

**CAPACITY BUILDING ON QUALITY AND QUANTITY OF HONEY AND
BEESWAX PRODUCTION: A CASE STUDY OF TUPENDANE NYUKI GROUP
KISARAWA VILLAGE, KISARAWA DISTRICT TANZANIA**

CONSTANTINE YOHANE MNEMELE

**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTERS OF COMMUNITY
ECONOMIC DEVELOPMENT OF THE OPEN UNIVERSITY OF TANZANIA**

SUPERVISOR CERTIFICATION

I, Chacha Matoka, confirm and certify that I have read the dissertation titled: **Capacity Building on Quality and Quantity of Honey and Beeswax Production, Tupendane Nyuki Group** in partial fulfillment for the requirements for the degree of Master of Community Development of the Open University of Tanzania.

.....
Dr. Chacha Matoka

.....
Date

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DECLARATION

I, **Constantine Yohane Mnemele**, hereby declare that the contents of this dissertation are a result of my own study and findings and to the best of my knowledge they have never been presented as a project work to neither Open University of Tanzania nor any higher learning institution for a similar award.

.....

Constantine Y. Mnemele

Date

DEDICATION

I would like to dedicate this dissertation to my wife Victoria Ambrose Nyang'oro, Catherine Mnemele, Chrispine Mnemele and Coline Mnemele my daughter and sons I am so gratefully for their support and love during the time of my studies.

ABSTRACT

Beekeeping in Tanzania is one of the informal sector that is sharply gaining momentum letting in a large number of entrepreneurship as participants in activities that are largely home based or individual enterprise with few or no employees. The Community Needs Assessment through PRA found that the key problem facing the organization is inadequate education on beekeeping and how to make modern beehives, inadequate of equipment, inadequate of market network and low conscious on how to keep bees in a modern way despite of number of opportunities and low knowledge on beekeeping .There is a need to conduct training on beekeeping and aspect of quality control of honey and beeswax for market assurance. The host organization has 10 members. The group member identified a number of problem during the Community Need Assessment (CNA). The CNA was conducted through rural participatory approach where members of the group were involved using focused group discussion, interviews, observation and questionnaires. The community needs assessment findings indicate that the respondents were of different age, level of education, economic status, family size which has impact on production, that as the population growing the production decreases which has an impact on food in the family. The goal of the project was to improve quality of honey and beeswax production in the community and the specific objectives of the project is to improve local beehives by replacing modern in order to increase productivity, increase of income in household level and create employment opportunity in the community and reduce environment degradation through afforestation. The researcher is highly recommended that there is a need for the government to mobilize the people to involve in bee keeping as means of income generation. The collective efforts should always be encouraged because it easier and economical assist group than individual in credit facilities, training and extension services. The government should help the beekeepers to find market for their bees' products.

LIST OF ABBREVIATIONS AND ACRONYMS

ANN	Africa News Network
CNA	Community Needs Assessment
DADPS	District Agricultural Development Project
FAO	Food and Agriculture Organization
MCED	Masters in Community and Economic Development
MDG	Millennium Development Goals
MKUKUTA	Mkakati wa Kukuza Uchumi na Kupunguza Umasiki Tanzania
NANYATA	Naipenda Nchi Yangu Tanzania
NBKP	National Beekeeping Programme/ policy
NGO	Non Government Organization
NSGPR	Nation Strategy for Growth and Poverty Reduction
SACCOS	Saving and Credit Cooperatives Society
SASH	Southern Haiti Apiary Society
SWOT	Strength, Weakness, Opportunities and Threat
TANESCO	Tanzania National Electricity Supply Cooperation
TAZARA	Tanzania and Zambia Railway authority
TRL	Tanzania Railway Limited
UK	United Kingdom
UNDP	United Nations Development Program
VEO	Village Executive Officer
VICOBA	Village Community Bank
VSLA	Village Saving and Loan Association

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First I wish to thank my almighty GOD for His guidance and Blessing to my daily activities basically giving me a good health in His guidance and provision of good support I could not rich here and succeed write this project report. I sincerely indebt my appreciation to Dr. Chacha Matoka for his mutual guidance to this work, otherwise without his directives to me, it was not possible to write this project.

I also indebt my appreciation to Dr Kisamo Minja and Mr Bethuel B. Mlemba who provided me a lively Cooperation and support during whole process of CNA, they spent their time by directing me to group activities. I sincerely indebting my gratitude to the whole administration of Tupendane Nyuki group for their cooperation during the CNA survey in this case Mr Ally S. Mwiru (chairperson), Mr Ayubu Issere (secretary) and Aisha J. Abdallah (treasurer). My special thanks should go to Kisarawe District Council through DADPS programme for supporting the project to empower the local peasants in Kisarawe village where subsequently saved even the marginalized people in the community hence boost the economic status. My colleagues of MCED especially Mr Seni Jilulu Magembe, Mr Bujo Muzo Mwakapalila, Dr Salima Chande, Mr Clement Maganga, Ephraim Kapungu, John S. Msabaha, Shalom and just mention a few, deserves a high appreciation for their sincere cooperation and encouragement.

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CHAPTER ONE

1.0 PARTICIPATORY NEED ASSESSMENT

1.1 Background Information

The chapter explains the participation of community in the process of formulation of group, staffing, identification of the community problem or the need of community, resource allocation, finding the solution and the sustainability of the project using the participatory rural appraisal in collaboration with the researcher.

In Kisarawe village, the community need assessment was done in collaboration with village leaders, MCED student, volunteer who need to join the project and other stakeholder(s) who feel that the development of the community is of paramount. The aim of community needs assessment is explore the problems, strength, opportunities, resources available, designing a committee and find solutions using participatory methods to address the problems. Participatory Assessment is a method for determining, from the insiders point of view: what activities are needed and can be supported; whether insiders accept the activities proposed by outsiders and; whether the activities are reasonable and practical (D'Arcy 1990). But the real insider has a great role in making decision to initiate the project which they believe the implementation will be easy depending on their resource they have and it used to vary depending on the community involved.

1.2.1 Community Profile

Kisarawe is one among six district in Coast region which situated between latitude 6 50 centigrade and 35 centigrade and longitude 38 15 East centigrade and 39 30 centigrade East. It borders is Mkuranga district in the East and Morogoro district in the west and Ilala municipal in to the North, Kibaha district to the north and Rufiji district to the South. The district covers an area of 3535 sq. kilometer and 1000 meters above the sea level.

1.2.2 Climate

Kisarawe district has temperature vary between 28C and 30C with mean temperature of 29C. The district has two rain season; the short rains which normally start in mid October to December and the second starts in March to June. The average rainfall range from 1400mm to 1600mm in the eastern part of district which cover Sungwi division and the western part covers Chole, Maneromango and Mzenga divisions receive the average rainfall of 1000mm per annum.

1.2.3 Population

The district has a total population of 95,614, of which 48343 are male and 47271 female with the average growth rate of 2.1 and the house hold of 4.2 people. The council population is expected by 2010/12 to be 116,667 (Census 2002). The growth encourage or provide challenges to meet social economic development of the entire community in the district.

1.2.4 Social-Economic Welfare

1.2.4.1 Education Services

Kisarawe district has 79 primary schools with 636 teachers and 23464 pupils of which 12082 are boys and 11382 are girls. Apart from primary school, Kisarawe district has 18 secondary schools.

1.2.4.2 Health Services

The district has only one District hospital which has 80 beds, with 4 health centers and 19 dispensaries, 14 among those are owned by the government, 2 owned by religious institution and 3 owned by private individuals. Each dispensary serves the average of 100-775 people (per year). The village is located at the capital of the district, so the

District hospital provides health service to the indigenous. The district hospital 1 serves 28000 up to 30000 patients a year. Also the village has 1 dispensary (Participatory survey December 2011).

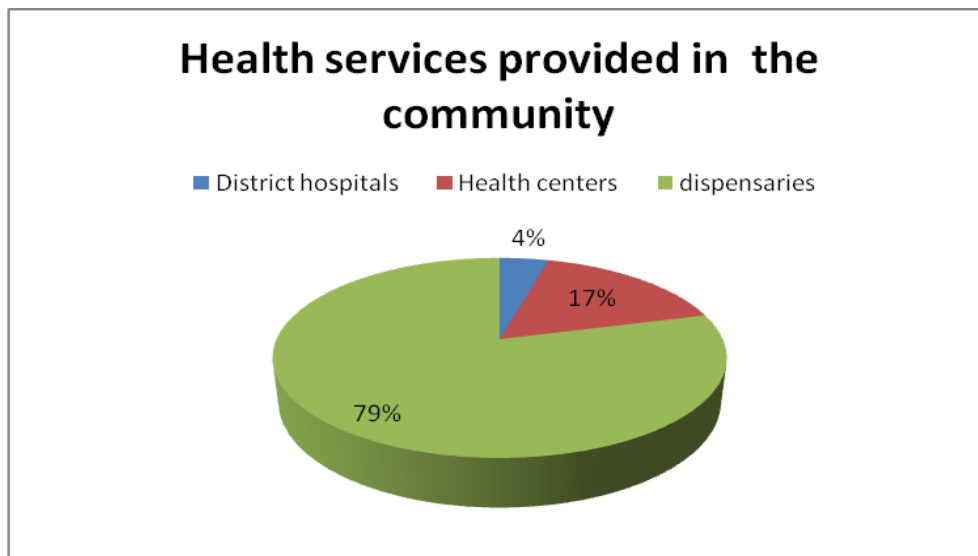


Figure 1: **Health Services Available in the Village.**

Source: Participatory survey 2011

1.2.4.3 Agriculture Activities

The agriculture sector employs 95 percent of the people in the district. The major cash crop includes cashew nuts, cassava and coconut. Tropical fruits like mangoes, orange, jackfruits and pineapple. The food crops grown in the district include maize, cassava, paddy, sorghum and sweet potatoes. Kisarawe district has potential area for agricultural activities which cover 309, 000Ha where by 83,645 Ha are utilized and 28,000Ha are suitable for irrigation.(participatory survey 2011)

1.2.4.4 Road and Water Services

The district has road network of 649.7 km out of that 159 km is regional road and 490 km are council road serving the community. Also there is two railways crossing the district

with about 50 km .These are Tanzania and Zambia Railway Authority (TAZARA) and Tanzania Railway Limited (TRL) which are crossing the district. All infrastructure networks crossing the district contribute to social – economic development and wellbeing of the people within and out the district. The District experienced different source of water, which include pipes which serve 21,000 people and 6,500 people served by dams and rain water harvesting.

1.2.4.5 Administration and its Structure

Kisarawe village council is administered by the chairperson Mr.Abel Mudo, Village Executive Officer (VEO) Mwashamba Genda and 24 Village Council members. The overall decision concerning the village is made after the discussion with village members.

Village administrative structure

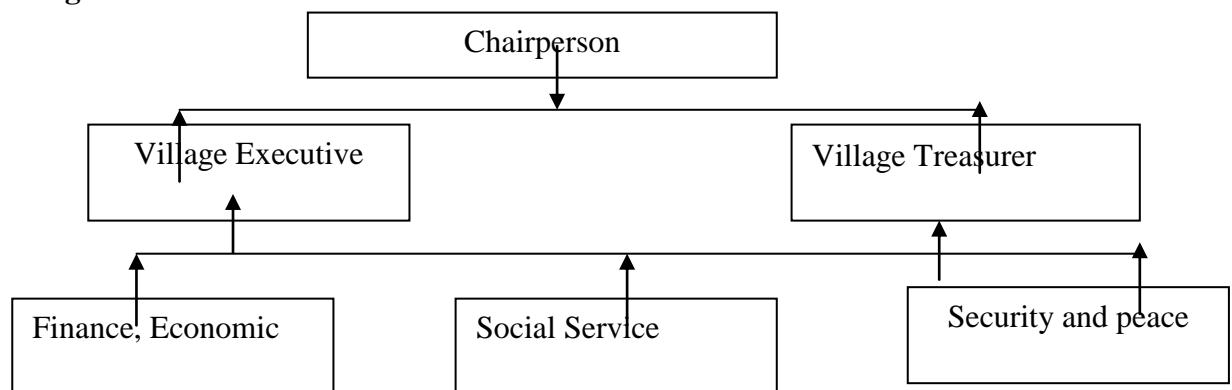


Figure 1.2 Administrative structure

Source: Participatory survey 2011

1.2.4.6 Population

The Kisarawe village has 194 families with the population of 6744 of which 3259 are male and 3485 are female. The population of the village has the following distribution in the hamlets;

Table 1.Village Population

S/N	Name of hamlet	Population
1	Kibaoni	1456
2	Bomani	1104
3	Minaki	1007
4	Matumbini	1033
5	Vigama	871
6	Sanze	961
7	Mambisi	321
	Total	6744

Source: Participatory survey 2011.

1.2.4.7 Education Service

The Kisarawe village provides education and has the following primary schools with its pupil's population;

- i. Chanzige A Primary school with total pupils 429 of which 199 male and 230 female
- ii. Chanzige B Primary school with total pupils 240 of which 122 male and 188 female
- iii. Sanze primary school with total 304 pupils of which 162 male and 242 female
- iv. Kibasila primary school with 417 pupils of which 213 male and 204 female

The village also has 3 secondary school namely Minaki secondary school with 700 male students, Kimani secondary school with 204 students about 119 are male and 85 female and Chanzige secondary school with 460 students 252 are male and 208 female and Kisarawe junior seminary secondary school 425 students 276 are male and 149 female (Participatory Survey December 2011)

1.2.4.8 Economic Activities

Kisarawe village has arable land which favors agriculture of different crops. People involve in different economic activities which includes agriculture and business. The agriculture sector employs 95 percent of the people in the district. The major cash crop includes cashew nuts, cassava and coconut. Tropical fruits such as mangoes, orange, jackfruits and pineapple. The food crops grown in the district include maize, cassava, paddy, sorghum and sweet potatoes. Kisarawe district has potential area for agricultural activities which cover 309, 000Ha where by 83,645 Ha are utilized and 28,000Ha are suitable for irrigation (Participatory survey 2011).

