

*Nyuki ni Hazina (Beekeeping is Treasury)*



**MEASURING RURAL BEEKEEPERS BENEFITS GOES BEYOND  
INCOME, INPUTS AND POVERTY LINE**

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**30<sup>th</sup> September 2013**

## **Abstract**

*Numbers of beekeepers in developing countries in particular at tropical climates are living in rural areas and still practice intermediate market economy with several forms pertaining social and cultural of the society in question. In Tanzania, beekeeping is considered as livelihoods and income generating activity that can help local communities to generate income but also conserving natural resources.*

*Definition of livelihood “comprises the capabilities, assets and activities required for a means of living”: beekeepers in rural areas have been utilized available resources within their areas such as forests, bushes for keeping bees, small-scale based hives, protective gears and harvesting and storage facilities. Some literatures and thoughts stipulates that a livelihood can be sustainable when it can cope with and recover from stress and shocks, maintain and enhance its capabilities and assets; and contributes net benefits to other livelihoods at the local and global levels, in the short and long terms.*

*In calculating benefits from beekeeping, majority of experts are basing on the inputs versus outputs in terms of monetary value. This means of quantifying and valuing beekeeping contribution in rural areas sometimes portray negative answers that may help the decision-makers to increase incentives.*

*Hard stories collected from different societies in Tanzania through field observation and interview discussion were shown that, beekeepers and the communities around have been benefiting with beekeeping and bee products more than what is recorded in terms of cash income.*

*Results showed that local buyers do not prefer refined honey, some like crude honey for making honey wine; others are using crude honey for dowry and cultural rituals. The beekeepers in rural areas are respected by the society because during harvesting period they help them with honey just to use as medicine. Some have harvested more than 80 containers (each with the capacity of 20 litres) and by using batter system have exchanged with bags of maize, rice and beans. In some area, a beekeeper stored maize mixed with honey in a drum for about six months and then it served the community around during hunger period.*

*Discussions include sustainable livelihood approach, appropriate incentives to beekeepers, self and participatory beekeepers evaluation and indicators for measuring beekeeping*

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## **Acknowledgements**

With my heart giving thanks to beekeepers in Tanzania for their tireless efforts in beekeeping and useful information provided during data collection. Thanks are due also to the Ministry of Natural Resources and Tourism of the United Republic of Tanzania and Tanzania Forest Services (TFS) Agency for the support that enabled me to travel and stay in Ukraine.

# **1. INTRODUCTION**

## **1.1 Background to Introduction**

Numbers of beekeepers in developing countries in particular at tropical climates are living in rural areas and still practice intermediate market economy with several forms pertaining social and cultural of the society in question. In Tanzania, beekeeping is considered as livelihoods and income generating activity that can help local communities to generate income but also conserving natural resources.

The country potential to produce honey is between 110,000 and 138,000MT per annum but actual production does not exceed 32,000 MT per annum. Annual production of beeswax is 625MT.

Beekeeping is practiced in almost all rural areas of Tanzania, but important beekeeping regions are in miombo woodlands in particular southern highlands, central and northern zones. High important beekeeping areas now being harvested are Kigoma, Katavi, Shinyanga, Tabora, Singida, Dodoma, Manyara, Iringa, Njombe, Mbeya and Rukwa regions.

The market of honey in Tanzania is still fragmented and dominated with traditional retail markets that characterized of individual outlets and middlemen (Vermeulen et al, 2008). Beekeepers in rural areas rely on who come is the right buyer. Price of honey and beeswax is determined by Buyers and fluctuate with seasonality and concentrated by middlemen in certain place at the same time.

The use of honey in different cultures in Tanzania is almost the same, majority use honey as food and for medicinal purpose. They believe that honey is curative and preventive for many diseases. Honey is used also in making honey beer and honey wine and further honey is a special food for maternity mother. It is also an interesting fact that some tribes considered honey as special package for dowry negotiations.

