozi group project has been done three times since hives were placed in apiary. The first time, harvesting was done on April 2012, the group members managed to harvest 5 hives with ripe honey and 8 hives were with brood. The second time harvesting was done on December 2012 whereby they managed to find 8 hives with ripe honey and 10 hives were with brood. The third time harvesting happened on June,2013 they managed to get 12 hives with ripe honey and 7 hives with brood. In

harvesting they worked in participatory manner, 4 members group wearing harvesting honey suits to protect from bees stinging were working in rotation. Bees smoker used to smoke the bees around the entry and in the hive in order to control temper. Sisal rope used to download and up lift hive from trees, hive tool used to separate top bars cemented with bees glue. The honey combs found with ripe honey were cut with sharp knife and put into clean plastic buckets. The combs with unripe honey and brood were left in the hives. After harvesting the top bars arranged in its position and covered with the hive lid then the hive uplifted to the tree branches.

(xii) Processing and Packaging of Honey and Beeswax.

The honey combs with ripe honey kept in the clean plastic buckets now were strained in the honey strainer and stored in the big container to settle the impurities of honey combs. The filtered honey was packed in small containers of 1litre and 0.5 litre ready for marketing. The remains of honey combs from strained honey were boiled in the big iron pot. On boiling the honey combs dissolved completely in water and after cooling a cake formed on top of water according to the shape of iron pot which now is called beeswax.

In the first harvest obtained 56 litres of honey and 5 kg of beeswax, the second harvest got 83 litres of honey and 7.5 kg of beeswax and the third harvest managed to get 106 litres of honey and 12 kg of beeswax. The production has been increasing as they have been corrected by BDO and MCED student.

(xiii) Selling of Honey and Beeswax

In the first and second harvest of honey the group members managed to get market in the village and Kilosa town. One litre of honey was sold Tshs 7000/= and beeswax was sold Tshs 5000/= per kg. The third harvest their products were sold at Nane nane Exhibition August 2013 in Morogoro. TFCG enabled them transport of their products and two

selected members. The price at Nane nane Exhibition were high compared with the market of Kilosa. Honey was sold Tshs 10000/= per litre and beeswax was sold Tshs 8000/=. While in Nane nane exhibition they got an order from Hilux Hotel to supply honey 40 litres per month also several orders were obtained from other businessmen.

(xiv) Project Monitoring and Evaluation

Monitoring is an ongoing process to make sure the project is on track. It measures efficiency in terms of use of inputs, activities outputs and assumptions. This was conducted throughout the project duration. Evaluation is meant to measure long term impact and sustainability in terms of achievement of purpose and goal and unplanned changes. Evaluation was carried during January 2012 instead of February 2012 aimed at assessing the ongoing project activities and provide information to improve the project.

(xv) Project Reporting

Project reporting this normally carries monitoring report, and two types of interim reports were prepared. The narrative report is about the monitoring information presented to project stakeholders and financial reports which reports on inputs deployed in financial terms and compares with items as indicated in project budget.

Table 8: Project Implementation Gantt chart

S/N	Activity	2010	2011					2012		Resources/Inputs	Responsible people
		Dec	Aug	Sept	Oct	Nov	Dec	Jan	Feb		
1.	Application for field attachment in TFCG organization									Stationery	OUT, CED student
2.	To meet with Ukombozi group for familiarization aimed at conducting Can and project identification									Personnel, Fund, Stationery	CED student, group members, Village community, and influential people
3.	Community Needs Assessment									Personnel, Fund, stationery and transport.	CED student and Survey Assistants
4.	Project Design and Formulation									Funds and stationery	CED student and Group members
5	Procurement of beehives (TTBH)									Funds and transport	TFCG Project manager, CED student and DBO
6	Procurement of beekeeping equipments and other facilities.									Funds and transport	TFCG Project manager, CED student and DBO
7.	Conduct a workshop of 5 days on Sensitization and training in beekeeping husbandry skills,									Personnel, venue, fund, training materials and equipment	Facilitator, (DBO), CED student
8.	Conduct a training of 3 days in entrepreneurship and Business development skills									Personnel, venue, fund, training materials and equipment	CED student
9.	Develop group constitutional as tool for group identification									Personnel, venue, stationary, Constitutional guide line and	Ward extension officer (WEO) CED student

										fund.	
10.	Bating and Placing/ hanging beehives in forest									Personnel and time	Group members, CED student and DBO
11.	General management and care of apiary.									Personnel and time	Group members,
12.	Record keeping for dates beehives colonized									Personnel, fund and stationery	Group members.
13	Project Monitoring									Personnel, fund, stationery and time	CED student
15	Harvesting of honey									Harvesting equipments, personnel	Group members, CED student and DBO
16	Processing and packaging of honey and beewax									Packaging materials, personel	Group members, CED student and DBO
17	Selling of honey and beeswax									Markets, funds	Group members, CED student
18.	Project evaluation									Personnel, fund, Stationery and time	TFCG project manager.
19. .	Writing report									Personnel, fund, stationary and time	CED student

4.5 Challenges Encountered

Since the participants most of them were standard leaver understanding in the training was slow. Poor timing in harvesting of honey every time of harvesting was found hives with brood. Women were active in beekeeping activities when working together with men but they don't trust on working alone. Some group members didn't participate fully in implementing activities due family responsibilities. Resources were not enough to conduct training on collecting the swarm and introducing in the empty hives to multiply faster.