1.2.4.9 Infrastructure

The village has road network of 35 km out of that 11km is bituminous road/tarmac road under Tanroad control (Kisarawe – Kazimzumbwi road) and 24km gravel and earth road serving the community Kisarawe town. The village has the many feeder road which used by the community to transport their cash crops to the market hence improve the living standard of the people in the community. There is also the communication networking which involves different companies such as Vodacom, Airtel, Tigo and Zantel which provide telecommunication services to the community. The government is responsible to make sure the communication companies in the community are providing required service to the people at minimum cost.

1.2.4.10 Mining Activities

Sand, gravel stone/boulders, aggregate, limestone and salt extraction are common mining activities. The last is non-finite while others are finite resources, which are exhaustible, thus their efficient extraction is essential. Mining activities are carried out under the

provisions of Mining Act of 1998, which prohibits reconnaissance, prospecting or mining without mineral rights and without a written consent from the relevant authority.

1.2.4.11 Energy Distribution

Kisarawe village, like other settlements in Tanzania depends on different sources of energy, such as electricity, kerosene, charcoal, firewood, solar, etc. The main source of power for lighting, business and industry is electricity, which is generated, transmitted and supplied by a sole utility agent, Tanzania Electric Supply Company Limited (TANESCO). Residents commonly use kerosene, firewood and charcoal for cooking and lighting.

1.2.4.12 Cooperatives

The village has several types of cooperatives. These include: beekeeping cooperatives, rural primary society, industrial cooperatives, savings and credit societies (SACCOS), and service providers which are registered according to the Cooperative Act No. 20 of 2003 and others are not registered, they underway to registration. By the year 2011 the village had 8 cooperative societies, out of which 5 were active and 3 were not active (Participatory survey 2011).

1.2.4.13 Financial Services

Major financial services available in the village are a branch of the National micro Finance bank (NMB).

1.3. Introduction to Community Needs Assessment

Community Needs Assessment define by Dick, 2002 as process by which the assessment of the community initiation and current situation in the community is undertaken and the

community becomes of the project implementation. CNA provides the first hand information and involves all the community in the project. CNA proved a room to the community to plan, elect leaders, implement and make evaluation of the planned activities. CNA is a research conducted as an equal partnership between traditionally trained and people having skills and members of a community. A community needs assessment is incomplete if nothing is done after the information has been collected. It must be analyzed and used to plan, implement and evaluate project implementation to their members. The process is recurring and should be repeated; with the information updated it continues to reflect the needs of local people.

1.3.1 Objective of Community Needs Assessment

The main purpose of the community needs assessment was to collect information of the community as shown in the community profile that help in the project analysis, operation and provision of the service in the community.

1.3.2 Specific Objectives

- 1.) To identify the group challenges by using Community Needs Assessment.
- 2.) To examine the group strategies on how they can improve the community engagement in the project through participatory methods.
- 3.) To identify the possible solutions to make the group grow and meet its intended objectives.

1.3.3 Research Questions

1. What are the strategies could be used by the community to improve its engagement in the project?

2. What are the challenges facing the community from attaining their project well being?
3. What do you think is best option to escape from challenges facing your group?

1.3.3 Research Methodology

1.3.3.1 Research Design

Research design is concerned with the overall plan of the research (Saunders 2009:138). The research design in this point of view is focused on quantitative and qualitative research. The researcher opt this design to allow different method of data collection and techniques within one study. Kothari 2009 define research design as arrangement of conditions for data collection and analysis of data in manner that aimed at combining relevant to research purpose with economy in procedure. The choice of this design is due to its strength in data collection and data analysis during CNA due to nature of the group where Tupendane Nyuki group was purposely selected.

1.3.3.2 Sampling Techniques

After designing on the sample size, the researcher formulates a procedure to be used in selecting the subject/cases to be included in the sample (Mugenda 2003:44). Kothari 2009 defines sampling techniques as the procedure the research would adopt in selecting items for the sample. Also sampling techniques are those techniques used to select sample in the large population which are probability or representative or non probability or judgemental sampling (Saunders et al, 2009:213). The following were techniques used in sample selection:-

1.3.3.3 Non Probability Sampling

Is the sampling procedure which does not afford the basis for estimating probability that each item in the population has being in the sample; also it is known as purposive,

judgemental or deliberately sampling (Kothari 2008:59). Also it allows the researcher to use cases that have required information with respect to objectives of his/her study (Mugenda 2003:50). So Tupendane Nyuki group was purpose selected to cater the objectives of the project.

1.3.3.4 Data Collection Methods

The researcher used different methods in data collection which include questionnaire, focused group discussion, interview and observation methods where a researcher has opportunity to observe the group activities within the group.

(i) Secondary Data

Secondary data is data that has already been collected by researchers for some reasons, i.e. academic or other use of study information. It can be used to get a new perspective on the current study, to supplement or compare the work or to use parts of it, as another study may prove costly and time consuming (Kothari, 2009) e.g. research made on beekeeping by other stakeholders.

(ii) Primary Data

This primary data are original or firsthand information from the field after conduct the sample selected. Primary data is information collected by the researcher or person during the field of the study. Primary data for this study were obtained from the sample using a questionnaire and interview. The following were the methods used in data collection:

(iii) Questionnaire

Questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents (Kothari, 2009). They

can be designed to solicit statistical or perception analysis on beekeeping. The open ended questionnaire was designed to enable the respondent to give his/her view on to improve the project. The obtained information is first hand and good for project implementation

(iv) The Focus Group Discussion

Focus group discussions provide an opportunity to the researcher of getting different ideas from the groups of interviewees, using small informal groups to discuss and reflect on issues surrounding their group and community at large. (Mugenda 2003).

The method was used to get views from different categories of stakeholders including beekeepers ie Tupendane nyuki group, NANYATA and others so as to understand their perceptions and current situation on beekeeping and bees products production practices, involvement of different social economic activities and community access to social services such as health, education, water ,extension service and marketing related with bees products.

(v) Interview Method

This is happens when the interviewer has the conversation with the interviewee and this is the conversation between two people where questions are asked by the interviewer to obtain information from the interviewee (Saunders et al 2009). Interview was meant to focus attention on the experience of beekeeping and the benefit which the community is benefiting from the activities. The experience obtained from the respondent will provide the real picture on how the group benefit from beekeeping.

(vi) Observation Method

This is the method of looking what is going on in a particular area. Observation is not scientific observation but is the interactions of kind (Kothari, 2009).Observational research

techniques solely involve the researcher making observations and in using the five senses of organs where he/she can touch, see, taste, hear and smell. There are many positive aspects of the observation in this research approach. Observation as a scientific tool and the method of data collection for the researcher, when it serves a formulated research purpose, is systematically planned and recorded and is subjected to checks and controls on validity and reliability.

(vii) Administration of Research

Open University Tanzania introduced the researcher to the organization leader(s) and members of the organization by providing him a letter asking the leader to provide cooperation. The researcher takes the letter to the community leader. The community leader introduced the researcher to organization leader who familiarize the researcher to the group member and other stake holders. The aim of this introduction was to provide a room to the researcher to collect data needed.

A total of 55 questionnaires were administered to men and women respondents in the selected households. The questionnaires were translated into Kiswahili since most of the respondents were not familiar with English language. A total 10 questionnaires for stakeholders were self-administered and their questionnaires were set in English language. Ten guiding questions were set for Focus Group discussion with ten respondents from community. The researcher on their respective areas interviewed 10 respondents. The questionnaires are attached to the appendices for referencing and demonstration.

1.3.3.5 Data Analysis and Presentation

Data analysis was used different methods. The data collected from the field were analyzed both quantitatively and qualitatively. Responses from the structured questions

were analyzed quantitatively and the results are presented in tables and figures in frequencies and percentages. Qualitative data analysis was used to discuss the perceptions of people who answered open-ended questions and focus group discussion. According to Powell, 1991 content analysis is the method which consists of establishing a number of different content categories and counting up the number of times items relevant to each of them occurs in a particular set of data. Content analysis is systematic, objective, quantitative analysis of the occurrences of words, phrases and concepts so as to analyze the expressed content that is the inferences of communication. The Microsoft excel was used to analyze data.

(i) Ethical Issues

Ethics has been defined as that branch of philosophy which deals with one's conduct and serves as a guide to one's behavior (Mugenda 2003:190). Ethical issues are likely be of importance throughout the research and required integrity from the researcher .Ethical issues start from the research design, and data collection, data processing and storage, data analysis and reporting(Saunders 2009:pp187-199).In this stage respondent is given room to decide if he/she has a consent to participate in the research, his/her rights. Ethical issue provides confident to the respondent to participate in research without any fear hence produces a good research report. Ethical issue guarantees confidence to the respondent and the researcher were able to explain and ensure those respondents that the information given will be confidential and for the academic purpose and the researcher is expecting to adhere to the principles of the ethics of research so that they may meet all the qualifications.

1.4 Community Needs Assessment Findings

The community had a lot of challenge and some have been taken for the implementation

of the project. The findings were presented in the way of description, figures and charts. The findings were obtained after involving different stakeholders using the prescribed methods of data collection trying to examine the community characteristic (sex, age, tribe, religion, education and family sizes), political and administrative, economic activities and cultural traditions. All this help the researcher to involve the community in the project

1.4.1 Community Characteristics

The community characteristic is very important in developing a project. It gives the researcher what kind of respondent is going to collaborate with. In this assessment, the researcher gathered information relating with gender, age, level of education and family size. This helps the respondent to be free from interference with those who are superior in economy, age, sex and education. Every group were treated separately with the basis of involving them full in mentioning their priority in the improving the project. The researcher used different technique to balance the discussion.

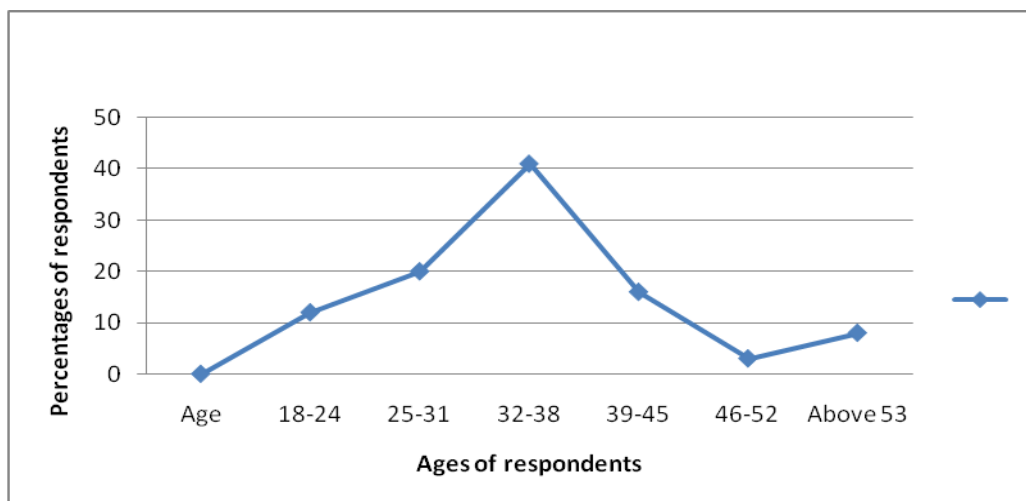


Figure 2: Age of Respondent.

Source: Field data 2011

The researcher asked the age of respondent and the findings indicates that the group is dominated by the people of aged 32-38years which is 41 percent followed by age of 25-

31years which is 20 percent. This means that the group has the man power which can make changes in the group if they put full commitment to the project.

Table 2: Respondent Levels of Education

Education level	Number of people	Percentage
Std seven	12	40
Form IV	6	20
Form VI	7	23
Vocational training	5	17
Diploma	-	-
University	-	-
Post graduate	-	-

Source: Research Findings 2011

The education level of the group members are varies and it provided the essence of selecting members of the group with the intention that even the people of primary education has their own view. If were mixed by elite there was a possibility of being dominated hence fail to contribute in the project. The findings indicate that 40 % (12) were standard seven and the rest 60 % includes different level of education as it shown in table 2 above.

The size of the family has impact in production. As economist Malthus stated, while the population is growing the production decreases which result to food shortage. The community has different number size of the family where most of respondents have 2-5 people which constitute 50% of the sample .Also there no family which have more than 13 member of the family. Poverty reduction in the community depend on the number of

the people and the production, it is possible to reduce poverty in the group since the spending might be minimal depending on the number of individual in the household.

Table 3: Respondent on Family Size

Size of family	No. Respondent	Percentage
2 People	4	13
2-5 People	15	50
5-9 People	10	33
10-13 People	1	4
Above 13 People	NIL	NIL

Source: Field Data 2011

1.4.2 Current Actions Taken to Meet the Most Community Need by the Organization

The current action taken is stabilize the Tupendane Nyuki group as a pressing need by the organization respondent, 55% would like to improve their project by adopting the modern new way of beekeeping rather than the old way of keeping bees. The use of new beehives will attract bees and plant tree along the area where the project is located which will increase the production of honey due to abundant pollen along the area where bees are kept which is necessary for honey production, 18% of the respondents said that, they need to improve the project by increasing membership to many people and improve the management of the project, 15% respondents said that they need to improve the project by every member shall contribute 2000/= a week to subsidies the project account, and 5% of the respondent need to increase the production by seeking advice from community

development officers. 7% respondents mention that capital generation in progress for horticulture where they can improve the capital of modernizing their project.

1.4.3 Respondents' Annual Income

According to respondent view, 40% respondents said that they earn less than 0.5m per year, 25% respondents their income was between 0.5m-0.8m/= per year, 15% earn between 0.8-1.2m/= and 20% respondent earn above 1.5m/=. The findings revealed that majority of the respondents annual income was very low in such a way that they cannot even satisfy their basic daily needs.