## 1.2 Justification of the Paper

Definition of livelihood “comprises the capabilities, assets and activities required for a means of living”: beekeepers in rural areas have been utilized available resources within their areas such as forests, bushes for keeping bees, small-scale based hives, protective gears and harvesting and storage facilities. Some literatures and thoughts stipulates that a livelihood can be sustainable when it can cope with and recover from stress and shocks, maintain and enhance its capabilities and assets; and contributes net benefits to other livelihoods at the local and global levels, in the short and long terms.

Beekeepers have been and still maintain their cultures that allow them to exchange commodities not as butter system but what is known as shade price. Measurement of poverty in many countries by scholars are based on “gain more interest and how rural people access basic needs” (Helder, 2012). Integrated rural development approaches have been concentrated on health, education and sanitation projects and food security. Individuals and households were not involved in design and implementing such approaches based on what resources available for them. Countries are computed poverty lines at a level that is equivalent, in purchasing power parity (PPP) terms, to one U.S. dollar per person per day, which is the internationally accepted poverty line for a specific country. However, this computation is sometime difficulty to apply for society that means of living is not tied in cash purchasing but direct use and exchange of farm products with other necessities in form of shade prices.

Means of living for majority of rural people in Tanzania are tied in crop cultivation, pastoralism, fishing and petty trade. These activities are subjective to many challenges amongst include conflicts between large scale and small scale. Beekeeping in Tanzania is an industry with less conflict as many actors are at individual and household level. The products from beekeeping (honey and beeswax) are complementary sources of income, school fees and emergency for the family.

## **1.3 Objectives**

### ***1.3.1 Main Objective***

The main objective was to measure benefits from rural beekeepers in relation to poverty and livelihood in Tanzania

### ***1.3.2 Specific Objectives***

The specific objectives were

- i) To determine inputs, income and outcomes of rural beekeepers in Tanzania
- ii) To examine vulnerability context and livelihood assets of rural beekeepers in Tanzania

## **2. METHODS**

### **2.1 Study Area**

Tanzania is located in Eastern Africa between longitude 29° and 41° East, Latitude 1° and 12° South. Its total land surface is 948,000 square kilometres, forest areas covering 48.8 million hectares. Information of this study was collected from Iringa, Dar es Salaam, Kigoma, Tabora, Kilimanjaro, Dodoma, Singida, Manyara and Arusha regions.

Beekeepers in Kigosi Moyowosi Game Reserve, Ugalla Game Reserve, Kiziga Rungwa Game Reserve and Forest Reserves in Kigoma, Tabora, Katavi and Shinyanga Regions were useful respondents for this paper.

### **2.2 Methods**

Field observation and interview discussion were used as method to collect hard stories from beekeepers and societies in Tanzania. Respondents were beekeepers and villagers around beekeeping areas and adjacent townships. Hard stories from beekeepers were recorded and analysed using qualitative methods.

### 3. RESULTS

Hard stories collected from different societies in Tanzania were shown that, beekeepers and the communities around have been benefiting with beekeeping and bee products more than what is recorded in terms of cash income. Health of the family was also an indicator for success in beekeeping.

**Table 1: Percentage of Uses of Honey and Levels**

Uses of Honey Levels	Direct as food	Making beer	Dowry and rituals purposes	Sale to Buyers	Social interaction (free to neighbouring)
At Beekeepers Gate (in Protected areas and apiary sites)	3.57	13.29	1.71	71.43	10.00
At villages and adjacent townships	10.34	20.69	6.90	44.83	17.24
At Selected cultures in Dodoma, Manyara and Arusha	12.50	6.50	24.20	20.94	35.86

#### 3.1 Inputs, Outputs and Outcome of Rural Beekeepers

*a) Beekeepers who carryout beekeeping in Miombo Woodlands (Around Kigosi Moyowosi Game Reserves)*

- Owned an average of 553 hives per beekeeper per unit area at 81.57 log hives and 18.43 top bar hives. One log hive cost TZS 15,000/= and top bar hive TZS 65,000/=.
- Average production per hive was 15kg for log hive and 10kg for top bar hive.
- One beekeeper utilized 21 days during harvest period inside game reserve with seven assistants.
- The requirements (inputs) include
  - Permits for entry collected at game reserve office (one for beekeeper and 7 for assistants (each permit 1,000/=)
  - Food items for feed 8 persons for 21 days

