

Famine Relief Aid and Food Security Projects In Rural Kenya (FARAFOS)

Missionswerk der Neuapostolischen Kirche
Süddeutschland e.V.

SUSTAINABLE BEEKEEPING PROJECT-REPORT



Kujenga Maisha East Africa (KUMEA)

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BASIC INFORMATION

Donor Organization	Missionswerk der Neuapostolischen Kirche Süddeutschland e.V		
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Project Title:	Famine Relief Aid and Food Security Projects in Rural Kenya (FARAFOS))	Beneficiaries	120 farmers
Project Start Date:	February 2012	Project End Date:	Completed

ABOUT KUMEA

Kujenga Maisha East Africa (KUMEA) was established and registered in Kenya in June 2010 as an NGO for the New Apostolic Church; East Africa District. It grew out of the Relief and humanitarian efforts of the church that had been going on for five years. HIV/AIDS and poor climatic conditions are major contributors to rural poverty in East Africa. KUMEA therefore feels duty bound to respond to the needs of these communities.

Although KUMEA is a Faith based NGO, it operates beyond the boundaries of the New Apostolic church. It brings together people of all faiths and persuasions without discrimination. KUMEA seeks to improve the living conditions of vulnerable members of the community through developmental activities. It is a vehicle through which an organization or individual can contribute towards sustainable development in the communities of East Africa. The Objectives of KUMEA include:-

- Enhancing agricultural crop and animal yield through modern, innovative, cost effective and efficient farming techniques and improving sanitation
- Employing agricultural extension officers to train adult Kenyans in modern farming techniques and assisting them acquire managerial skills;
- Drilling boreholes and erecting water catchments reservoirs
- Distributing farm implements free or at subsidized cost to individual or collective members of the beneficiary communities, and actively initiate or participate in activities and projects aimed at economic empowerment of the people within the organisation's sphere of operation.
- Engaging members and the general public in environmental conservation efforts and sensitization.

EXECUTIVE SUMMARY

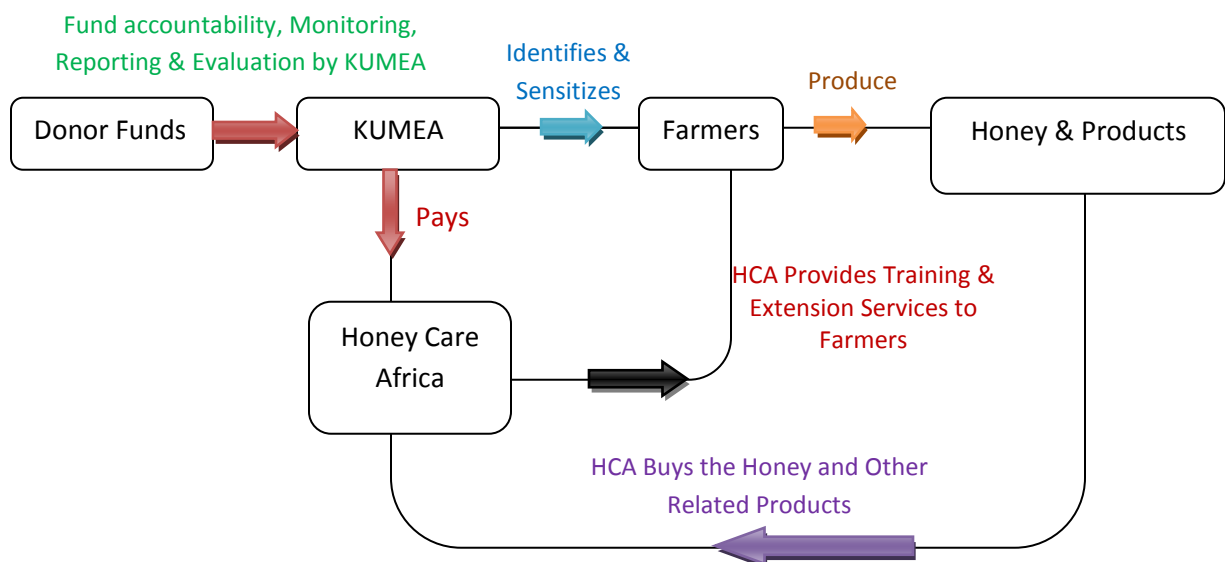
This report covers the Implementation and Evaluation of The sustainable bee-keeping project. The origin of this project was a direct response to stake holders request for income generating projects that are sustainable. It is a component of the larger project named ‘Famine Relief Aid and Food Security Projects in Rural Kenya (FARAFOS)’. The requests for this project were confirmed by farmers at various meetings who showed great enthusiasm and confidence in bee keeping for income and food security. The Farafos Sustainable beekeeping project builds on the Sustainable Commercial beekeeping project that was funded by Bishop John Eckhardt of Canada and implemented in Busia, Homabay and Machakos counties.