1.4.4 Main Sources of Cash Income

The study findings indicate that respondent had several sources of income to run their daily activities. 20% of the respondent income came from employment of which 10% came from the temporary jobs while the self employment or entrepreneurship covered 16% while agriculture had 60%, Village community Bank 12% and other income took 5% of the respondent

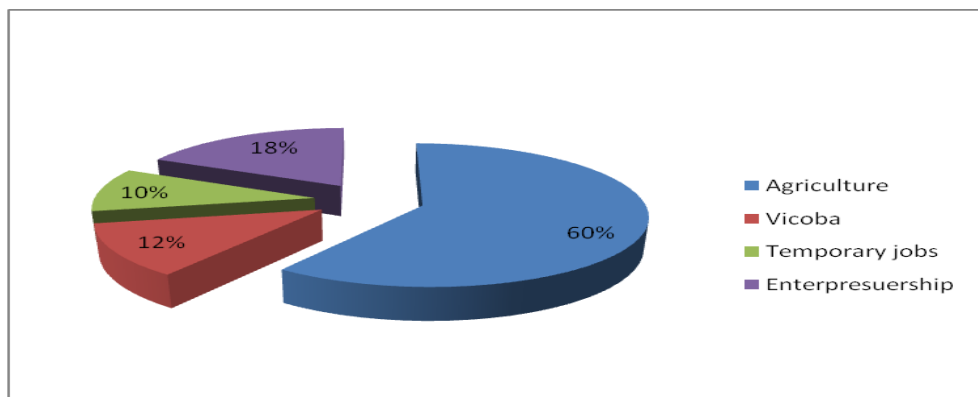


Figure 3: Employment Opportunities

Source: Field Data

1.4.5 Respondent Level of Satisfaction.

Household income depend on their daily needs and they were not satisfied following the inflation rate of about 19 November 2011 and the respondents were asked to state if their annual income satisfies their daily needs.(45%) respondents said that their cash income is very low and cannot satisfy their needs; respondent who are (25%) of all respondents reported that their cash income was at least adequate does not satisfies their daily needs, (30%) reported that their cash income was adequate and satisfies their daily needs but not for saving.

1.4.6 Main Cash Expenditures for Community

Respondents said they spent their income in home based expenditure such as schools, buying food security. The community spent more money in health which takes 65% of their expenditure i.e. buying food, hiring room and medication support, only 20% is used to support agriculture activities, only 15% is used for investment through investing in informal sector.

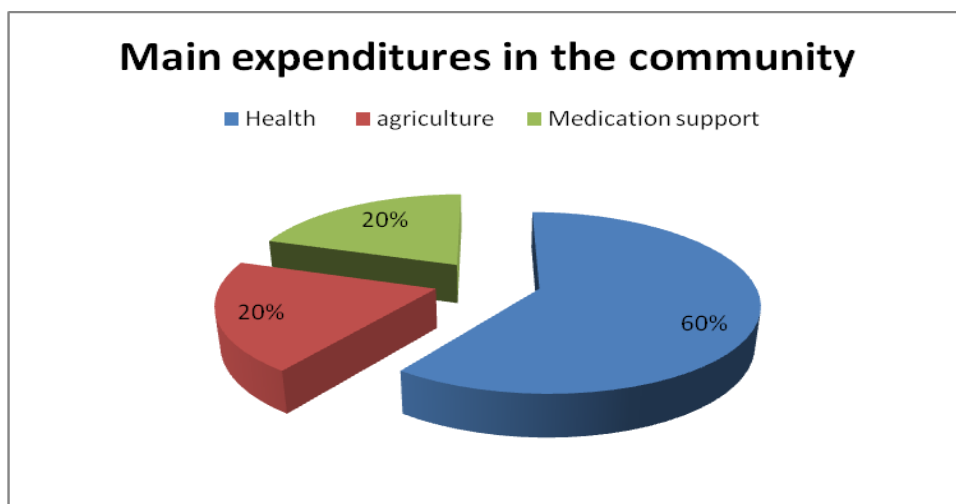


Figure 4: Expenditures

Source: Field Data 2011

1.4.7 Problem Encountered by Stakeholders in Providing Service to the Organization

There are several problems the stakeholders do encounter in the provision of services they include low attendance, lack of awareness to the group on how to keep bees in a modern way and to determine the favorable environment for bees to nurture. The study findings indicate that the entire stakeholder encounters when providing services in community. Major problems encountered were lack of awareness 80% and low attendance by 70%, most of time they spent searching for money.

1.4.8 Involvement of the Community in the Project

The group/community have involved by in the community assessment through participatory rural appraisal. The group have involved in project initiation by selecting the group leaders i.e. chairperson, secretary and treasurer. The community also was involved in initiation of projects and underpinning the strategies which will help the project to meet its objectives. The community agreed to plant trees along the project site where bees will be able to collect pollen necessary for honey production. The findings indicates that (75%) said that the facilitator was involved in problem identification, (10%) said that they have been involved in Project implementation and (15%) was involved in project monitoring and evaluation others said they are customers of the project

1.4.9 Strategies that should be Taken to Meet Community Needs

Respondents (stakeholders and community members) were also asked to provide their opinion on what should be done in the community. (50%) of the respondents said that the community should be involved in capacity building, (17%) pointed out to involve them in resource identification and mobilization needs, implementation, monitoring and evaluation of the project, (33%) pointed out to promote afforestation so that they can improve and increase honey production and bee wax as well as environment conservation

Table 4: Shows How Priority Have Been Done and Ranked by the Community Pair Wise Ranking

	Inadequate of education	Inadequate of modern beehive	Inadequate of networking	Inadequate of storage facilities	Inadequate knowledge in a forest ration	MARKS	POSITION
Inadequate of education		Inadequate of education	Inadequate of education	Inadequate of education	Inadequate of education	5	1
Inadequate of modern beehives			Inadequate of modern beehives	Inadequate of modern beehives	Inadequate of modern beehives	4	2
Inadequate of networking in marketing				No enough knowledge in beekeeping	Lack of networking	3	3
Inadequate of storage facilities					Lack of storage facilities	1	5
Inadequate of knowledge in a forestation						Lack of knowledge in a forestation	6

Source: Participatory Survey, 2011

1.5 Community Prioritization

In the cause of discussion the community /Tupendane Nyuki group arrived at the following priorities for their project to be health and viable organization. The *prioritisation was ranked using pair wise ranking*

In the cause of discussion the community of Tupendane Nyuki group arrived at the following results for the project to be productive. The result *was ranked using pair wise ranking as follows in Table 5.*

Table 5. Pair Wise Ranking

S/N	Problem	Score	Position
1	Inadequate of education in beekeeping	8	1
2	Inadequate of modern beehives equipment	5	2
3	Inadequate of network market	3	4
4	Inadequate of storage facilities	2	5
5	Afforest ration and cultivating sunflower	4	3

Source: Participatory Survey, 2010

1.6 Conclusion

The chapter provides background information of the project; the chapter also explains the community needs assessment, objectives behind CNA, research methodology used , research design, sampling techniques, data collection methods, data analysis methods, findings collected from the field and how the community come up with the problem facing by using pair wise ranking method. These problems include;

Inadequate education in beekeeping, Inadequate of modern beehives equipment, Inadequate network concerning market, Inadequate of storage facilities and The group has no enough area for planting trees[a forestation] and cultivating sunflower for pollination Based on identified problems during community need assessment, the community in selected area was real involved. Therefore community intervention on problem is of inadequate of education relating to beekeeping which results to poor honey and beeswax harvesting as the result of low income hence poverty

CHAPTER TWO

2.0 PROBLEM IDENTIFICATION

2.1 Background to the Research Problem

The chapter considered the results from the Community Needs Assessment. It provides changes within the project that have been projected. The problems identified were Inadequate of education in beekeeping, Inadequate of modern beehives equipment, Inadequate network concerning beekeeping, they do not have enough information of the market of the products which contributes to the poverty and they do not have own permanent premises for cultivating sunflower and a forestation. The chapter gives a direct documentation on how the community responded to the project activities and the responses of the project stakeholders and the way it will ensure its sustainability of the project. The community needs capacity building on beekeeping, its merits, and how they can make the project sustainable through the knowledge they got. Community member said that lack of proper knowledge on running this project they find to run the project without any benefits to the stakeholders. The problem has its root from education and asks people who have knowledge on beekeeping to help them to make the project sustainable.

2.2 Statement of the Problem

The Community Needs Assessment through PRA found that the key problem facing the organization is inadequate of education on beekeeping and how to make modern beehives (33%), inadequate of equipment (27%), inadequate of network and low conscious on how to keep bees in a modern way despite of opportunities (23%) and low knowledge on beekeeping (17%). In Kilindi district as it in Kisarawe village, the problem encounter is the use of traditional beehive and traditional harvesting methods. The group own only 5 traditional bee hives. The production of honey and beeswax is very minimal due to the use

of these methods. Kilindi district has about 15,000 beekeepers with 33,854 traditional beehives with minimal honey and beeswax production (Citizen 2011). So there is a need for conducting training on how to keep bees in a modern way to ensure the quality and quantity production in honey and beeswax. The problem is to determine if training deficiencies impede the development of project and to identify the training needs that may cater the need of the organization to develop. During this period the community were full involved in the determining the need of the community.

2.2.1 Problem Tree Analysis

From problem tree analysis findings indicates that the core problem was inadequate of education in bee keeping and quality control of bee's products during in the whole process of production. The root causes of the core problems arising from are Inadequate of modern beehives, Inadequate of storage facilities and equipments, Inadequate of networking in marketing of bee's products, Inadequate of land for afforestation to easy pollination process. The result of these root causes are poor quality of bee products, poor productivity, in access to financial institutions for loan and low income earnings to the project.

2.3 Project Description

The project is meant to serve the community members of Tupendane Nyuki Group of Kisarawe village in Kisarawe ward, Sungwi Division and Kisarawe district at large. The project is allocated at Pugu- Kazimzumbwi forest reserve along Pugu kajungeni to Kisarawe- Maneromango road meanwhile they finding their own permanent area for the project in Kisarawe district

2.3.1 Target Community

The first target group are 10 members of Tupendane Nyuki Group based at Kisarawe village. The project will be implemented by the host organisation of Tupendane Nyuki

Group, NANYATA group and others small-holder farmers interested with beekeeping, knowledge and willing to join it for practices. Beneficiaries are the small-holder farmers in the community who are interested in beekeeping and using honey and beeswax as well as others who will learn through the knowledge that will be disseminated. And group constitution is essential for good management during implementation.

2.3.2 Stakeholders Involved their Concerns and Expectation

This is the list of key players, groups and institutions that have a stake in the project, the below is the roles concerns and expectations of the stakeholders in the community to this project.

2.2.3 Project Goals in CED Terms

Capacity building on quality and quantity of honey and beeswax production: a case study of Tupendane nyuki group Kisarawe village, Kisarawe District

2.3.4 Project Objectives

To improve quality and quantity of honey beeswax production in the community.

Specific Objectives

1. To improve local beehives by replacing with modern to increase productivity
2. To increase income in the household level and create employment opportunities in the community
3. To reduce environmental degradation through afforestation

Table 6: Stakeholder Analysis

Stakeholders	Stakeholders role	Concern	Stakeholders expectations
District level	To recognize, support the efforts of small community based groups and their contribution to development	Allow flexibility in the economy	Deliver the expected results to meet the objectives
Community department	To involve in supporting development organizations to alleviate poverty Set the baseline for bylaws for the starting organization and operations in the community	Ready to help the efforts made by the organization and other development stakeholders	Work according to the set standards of operation within the community
Community measures	To be able to accept the initiative for development made by organizations and to be party of such efforts	Participate in the developmental activities	Get the required service according to the set standard.
Other Community based Organisations	To help the organization by providing the standard measures and support them materially and financially as well as skills necessary.	Lack of skills to for fund applications	Be able to apply and get support for development
Ward level	To help the organization on recognition and registration support of the local organization	Organization are scarce so they need to be supported	More organization to be established to meet the demand in the community

Source: Field Research 2011

2.4 The Host Organization Analysis

Current members of the group are ten [10] there some weakness found within the organization as technical and skills challenges and the following are risks of associated in working with such institution.

- a) Some may delay the commitment
- b) amount they saved based on a business plan and guarantee by other members of the group may not be enough to hand the whole process
- c) lack of security as it would be supported by collateral
- d) the habit of not repaying of the loan
- e) unexpected error
- f) unexpected threats such as death

2.4.1 SWOT Analysis

Strength	Weakness
The availability of committed organization members	Lack of good working environment is the weakness to the performance of the organization
Both men and women in the community are ready to join the organization	Lack of formal constitution and unclear legal status
Subscriptions given by the organization members	Lack of transparent within the organization Failure of organization members to contribute
Opportunities	Threats
The government concern to the health problems in the country	Political influence that might be against the policy and efforts of the government.
Government efforts towards community safety	Lack of reliable information to these groups threatens the efforts of the organization.
Availability of donors	Lack of knowledge on the financial management skills

Source: Field Research 2011

CHAPTER THREE

3.0 LITERATURE REVIEW

3.1 Introduction

Chapter reviews the literature which is centered into the honey production with the particular emphasize on the quality increase. The documents review includes books, national and international policy, various texts found on the websites and journals.

3.2 Theoretical Literature Review

The theoretical literature covers concepts on the quality production of honey and bee keeping in Tanzania and other places and its positive and negative implications to the human life in relation to the income of the household within the community.

3.2.1 The Concept 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.

Although most people associate beekeeping exclusively with the collection of honey, there are many other ways modern beekeepers can earn an income from their colonies. For example, beeswax is often used to make candles and cosmetics. Royal jelly, a substance secreted from the hypo pharyngeal glands of young worker bees, is a popular dietary supplement. Propolis, a resinous substance honey bees use to seal cracks in the hive, is used in alternative medicine, acupuncture, and homeopathy. Many commercial beekeeping

operations also offer a crop pollination service that provides a significant portion of their annual income (Kihwele 2001).