- Hiring transport (fuso lorry) to carry products harvested
- Each assistant demand 20 litres of honey every 10 days for 21 days is 40 litres time 7 people
- Sometime honey is moved by bicycle or by head, the wages also need a twenty-litre container of honey when transferred 4 containers

Output from beekeepers was 280 containers of semi-processed honey, 40 containers of second grade honey and 280 kg of beeswax. The prices were,

- TZS 100,000/= per container of semi processed honey at village gate
- TZS 120,000/= per container of semi processed honey at Dar es Salaam City
- TZS 8,000/= per kilogramme of beeswax
- TZS 40,000/= per container of second grade honey (used to make honey beer known as kangara)
- Distribution of the products
  - 5 containers were distributed free to his adjacent villagers
  - 45 containers were given to assistants and transport herds
  - 230 containers were belonged to beekeepers
  - Earnings was TZS 22,500,000 for honey and TZS 1,600,000/=

*b) Beekeepers in Northern Tanzania (Kilimanjaro, Manyara and Arusha Regions)*

- Hives in use log, top bar and frame hives at an average of 7 to 15 hives, kept also stingless bees.
- Average production of honey was 7kg for log hive, 9 kg for top bar hive, 6kg for frame hive and 4kg for stingless beehive per annum.
- Hive were manufactured at TZS 25,000/= per log hive TZS 85,000/= per top bar hive and TZS 100,000/= per frame hive. Stingless beehive was sold at TZS 120,000/= with colony.
- Prices of honey per kg were as follows
  - TZS 8,500/= for stinging bees honey
  - TZS 25,000/= for stingless bee honey.
  - TZS 200,000/= for Crude honey

*c) Beekeepers in Southern Highlands Zone (Mbeya, Iringa and Njombe Regions)*

- Hives in use were log hives, pot hives and top bar hives. Frame hives were used in institutions like churches, Government extension units and private sectors.
- Some beekeepers owned up to 250 log hives
- Production of honey range from 60 kg to 2400kg per individual
- Shade price applied for honey in order to obtain tree seedlings, fertilizers and farm implements

d) *Expectations of Beekeepers (Outcomes for beekeepers)*

- Meet basic households needs
- Building house roofing with aluminium sheets
- Buy motor cycle and Bajaj
- Trustful - “Mali kauli”
- Health status – most of activities are performed by beekeeper and family i.e. metabolic energy is applied.
- Power of land tenure,

### **3.2 Livelihood Assets of the Beekeepers and Beekeeping**

i) Natural capital

- Potential areas in forest and game reserves
- Collection of wild fruits and sell of the same or juices (tamarinds, baobab)
- Un managed bee colonies that swarms (do not breed)
- Availability of stingless bee colonies that are kept at home by women and youth
- Hand crafts – carvings, decorations and mats made from forest resources

ii) Human capital

- Indigenous knowledge and practical skills for beekeeping and farming
- Manpower – health of the family and beekeeping groups
- Pass over incentives (sharing available resources)

iii) Financial capital

- Financial arrangements (vicoba, SACCOs and SIDO)
- Shade prices and malikauli
- Village markets and roadside selling points

iv) Social capital

- Cultures
- Trustful behaviour of the society to beekeepers
- Tradition means of storage

v) Physical capital

- Accessibility
- Equipment used to support livelihood (log, pots)
- Natural springs

**Table 2: Vulnerability Context for Rural Beekeepers in Tanzania**

Trends	Shocks	Seasonality
<ul style="list-style-type: none"> <li>• Increasing poverty among rural people: subsistence farming do not afford inputs required in beekeeping</li> <li>• Adjacent forest communities dependent on forest resources</li> <li>• Loss of bee resources due to forest destruction, wild fires and agricultural expansion (shifting cultivation)</li> <li>• Increased inflation rates against TZS and US\$</li> </ul>	<ul style="list-style-type: none"> <li>• Conflicts between resources users (in protected areas) beekeepers and forest dealers, tourist hunting; in general land is between beekeepers and crop growers.</li> <li>• Economic capability- beekeepers lack cash to meet basic needs i.e. facilities for beekeeping. They relay in ‘mali kauli’ and shade price.</li> <li>• Outbreak of diseases in production areas</li> </ul>	<ul style="list-style-type: none"> <li>• Honey flow is determined by weather (low or high rainfall) affect many miombo woodlands tree species.</li> <li>• Prolonged dry season and absconding of bee colonies.</li> <li>• Seasonal demand for honey and beeswax by middlemen and retailers</li> <li>• Seasonal permit entry to enter in protected areas for beekeeping.</li> <li>• Timing of swarms and harvesting bee products.</li> </ul>