CHAPTER FIVE

5.0 PROJECT PARTICIPATORY MONITORING, EVALUATION AND SUSTAINABILITY

5.1 Introduction

This chapter describes how participatory monitoring, evaluation and sustainability how were carried out at Kisongwe village when conducting modern beekeeping project. This helped to gather information needed to keep the project on schedule. It is very important to conduct monitoring and evaluation for any project on progress in order to capture any changes that may arise and affect objectives of the project. Monitoring and evaluation was a useful tool in reviewing and observing the project to ensure it function regardless of changes in internal and external circumstances.

Since the project was participative and had different stakeholders, every one ensured strong monitoring of the project activities. The Kisongwe village council volunteered the building for trainings as their contribution for the project. Through field visits by the group leaders, the executive committee responsibility is to monitor the project progress and measure performance.

The project researcher from the Open University of Tanzania involved in monitoring of the project by supporting group leaders with skills on how to prepare and document reports on project achievements, challenges and the lesson learned in between. The project researcher facilitated them on how they can use the learnt lesson as frame work for project activities adjustment where necessary. The group executive committee accepted on the mode of reporting that will be monthly, quarterly, semi-annual and annual reports.

5.2 Participatory Monitoring

The importance of participating in monitoring the project is that every participant will be assessing the project progress through reflection of set goal and objectives and see if are all in track.

5.2.1 Monitoring Information System

The main objective of monitoring the information system was to check if the project plan is in the right track in respect to planned activities, inputs, supervision, and resources to achieve the objectives. The project objectives included to impart awareness, modern beekeeping skills for productivity improvement, sensitization and training entrepreneurship and business development skills to ensure marketing capability of beekeeping products, provision of modern beehives, equipments and enhancing cooperation and strengthening the institution. .

During monitoring there were some standard questions asked to assess the project progress towards the objectives. Anyone involved in monitoring sought to know whether the planned activities done timely and rightly, the stakeholders fulfilled their promises regarding their contribution for the project, whether the resources were used correctly and whether there was a need to adjust the plans. After collection of these data the researcher analyzed them and rectified areas that went wrong.

During the research design the focus aimed at collection of both quantitative and qualitative data regarding to project implementation. The stakeholders involved kept the record of the project day to day operations.

5.2.2 Participatory Monitoring Methods

During participatory monitoring different methods were used including stakeholders'

workshop, Self- Assessment method, documentary review, participatory observation and interview. Likewise secondary data were collected from group leaders and government leaders at ward level to district level. A participatory observation enabled observers to see whether physical activities have been executed and recorded. Therefore, these methods enabled the researcher and the group members to identify what was not functioning properly.

5.3 Participatory Evaluation

It is a collaborative process that involves stakeholders at different levels working together to assess a project and take any corrective action that is required. The need for evaluation comes from the fact that in between the implementation stages some information may be required by different stakeholders for different reasons. Therefore, the community needs assessment findings were used as base line information when it came to evaluate the project intermediate outputs as long as the project activities progress. It aims at finding out how the extent at which project activities are being implemented in relation to resources mobilized. This exercise determines what improvement and adjustments are required to attain the project objectives.

5.3.1 Performance Indicators

Each objective has its indicator which shows its success or progress towards achievement. The table below shows objectives and their indicators

Table 9: Participatory Monitoring Plan

OBJECTIVES	ACTIVITY	DATA SOURCE	METHODS & TOOLS	RESULTS
• Impart awareness and modern beekeeping husbandry skills for productivity improvement to 28 group members by Oct 2011.	• Outsource a facilitator • Prepare training materials • Facilitate 5 days training on modern beekeeping skills • Field work on setting beehives	• Training report • Evaluation report • Attendance list.	• Focus group discussion • Documentary review • Observation	• 26 Beneficiaries were trained • Beehives were set in field. • The group improved production
• Sensitization and training in entrepreneurship and business development skills for empowerment of marketing beekeeping products to 28 group members by October 2011.	• Preparing training materials • Facilitate 3 days training on entrepreneurship skills to members group.	• Training report. • Evaluation report • Attendance list	• Focus group discussion • Documentary review	• 26 beneficiaries were trained. • The products sold in the market. • Income improved hence poverty reduction.
• Provision of 25 modern beehives and other beekeeping equipments and materials to group members by October 2011	• Procure modern beehives and beekeeping equipments. • Transport the beehives and beekeeping equipments	• Group report available	• Observation. • Documentary review.	• 25 modern beehives and beekeeping equipments received by group members and used as intended to

				boost economy.
• Enhance cooperation among group members and strengthen institution	• Facilitate 2 days to develop group constitutional. • Prepare samples of constitutions.	• Attendance list. • Minute report	• Focus group discussion. • Documentary review.	• Draft of group constitution developed. • Spirit of working together increased • Group registered as CBO.