The Primary stakeholders of the project are KUMEA, Honey Care Africa (HCA) and farmers in the project area of Busia and Homabay Counties. KUMEA provides the Administrative and financial logistics while HCA provides the technical support in bee husbandry and marketing of hive products.

The farmers implement the project as trained and ultimately benefit from the proceeds of the project. The FARAFOS beekeeping project has since been implemented in the two counties for the last one and a half years. At this point, an impact assessment was done between 16th -19th July 2013 to determine progress of the project with regard to the planned objectives of improving incomes and livelihoods of the target farmers. It is worth noting that the project is still in its initial stages of development and therefore this report only gives indications on progress.

COUNTY	SELF HELP GROUP	BENEFICIARIES	BEEHIVES
Busia	Amka Twende	10	30
	Riziki	25	75
	Nasda	25	75
Homabay	Magunga II	10	30
	Pamoja Youth	25	75
	Soko ‘B’ Health Development	25	75
Total		120	360

PROJECT DESIGN



TRAINING AND PROJECT IMPLEMENTATION

OBJECTIVES OF THE TRAINING

- To impart knowledge on the best approaches towards poverty eradication through bee keeping
- To provide an opportunity to sharing experiences and learning new technologies in commercial bee keeping using Langstroth hive.
- To enable civil society organization and government to have an opportunity to appreciate bee keeping as a viable and sustainable project.

BEEKEEPING TRAINING

The training on Apiculture Level one focused on Bee keeping as an income generating activity like other Agri-business practices. The training aimed at equipping the participants with most relevant and practical skills on handling Bees for maximum production of honey.

The training covered a period of three days at the respective venues which saw a total of 120 farmers participate in both the theory and hands-on demonstration sessions that were most encouraged by the participants. During the learning sessions, participants went through various bee keeping skills and knowledge that included;

- Introduction to Bee keeping in Kenya
- Social Organization of bees and Hierarchy of colony
- Importance of beekeeping
- Bee keeping equipment and tools
- How bees communicate
- Lang'stroth hive technology
- Bee pests
- Bee keeping Records

The training was an interactive one with participants getting to prove what they had some prior information on bees before and its economic importance to both human and environment. It was a chance for them to have hands-on demonstrations, which improved further their understanding of the course.

Demonstration sessions were carried out on how to inspect, super, check & control pests and harvesting. These formed a



**Arrival of 180 Langstroth Beehives at
Magunga - Homabay**



**A trainee demonstrates how to dress up for
Beehive Inspection**



**A Training Session at Magunga New
Apostolic Church**

major session of the training as the participants were expected to be well conversant with the processes.

The respective training venues were very ideal for both the participants and the facilitator as it provided a quite environment away from public destruction.

Training Venues

Nasira New Apostolic Church (**Busia**)
Funyula Town New Apostolic Church (**Busia**)
Magunga New Apostolic Church (**Homabay**)



Trainees in Session at Magunga

Workshop Norms

The participants agreed on the following as the workshop set rules in almost all the venues.

- Participatory, everybody contributing during the session.
- No unnecessary movement in the class.
- One at a time when given the opportunity to speak.
- Mobile phones be put off or on vibration when in class.
- Keeping time always during the workshop.

Workshop Responsibilities

For the smooth running of the workshop it was necessary to have the following responsibilities taken care of with respective group members, which went on so well throughout the training period.