<ul style="list-style-type: none"> <li>• Financial limitations; no scheme (collateral) that enable beekeepers to access loan/credits</li> <li>• Relative on what activity pay better: beekeepers are also crop cultivators,</li> </ul>	<p>and selling centres.</p> <ul style="list-style-type: none"> <li>• Application of agricultural pesticides and water pollution</li> <li>• Problem animals in beekeeping areas</li> <li>• Poaching; restriction in protected areas is subjective or objective to control poachers.</li> </ul>	
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## **4. DISCUSSION**

Results showed that local buyers do not prefer refined honey, some like crude honey for making honey wine; others are using crude honey for dowry and cultural rituals. The beekeepers in rural areas are respected by the society because during harvesting period they help them with honey just to use as medicine. Some have harvested more than 80 containers (each with the capacity of 20 litres) and by using batter system have exchanged with bags of maize, rice and beans. In some area, a beekeeper stored maize mixed with honey in a drum for about six months and then it served the community around during hunger period.

### **4.1 Sustainable Livelihood Approach**

Beekeepers in many places of Tanzania do beekeeping with other land use activities that involve family or clan in general. Although responsibility of handling bees is the work of father, mother and children were also involved in the process. Sustainable livelihoods Approach can be applied for rural beekeepers to identify most vulnerability and how they are strongest (Bradbear, 2009). The results shown that majority of beekeepers in Tanzania were carried out beekeeping as small-scale as a substitute or complementary to crop farming. The earnings were shared among the family and adjacent villagers. Ownership of permanent plots is challenging most of beekeepers. There are on going initiatives by the Government to ensure access of beekeepers to areas potential for beekeeping (MKUKUTA II, MNRT, 2010). Relief on tax for beekeeping equipment and facilities and provide incentives to beekeepers in terms of beehives and protected gears (URT, 2013). Beekeepers are also encouraged to organize themselves into associations (TFS, 2013).

### **4.2 Appropriate Incentives to Beekeepers**

About 80% of respondents in Arusha, Dodoma, Kilimanjaro, Singida and Dar es Salaam pointed out that they bought honey for curative ingredients, for use as food spices or alternative to sugar and jam. In Tabora, Shinyanga and Katavi regions,

40% of honey produced went to honey beer makers. For them, no restrictions on packaging materials, labelling were applied although price was subjective to seasonality. In central Tanzania, price of honey was very high at the beekeepers gate because of many buyers from within the country and neighbouring. Data for harvesting bee products are difficult to get by normal channel but except when beekeepers are willing to provide. The family is not recording amount honey used as food, given to friends and that sold to couples for dowry payment. Also do not capture quantity of products involved in shade price arrangement or barter systems means.

### **4.3 Participatory Beekeepers' Evaluation**

Village shops, secondary school heads and village governments recognize and trust beekeepers that will pay amount of money required for school fees, farm implements when he/she harvest hive products. Beekeepers in rural areas dislike questions or interviews to know about volume of honey harvested or sold, although may be free to answer questions associated with the importance of beekeeping and why decided to become a beekeeper.