The place where a beekeeper keeps his bees is called an apiary or a bee yard. The bee colony is kept inside a hive that is made from a series of wooden boxes and frames that hold wax sheets for the bees to use as a starting point when building honey comb the top box contains honey, while the bottom box is used to hold the queen bee and most of the worker bees

3.2.2 Honey Production

Honey is a sweet food made by bees using nectar from flowers. The variety produced by honey bees (the genus *Apis*) is the one most commonly referred to and is the type of honey collected by beekeepers and consumed by humans (Kihwele 2001). Honey produced by other bees and insects has distinctly different properties.

Honey bees transform nectar into honey by a process of regurgitation, and store it as a primary food source in wax honeycombs inside the beehive. Beekeeping practices encourage overproduction of honey so the excess can be taken from the colony. Honey gets its sweetness from the monosaccharide fructose and glucose, and has approximately the same relative sweetness as that of sugar it has attractive chemical properties for baking, and a distinctive flavor that leads some people to prefer it over sugar and other sweeteners (Nyali 1993). Most microorganisms do not grow in honey because of its low water activity of 0.6. However, honey sometimes contains dormant endospores of the bacterium *Clostridium botulinum*, which can be dangerous to infants, as the endospores can transform into toxin-producing bacteria in the infant's immature intestinal tract, leading to illness and even death

Honey has a long history of human consumption, and is used in various foods and beverages as a sweetener and flavoring. It also has a role in religion and symbolism. Flavors of honey vary based on the nectar source, and various types and grades of honey are available (Nyali 1993).. It is also used in various medicinal traditions to treat ailments. The study of pollens and spores in raw honey (melissopalynology) can determine floral sources of honey because bees carry an electrostatic charge, and can attract other particles, the same techniques of melissopalynology can be used in area environmental studies of radioactive particles, dust or particulate pollution.

3.2.3 Formation

Honey is produced by bees as a food source. In cold weather or by contriving for bee swarms to nest in artificial hives, people have been able to semi domesticate the insects, and harvest excess honey. In the hive (or in a wild nest), there are three types of bees in a hive:

- a) 20,000 to 40,000 a single female queen bee
- b) a seasonally variable number of male drone bees to fertilize new queens
- c) Some female worker bees.

The worker bees raise larvae and collect the nectar that will become honey in the hive. Leaving the hive, they collect sugar-rich flower nectar and return.

In the hive, the bees use their "honey stomachs" to ingest and regurgitate the nectar a number of times until it is partially digested. The bees work together as a group with the regurgitation and digestion until the product reaches a desired quality. It is then stored in honeycomb cells. After the final regurgitation, the honeycomb is left unsealed. However, the nectar is still high in both water content and natural yeasts, which, unchecked, would cause the sugars in the nectar to ferment (Kumar 1996). The process continues as bees

inside the hive fan their wings, creating a strong draft across the honeycomb, which enhances evaporation of much of the water from the nectar. This reduction in water content raises the sugar concentration and prevents fermentation. Ripe honey, as removed from the hive by a beekeeper, has a long shelf life, and will not ferment if properly sealed.

3.2.4 Physical Properties

The physical properties of honey vary, depending on water content, the type of flora used to produce it, temperature, and the proportion of the specific sugars it contains. Fresh honey is a supersaturated liquid, containing more sugar than the water can typically dissolve at ambient temperatures (Kumar 1996). At room temperature, honey is a super cooled liquid, in which the glucose will precipitate into solid granules. This forms a semisolid solution of precipitated sugars in a solution of sugars and other ingredients.

The melting point of crystallized honey is between 40 and 50 °C (104 and 122 °F), depending on its composition. Below this temperature, honey can be either in a metastable state, meaning that it will not crystallize until a seed crystal is added, or, more often, it is in a "labile" state, being saturated with enough sugars to crystallize spontaneously. The rate of crystallization is affected by the ratio of the main sugars, fructose to glucose, as well as the dextrin content. Temperature also affects the rate of crystallization, which is fastest between 13 and 17 °C (55 and 63 °F). Below 5 °C, the honey will not crystallize and, thus, the original texture and flavor can be preserved indefinitely.

Since honey normally exists below its melting point, it is a super cooled liquid. At very low temperatures, honey will not freeze solid. Instead, as the temperatures become colder, the viscosity of honey increases. Like most viscous liquids, the honey will become thick and sluggish with decreasing temperature (Bland 1978). While appearing or even feeling

solid, it will continue to flow at very slow rates. Honey has a glass transition between -42 and -51 °C (-44 and -60 °F). Below this temperature, honey enters a glassy state and will become an amorphous solid (no crystalline).

The viscosity of honey is affected greatly by both temperature and water content. The higher the humidity, the easier honey will flow. Above its melting point, however, water has little effect on viscosity. Aside from water content, the composition of honey also has little effect on viscosity, with the exception of a few types. At 25 °C (77 °F), honey with 14% humidity will generally have a viscosity of around 400 poise, while a honey containing 20% humidity will have a viscosity of around 20 poise. Viscosity increase due to temperature occurs very slowly at first (Anita 1996). A honey containing 16% humidity, at 70 °C (158 °F), will have a viscosity of around 2 poise, while at 30 °C (86 °F), the viscosity will be around 70 poise. As cooling progresses, honey will become more viscous at an increasingly rapid rate, reaching 600 poise around 14 °C (57 °F). However, while honey is very viscous, it has rather low surface tension.

A few types of honey have unusual viscous properties. Honey from heather or manuka display thixotropic properties. These types of honey enter a gel-like state when motionless, but then liquify when stirred.

Unlike many other liquids, honey has very poor thermal conductivity. Melting crystallized honey can easily result in localized caramelization if the heat source is too hot, or if it is not evenly distributed (Anita 1996). However, honey will take substantially longer to liquify when just above the melting point than it will at elevated temperatures.

Since honey contains electrolytes, in the form of acids and minerals, it exhibits varying degrees of electrical conductivity. Measurements of the electrical conductivity are used to

determine the quality of honey in terms of ash content. The effect honey has on light is useful for determining the type and quality. Variations in the water content alter the refractive index of honey. Water content can easily be measured with a refractometer. Typically, the refractive index for honey will range from 1.504 at 13% humidity, to 1.474 at 25% (Anita 1996).. Honey also has an effect on polarized light, in that it will rotate the polarization plane. The fructose will give a negative rotation, while the glucose will give a positive one. The overall rotation can be used to measure the ratio of the mixture.

Honey has the ability to absorb moisture directly from the air, a phenomenon called hygroscopy. The amount of water the honey will absorb is dependent on the relative humidity of the air (Brad bear 1991). This hygroscopic nature requires that honey be stored in sealed containers to prevent fermentation. Honey will tend to absorb more water in this manner than the individual sugars would allow on their own, which may be due to other ingredients it contains.

3.2.5 In History, Culture, and Folklore

Honey use and production has a long and varied history. In many cultures, honey has associations that go beyond its use as a food. Honey is frequently used as a talisman and symbol of sweetness (Melnyk: 2006).

Ancient Times

Honey collection is an ancient activity. Humans apparently began hunting for honey at least 10,000 years ago, as evidenced by a cave painting in Valencia, Spain. The painting is a Mesolithic rock painting, showing two female honey-hunters collecting honey and honeycomb from a wild bee nest. The two women are depicted in the nude, carrying baskets, and using a long, wobbly ladder to reach the wild nest.

In ancient Egypt, honey was used to sweeten cakes and biscuits, and was used in many other dishes. Ancient Egyptian and Middle Eastern peoples also used honey for embalming the dead. Pliny the Elder devotes considerable space in his book *Naturalis Historia* to the bee and honey, and its many uses. The fertility god of Egypt, Min, was offered honey. The art of beekeeping in ancient China has existed since time immemorial and appears to be untraceable to its origin. In the book "Golden Rules of Business Success" written by Fan Li (or Tao Zhu Gong) during the Spring and Autumn Period, there are some parts mentioning the art of beekeeping and the importance of the quality of the wooden box for bee keeping that can affect the quality of its honey.

Honey was also cultivated in ancient Mesoamerica. The Maya used honey from the stingless bee for culinary purposes, and continue to do so today. The Maya also regard the bee as sacred. Some cultures believed honey had many practical health uses. It was used as an ointment for rashes and burns, and to help soothe sore throats when no other practices were available.

Religious Significance

In Hinduism, honey (Madhu) is one of the five elixirs of immortality (Panchamrita). In temples, honey is poured over the deities in a ritual called Madhu abhisheka. The Vedas and other ancient literature mention the use of honey as a great medicinal and health food. In Jewish tradition, honey is a symbol for the New Year, Rosh Hashanah. At the traditional meal for that holiday, apple slices are dipped in honey and eaten to bring a sweet new year. Some Rosh Hashanah greetings show honey and an apple, symbolizing the feast. In some congregations, small straws of honey are given out to usher in the New Year.

The Hebrew Bible contains many references to honey. In the Book of Judges, Samson found a swarm of bees and honey in the carcass of a lion (14:8). The Book of Exodus famously describes the Promised Land as a "land flowing with milk and honey" (33:3). However, the claim has been advanced that the original Hebrew (דבש *devash*) actually refers to the sweet syrup produced from the juice of dates. Pure honey is considered kosher even though it is produced by a flying insect, a nonkosher creature; other products of nonkosher animals are not kosher.

In Buddhism, honey plays an important role in the festival of Madhu Purnima, celebrated in India and Bangladesh. The day commemorates Buddha's making peace among his disciples by retreating into the wilderness. The legend has it that while he was there, a monkey brought him honey to eat. On Madhu Purnima, Buddhists remember this act by giving honey to monks. The monkey's gift is frequently depicted in Buddhist art.

In the Christian New Testament, Matthew 3:4, John the Baptist is said to have lived for a long period of time in the wilderness on a diet consisting of locusts and wild honey. In Islam, there is an entire Surah in the Qur'an called al-Nahl (the Honey Bee). According to hadith, Prophet Muhammad strongly recommended honey for healing purposes. The Qur'an promotes honey as a nutritious and healthy food. Below is the English translation of those specific verse And your Lord inspired the bee(s), saying: "Take your habitations in the mountains and in the trees and in what they erect. (68) Then, eat of all fruits, and follow the ways of your Lord made easy (for you)." There comes forth from their bellies, a drink of varying color wherein is healing for mankind. Verily, in this is indeed a sign for people who think.

In Western Culture

The word "honey", along with variations like "honey bun" and the abbreviation "hon", has become a term of endearment in most of the English-speaking world. In some places it is used for loved ones; in others, such as Australia and the Southern United States, it is used when addressing casual acquaintances or even strangers.



Figure 5: Honey Dipper

In many children's books, bears are depicted as eating honey (e.g., Winnie the Pooh), though most bears actually eat a wide variety of foods, and bears seen at beehives are usually more interested in bee larvae than honey.¹ In some European languages, even the word for bear (e.g. in Russian медведь *medvéd*, in Belarusian мядзведзь, in Ukrainian ведмідь, in Polish s. *niedźwiedź*, in Czech *medvěd*, in Serbian медвед *medved*, in Bosnian *medvjed* in Croatian *medvjed/meded* and in Hungarian *medve*) is coined from the noun meaning honey and the verb meaning to eat, thus "honey eater." Honey is sometimes sold in bear-shaped jars or squeeze bottles.

3.2.5.4 Collecting Honey

Honey is collected from wild bee colonies, or from domesticated beehives. Wild bee nests are sometimes located by following a honey guide bird. Collecting honey is typically achieved by using smoke from a bee smoker to pacify the bees; this causes the bees to attempt to save the resources of the hive from a possible forest fire, and makes them far less aggressive. The honeycomb is removed from the hive and the honey is extracted from that, often using a honey extractor. The honey is then filtered.

3.2.5.5 The Uses of Honey

(i) Food and in Cooking

The main uses of honey are in cooking, baking, as a spread on bread, and as an addition to various beverages, such as tea, and as a sweetener in some commercial beverages. According to the The National Honey Board (a USDA-overseen organization), "honey stipulates a pure product that does not allow for the addition of any other substance this includes, but is not limited to, water or other sweeteners". Honey barbecue and honey mustard are common and popular sauce flavors.

Honey is the main ingredient in the alcoholic beverage mead, which is also known as "honey wine" or "honey beer". Historically, the ferment for mead was honey's naturally occurring yeast. Honey is also used as an adjunct in some beers. Honey wine, or mead, is typically (modern era) made with a honey and water mixture with a pack of yeast added for fermentation. Primary fermentation usually takes 40 days, after which the must needs to be racked into a secondary fermentation vessel and left to sit about 35–40 more days. If done properly, fermentation will be finished by this point (though if a sparkling mead is desired, fermentation can be restarted after bottling by the addition of a small amount of sugar), but most meads require aging for 6–9 months or more in order to be palatable.

Table 7: Nutrition Status of Honey

Nutritional value per 100g		
	Energy	1,272kj(304kcal)
	Carbohydrate	82.4g
	Sugar	82.12g
	Dietary fiber	0.2g
	Fat	0g

Source: USDA Nutrient Database

Honey is a mixture of sugars and other compounds. With respect to carbohydrates, honey is mainly fructose (about 38.5%) and glucose (about 31.0%), making it similar to the synthetically produced inverted sugar syrup, which is approximately 48% fructose, 47% glucose, and 5% sucrose. Honey's remaining carbohydrates include maltose, sucrose, and other complex carbohydrates. As with all nutritive sweeteners, honey is mostly sugars and contains only trace amounts of vitamins or minerals (Bray Book 1991). Honey also contains tiny amounts of several compounds thought to function as antioxidants, including chrysin, pinobanksin, vitamin C, catalase, and pinocembrin. The specific composition of any batch of honey depends on the flowers available to the bees that produced the honey.

Typical honey analysis: Fructose: 38.2%, Glucose: 31.3%, Maltose: 7.1%, Sucrose: 1.3%, Water: 17.2%, Higher sugars: 1.5%, Ash: 0.2%, Other/undetermined: 3.2% Its glycolic index ranges from 31 to 78, depending on the variety. Honey has a density of about 1.36 kilograms per litre (36% denser than water). Isotope ratio mass spectrometry can be used to detect addition of corn syrup or sugar cane sugars by the carbon isotopic signature. Addition of sugars originating from corn or sugar cane (C4 plants, unlike the plants used by bees, which are predominantly C3 plants) skews the isotopic ratio of sugars present in

honey, but does not influence the isotopic ratio of proteins; in an unadulterated honey, the carbon isotopic ratios of sugars and proteins should match. As low as 7% level of addition can be detected.