- Time Keeper
- Welfare
- Team leader
- Spiritual leader



A training Session at Nasira New Apostolic Church- Busia

INTRODUCTION TO BEEKEEPING

The facilitator took the participants through the introduction to bee keeping session where the following were covered as key areas;

Beekeeping is defined as the art of having bees for honey and other bee products for income. Bee keeping was agreed to be an activity from long time done with our great grand fathers basically for honey production. They had methods they used to get hold of the bees and get the products which they always wanted.

The following are some of the ways they used to keep bees;

- The Gourds.
- The pots.
- The natural trees and caves.



A trainee at Nasira demonstrates how to wear a bee suit

- The log Hives.
- The house.

In the olden days bee keeping was important as they got very important products from it like honey, brood and the propolis.

Honey

Honey was important in so many ways in the traditional era.

- As food.
- For income, barter trade.
- As medicine.
- Used as part of dowry in some communities.
- Used on reconciliation ceremonies and oath procedures in other communities.

Brood

Brood was basically meant for the old people. They could go to the apiary and remove the combs with the young bees which are one to two weeks. At these age the bees has got the better part of the nutrients which the old men always targeted for the royal jelly.

Propolis

This was harvested at small quantities which traditionally were used to mend the leaking water containers. It also came out at the workshop that in the olden era, the old men were chewing propolis for some medical reasons.

IMPORTANCE OF BEE KEEPING IN THE MODERN ERA

This was discussed with the participants and the following came out clearly in addition to the importance in the traditional era. To improve the understanding, this was categorized in two;

Importance to the Environment

- Pollination.
- Helps in balancing the ecosystem.
- Encourages afforestation and agro-forestry.
- Environmentally friendly.

Importance to the Farmer

- Income generation.



Homa bay Beekeepers after the training received Apiary Level 1 certificates each and honey extractor for the group



Busia Beekeepers after the training also received Apiary Level 1 certificates each and honey extractor for the group



The first harvest in Homabay

- A source of medicine.
- Foreign exchange earner.
- Pollination.
- Promotes gender equity.
- Completely sustainable.
- Security purposes.

Bee Products and Their Uses

Honey:

Food, Medicine, Brewing liquor, Preservative, Raw material for cosmetics and for Income generation.

Wax:

Raw material for shoe polish, candles, matches and comb foundation

Pollen:

Highly rich in protein used to make capsules and health foods

Propolis:

Used in manufacture of tar, gum, glue and other antibiotics

Bee Venom:

Raw material for making medicine [anti-venom]

Royal Jelly: Manufacture of health foods.



SOCIAL ORGANIZATION OF BEES

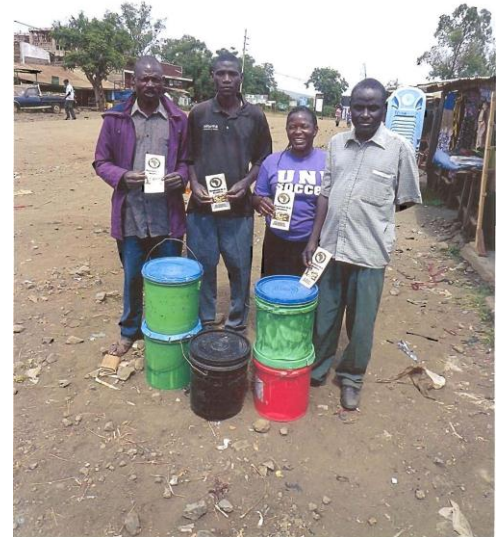
The participants were taken through the bee caste as follows;

Types of bees making a Colony

The Queen, Drone and the Worker

Queen

- The true mother of all bees in a colony lays eggs and gives instructions in the colony.
- Owns the ruling power of the colony and can live for 3-5 years depending on the environment.
- Has the capacity to lay between 1500-3000 eggs per day as per age and environment.
- It has short wings which does not reach the entire body for the following reasons.
 - To show her purity.
 - To ease mating.
 - To ease laying of eggs in the cell.
- It has a V- shaped abdomen for accurate laying in the cells and a shiny thorax and abdomen.
- Has a curved sting only used to fight rival queens.
- After hatching into adult queen stays in the hive for 5 days during which she is being taught on colony management by nurse bees.
- She mates 8-10 drones after which she remains fertile for the rest of her life.
- Only the strongest 8-10 drones shall mate the queen.