Self Participatory Evaluation is a useful tool that helps to gather information from beekeepers and users of bee products at village level. It guide society intended to point out plans and expectations that will help to make step in develop. Based on evaluations that conducted in 2002, 2005 and 2009 involved communities in Njombe, Ludewa na Iringa Districts (Heifer International Tanzania and Msemo S.E), farmers/beekeepers were asked to evaluate themselves. The main questions set were: how many hives a beekeeper can own to meet basic family needs; who own hives and lands: what are the roles of the family (father, mother and children) and who benefit more than others in the family or society. The answers from them (male and females) were different from the questions asked. They responded as follows: family need sufficient food throughout the year; need money to meet school fees, need money for health (traveling to health centres, purchase of medicine and family want food for the family and help neighbouring. At the village level, they keep bees so as to get honey for food, and meet basic needs including building society cohesion. Vermeulen et al, 2008, discussed about traditional wholesale and retail outlets; how regulation of the government affect

the quality, hygiene and infrastructure of traditional markets, along with cultural traditions, shift of consumers.

The record shown that beekeepers around Ruaha National Parks in Iringa region were respected by the society because they used to serve neighbouring with food during hunger period. Honey harvested preserved with maize in lacquered drums for a period of one year and later the mixture was direct eaten as food. The time Honey was exchanged with grains, as results beekeepers were not affected with the situation. This arena is difficulty to quantify using poverty line indicators and measurements. A group of tree growers (villagers) in Kifanya Village in Njombe have the plan to raise a number of tree seedlings. They introduced beekeeping as an income generating activity. After a year they harvested 15 containers, which were sold and the money used to buy hand-water pump, seedling and polythene tubes.

Beekeepers are recognised themselves to see their children are in schools, able to pay social interaction costs and meet daily basic needs through products harvested. They also recording series of items brought after harvesting and sale of the products, for example clothes, aluminium sheets and bicycle. The most prominent for them is health of beekeeper and family and respect they get from other villagers. During harvest they tend to offer half a litre of honey to each neighbouring villager around ten cell households.

#### **4.4 Indicators for Measuring Beekeeping**

In calculating benefits from beekeeping, many of experts are basing on the inputs versus outputs in terms of monetary value. This means of quantifying and valuing beekeeping contribution in rural areas sometimes portray negative answers that may help the decision-makers to increase incentives. Beekeepers around protected areas they incur cost of food to feed people who assist them during harvest and stay 21 days in the field. Assistants demand (wages) a twenty-litre container of honey for a week basis. Working for three weeks it means a beekeeper will provide 3 containers (60 litres equivalent to 90kg) per person. This exclude costs for shelter, food and transport from the village to the field and back home. Most of Beekeepers have informal financial arrangements that help to deliver harvesting facilities from Suppliers in the form of “mali kauli” a verbal statement of

promising to pay back nominal money or honey equivalent to the price of the item/facility requested. This situation sometimes is not a win-win situation (beekeepers and Suppliers) due to price fluctuation during the time of harvest and volume of honey agreed before. Market strategies are built and maintained by trustful, defence of quality, consistency and assurance of consumers. It also stands at reliability and continuity of supply and low prices (vermuelen et el, 2008). In rural areas the market strategies are built in the interest of buyers who determine price and cultures that determine the consumption based on seasonality. Rural beekeepers have been set indicators that include, ownership of beekeeping area, number of hives, number of individuals casual labours, health/strong to work, ability to meet basic needs, materials brought after harvesting.

## CONCLUSION AND RECOMMENDATION

### **5.1 Conclusion**

Production of bee products (honey and beeswax) for many beekeepers in Tanzania are based on the ideal to meet basic needs and maintain social status. In economy, the aim is to improve the livelihoods of rural people. To address the problem, there is need to introduce informative scheme that incorporate the ideas of villagers within their range of interact. This may help to collect hidden information that are useful for measuring economic indicators for rural development through beekeeping.

Action plans for improving beekeeping may focus on opportunities rather than recycling on problems. Opportunities available for rural beekeepers are associated with availability of land (beekeeping areas), increased local market, development of middle class and responsible institutions to provide incentives to beekeepers especially on areas that for them is difficult to change.

### **5.2 Recommendations**

Adoption of indigenous knowledge and cultures that regulate use of natural resources for beekeeping is vital for promoting sustainable livelihood to rural communities. There is need to incorporate plans from rural beekeepers by providing incentives that are most relevant to them. Incentives to beekeepers are not necessarily support of beehives but also harvesting facilities and protected gears.

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