(ii) Nutrition Classification

Honey is classified by its floral source, and there are also divisions according to the packaging and processing used. There are also regional honeys. Honey is also graded on its color and optical density by USDA standards, graded on a scale called the Pfund scale, which ranges from 0 for "water white" honey to more than 114 for "dark amber" honey (Bethel 1988).

(iii) Floral Source

Generally, honey is classified by the floral source of the nectar from which it was made. Honeys can be from specific types of flower nectars, from indeterminate origin, or can be blended after collection (el- band 1988).

(iv) Blended

Most commercially available honey is blended, meaning it is a mixture of two or more honeys differing in Polyclonal. Polyclonal honey, also known as wildflower honey, is derived from the nectar of many types of flowers. The taste may vary from year to year, and the aroma and the flavor can be more or less intense, depending on which blooming is prevalent. To produce monoclonal honey, beekeepers keep beehives in an area where the bees have access to only one type of flower. In practice, because of the difficulties in containing bees, a small proportion of any honey will be from additional nectar from other flower types

(v) Monoclonal

Monofloral honey is made primarily from the nectar of one type of flower. Different monofloral honeys have a distinctive flavor and color because of differences between their principal nectar sources. To produce monofloral honey, beekeepers keep beehives in an area where the bees have access to only one type of flower. In practice, because of the difficulties in containing bees, a small proportion of any honey will be from additional nectar from other flower types. Typical examples of North American monofloral honeys are clover, orange blossom, blueberry, sage, tupelo, buckwheat, fireweed, and sourwood. Some typical European examples include thyme, thistle, heather, acacia, dandelion, sunflower, honeysuckle, and varieties from lime and chestnut trees. In North Africa (e.g. Egypt) examples include clover, cotton, and citrus (mainly orange blossoms).

(vi) Honeydew Honey

Instead of taking nectar, bees can take honeydew, the sweet secretions of aphids or other floral source, color, flavor, density or geographic origin. plant sap-sucking insects. Honeydew honey is very dark brown in color, with a rich fragrance of stewed fruit or fig jam, and is not as sweet as nectar honeys.¹ Germany's Black Forest is a well known source of honeydew-based honeys, as well as some regions in Bulgaria and Northern California in the United States. In Greece, pine honey (a type of honeydew honey) constitutes 60–65% of the annual honey production. Honeydew honey is popular in some areas, but in other areas beekeepers have difficulty selling the stronger flavored product.

The production of honeydew honey has some complications and dangers. The honey has a much larger proportion of indigestible than light floral honeys, thus causing dysentery to the bees, resulting in the death of colonies in areas with cold winters. Good beekeeping management requires the removal of honeydew prior to winter in colder areas. Bees

collecting this resource also have to be fed protein supplements, as honeydew lacks the protein-rich pollen accompaniment gathered from flowers.

(vii) Classification by Packaging and Processing

Generally, honey is bottled in its familiar liquid form. However, honey is sold in other forms, and can be subjected to a variety of processing methods. A variety of honey flavors and container sizes and styles from the 2008 Texas State Fair

Crystallized honey is honey in which some of the glucose content has spontaneously crystallized from solution as the monohydrate. Also called "granulated honey." Honey that has crystallized over time (or commercially purchased crystallized) in the home can be returned to a liquid state if stirred in a container sitting in warm water at 120 °F (approx 49 °C).

Pasteurized honey is honey that has been heated in a pasteurization process (161 °F (71.7 °C) or higher). Pasteurization destroys yeast cells. It also liquefies any microcrystal in the honey, which delays the onset of visible crystallization. However, excessive heat exposure also results in product deterioration, as it increases the level of hydroxymethylfurfural (HMF) and reduces enzyme (e.g. diastase) activity. Heat also affects appearance (darkens the natural honey color), taste, and fragrance.

Raw honey is honey as it exists in the beehive or as obtained by extraction, settling or straining, without adding heat (although some honey that has been "minimally processed" is often labeled as raw honey). Raw honey contains some pollen and may contain small particles of wax. Local raw honey is sought after by allergy sufferers as the pollen impurities are thought to lessen the sensitivity to hay fever

Strained honey has been passed through a mesh material to remove particulate material (pieces of wax, propolis, and other defects) without removing pollen, minerals or enzymes.

Filtered honey is honey of any type that has been filtered to the extent that all or most of the fine particles, pollen grains, air bubbles, or other materials normally found in suspension, have been removed. The process typically heats honey to 150–170 °F (approx. 65–77 °C) to more easily pass through the filter. Filtered honey is very clear and will not crystallize as quickly, making it preferred by the supermarket trade.

Ultrasonic Ted honey has been processed by ultrasonication, a nonthermal processing alternative for honey. When honey is exposed to ultrasonication, most of the yeast cells are destroyed. Those cells that survive sanitation generally lose their ability to grow, which reduces the rate of honey fermentation substantially. Ultrasonication also eliminates existing crystals and inhibits further crystallization in honey. Ultrasonically aided liquefaction can work at substantially lower temperatures of approximately 95 °F (35 °C) and can reduce liquefaction time to less than 30 seconds.

Whipped honey, also called creamed honey, spun honey, churned honey, candied honey, honey fondant, and set honey (in the UK), has been processed to control crystallization. Whipped honey contains a large number of small crystals in the honey. The small crystals prevent the formation of larger crystals that can occur in unprocessed honey. The processing also produces a honey with a smooth, spreadable consistency. Dried honey has the moisture extracted from liquid honey to create completely solid, nonsticky granules. This process may or may not include the use of drying and anticaking agents. Dried honey is commonly used to garnish desserts.

Comb honey is honey still in the honeybees' wax comb. It traditionally is collected by using standard wooden frames in honey supers. The frames are collected and the comb is cut out in chunks before packaging. As an alternative to this labor intensive method, plastic rings or cartridges can be used that do not require manual cutting of the comb, and speed packaging. Comb honey harvested in the traditional manner is also referred to as "cut-comb honey". In India, honey is harvested from forests in bee's natural habitat. It is said that honey will be consumed by the bees on the new moon day, so it is cultivated the day before. Chunk honey is packed in wide mouth containers consisting of one or more pieces of comb honey immersed in extracted liquid honey.

(viii) Preservation

Because of its unique composition and chemical properties, honey is suitable for long-term storage, and is easily assimilated even after long preservation. Honeys, and objects immersed in honey, have been preserved for decades and even centuries. The key to preservation is limiting access to humidity. In its cured state, honey has a sufficiently high sugar content to inhibit fermentation. If exposed to moist air, its hydrophilic properties will pull moisture into the honey, eventually diluting it to the point that fermentation can begin. Honey sealed in honeycomb cells by the bees is considered by many people in the community to be the ideal form for preservation.

Honey should also be protected from oxidation and temperature degradation. It generally should not be preserved in metal containers because the acids in the honey may promote oxidation of the vessel. Traditionally, honey was stored in ceramic or wooden containers; however, glass and plastic are now the favored materials. Honey stored in wooden containers may be discolored or take on flavors imparted from the vessel. Likewise, honey stored uncovered near other foods may absorb other smells.

Excessive heat can have detrimental effects on the nutritional value of honey. Heating up to 37 °C (98.6 °F) causes loss of nearly 200 components, some of which are antibacterial. Heating up to 40 °C (104 °F) destroys invertase, an important enzyme. At 50 °C (122 °F), the honey sugars caramelize. Generally, any large temperature fluctuation causes decay. Regardless of preservation, honey may crystallize over time. Crystallization does not affect the flavor, quality or nutritional content of the honey, though it does affect color and texture. The rate is a function of storage temperature, availability of "seed" crystals and the specific mix of sugars and trace compounds in the honey. Tupelo and acacia honeys, for example, are exceptionally slow to crystallize, while goldenrod will often crystallize still in the comb. Most honeys crystallize fastest between about 50 and 70 °F (10 and 21 °C). The crystals can be dissolved by heating the honey.

(ix) Distinguishing Honey

Honey Grading

In the US, honey grading is performed voluntarily (USDA does offer inspection and grading "as on-line (in-plant) or lot inspection...upon application, on a fee-for-service basis.") based upon USDA standards. Honey is graded based upon a number of factors, including water content, flavor and aroma, absence of defects and clarity. Honey is also classified by color though it is not a factor in the grading scale. The honey grade scale is:

Other countries may have differing standards on the grading of honey. India, for example, certifies honey grades based on additional factors, such as the Fiehe's test, and other empirical measurements.

Table 8: Honey Grading

Grade	Water content	Flavor and aroma	Absence of defects	Clarity
A	< 18.6%	Good—has a good, normal flavor and aroma for the predominant floral source and is free from caramelization, smoke, fermentation, chemicals and other odor causes	Practically free—practically no defects that affect appearance or edibility	Clear—may contain air bubbles that do not materially affect the appearance; may contain a trace of pollen grains or other finely divided particles of suspended material that do not affect appearance
B	< 18.6%	Reasonably good—practically free from caramelization; free from smoke, fermentation, chemicals, and other causes	Reasonably free—do not materially affect appearance or edibility	Reasonably clear—may contain air bubbles, pollen grains, or other finely divided particles of suspended material that do not materially affect appearance
C	< 20.0%	Fairly good—reasonably free from caramelization; free from smoke, fermentation, chemicals, and other causes	Fairly free—do not seriously affect the appearance or edibility	Fairly clear—may contain air bubbles, pollen grains, or other finely divided particles of suspended material that do not seriously affect appearance
Substandard	> 20.0%	Fails Grade C	Fails Grade C	Fails Grade C

Source: USDA Nutrient Database.

(x) Indicators of Quality

High-quality honey can be distinguished by fragrance, taste, and consistency. Ripe, freshly collected, high-quality honey at 20 °C (68 °F) should flow from a knife in a straight stream, without breaking into separate drops. After falling down, the honey should form a bead. The honey, when poured, should form small, temporary layers that disappear fairly quickly, indicating high viscosity. If not, it indicates excessive water content (over 20%) of the product. Honey with excessive water content is not suitable for long-term preservation.

In jars, fresh honey should appear as a pure, consistent fluid, and should not set in layers. Within a few weeks to a few months of extraction, many varieties of honey crystallize into a cream-colored solid. Some varieties of honey, including tupelo, acacia, and sage, crystallize less regularly. Honey may be heated during bottling at temperatures of 40–49°C (104–120°F) to delay or inhibit crystallization. Overheating is indicated by change in enzyme levels, for instance, diastase activity, which can be determined with the Schade or the Phadebas methods. A fluffy film on the surface of the honey (like a white foam), or marble-colored or white-spotted crystallization on a containers sides, is formed by air bubbles trapped during the bottling process

A 2008 Italian study determined nuclear magnetic resonance spectroscopy can be used to distinguish between different honey types, and can be used to pinpoint the area where it was produced. Researchers were able to identify differences in acacia and polyfloral honeys by the differing proportions of fructose and sucrose, as well as differing levels of aromatic amino acids phenylalanine and tyrosine. This ability allows greater ease of selecting compatible stocks

(xi) Medicine

Historically, honey has been used by humans to treat a variety of ailments through topical application, but only recently have the antiseptic and antibacterial properties of honey been chemically explained. In Ayurveda, a 4000-year-old medicine originating from India, honey is considered to positively affect all three primitive material imbalances of the body. "*Vaatalam guru sheetam cha raktapittakaphapaham/ Sandhatru cchedanam ru ksham kashayam madhura madhu*/" "It has sweetness with added astringent as end taste. It is heavy, dry and cold. Its effect on *doshas* (imbalances) is that it aggravates *vata* (*air / moving forces*), scrapes *kapha* (*mucus / holding forces*) and normalizes *pitta* (*catabolic fire*) and *rakta* (*blood*). It promotes the healing process." Some wound gels which contain antibacterial raw honey and have regulatory approval are now available to help treat drug-resistant strains of bacteria (MRSA). One New Zealand researcher says a particular type of honey (Manuka honey) may be useful in treating MRSA infections.

As an antimicrobial agent honey may have the potential for treating a variety of ailments. Antibacterial properties of honey are the result of the low water activity causing osmosis, chelation of free Iron, its slow release of hydrogen peroxide, high acidity, and the antibacterial activity of methylglyoxal. Honey appears to be effective in killing drug-resistant biofilms which are implicated in chord

(xii) Osmotic Effect

Honey is primarily a saturated mixture of two monosaccharide, with a low water activity; most of the water molecules are associated with the sugars and few remain available for microorganisms, so it is a poor environment for their growth. If water is mixed with honey, it loses its low water activity, and therefore no longer possesses this antimicrobial property.

(xiii) Hydrogen Peroxide

Hydrogen peroxide is formed in a slow-release manner by the enzyme glucose oxidase present in honey. It becomes active only when honey is diluted, requires oxygen to be available for the reaction (thus it may not work under wound dressings, in wound cavities or in the gut), is active only when the acidity of honey is neutralized by body fluids, can be destroyed by the protein-digesting enzymes present in wound fluids, and is destroyed when honey is exposed to heat and light (Moorjani, 1996).

Honey chelates and deactivates free iron, which would otherwise catalyze the formation of oxygen free radicals from hydrogen peroxide, leading to inflammation. Also, the antioxidant constituents in honey help clean up oxygen free radicals present. $\text{C}_6\text{H}_{12}\text{O}_6 + \text{H}_2\text{O} + \text{O}_2 \rightarrow \text{C}_6\text{H}_{12}\text{O}_7 + \text{H}_2\text{O}_2$ (**glucose oxidase reaction**) When honey is used topically (as, for example, a wound dressing), hydrogen peroxide is produced by dilution of the honey with body fluids. As a result, hydrogen peroxide is released slowly and acts as an antiseptic. Nick rhino sinusitis.