Magunga Beekeepers waiting for the HCA honey collection vehicle

- The queen is fed on royal jelly through her life time; the royal jelly is secreted by nurse bees body. This is for the queen to lay more eggs and stay longer.
- With exception of her mating, the queen leaves the hive only when accompanying a swarm or absconding and communicates with the rest of the colony by use pheromone.

Drones

- This is the only male bee in the colony. They are shorter, thicker, bulkier than any other bee in the colony and have no sting.
- They have no means of gathering nectar, pollen, water and even feeding themselves and are fed by the workers.
- Have the duty of mating the queen only and have a lifespan of at least three months.
- Normally expelled or killed during draught. They die after mating.

Workers

- These are the smallest underdeveloped female bees in a colony. They form the largest population in a colony and have sting to protect the colony.
- They experience a well organized division of labor.
- Foragers-bring forage [food and water] to the hive.
- Scouts-looks for forage sites and knew homes.
- Soldiers-these ensures the security of the colony.
- Nurses-takes care of the queen, feeds the young and the drones in the colony.
- Workers have pollen baskets used to collect pollen.
- Have a lifespan of 6-8 weeks in hardship areas and up to 4 months in a good environment.

COMMUNICATION OF BEES

Bees like any other living organism communicate in a particular set way. There are three main ways on how bees communicate i.e by Pheromone, Dances and Buzzing

Pheromone

This is a micro-chemical secreted by the queen bee to communicate different messages to the rest of the colony. It has other millions of micro-chemicals.

Dances

These are systems done by scout bees to indicate the distance of food, new homes and forage from the colony.

Types of Dances

1. Round dance: these indicates that the food is near
2. Wag tail dance: these indicates far away food source.

LANGSTROTH TECHNOLOGY

These being the peak of the training the participants were successfully taken through the components of the Langstroth hive alongside practical demonstration where they were able to identify the components and their uses by the end of the session.



A langstroth beehive with a supper in positibn

Components

- **Floor:** provide the base to the hive.
- **Entrance:** getting in and out of the hives.
- **Brood box:** holds the queen and the brood.
- **Brood frames:** holds the combs for the brood.
- **Queen excluder:** excludes the queen from the super box.
- **Super box :** where bees store pure honey.
- **Cover/Top :** protect hives from direct rain and sunlight.

This was then followed with an explanation on how the Langstroth hive operates. The participants after getting the concept were therefore to give the advantages and disadvantages as compared to other hives. They had the following list which was agreed upon after logical discussions.

Advantages of Langstroth Hive

- Clean honey produced hence high income.
- Ease in harvesting, inspection, and pest control.
- Reduced work for bees
- Durable and portable.
- Bees are not killed during harvesting and inspection.
- More than one product can be harvested e.g. propolis, honey, pollen, wax, royal jelly.
- Gender neutral and requires less space of land.
- Market of Langstroth products is readily available.

Disadvantages

- Expensive to acquire.
- Requires skills due to the many components.

SITE SELECTION AND APIARY MANAGEMENT

Once the hive has been colonized the farmer should be ready to transfer the hive to the apiary. This is the place set aside for the bee keeping. When the brooder has been set for batting, the farmer should immediately prepare the apiary as the hive could be colonized anytime, The best apiary should therefore have the following points considered:



Langstroth Beehives in an Apiary in Homabay



Langstroth Beehives in an Apiary



Beehives in an Apiary in Busia

- Should be under a shade, the early morning sun and late evening sun if possible should catch the hives (no direct hot sunlight, wind or rain)
- Enclosed in a thick live fence possibly trimmed at 7-8 feet high to reduce aggressiveness.
- Avoid busy and noisy areas (public places, grazing areas, markets, roads, near machines and schools)
- Availability of forage and water should be checked, as bees would work well within 2km. to get water and forage.
- Must be kept clean as always and secured.

Goal Post Method

- Raise the bee hive a few feet from the ground (2 feet minimum)
- The 6 gauge wire should be used to hang the hives.
- The height of the hive from the ground should be 2 feet and the wire hangs 5 feet from the cross bar.
- From one hive to the next should be a minimum of 1.5 feet and from the post should be 2 feet.