Table 10: Performance Indicators

Objective	Performance indicator
To Impart awareness and modern beekeeping husbandry skills for productivity improvement to 28 group members	-Number of group members with skills on modern beekeeping to improve productivity. - Production increased.
To Sensitization and training in entrepreneurship and business development skills to empower marketing beekeeping products to 28 group members	-Number of group members with skills on entrepreneurship and business development to empower marketing beekeeping products. -various diversification of products -market of products obtained
To Provide 25 modern beehives and other beekeeping equipments and materials to boost beekeeping.	-Number of beehives available in the apiary and beekeeping equipments received by Ukombozi group.
To enhance cooperation among group members and strengthening institution.	-Group constitution is formed and working jointly. -Certificate of registration of the group.

5.3.2 Participatory Evaluation Methods

During evaluation the methods used are the stakeholders' workshops and Self-Assessment methods. Other methods include special focusing group discussion and documentary review. A participatory observation method enables observation of physical activities been conducted and record the information for analysis.The tools used for data collection were special group discussion, interview and questionnaires. Before the exercise of evaluation was executed there were questions prepared based on performance indicators stated in each objective. Such questions were, ''How many group members have skills on modern beekeeping?'' How many group members have skills on entrepreneurship and business development?'' How many modern beehives do the group members are owning?'' Does the group have its own constitution? There was a documentary review aimed to assess implementation as per planned objectives. The project evaluation report results were as summarized in the following table.

Table 11: Project Evaluation Summary

Objectives	**Performance Indicator**	**Data Source**	**Methodology**	**Results**
▪ To sensitize and train 28 group members on modern beekeeping skills to improve productivity.	▪ Number of group members knowledgeable and practicing modern beekeeping.	▪ Training report	▪ Documentation ▪ review ▪ Observation	26 group members were trained. 245 litres of honey produced. 24.5 kg of beeswax produced.
▪ Sensitize and train 28 group members on entrepreneurship and business development skills to empower marketing beekeeping products.	▪ Number of group members knowledgeable on marketing beekeeping products.	▪ Training report	▪ Documentation ▪ Observation	26 group members were trained. 245litres of honey and 24.5 kg of beeswax were sold.
▪ To Provide 25 modern beehives and other beekeeping equipments and materials to boost up beekeeping.	▪ Number of beehives available in the apiary and beekeeping equipments received by Ukombozi group	▪ Project reports	▪ Special group discussion ▪ Observation	25 modern beehives and other beekeeping equipments were provided.

Objectives	Performance Indicator	Data Source	Methodology	Results
▪ To enhance cooperation among group members and strengthening institution	▪ Group constitution is formed and working jointly.	▪ project report ▪ group report	▪ Documentation ▪ Review ▪ Observation	-Group constitution formed. Certificate as CBO registration obtained.

5.4 Project Sustainability

It is the ability of the project to generate the required results after the project itself has come to an end or after the project sponsors have finished their duty of financing or providing technical assistance. Therefore a sustainable project is one that can deliver benefits to the target group for an extended period of time after the main assistance from a donor has come to end. Sustainability means more than just development activities that are environmentally sensitive, it implies that the project would lead to improvements that will persist and spread beyond the project boundary and time span and not create dependency. Sustainability also refers to the capacity of the project to continue functioning, supported by its own resources (human, material and financial factors),even when the external sources of funding has ended(CEDPA 1994).Most of projects conducted by civil society especially in developing countries face challenges or problems of the project sustainability (World Bank Economic Development Report 2002).

The sustainability of this project is ensured by different factors which are found to contribute to implementation efforts as shown by the community members from the point of community needs assessment, problem identification and prioritization, project design and implementation, monitoring and evaluation. These factors are appropriate technology, institutional sustainability, political sustainability, policy support, environment protection, socio-cultural and women participation and VSL support factors.

5.4.1 Appropriate Technology

The trainings on modern beekeeping, entrepreneurship and business development skills equip the group members with knowledge previously didn’t have. The training coverage was on how to increase productivity, the equipments needed, where to find them, the best

location for the hives, what considered good location for apiary, the enemies of bees, how to feed bees during drought, and how to produce quality honey and wax for best earnings. Likewise the entrepreneurship training enlightens them with skills on how to engage in any business being beekeeping or any other business without making costly mistakes. During entrepreneurship training the participants were explained different markets for selling beekeeping products such as hotels, supermarkets, markets, main stands, Nane nane and Sabasaba exhibition days and advertising to the agents collecting and transporting outside the country all these places the demand for honey and wax is very high. The participants were assured if they engage properly in beekeeping business earning money is continues hence sustainability of the project. Furthermore the participants were required to spread-out the skills acquired to other members who are beekeepers in the community.