(xiv) Use for Diabetic Ulcers

Topical honey has been used successfully in a comprehensive treatment of diabetic ulcers when the patient cannot use topical antibiotics.

(xv) Acidity

The PH of honey is commonly between 3.2 and 4.5. This relatively acidic PH level prevents the growth of many bacteria.

(xvi) Methylglyoxal

The non-peroxide antibiotic activity is due to methylglyoxal (MGO) and an unidentified synergistic component. Most honeys contain very low levels of MGO, but manuka honey

contains very high levels. The presence of the synergist in manuka honey more than doubles MGO antibacterial activity.

(xvii) Nutraceutical Effects

Antioxidants in honey have even been associated with reducing the damage done to the colon in colitis in a study involving administering honey enemas to rats. Such claims are consistent with its use in many traditions of folk medicine.

(xviii) Use for Sore Throats and Coughs

Honey has also been used for centuries as a treatment for sore throats and coughs and, according to recent research, may be an effective soothing agent for coughs (Bear 1998)

3.2.5.6 Other Medical Applications

Some studies suggest the topical use of honey may reduce odors, swelling, and scarring when used to treat wounds; it may also prevent the dressing from sticking to the healing wound. Honey has been shown to be an effective treatment for conjunctivitis in rats. Unfiltered, pasteurized honey is widely believed to alleviate allergies, though neither commercially filtered nor raw honey was shown to be more effective than placebo in a controlled study of 36 participants with ocular allergies. Nearly 1 in 3 of the volunteers dropped out of the study because they couldn't tolerate eating one tablespoon of honey every day due to the overly sweet taste (Anita 1996)..The official conclusion: "This study does not confirm the widely held belief that honey relieves the symptoms of allergic rhino conjunctivitis." A more recent study has shown pollen collected by bees to exert an antiallergenic effect, mediated by an inhibition of IgE immunoglobulin binding to mast cells. This inhibited mast cell deregulation and thus reduced allergic reaction. The risk of

experiencing anaphylaxis as an immune system reaction may outweigh any potential allergy relief.

A review in the Cochrane Library suggests honey could reduce the time it takes for a burn to heal — up to four days sooner in some cases. The review included 19 studies with 2,554 participants. Although the honey treatment healed moderate burns faster than traditional dressings did, the author recommends viewing the findings with caution, since a single researcher performed all of the burn studies.

(i) Health hazards Botulism

Because of the natural presence of outline endospores in honey,^l children under one year of age should not be given honey. The more-developed digestive system of older children and adults generally destroys the spores. Infants, however, can contract botulism from honey. Medical grade honey can be treated with gamma radiation to reduce the risk of outline spores being present. Gamma radiation evidently does not affect honey's antibacterial activity, whether or not the particular honey's antibacterial activity is dependent upon peroxide generation. Infantile botulism shows geographical variation. In the UK, only six cases have been reported between 1976 and 2006 yet the U.S. has much higher rates: 1.9 per 100,000 live births, 47.2% of which are in California.[\] While the risk honey poses to infant health is small, it is recommended not to take the risk

(ii) Toxic honey

Honey produced from flowers of oleanders, rhododendrons, mountain laurels, sheep laurel, and azaleas may cause honey intoxication. Symptoms include dizziness, weakness, excessive perspiration, nausea, and vomiting. Less commonly, low blood pressure, shock, heart rhythm irregularities, and convulsions may occur, with rare cases resulting in death.

Honey intoxication is more likely when using "natural" unprocessed honey and honey from farmers who may have a small number of hives. Commercial processing, with pooling of honey from numerous sources, claims it dilutes any toxins but these findings are not verifiable.

(iii) **Honey Handling Room**

Whether one super is being handled, or five thousand, the requirements of a honey room are the same. Above all is hygiene. Floors and surfaces should be washable and toilet and washing facilities available. Hot and cold running water are not imperative, but very helpful. Where honey is extracted only for consumption by family & friends and not sold, the odd bee wing or lump of wax is not a disaster, whereas honey for sale, if unsatisfactory in any way, can theoretically bring a visit from a Trading Standards officer to scrutinize every part of the operation. If keeping bees and wasps out is difficult, it may be worth considering a night shift, with supers being opened as foragers cease flying. After working through the night, all honey can be packed away, supers sealed and equipment washed before enough bees discover the feast.

3.3 Empirical Literature Review

The empirical literature review presents the experiences; approaches and lessons learned in community based on the production of honey and beeswax at local national and international level. The practical examples of different projects conducted in Tanzania and beekeeping of one type or another, hobbyist, sideline and commercial, is possible everywhere in Tanzania. But there are areas which are more susceptible of development than others. The beekeeping authorities have identified some Districts as major potential areas for honey and beeswax production at significant level. See the table below showing District productivity.

Table 9: Beekeeping Potential Areas (Honey Production Annually)

High producing districts			Medium producing districts			Un – exploited districts		
District	Potential (Tons)	Actual (Tons)	District	Potential (Tons)	Actual (Tons)	District	Potential (Tons)	Actual (Tons)
Kahama	4,000	500	Kondoa	3,000	300	Lindi	8,000	50
Mpanda	8,000	1,500	Kiteto	2,000	250	Songea	6,000	50
Sikonge	6,000	2,000	Babati	1200	150	Iringa	5000	40
Urambo	6,000	1,400	Kibondo	4000	250	Bihalamulo	4,000	15
Nzega South	4,000	400	Handeni	3,000	150	Kasulu	4,000	5
Tabora	5,000	1,200	Kigoma	3,000	100	Newala	4,000	15
Chunya	6,000	400	Arumeru	1,500	100	Tundulu	4,000	15
Manyoni	8,000	600	Rufiji	2,500	50	Singida	3,000	5
Bukombe	5,000	800	Nkasi	1,500	50	Hai	2,500	5
Total	52,000	7,800		21,700	1,400		40,000	180

Source; National Beekeeping Programme (2001-2010)

Income generation and financing of beekeeping, the available records in the Ministry of Natural Resources and Tourism the cost of producing one kg of honey is Tshs.62.57 and beeswax is Tshs.349.45. After adding 10% contingency costs and another 25% profit margin for the beekeepers, the price of honey and beeswax are Tshs.85.95 and Tshs.480.50 respectively. An actual price of honey and beeswax offered by beekeepers was Tshs.230 per kg of honey and Tshs. 700 per kg of beeswax. The local market prices in Tanzania today are ranging from Tshs. 8,000 up to 10,000 as per one kg of honey and Tshs.....as per one kg of beeswax. In 1982 the contribution of beekeeping to GDP stood at 0.3% from beeswax alone compared to 0.1% from forest product (Ministry of Natural Resources and Tourism 2001)

Table 10: Beeswax and Honey Exports

Year	Beeswax		Honey	
	Metric Tons	Value USD	Metric Tons	Value USD
1988 / 89	326	324070.0	20.5	14,727.0
1989 / 90	203	328,353.0	33.3	20,487.0
1990 / 91	234	378,495.0	38.0	23,591.0
1991 / 92	696	2,088,000.0	123.0	221,400.0
1992 / 93	569.5	1,522,739.0	32.0	31,216.0
1993 / 94	124	237,883.0	78.0	71,540.0
1994 / 95	120	371,625.0	19.0	25,837.0
1995 / 96	226	782,662.0	56.0	74,459.0
1996 / 97	326	1,359,843.6	310.5	370,094,20.0
1997 / 98	449	1,523,544.0	190.0	237,175.0
1998 / 99	403	1,440,678.0	39.0	35,533.0
1999 / 2000	462	1,863,387.0	135.0	148,808.0

Source; Tanzania Revenue Authority (March. 31. 2000)

3.3.1 The Quality Honey Production in Haiti

SHAS (Southern Haiti Apiary Society) is in the third section of the Aken Commune and started in March 2003. SAHS began with 9 members and today has 35 active members. The project has successful, Improved and modernize the honey production in all of the Aken Commune. It also has allowed the members to benefit from more honey production in searching for ways to improve production and look for ways to sell the syrup. The principle activity of the members is the honey production made in an artisan fashion where the producers use a hive made out of a palm tree (Anita 1996).. Unfortunately, during the flood period, producers lost many hives.

3.3.2 New Zealand

Toxic honey may also result when bees are proximate to tutu bushes (*Coriaria arborea*) and the vine hopper insect (*Scolypopa australis*). Both are found throughout New Zealand. Bees gather honeydew produced by the vine hopper insects feeding on the tutu plant. This introduces the poison tutin into honey. Only a few areas in New Zealand (Coromandel Peninsula, Eastern Bay of Plenty and the Marlborough Sound) frequently produce toxic honey. Symptoms of tutin poisoning include vomiting, delirium, giddiness, increased excitability, stupor, coma, and violent convulsions. To reduce the risk of tutin poisoning, humans should not eat honey taken from feral hives in the risk areas of New Zealand. Since December 2001, New Zealand beekeepers have been required to reduce the risk of producing toxic honey by closely monitoring tutu, vine hopper, and foraging conditions within 3 km of their apiary. In 2005, China, Argentina, Turkey and the United States were the top producers of natural honey, reports the Food and Agriculture Organization of the United Nations (FAO). Significant regional producers of honey include Turkey (ranked third worldwide) and Ukraine (ranked fifth worldwide).

Mexico is also an important producer of honey, providing about 10% of the world's supply. Much of this (about one-third) comes from the Yucatán Peninsula. Honey production began there when the *Apis mellifera* and the *A. mellifera ligustica* were introduced there early in the 20th century. Most of Mexico's Yucatán producers are small, family operations that use original traditional techniques, moving hives to take advantage of the various tropical and subtropical flowers. Honey is also one of the gourmet products of the French. Corsican honey is certified as to its origins as French wines,

3.3.3 The Honey Production in Uganda

In Uganda, according to the Ministry of Agriculture, Animal Industry and Fisheries; 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)¹. 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.

3.3.4 The Honey Production in Kenya

After realizing a shortage and very inconsistent supply of honey in Kenya, Ernest Simeoni decided in 2005 to venture into commercial honey production using the most modern equipment available globally. The road to successful commercial beekeeping has been challenging due to the fact that there had never been information or research regarding the industry in the region. It has been a learning process to understand amongst other things; the flowering seasons of the numerous nectar bearing flowers as well as regional honey flows. Having gathered information over the years Ernest has managed to set up commercial apiaries in several locations in the country. These have been set up in carefully selected sites across rural Kenya with local communities or in commercial orchards and agricultural plantations for pollinations purposes.

These projects in themselves have served and continue to serve as demonstration to local communities that bee keeping can be practiced as a viable commercial enterprise. After a series of trainings, local personnel are employed as caretakers of the apiaries at all sites. ABL staffs with the correct expertise and experience in turn manage the hives and harvest

honey. All visits by the ABL staff is documented with report forms filled in, recording the weather, flowering (by local names), the status of the bees and hives.

Since 2006, ABL has successfully operated 500 Langstroth bee hives in Kenya's renowned Masai Mara. The project sparked ideas with the local community who then showed interest in starting up their own bee keeping project in the recently established Enongishu Conservancy.

Following a series of consultation with the local community, Ernest managed to source some funding from the Ford Foundation and together with the founding member of Enongishu Conservancy – Tarquin Wood, a women's group was formed. The women's group uses a business acumen model specifically formulated to their needs; to become a member, one needs to buy a number of shares. ABL are engaged as the project managers and Onengishu conservancy provided the land to make a three pronged approach. All honey proceeds is paid directly into the group account and the money is shared to the members according to the individual shares at the end of the year. This beekeeping enterprise model for rural communities is in the process of being replicated to suit other regions so as to sustain the supply of good quality honey for and from Kenya.

3.3.5 The Experience of Tanzania

In Tanzania according to the National Beekeeping Programme, there are about 9.2 million honeybee colonies with a production potential of about 138,000 tons of honey and 9,200 tons 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. Recent estimates by Mwakatobe and Mlingwa (2005) show that beekeeping generates about US\$ 1.7 million each year from sale of honey and beeswax

and employs about 2 million rural people. Going by the country's honey and beeswax production potential, this annual income is far below average and undermines the role of beekeeping in socio-economic development especially for forest and woodland adjacent communities that continue to be trapped in poverty and environmental degradation.

Umba River in Lushoto, Tanzania. Farmers have been trained in the production of better quality honey. The project has mobilized farmers into groups and is in the process of developing a producer market value chain for honey. Farmers have been sensitized on beekeeping along water sources in order to conserve the fragile ecosystems. Deliberate campaigns to plant fruit and other useful tree species have been initiated. Selected tree species including *Calliandra* flower and remain green throughout the year providing nectar for bees as well as restoring degraded soils (NBKP 2001-2010).

Farmers have been trained to make beehives and, process and bulk honey. As a result of increased income from sale of honey and beehives, farmers have been motivated to engage in beekeeping and have established a beehive carpentry workshop. The project uses farmer groups as a governance model to guide modern beekeeping. Through farmer groups, the project has set up modern beehives along a degraded one kilometre strip of Umba River. Participating farmers have invested resources towards restoration of this portion of the river bank that had suffered excessive harvesting of trees, bushfires and uncontrolled crop cultivation. Bees in the colonized beehives now police and therefore prevent further degradation of the river bank.

Beekeeping was chosen as an alternative source of livelihoods replacing tree harvesting for income and crop cultivation that degrade the river banks. Farmer groups now harvest and sell honey and related products for household income part of which is reinvested into

NRM. The project facilitates farmer market access and value addition for honey and related products. At present, the farm gate price for one kg of honey ranges from US\$ 0.6 to US\$ 0.9. However, farmers have been linked to markets in Moshi, Arusha and Dar es Salaam where the price ranges from US\$ 1.0 to US\$ 2.5 per kg of honey. A visit of selected farmers to Bunyangabo Beekeepers Cooperation (BBC) in Kabarole district, Uganda is planned for October this year to enable them learn about honey value addition.