Beehives in an Apiary in Homabay

Stand Method

- The hives should be raised 2 – 2.5 feet from the ground, if a farmer could get steel stands but when wooden stands are used then Ant precautions must be considered
- The other details remain the same as the goal post method up to including spacing



An Apiary in Funyula-Busia

Bee Foraging Plants

Bees shall visit all nectar rewarding plants for their forage. The following gives a list of some plants within the locality of the project, but not comprehensive:

- Fruit trees; banana, mangoes, guavas, oranges, lemon, pawpaw, avocado e.t.c.
- Vegetables; beans, soya, sweet potatoes e.t.c.
- Oil crops; maize, groundnuts, sunflower, simsim e.t.c.
- Fibre crops; sisal, cassava e.t.c.
- Trees; acacia, euphorbia, moringa, gravellia, eucalyptus, calendar, bottle brush, Neem tree (Mwarubaini) e.t.c

COLONY TRAPPING PROCEDURE

Bees normally create colonies naturally a process referred to as **swarming**. On the other note a colony can decide to leave a particular place for good to settle somewhere else due to some reasons a process called **absconding**. In both ways a potential farmer would be



A beekeeper in Busia shows her Beehive in colony trapping position

targeting a colony from either processes hence must introduce a more conducive environment in form of a hive for the wild bees to colonize, the following are some of the steps considered to ensure a prompt colonization with Langstroth.

- Ensure your brood box is clean and properly waxed (comb starters fixed)
- Identify a proper catching site which should be bees route and not far from apiary site. These could be high on a tall tree as bees tend to move little bit higher during swarming or absconding.
- Using a binding wire (greased) tie the brood box and raise it higher on the tree and the end of the wire tied at a reachable height to ease transfer once the hive has been colonized.
- The brooder should be left there for one month as you keep on checking for the colonization progress.
- After a month lest the hive remain un-colonized, lower the brooder and check to clean in case of pest attack then possibly change catching site.

OPERATION AND MAINTAINANCE OF BEE KEEPING EQUIPMENT

For effective management of honey bee colony a potential bee keeper must have the following equipment:

1. **Bee suit:** protects the body (light colored as bees are not irritated with light colors)
2. **Bee veil:** protect the face and the head
3. **Smoker:** disconnects communication of bees
4. **Gumboots:** protects the foot
5. **Hive tool:** opening lids and bars
6. **Bee brush:** removing bees from your cloth and comb (soft fibre)
7. **Torch:** light source
8. **Rubber gloves:** protects hands.

COLONY MANAGEMENT

Hive Inspection

This is a process carried out to monitor the progress of each colony. It is therefore required to be carried out at interval of two weeks.

Things to establish during inspection:

- Updating the records.
- The progress of the colony.
- Find out whether ready for supering or not.
- Know if honey is ready.
- Check for availability of predators and pests.

Inspection Procedure

- Light the smoker and keep it working.
- Dress accordingly i.e. makes good all the zips.
- Ensure availability of all you need.
- Keep movements slow and deliberate.
- Wherever possible work your hives early in the morning or late in the evening to avoid working during rains or hot sun.
- Avoid strong odors when going to the apiary.
- Avoid wearing bright colors or dark colors.



A Trainee demonstrates how to approach beehive for inspection



- Avoid flight paths of the bees.
- Lift the frames carefully and check properly to your satisfaction.
- Replace the checked frames exactly on the space provided and never break the combs.
- Avoid dismantling all the frames at ago as these could expose the queen -which might lead to absconding.
- Under favorable conditions suppering should be done six months after catching and first harvesting at the ninth month.

Factors to Determine How First A Colony Needs A Super

- Type of colony i.e. strong or weak colony.
- General management i.e. regular inspection.
- Forage/ food availability and water.

Bee Pests and Predators

1. Honey badger: prevent using goal post.
2. Hive beetles: Prevent by regular inspection.
 - Use goal post method of hanging.
3. Human
4. Ants /white ants/termites (black and red).
 - Use ant killers.
 - Goal posts which are treated.
5. Wax moth.
 - Regular Inspection.
 - Keep apiary clean.
 - Cannot survive in a strong colony.