5.4.2 Financial Availability

Is expected Ukombozi group to continue the project even if the donor fund supply will end. The group has started to harvest and sell honey and beeswax, the money obtained from sales will increase the income to satisfy the socio economic needs also to buy other hives and beekeeping equipments as result the project will expand and self driven.

5.4.3 Created Project Ownership

The project was selected as a felt need of the Group since it was ranked first as an intervention against the prevalent income poverty in Kisongwe village community. In view of that it is expected that the project will get full support of the Group members bearing in mind that they are the primary beneficiaries of project. Although the big part of budget to run the project came from TFCG, as Group members contributed money to

procure 5 hives and 2 iron pots from their own sources. Therefore the group members feel the project belongs to them.

5.4.4 Market Availability

If the ukombozi group member will base on the skills gained in the trainings to produce honey in high quantity and quality, for sure market within the country and outside is high. They were enabled by TFCG to bring their products to Nanenane exhibition in Morogoro town whereby they managed to sell their products and getting orders from businessmen. This is a good indication to assure the presence of market the only thing is to increase production in order to have large amount of honey with good quality.

5.4.5 Political Sustainability

The Kisongwe village leadership collectively said that, they would support the project as it would be the source of helping the community in the village. The District council had promised (through DBO) to support the project since it conforms to the first Millennium Development Goal that of eradicating extreme poverty

5.4.6 Policy Support

The National Beekeeping Policy (NBP) of 1998 with overall goal of enhancing the contribution of the beekeeping sector to the sustainable development of Tanzania and the conservation and management of its natural resources for the benefit of present and future generation. The NBP encourages active participation of all stakeholders in establishment and sustainable management of bee reserves and apiaries, promoting beekeeping based industries and products and promoting sustainable management of beekeeping in cross sectoral areas for ecosystem conservation and management.

5.4.7 Environment Protection

Currently the village council has allowed the group and individual beekeepers to locate the beehives in the village forest reserves with an area about 100 ha. The village council allowed with the condition that any group or individual beekeepers must sign a contract as a tool in imparting sense of responsibility towards the environment protection as well as project development.

5.4.8 Socio-Cultural and Women Participation

Since the project was gender sensitive, women who for a long time were excluded in beekeeping have an opportunity now to engage in beekeeping. This therefore eliminates the culture that makes them shun away from this activity.

5.4.9 Village saving and Loan support

TFCG organization supported the Ukombozi group members with training on village savings and loans. All equipments and materials required in operation has been supplied to the group. This will help the group to have local financial institution. The funds will be accumulated through shares contributions as result the group can take loan to run the project activities when the need arises.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter presents the conclusion and recommendations and the way forward towards the project being under taken by Ukombozi Group at Kisongwe village, Kilosa District. This conclusion summarizes the findings of the participatory needs assessment, literature review, reasons which guided the choice of the project, the report on the project implementation and indicates the project objectives which have been achieved so far. Also the chapter shows the summary of the findings of the project participatory monitoring, evaluation and the sustainability plan and description of the outcomes that may be expected if the project is successfully completed.

6.2 Conclusion

Participatory needs assessment gives a clear picture of what is going on in a particular community. It enables members of the particular community to agree on why it is important to focus on a particular need or number of needs to best address the problem. The participatory assessment facilitates in identifying problems that are needed to be addressed in a particular community, its sources, effects, resources available to solve the problem and the most affected people in the community and show how or reveal the resources available within the community to address those problems. To come up with the project, various research methodologies were applied to identify the needs such as Questionnaire, Focus Group Discussion, participants' observations and documentary review. During participatory needs assessment about six major needs were identified and were prioritized, the results of which placed low income due to non availability of viable income generating activities as problem number one, the other five problems identified in

this research were not addressed by this project, other researchers can address them in future.

The theoretical literature review shows that research done on behavior of bees has lead to practice in beekeeping to be possible; also livelihoods for people can be created from beekeeping. Furthermore Beekeeping in Tanzania plays a major role in socio economic development and environmental conservation. It is source of food, raw materials for various industries, medicine and it is an important income generating activity with high potential for improving income, especially for the community living close to forests.

It was found that people when engaging in different economic activities without appropriate skills and sometimes lack the assistance from the government extension officers, they produce products of which the market is not clear to them as result the earnings are low. The same applied to beekeepers, about 95% of all hives in Tanzania are traditional; beekeepers are unable to access better market due to the poor quality and low quantity of honey produced.

The communities are surrounded by a variety of potential resources which can be useful in their life but they lack of skills, appropriate technology and support to boost their efforts. This project after community need assessment analysis observed that 27% of the respondents are practicing local beekeeping and acquired skills of beekeeping from their grandfather and other relatives had never attended any formal training of beekeeping. When sensitization and training in beekeeping husbandry, entrepreneurship and business skills conducted, cultivated interest of many people to engage in beekeeping activities. That observation was revealed during monitoring and evaluation of the project. .