Modern beekeeping in this area has proved to satisfy socio economic demands and at the same time, restores and conserves the ecosystem's integrity. In other words, it is capable of improving livelihoods while conserving ecosystems and restoring degraded ones through regeneration of different plant species as illustrated in the picture below and therefore, a good candidate for scaling up and out in the region.

3.4 Policy Review

A policy is a plan action an organization has to follow in regard of the set activities to be accomplished. The policy has to specify the organization response to an identified problem within the community or organization. In Tanzania the National Beekeeping policy (NBKP) is an instrument designed to put the new beekeeping policy into practice, which was approved by the Government in 1998. The policy takes cognizance of macro-economic other sectoral policies such as Agriculture policy, forest policy, Land policy, wildlife policy, mineral policy and the like. The formulation of respective legislation and their operationalization will enhance sustainable beekeeping management mainly in the public lands and cross-sectarian areas. The beekeeping programme document was one of the important sources of information for beekeeping policy. Relevant issues concerning development of the beekeeping sector contain in the document of beekeeping programme which involved main stakeholders at village meetings and national workshops and their

contributions have been incorporated in the policy. Thus the government decided to write a separate beekeeping policy document to have a clear vision, mission and adequate coverage of beekeeping and beekeeping – based cross sectoral issues and policy statements which are basis for the formulation of a new beekeeping legislation which is the main legal instrument for implementing the policy.

The National Beekeeping Policy (NBKP) was developed to address beekeeping issues within the context of sustainable development, to promote the conservation and sustainable use of beekeeping resources to meet local, national and global needs through fostering national and international partnership to manage, protect and restore beekeeping resources.

The main objectives of the government are:-

- (i) Maintain sustainable supply of beekeeping products and services to meet the needs at local, national and global levels.
- (ii) Enhance national capacity to manage and develop the beekeeping sector in a collaborative manner.
- (iii) Enabling legal and regulatory framework for the sector in place and
- (iv) Increase economic contribution, employment and foreign exchange earnings through sustainable beekeeping based industry development and trade of bee products.

The National Beekeeping Programme (NBKP) has three implementation programmes, which focus on conservation and sustainable use of beekeeping resources as well as development of institutional and human resources. (i) Beekeeping Development Programme which aims at developing and managing the honeybees and bee fodder in the public lands, agriculture lands national parks, forest reserves and plantations as well as maximizing production and utilization of bee products. (ii) Legal and Regulatory Framework

Programme focuses on the development or establishment of legal mechanisms such as beekeeping Act, rules, regulations and guidelines to facilitate beekeeping operations including protection of bee habitat honeybee colonies and bee resources.(iii) Institutions and Human Resources Development Programme that aims at strengthening institution set up and improving coordination of beekeeping, establishing sustainable beekeeping sector funding, strengthening of human resources capacity and improving beekeeping research and extension services.(NBKP Nov 2001)

3.4.1 The National Strategy for Growth and Reduction of Poverty (NSGRP-2011)

The policy emphasizes the community to eradicate poverty through the investment in the local resources available. The second, new NSGRP/MKUKUTA will be implemented 2011-2015. NSGRP/MKUKUTA is committed to the Millennium Development Goals (MDGs) as internationally agreed targets for reducing poverty, hunger, diseases, illiteracy, environmental degradation and discrimination against women by 2015. The focus of NSGRP/MKUKUTA is outcome orientated and organized around three clusters: growth and reduction of income poverty, improved quality of life and social well-being, and governance and accountability. The former NSGRP/MKUKUTA was approved in February 2005 for implementation over five years and is the successor to the Poverty Reduction Strategy Paper.

Another important issue addressed in the MKUKUTA review was the poverty-population-environment nexus. Commissioned by the government to fill certain information gaps, EfD Tanzania provided two research studies on this issue. Among the finding is that, although the environment issues have been mainstreamed, the funding for environmental issues and the local investment has not been given enough attention.

CHAPTER FOUR

4.0 PROJECT IMPLEMENTATION

4.1 Introduction

The project implementations chapter explains the project products and outputs, project planning, staffing, budget and the implementations to the project.

4.2 The Project Products and Outputs

The following are expected products and outputs; these are targets which have been accomplished by the project.

- a) To increase the quality of honey and beeswax production by 75%
- b) Rise of the income of the group members from TZs. 0.5m-0.8m to TZs.1.5m per year.
- c) Formalization of the group by registration at the local level

4.3. Project Planning

The planning process was used to plan for the project activities whereby the community and stakeholders were involved. The planning has been summarized in tabular form indicating activity, time frame and responsible person who had to perform different activities of the project.

4.3.1 Train Needs Assessment

The group members have agreed to be trained on the following aspects:-

- What is bee keeping and how bees are captured
- How honey is processed and stored
- Training on entrepreneur skills
- Favorable botanical place for bee keeping and how bees are sited

Table 11: Project Logical Framework

Project Description	Performance indicators	Means of verification	Assumptions
Goals To train the organization members in proper bee keeping	100% of Tupendane Nyuki Group members participate in the training sessions	Trained at Kisarawe village hall/on good practice of beekeeping Training materials/reports.	Poor group members participation may lead to the project failure
Purpose Increase knowledge on the quality of bee keeping 98%	The increase number of group members who are dealing with the beekeeping	The increase of honey and beeswax production	Lack of commitment may ruin the group development
Outputs 1.Establish the group management team for beekeeping 2. By laws to govern the group were made	The group management team regarding the follow up were made of 10 group members	The acting of the group toward follow up of those indebted The commitment to the group activities as the result of the bylaws established	Lack of commitment may result into law breaking which can threaten the lifecycle of the group
Activities 1.Train Tupendane Nyuki Group on the concept of beekeeping	In puts Group members attendees list and training materials	Physical visit	Poor training may undermine the group performance
Registration of the group to the local level	Group members attendees list and minutes discussed	Physical visit	Beurocracy in registration may discourage group member
Formalization of the group and making the management team	Registration materials	Physical visit	Poor commitment may undermine the group performance

Source: Ngailo 2010:289

The methodologies used during training are as follows:-

- Simple lecture
- Brain storming/Question and answers
- Group discussion and presentation
- Field visit (observation)

4.3.2 Input Used

The CED student has to provide the financial resources; the human resource was from the group members, research assistants and the stakeholders.

4.3.3 The Staffing Process

Table 12: The Staffing Process

Staff	Program responsibility	Description
The project Supervisor	Supervision of the project	The head of the organization
The beekeeping trainers	Facilitator of training	Required by the researcher
MCED student and Council responsible officer	Monitor the project activities	MCED student on research work
Tupendane Nyuki Group Members	Receive training	Tupendane Nyuki Group members

Source: Field Research 2011

4.3.4 Budget

The budget explains in details the cost for each activity, since the project is based on cost sharing; both the project and community contributions are clearly indicated below:

The project had no salary since the researcher had to give the professional assistant except for the allowances such as food during the research and transport for the researcher.

4.4 Project Implementation

Project conceptual framework is based on the spirit of togetherness. The concept at entails participation, inclusiveness, partnership, co-operation, sharing and collectiveness of those involved in the project activities. Through this belief, the community members are eager to make resources useful within the organization but still are urged to contribute to the project costs in kind or with token money. In so doing, a sense of project ownership becomes in -built in the minds of the community hence the basis of sustainability. All other stakeholders like the local and central institutions and organizations are all invited to give their ideas on the project.

Table 13: The Training Budget of the Project.

Activity carried out by the project	The level of performance of the project	The implementation of particular activity	Resource used	Remarks
The community needs assessment	The problem were identified	accomplished by December 2011	Stationary and allowances such as transport	The expenses used 400,000/=
Awareness to the community	4 meeting conducted	By march 2012	Stationary and teaching materials	Allowances 300,000/=
Community trainees identification	One facilitators	By April 2012	Transportation	600,000/=
Report writing and presentations	The researcher	By June 2012	Allowances for the research assistants	700,000/=
Total budget				2,000,000/=

Source: Researcher 2011

4.4.1 Implementation Plan on Gantt Chart

The below information do summarizes the activities implemented, progress, and the dates of the implementation, resources used and comments for the project activities which included progress, implementation dates and resources

4.4.2 Implementation Report

Table 14: Implementation Report

Objective	Activity	What was accomplished	What was not accomplished	Constraint
Conduct capacity building to the group members	Trained the group members on the concept of beekeeping	100% Of the group members were trained	Done as planned and succeeded 100%	Time was very limited towards the training
Community awareness to the organization activities	Four sensitization meeting were conducted of which all the target members attended	95% of the community members attended.	Was done as it was planned and successful by 100%.’	The slow of the community participation in the training.
Monitoring of the activity of the project	All the activities have been monitored	95% of all the activities were monitored	Was done as it was planned and successful by 100%.’	Qualitative evaluation was hard to measure
Evaluation of all activities of the project	Formative evaluation were conducted	60% of the trained members reported to be successfully	40% of the evaluation still to be accomplished by the project host organization	Lack of understanding to the project activities have been the constraint to the project.

Source: Researcher 2011

Table 15: The Actual Implementation of the Project

Activities carried out	Project months																Resource needed	Person responsible
	Year 2011				Year 2012													
	9	10	11	12	4	6	7	8	9	10	11	12	13	14	15	16		
Find out about the community based organization conduct CAN																	Time stationary and meals allowances	Student
Problem identification and priotization																	Transport allowances And other funds	Project volunteering and staff
Conduct a community needs assessment																	Facilitators And allowances and refreshment	Project volunteering and staff
Identification of trainees/facilit																	Researcher	Project volunteering

ators																			
Conduct training																		Transport allowances	Project volunteering
Conduct a monitoring and evaluation follow up to the projects																		Time stationary and	Research volunteering
Project report write up																		Stationeries	Researcher
Project presentation																			
Project Sustainability																			

Source: Researcher 2011

4.5 Conclusion

The training was conducted with big response since people (group) members were eager to learn with the expectation of increasing production and quality of honey. The trainer was expected to train 10 participants but 9 people attended the training which is 90% of the expected participants only 1 (10%) member did not attend the training due to illness. The expected goal of training was highly successfully attained.

CHAPTER FIVE

5.0 PARTICIPATORY MONITORING EVALUATION AND SUSTAINABILITY

5.1 Introduction

This section of the project covers the monitoring, evaluation and sustainability of the activities implemented within the set time frame of the project. Monitoring part shows the process and methods that were used to measure the degree of the progress of the project activities in accordance to the set time. The evaluation part focuses on the output experienced by the project members in regard to the start of the project to the end of the project as per anticipation and observed character of continuity

5.2 Participatory Monitoring

Participatory, monitoring, evaluation and sustainability the Monitoring is the strong hold of progress indication of any project within the community. This measurement had the impact to realize all the activities done by the project. Quarterly meetings with the community were other forms of monitoring. Quarterly meeting were conducted to assess the work progress and plan for subsequent actions. Field and sectoral reports were discussed and a resolution made by the researcher and the group members and it was done very successful. Regular follow-up visits were set by extension staff and the organization members had to submit the field reports and submitted them to Project coordinator (MCED student).

5.2.1 Monitoring Information System

The group has no computers to keep the information due to the lack of reliable offices but they have established the system of communication within the group so that each member

can get the required information on time when that information is released among members.

5.2.2 Performance Indicators

The research objective was to collect data routinely to access if the set goal, purpose and objectives are being achieved progressively. Research questions helped to gather information in the course of monitoring of all the activities of the project. The question based on the need for the knowledge obtained during the project implementation.

5.2.3 Participatory Evaluation

Evaluation is a systematic investigation of the activities being practiced the advantages and disadvantages can be analyzed to ensure its known to the stakeholders of the project for the correction or amendment on the activities being done in the process. The aim of the evaluation is to know if the set goal and objectives have been reached by those who have been performing those activities identified by the project. The evaluation provides the information which help to improve the project. The information is for researcher, project staff, community and government. Evaluation gives evidence and guidance as to whether funding should continue to particular project or not (Kayombo 2009).

5.2.4 Formative Evaluation Summary

The formative evaluation was one of the forms of information collected from this research the formative Evaluation seeks to strengthen or improve a program in relation to the activities being done by the project. The formative evaluation has to analyze the intervention logic, outcomes, results and impacts of the project being analyzed by the project. The objective formative evaluation is examining among other things the delivery of the program, quality of its implementation, the organization context, personnel, structures and procedures.

Table 16: Participatory Monitoring Plan

Objectives/Activities	Performance Indicator
Objective: To support the group with the registration process	
Activities	Indicators
1. A joint meeting conducted to discuss the matter	At least 1 meeting conducted
2. Obtain the registration forms from Community Development Office.	The researcher assigned to get the application forms
3. Filling and signing the registration form	Members signatures
4. Submission of the application form	Evidence of members contribution towards the fees
5. Collection of registration certificate	The researcher assigned to collect the certificate
Objectives/Activities	Performance Indicator
Objective: To improve honey production to the group members	
Activities	Indicators
1. Mobilization of the group members	List of names and contacts of members
2. Attendance of the training	List of names of training participants
3. Members are able to conduct and record minutes of the meeting	Schedule of activities in training program or handout
Objectives/Activities	Performance Indicator
Objective 3: Train the group on the beekeeping for the quality production	
Activities	Indicators
1. The Group attendances	Members are contributing
2. available sales	Records of Money obtained from sales

Source: Researcher 2011

The formative evaluation has to analyze the intervention logic, outcomes, results and impacts. The purpose was to assess if the goal of the project was reached. The

participatory self Review and planning tool for formative evaluation was chosen because it is the method which allows all participants of the project assess the progress and agree on the objectives and indicators as per original plan. In this evaluation the participants vote against a given objective and set indicators.