The enemy of the bees waiting to pounce

RECORD KEEPING

Harvesting records

The harvesting records will be used to show the income flow in the farmers household from the bee keeping project as an enterprise.

The participants were taken through the major contents of harvesting records as shown below:

Harvesting record Sample

Name:-----

Date	Brooder no.	Super no.	Gross wt.	Empty wt.	Honey wt.	Amount

Inspection and Apiary Management Records

Name:-----

Date	Brooder no.	Super no.	Brood condition.	Super condition	Apiary condition.	Comment

FIRST AID FOR BEE STINGS

Tips to avoid bee stings

- Simply avoid beehives themselves unless someone experienced is with you.
- Bees foraging on flowers gathering nectar and pollen rarely sting. If you don't bother them, they won't bother you.
- Bees are attracted to motion, so swatting at a bee as it flies near you will only irritate the bee.
- If a bee is buzzing around your head, hold your hands up on each side of your face, and go calmly into the trees. Even a few branches will disorientate the bee and it will fly off.
- On warm sunny days, bees are most active, wear a cap that will eliminate the chance of a bee accidentally getting caught in your hair.
- If a bee gets caught in your hair, it will try to sting, as it feels trapped. It usually takes a few seconds for it to get into a position to sting, so calmly pinch the bee between your thumb and forefinger and crush it.
- If a bee accidentally flies into your vehicle, remain calm, slow down and park on the side of the road if possible. The bee will soon go to the windows because it is attracted to the sunlight and is trying to fly away. There it can simply be released by opening the window or door.
- The fragrance of heavy perfumes and flower scented perfumes may attract foraging bees.
- Avoid wearing bright clothing or floral prints.
- Take caution with yard work and gardening that might disturb undetected nests.

What to do if you get stung:

- Honeybee stingers are barbed so the stinger is detached from the bee and remains in your skin. This causes the honeybee to die shortly afterwards. That is why honeybees only sting when absolutely necessary. The stinger with a small venom sac is visible after the bee leaves.
- If you happen to get stung, first remove the stinger by scrapping it out with your thumbnail. Do not try to pinch the sting out, as you will be squeezing more venom into the wound.
- Apply a cold wet cloth or ice on the sting area to reduce the swelling and pain.
- The sharp pain associated with a sting will subside in several minutes.
- The body's response to the toxins in bee venom can vary. Symptoms range from localized swelling which is quite normal to allergic reactions in a limited number of cases.
- Allergic reactions require prompt treatment or medical assistance.
- Less than 1% of the world's population is allergic to bee venom.

THE REACTIONS

Normal

- Pain, Local swelling, Redness develops around the bite area and Itching

Treatment:

- Ice (cold compress) to reduce swelling, cleansing of wound
- Antihistamine or hydrocortisone ointment, which are available in chemists to provide relief. Apply Vicks Vapor Rub or Robb ointment to reduce swelling.

Toxic

- Local swelling, redness, pain, itching
- May be quite extensive
- Multiple stings-is very uncommon. High levels of bee venom exposure may be serious. There are severe symptoms in very rare cases.

Treatment:

- Ice to reduce swelling, cleansing of wound
- Antihistamine pills like Piriton to neutralize venom
- Serve patient little alcohol or strong black tea to neutralize venom
- Multiple stings may require medical assessment and treatment.

Allergic

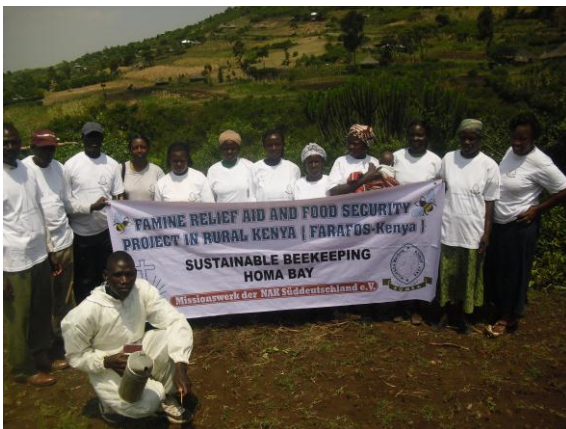
- Symptoms away from site of sting (systemic).
- Swelling (possibly lips, tongue, throat) and in severe reaction difficulty in breathing, vomiting and shock.