Project implementation began in October 2011 immediately after procurement of Modern hives and beekeeping equipments. The two project specific objectives of imparting modern beekeeping husbandry, entrepreneurship and business development skills to 26 group members has started to yield fruits as most of the participants have started to positively change their mind set of operating the project and other business related activities. The group managed to harvest honey and sold it in the village, Kilosa town and Nanenane exhibition in Morogoro. The other objective concerned with supply of hives and beekeeping equipments is achieved by 100% because the necessary equipments to run the project were procured and handled to the Ukombozi group for implementation. The forth specific objective that of enhancing cooperation among group members and strengthening institution was achieved as the group members participated to develop the group constitution which is an identity of the group also in participatory they implemented modern beekeeping activities.

Participatory Monitoring started to be conducted since the time of project initiation in order to measure the efficiency in the use of inputs, the running of project activities, and achievement of outputs and verification of the assumption. It would be conducted continuously by Ukombozi Group and stakeholders.

Evaluation would be conducted to measure the long term impact and project sustainability in terms of achievement of purpose and goal and any unplanned changes. Midterm participatory evaluation was conducted towards the end of January 2012.The sustainability plan was also established in order to determine project capacity to continue operating without depending external sources of funding when come to an end. There are indicators for the sustainability plan such as appropriate technology, financial availability, created project ownership, market availability, political sustainability, policy support,

environmental protection, socio-cultural and women participation and Village Saving and Loan support.

6.3 Recommendations

The following are recommendations regarding the experience so far gained out of conducting the project titled ‘empowering Community Livelihoods Through modern beekeeping’. Participatory Assessment is very vital and should be conducted before undertaking any development project to address the community development problem. Once the needs are identified using various participatory tools depending on the type of assessment, and prioritized the community members have to analyse their available resources to tackle the problem and feel that they are part of the project to be undertaken. This creates sense of project ownership, accountability and sustainability.

Project design should be done immediately after prioritizing the community need starting with stakeholder analysis, logical framework analysis and project implementation which entails activity planning and shows who will do what, when to do, types of inputs needed.
Literature review is very important before conducting any project as it will show the vital theoretical literature for the project you want to undertake, the empirical literature would help to locate such similar projects undertaken in other places or organization. Opportunities, challenges and lessons learned can be revealed and how you can tune with situation. While the policy review will assist in looking at the policy implications on the project to be conducted. Project monitoring, evaluation and sustainability are very important elements in project design and management. The importance of each element has been well elaborated under respective sections and if not adhered to for sure the project is bound to fail.

The researcher used four methods during data collection. All applied methods were most appropriate as they assisted the researcher and community members to easily identify the community need that led to project design and implementation. Among the best methods used include the Questionnaire and the Focus Group Discussions. However with these methods the researcher vehemently recommends that communities should use these methods as they facilitate to solve the problems and create cohesive force among communities that binds members to own the project that is more sustainable.

Beekeeping sector is very crucial for providing employment and food to poor rural people, but in rural areas the extension officers on beekeeping sector are very few despite the potentials of forests for beekeeping, I suggest the government to enroll more students on the course.

The participatory needs assessment made a continuous research on community needs in Kisongwe village. Six pressing needs were identified and prioritized using preferential ranking methods where by low income was ranked as number one problem. This is due to lack of viable income generating activities and consequently led to design and implementation of the project in point. However the community has a number of unaddressed needs, it is recommended that more efforts must be devoted for further research in the remaining five problem areas such as environmental destruction, lack of health facilities, poor infrastructure, poor village governance and crops destructive wild animals.

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APPENDICES

Appendix 1: Questionnaire used to asses community needs at kisongwe village.

Code number……..Location…….
date…….

1. Gender (1) male……(2) Female……
2. Age (1) 18-27…….. (2) 28-40./…….. (3) 41-59……. (4) over 60 years……..
3. Marital status (1) single……(2) married ……(3) Divorced…… (4) Others specify…….

4. Education level of the respondent.
   (1) Informal education…….(2) Primary…….(3) Secondary…….(4) Others specify……

5. Major community problem in the village.

(1) Low income……(2) Crops destructive wild animals ……..(3)Poor infrastructures …….. (4) Diseases……(5) Environmental degradation…….(6) Poor governance

6. What are the local resources available to meet the most community needs you mentioned above (a)…….. (b)…….

7. Major sources of livelihood.

(1) Livestock keeping …….(2) Farming……..
(3) Small Business…….(4)Temporary jobs/wage labour……. (5) others specify…….

8. If you depend on livestock keeping as source of your livelihood what kind of animals your keeping?.....
.....
.....
.....