Table 17: Evaluation Table

Goal/objective	Expected output	Actual output	Indicator	Degree of achievement
GOAL				
Objectives				
Training Tupendane nyuki group members on the quality of bee keeping	100% of the community members participated in the training	The community were actively involved as per selection of representatives	The community members were willing to join to involve in the bee production	This was about 90% achievement
Helping the group in the formalization by the registration process	Get the registration forms	Obtained from the registration office at local level and national level	The group started to operate	100% achieved
Training of Tupendane Nyuki group	They established standing by laws between the groups	Systematic follow up were made	Teaching materials in place	90% achieved
Monitoring the activities done	The group members and leaders	Monitoring and evaluation twice a year	Monitoring evaluation report	85% achieved

Source: Field Research 2011

5.4 Project Sustainability

5.4.1 Project Sustainability Elements

The development actors in community were fully involved in identification of the project. They promised to continue working with the project to ensure its sustainability. Sustainability means remaining into operation for the useable future the project has to ensure it survives therefore strategies have to be made in relation to the objectives and goals of the project. This section describes the sustainability plans for the project that have been developed to ensure that the project continues and sustains after phasing out. It highlights precautionary measures that have been undertaken to ensure that the outcomes and best practices from the project will remain for the benefit of Kisarawe community regardless possible changes that may occur or as a result from the limit of external support from DADPs, researcher, or any other development partners who may be interested later. The project sustainability has taken into consideration the following aspects:- Economic and financial sustainability, Political sustainability, Social sustainability and Environmental sustainability

5.4.2 Economic and Financial Sustainability

The development goal of this project to contribute to improve the livelihood of smallholder farmers involved in bees products production through increasing quality and quantity of bees products through adding value and market profitability. To achieve this objective, a total number of 9 out 10 of Tupendane nyuki group were trained and acquired knowledge and skills on entrepreneurship and business development especially on value addition and marketing for bees products as well as daily market information. The sales will have to ensure the financial sustainability of the organization since the repayment of loan and accessibility to financial institutions have ensured and the availability of the organization members with own land of 5 acres will encourage cultivation of sunflower

and afforestation where bees can obtain pollen, nectar, water and good shelter to protect from sun rise and blowing winds hence increase of bees products and productivity of the project.

5.4.3 Political and Institutional Sustainability

The presence of strong beekeepers groups and networks to with committed and accountable leadership to coordinate the project activities at community level is one of the aspects that demonstrate the existence of the institutional sustainability. The works of the politicians towards helping the community come out of poverty the peace and security within the village has ensured the community to have the sustainable project because they work hard every day under the presence of peace.

5.4.4 Social Sustainability

Social sustainability is the core element of project sustainability, essentially sustainability here is about creating and maintaining quality of livelihood of community. Therefore, the fact that this project has put in place mechanisms for financial and environmental sustainability, the same strategies will as well facilitate the project to attain social sustainability. Once beneficiaries and the surrounding communities will have increased the knowledge on production of bees products and marketing and also business management they will be able to increase income and improve livelihood. In so doing, the community will be able to access social needs. They will be able to link with other stakeholders where they may learn and acquire new knowledge of producing and processing bees products of high quality. The community and the organization members ensured their commitment to the project hence some of institution has put the institutional plan to ensure the sustainability of the project and the level of acceptance is good enough to assure the project sustainability in the community. As far as the project is concern there

is no sign of conflict in the community within the project area, we can conclude that the project is socially sustainable due to the fact that the project has increased community participation, ownership, commitment and contribution to the project.

5.4.5 Environmental Sustainability

The strengthening the small holders beekeepers' capacities on beekeeping and bees products processing and marketing information will impart knowledge and skills to them , maintain quality and quantity of bees products, business and entrepreneurship skills management and development. The project promotes integrated beekeeping and bees products production and marketing techniques that are sustainable and environmental friendly since the project involves afforestation of different varieties of trees for pollination as well as cultivation of sunflower around the beehives. There is no environmental hazard from by – products expected from it that may lead to environmental destruction as there are no industrial chemicals that being used during producing and processing bees products.

5.4.6 Environmental Sustainability

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CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

The bee keeping is seen to be very important factor in the process of raising the income of the community. The strategies for poverty alleviation will be possible to the developing countries if they allow the chance of all the community members to be access the activities that raise community. The sustainability of this project will mainly depend on the commitment of the empowered community to continue with efforts in place and the training given is expected to meet the expected level in the community. Since this project is line with the government policy of poverty alleviation, the government will be hand in hand to ensure the project continues to the expected standard. The participatory process was to build a partnership with the study population; this helped the researcher to gain an insight on the project stakeholders and the process of introduction and formation of the people to be involved in the process.

This was to get the information and knowledge on the related topic to see other scholars on the same topic; in general people are not aware on the activities of bee keeping in the community

6.2 Recommendations

The implementation plan was done by the researcher in collaboration with the organization members. It is highly recommended that this implementation method should be used to in the development of other development projects because it is result orient and it will help in the preparation of big investment projects. The literature review was categorized into theoretical, empirical and policy review. This approach was good because

it guided the student very well in the imparting knowledge to the service provider. The acquired knowledge is arranged systematically with lesson learned from each category of literature. Therefore it is recommended that this approach should continue to be used for the knowledge enlargement.

The used participatory monitoring and evaluation approach was very useful for the sustainability of the project. The work of employment opportunities creation should be dedicated to serve its members which in turn reducing income poverty to beneficiaries. It entails sense of ownership to the beneficiaries. Therefore the beneficiaries were directing responsible to monitor and evaluate their project as they planned. The approaches used included keeping the records therefore it's highly recommended that this approach should be used for monitoring, evaluation and hence sustainability ensured.

Generally bees products (honey, beeswax, nectar) are of high quality at source it is pure, organic and commands high price if quality maintained until reaches to final consumer thus due to low skills, poor management, poor equipment and storage facilities is where quality reduction begins during harvesting crude smoking is used, inappropriate equipment, unskilled processing, improper storage careless in transportation lead to low quality and high cost of production of bees products. Thus there is a need for Government and other stakeholders to take measures to support the groups, farmers and Co-operatives Societies that are dealing with beekeeping so as to control quality of bees products, price and link them to local and external market. Hence income earned will support to get social services and contribute to the national economy and sustainable development of the community at large and poverty alleviation

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LIST OF APPENDICES

Appendix 1: QUESTIONNAIRE FOR TUPENDANE NYUKI GROUP MEMBERS

I am a postgraduate student conducting “**Community needs Assessment**”. I would appreciate if you could spare a few minutes to provide information for this study. The information provided will be treated as confidential

Instructions on filling the questionnaire

Please answer all questions by circling your option(s) in multiple choices questions and give as much information as possible for open-ended questions

Demographic Information

1. Living place.....

2. Name of respondent (optional).....

3. Gender

(a) Male

(b) Female

4. Age (years))

(a) 15-20

(b) 21-30

(c) 31-40

(d) 41-50

(e) >50

5. Education level

(a) Informal education

(b) Primary education

(c) Secondary

education

(d)Vocational Training

(e) Adult education

(f) Higher

education

(h)Other

(please

specify).....

6 What are the main sources of cash (income) for your household?

(a) Small business

(b) Salaries

(c) Temporary jobs/Wage labor

(d) Charity

Other sources please specify.....

7. Estimated annual income

- (a) Less than 360,000/= (b) Between 360,000-1,000,000/=
- (c) 1,000,000-2,000,000/= (d) Above 2,000,000/=

8. Which of the following best characterizes the role and adequacy of income in your Household economy?

- (a) Cash income is low and mainly used to meet subsistence needs
- (b) Cash income is more than adequate to meet subsistence needs and there is a moderate surplus left over for consumptions of luxury goods /or savings
- (c) Cash income is adequate to maintain a higher than average standard of living for the area and a substantial part of the income could be used for saving

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

- a) School fees b) Buying food and water c) Building materials
- d) Health services/ Buying medicine e) Transport (d) Clothes

Others, please specify.....

10. What are members of your household? Please specify the number according to the following categories:

Category	Male	Female	Total
Children (< 18Yrs.)			
Adults(18-60Yrs.)			
Adults(61-aboveYrs.)			

11. What are local resources available in Tupendane Nyuki group which can be used to solve the problems you mention above?

a).....

b).....

c).....

d).....

e).....

12. What are the main opportunities for projects to solve the problems you mention above?

a).....

b).....

c).....

d).....

13. What are current actions taken to solve the problems in Tupendane Nyuki group ?

a)

b)

c)

d).....

14. Who works with the current problems in Tupendane nyuki group?

a)

b)

c)

15. Are you satisfied with the way the problems are tackled?

a) Yes

b) No

If yes, please explain how?.....

If No, please explain why?

.....

16. What are the barriers in implementing projects solve problems you mentioned in
Tupendane nyuki group?

a)

b)

c)

d).....

17. How do the members of group involved in solving problems?

a)

b)

c)

d).....

18. What is your opinions on which method should be used to solve the problems you
mention above?

a).....

b).....

c).....

d).....

Appendix 2: Questionnaire for Stakeholders

I am a postgraduate student conducting “**Community Needs Assessment**”. I would appreciate if you could spare a few minutes to provide information for this study. The information provided will be treated as confidential

Demographic Information

1. Respondent No.

2. Age (years)

a) 15-20 b) 21-30 c) 31-40 d) 41-50 e) Over 50

3. Gender

a) Male c) Female

4. Education level

a) No formal education b) Primary education c) Secondary education

d) Vocational Training e) Adult education f) Higher education

Others please specify.....

5. Do you provide any services for Tupendane Nyuki group?

a) Yes b) No

6. If yes, what services

a)

b)

c)

d)

7. If yes which method do you use to provide services to the Tupendane Nyuki group?

a)

b)

c)

d)

8. Do you think providing timely and comprehensive service will develop the Tupendane Nyuki group? (Please tick)

a) Yes b) No

If yes please explain.....

9. To what extent have you been successful in providing services to the group?

a) Very successful b) Successful c) Uncertain

d) Less successful

10. Do you encounter any problems in providing service to the Tupendane Nyuki group?

a) Yes b) No

11. If yes, what are those problems (please mention them)

a).....

b).....

c).....

d).....

12 .What strategies do you have to make sustainable services to the Tupendane Nyuki group.....

Appendix 3: Question for focus Group discussion

1. What are the problems facing Tupendane nyuki group
2. What are local resources available in Tupendane Nyuki group which can be used to solve the problems you mention above?
3. What are the main opportunities for projects solve the problems you mention above?
4. What are current actions taken to solve the problems in Tupendane Nyuki group?
5. Who works with the current problems in Tupendane Nyuki group?
6. Are you satisfied with the way the problems are tackled?
7. What are the barriers in implementing projects in solving problems you mentioned for Tupendane Nyuki group?
8. How members of group involved in solving problems?
9. What are your opinions on which method should be used to solve the problems you mention above?

Appendix 4: Interview Guide

1. What are the problems facing Tupendane Nyuki group?
2. What are local resources available in Tupendane Nyuki group which can be used to solve the problems you mention above?
3. What are the main opportunities for projects solve the problems you mention above?
4. What are current actions taken to solve the problems in Tupendane Nyuki group?
5. Who works with the current problems in Tupendane Nyuki group?
6. Are you satisfied with the way the problems are tackled?
7. What are the barriers in implementing projects solve problems you mentioned in Tupendane Nyuki group?
8. How members of group involved in solving problems?
9. What are your opinions on which method should be used in solving the problems you mention above?

Appendix 5: Questionnaire for monitoring and evaluation

Participants Name and Post..... Date.....

Organization's Name.....

Note: The Questionnaire has been developed with the objective of making the training effective by finding out the level of the participants on issues of Resource Mobilization. This is not any exam that would decide whether the participant is pass or fail. So, we request all participants to answer the questions that they can answer and if there are questions that they cannot, then you can left it.

1. What do you understand by resource? Tick below.

(a.) Human (b.) Money (c.) Information (d.) Service.

2. Among the 4 points given below, which one point is similar to the definition of Resource Mobilization? Tick below.

(a) Right use of available resource.

(b) To receive maximum resource from a single resource provider.

(c) Collect resource for the Program.

(d) Expand the research and relation of the resource provider for achieving the mission of the Organization.

3. There are various mechanisms for Resource Mobilization. List any five mechanisms.

(a)

(b)

(c)

(d)

(e)

4. Resource providers are of various types. List any 5 types of resource providers

(a)

(b)

(c)

(d)

(e)

5. In order to develop a Resource Mobilization Plan, what is it essential to know about the resource provider? (Tick below)

(a) Name and program of resource provider.

(b) Area of work.

(c) Type of resource.

(d) Aspiration or motivation of the resource provider

Appendix 6: Curriculum for training on beekeeping and quality control in bees products
Bees keeping

(a) What is beekeeping

- Beekeeping is a science of keeping honey bees for the purpose of bees products that is Honey, beeswax, nectar

(b) How bees are being kept?

- By using beehives of different types local hives such as Tanzania traditional hives and modern hives (Tanzania commercial hives)

(c) Where are bees being kept-In specific place where bees can obtain nectar, pollen, water and good shelter which protects them from sun raise and blowing winds.

(d)Where is favorable botanical place for beekeeping in Tanzania?

- Miombo wood land such as Tabora, Kigoma etc
- Acasia zone such as Dodoma and Singida,
- Mountains areas such as Kilimanjaro, Arusha. Iringa etc.

(e) How beehives are sited

- In a big tall trees,
- On stands made by timbers, bricks.
- In special bee house

Quality control of bees products ;

- Good quality of bees products starts right from sitting modern beehives and good management on:-
- Beekeeping knowledge are practiced accordingly
- Seasonal management that is good calendar of beekeeping are managed
- Harvesting ripe honey (honey which is sealed with beeswax in the comb cells),
- Uses of modern beekeeping gears (bee protective)
- Uses of clean containers the whole process of processing bees products.

Bees products storage:

- The processed honey should be kept in a clean containers which does not allow sun raise to protect losing nutrients and honey should be kept and stored at room temperature where as to prevent granulation of honey

Entrepreneurships skills:

Bees products are commercial commodities

- Bees products are commercial commodities Itself in nature since its demand is very high in local and external market due its uses. Honey is consumed as honey beer, food and medicine mixed with other ingredients for cure different diseases. Also in industries is used for bakeries, confectioners and pharmaceutical and honey wine production.
- How to seek market and net working to outsiders stakeholders.