9. If you depend on agriculture as source of your livelihood what kind of crops mainly cultivated.

……
……
……
…….

b) How is the productivity of your crops?
Explain……
……
……
……

10. Do agricultural, beekeeping, livestock extension officers visiting you for the advices? Explain.
……
……
……..

11. Do the market for selling agricultural crops and livestock reliable in the village?
explain……
……
……
……

12. What is your estimated annual income

(1) Below Tsh 99,999……. (2) Between Tsh 100,000 – 199,999……. (3) Between Tsh 200,000- 299,999……. (4) Above Tsh 300,000……..

13. What are the main cash expenditures of your household?

(1) Food……. (2) School fees……. (3) Building materials…….. (4) Health services ……(5) others specify…….

14. Do you practice beekeeping?

(1) Yes ……(2) No……. if YES proceed with question no 11, if NO proceed to question no 19

15. If yes how many beehives do you have

(1) Less than 5……. (2) between 6- 10……..(3)between 11- 15…….. (4) more than 16……..

16. What type of beehives you are using

(1) Local ……(2) modern…….(3) both ……

17. If you are using local beehives to whom did you get knowledge of beekeeping.

(1) From my grandfather/father …….. (2) From other relatives…….. (3) From other people……..

18. .If you are using modern type of beehives have you attended any training concerning beekeeping?

(1) Yes…….(2) no ……

19. If you are using both from your experience and understanding, which type of beehive produce more honey.

(1) Modern …….(2) Local…….

20. You are producing honey for what purpose?

(1) Selling to get cash ……(2) Food at home ……(3) Medicine……(4) for selling and food

21. If you are selling honey what about availability of market?

(1) High …….(2) medium ……..(3) low…….

22. What difficulties hindering your beekeeping and how have you tried to solve it?

23. Are you interested on beekeeping?

(1) Yes ……(2) No……..

24. If yes what has hindered you to start beekeeping?

Don't have capital ……..(2) don't have knowledge….. (3) both 1& 2 is true…(4) others ……

.25. Can you explain the relationship between beekeeping and forest conservation?

Appendix 2: Beekeeping Training Manual.

BEEKEEPING TRAINING MANUAL

INTRODUCTION

Tanzania is one of the country which is covered with large area of natural forests mostly are woodlands. These forests provide large quantity and good quality honey to the internal and external market of the country.

The meaning of beekeeping is to keep the bees in the local or modern beehive for the purpose of getting honey, wax, glue, Vernon, royal jelly, pollen etc.

Bees are good pollinator of plant crops, therefore farmer benefits high quantity and good quality of crops.

THE IMPORTANCE OF BEEKEEPING

1. We get honey, wax, glue and other products
2. Our plant crops are pollinated by bees
3. Equipments for making beehives most are available locally, is not necessary to use very expensive equipments.
4. The need of making beehives and other equipments result into another business like making smokers, knives etc.
5. Bees gather pollen and nectar from the flowers which do not need money in comparison of feeding other animals. Bees gather food from natural and planted plants, therefore drier areas which are not sweet for agriculture can be applied for beekeeping.
6. Bees collect pollen and nectar also various minerals from flowers and mix with honey, therefore don’t need extra food.

7. Honey and wax are valuable goods in human life.
8. Bees do not need every day check up.
9. Beekeeping can be done by gender of different age.
10. Beekeeping doesn't need fertile land; beehives can be hanged in trees with infertile soil. Bees fly away a distance of 2 miles to search food.
11. Beekeeping helps people to sustain life.
12. There are two seasons for honey harvesting, the high and low season (this differs according to environment the beehives are kept).

3. TYPES OF BEES IN THE COLONY

In the bee colony there three types of bees,

a. One queen

b. Hundreds of males

c. Thousands of workers.

Bees of Tanzania are divided into 3 groups according to the environments they are living.

1. Bees living in Coast are called *Apis mellifera litorea,* they have small body form and highly stinger
2. Bees living in dry and lowland areas are called *Apis mellifera scullata* (Adansonii), this type of bees they sting moderate and they produce honey in large quantity.
3. Bees living in the mountain areas more than 6000ft below sea level. This type of bees are large in body form, polite , even honey can be harvested without protective gears . they are known as *Apis mellifera monticola*

4. EQUIPMENTS AND PROTECTIVE GEARS USED IN BEEKEEPING

A. Local beehives can be magome, logs, clay pots, gourd, tins, weaved basket etc

B. Modern beehives

   i. Tanzania Top bar Hive

   ii. Tanzania Commercial Hive

C. Smoker: this equipment used to smoke inside the beehive to make them polite.

D. Tool hive (Patasi ya mzinga) : this is equipment used to open the top bars of hive glued by bees.

E. Veil (utaji wa uso): is a protective gear used to cover head and face to protect bees to sting from head and face.

F. Overall: this is an American hard cloth used to cover the body from neck to hands up to limbs to avoid bees stinging.

G. Gloves: these are hands pockets which protect bees from stinging hands and palms.

H. Gumboot: protect bees from stinging legs.

I. Honey strainer: is equipment used to strain honey combs to separate honey and solid materials when boiled make wax.

5. IMPOTANT ISSUES TO CONSIDER ON BEEKEEPING

A. Examine the area if there are enough honey plants eg. Miombo trees, Misufi, Cashew nut tree, Mango trees, Eucalyptus, Accasia spp, Sunflowers, Sisal, Mipapai, Maize, Beans. Orange trees etc.

B. Examine if there enough and permanent water. If there is no water make sure you send water in tins or build small wells and put dried sticks to enable the bees to land during water fetching.

C. Observe if there are effects of floods always.

D. Observe the enemies of bees in the area and how you are going to minimize or eliminate completely eg, Nondo, Red ants, people, termites etc. Make sure is not near main road or busy place for community activities e.g market. Church, mosque, hospital home etc.

6. HOW TO TRAP THE BEES COLONY.

A. New made beehive before is hanged must be smeared inside with melted wax, because wax smell attract the bees looking for food or place to live. Bees detect the smell of wax faster than other insects.

After coating the wax in beehives then beehives are hunged under trees by using galvanized wire to wait the bee colonies to pass through. By using this method bees may not enter immediately. Therefore the beehives must be inspected always to clean and add wax. This method is suitable during tree flowering and harvesting of bees products.

B. Another method is to divide big colony into the new made beehive. This method is good because is required to shift 2 combs with young nearly to be hatched, one honeycomb with eggs of age below 24 hrs and honeycombs with food (honey and pollen) together with bees not less than 100. The new beehives is replaced where the old beehive was and the old beehive is shifted to another place.

C. Another method is to collect the small bee colony from the tree branch to small beehive then go and place them in the big beehive. Make sure you

have collected the queen. Make sure you seal the outlet of the beehive to protect escape of queen. Because they don't have food it will require to feed them honey or dissolved sugar in water in the ratio of 1:1 for example one cup of water dissolves sugar of one cup.

D. Another method to get the queen is to brood yourself and put in the beehive with bees not less than 100 together with honey comb of young nearly to be hatched and food. This method enable to get bees in hives in time the farmer/beekeeper like to get

NB 1. This method more scientific

2. Method B and D suitable for modern beehives and method A suitable for local and modern beehives also.

7. HOW TO HANDLE BEES

According to the behavior of bees to be furious, the beekeeper needs to consider the following when handling the bee colony in order to avoid stinging or making them angry

i. Approach the beehive behind or side way in order to avoid broke the entry and outlet of bees.

ii. Smoke in the beehive slowly through the outlets/door by using smoker equipment.

iii. Open your beehive and continue to smoke inside slowly.

iv. Use hive tool (**Patasi)** to uplift top bars intact with honey combs in order to inspect if the bees have built the combs, if there are enemies or if honey is due to be harvested.

v. Be carefully to kill bees by pressing with top bars and **patasi** because they release pheromone alerting danger in which other bees when sense becomes very furious.

Inspection of the bee colony is done according to calendar of beekeeping. The following are the explanation of calendar and the activities done.

a. **The season of hunger**:

This period the bee colonies are inspected to check if there are enemies like, red ants, Nondo etc and if don't have food feed them with dissolved sugar or honey if is there.

NB: in Tanzania is not the culture to feed bee colony is the decision of the farmer/ beekeeper himself.

b. Building season:

This is the building bees season, in this period many bushes and few trees start to flower and the bees start to build the honey combs ready for storing honey for the next season of flowering.

Important things to note or to do

- Check the enemies of bees in the beehives.
- Join the small bee colonies to form big bee colony
- Make sure the bees are building honey combs along the bars and not across.
- Hygiene of beekeeping farm
- Divide the bee colonies.

c. Flowering season:

This period is when all bushes and trees flower therefore they gather food (nectar and pollen) in large quantity to produce honey.

Important things to note or to do:

- Expand the house by putting the box on top in case the lower box is ¾ full make sure Queen is placed. This practice is possible for commercial hives only.
- Check the enemies of bees
- Check if the honey is dew and ready to harvest.
- To prepare tools and equipments for harvesting honey i.e protective gears and containers
- Prepare market to sell your products (honey, wax, glue etc.)

d. This period is very important, if the beekeeper will be late, the bees will feed on honey. Therefore when see the honey combs full covered honey that is due to harvest.

Activity to do

- To harvest honey and squeezing to separate pure honey and left over which is boiled to get wax.

8. HOW TO PREPARE PRODUCTS OF BEES

a. Honey

The honey combs are squeezed in the machine and the squeezed honey drops in the clean container under the machine. Another method you can use sieve and get clear honey.

b. Wax

After separating honey and left over, the left over are washed in water in order to remove remnants of honey and then is boiled in a clean vessel with water. Steer until all left over are dissolved, then sieve using **Kung'uto,** smear soap in the vessel before wax is dropped to avoid intact between vessel wall and wax. Another method is to use hot water, left over /combs squeezed honey is left in water for 24 hours then is drawn out wrap with a piece of cloth or light sack and boil in the big iron pot containing water. Another method is to use sunrays by special vessel for melting wax.

9. THE USES OF BEE PRODUCTS

a. Honey

i. Used as food

ii. Medicine

iii. in breads

iv. in drinks such as tea, porridge .

v. mixing in bitter medicines eg malaria and coughs.

vi. In making lotion

vii. Fast healer when smeared on the burnt body part.

viii. Rich in iron minerals when consumed more blood increase in body.

b. Wax

i. To soften animal skins in industries.

ii. Making candles

iii. Making bullets

iv. In chocolate

v. Making lipstick

vi. Making creams

vii. Mixing with medicine to cover tooth bore.

viii. Making shoe polish

ix. Polish for floor and furniture

x. Used as ointments

xi. Used in textile industries.

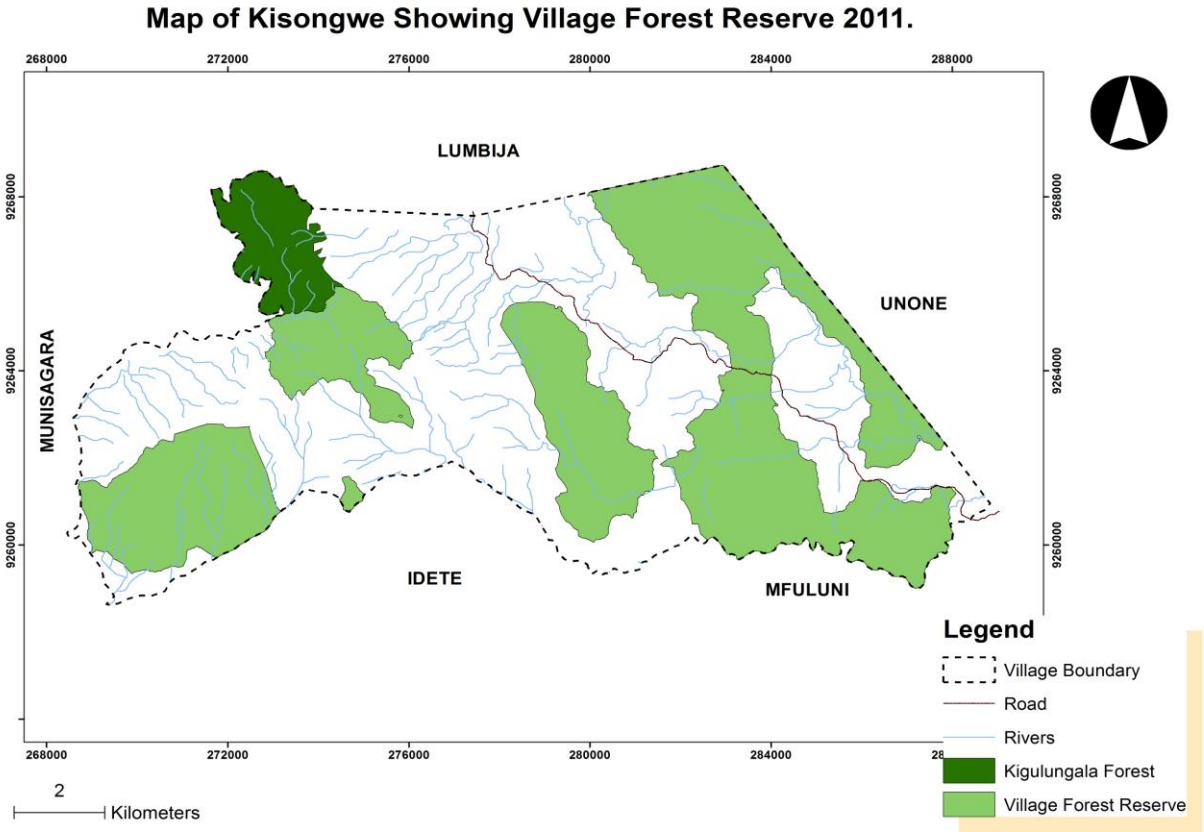
xii. Used as bate for bees

xiii. Used in paper and soup industries

xiv. Used an insulator in electricity equipments

xv. Used in making cup to brood the queen.

Appendix 3: Map of Kisongwe Showing Village Forest Reserve 2011



Appendix 4: Photos taken during the events

Plate 1: CED student talks to Ukombozi members group during familiarization meeting

Plate 2: The carpenter shows the CED student made hives ready to transport to Kisongwe village.

Plate 3: The hives and other equipments parked in the car ready for transportation to Kisongwe

Photo 4: Facilitator DBO elaborates types of bees in the colony during training session

Plate 5: The participants listening to the facilitator during training session

Plate 7: Facilitator demonstrate how the bars are arranged in the hive

Photo 7: The members of Ukombozi group hang the hive under tree branches in the field**.**