Treatment

- Mild (skin or external symptoms only)-antihistamines like Piriton to neutralize venom
- Rush patient for medical attention and treatment
- Severe (any internal symptoms)-epinephrine (adrenaline), steroids, antihistamines which can be recommended by a doctor.



Amuka Twende Self Help Group Members- Busia



Magunga Beekeeping Farmers



Homabay Bee keepers waiting to Transport their Honey

PROJECT EVALUATION REPORT JULY 2013

This report highlights indications for progress in terms of impact points across the two project areas. The impacts are categorized as economic, social and environmental impacts. Farmer identification, group names, and still pictures have been used for traceability. The evaluation misses out on additional economic impact data from several hives which are actually ready for harvesting in the month of July at the time of this evaluation but had not yet been harvested.

There are three groups supported by KUMEA in each of Busia and Homabay Counties. In Busia, the main groups are Amka Twende, NASDA and Riziki. Amka Twende and NASDA groups are located at Bukhaya West, Busibwabo and Nasira sub-locations respectively. Riziki group is located at Funyula Sub County with farmers clustered around the Wakhungu, Segero and Bukhulungu areas. In Homabay, the groups are Pamoja Youth, Magungu 2 self help and Soko health and development groups.

All the groups have several members of whom 25 members from each group of the first four received three bee hives from KUMEA. Two groups of 10 members each received three beehives also. Therefore a total of 360 three hundred and sixty bee hives were placed among farmers in homabay and Busia. The total hives in the project area are 450 (four hundred fifty). All the farmers who benefited were targeted for the impact evaluation though actual participants who could be met within the set evaluation period are documented.

FARMER PARTICIPANTS IN THE IMPACT ASSESSMENT EXERCISE

Attendance lists with demographic data are attached annex 1 for all the participants from Busia and Homabay Counties. Information from the demographic data is representative of the entire project area.

- A total of 120 farmers received bee hives from the project. A total of 58 farmers (38%) directly participated in the impact assessment exercise. A significant sample size.
- Of all the farmers who participated, 53% were male while 47% were female. Women are getting interested in beekeeping unlike before where bee-keeping was by men.
- Over 80% of the respondents at evaluation went as far as primary education. Less than 20% went to secondary schools, and less than 5% went to college and another less than 5% never attended school at all. This information will be useful in designing relevant approaches to the target farmers while considering their literacy levels.
- The average age of the project participants who participated in the impact assessment across the project area is 43years. There may be a need for the project participants to make deliberate efforts to involve their youths in the project to ensure project sustainability.
- Most of the participants across the project area are Luhyas with a few Teso and Luos found around NASDA and Riziki groups in Busia County and predominantly Luo and Suba tribes in Homabay County. These are the usual local tribes in those areas. This indicates that proceeds from the project will benefit the local people and not taken away by persons leasing land.

THE IMPACT ASSESSMENT: METHODS AND PROCESSES

This involved visits to over 90% of all the apiaries around each of the groups in Busia and Homabay Counties. Amka twende and NASDA groups were visited on 16th July 2013 while Riziki group apiaries were visited on 17th July 2013 for Busia County. In Homabay County, visits were on 18th to 19th July 2013. Farmers accompanied the evaluation team to the apiaries. The means of transport connecting the Busia and Homabay counties at some stage was by ferry. We missed the ferry and had to take a motor boat to connect over.

Other evaluation methods included observations, interviews from structured questions and focused group discussions. The findings from all these methods are recorded in this report as categorized impacts. These methods were applied to all group members.

ECONOMIC IMPACTS OF BEEKEEPING

- Pamela Nekesa, 52 years from Amka twende group was paid an initial Kshs 300/= which she used to buy two local female hens. One of the birds has hatched ten chicks while the other one is now laying eggs.
- Caroline Egesa, 37 years, from Amka twende group also received kshs 300/= from initial sales of her hive products. She also bought two local hens which are still growers.
- Evans Nalisi, 33 years; Hannington Amudede (38) and Peter Egesa (48) are specializing as bee-hive inspectors in Busia county after the training by HCA. Their services have been hired in a neighbouring sub-county for which they were paid.

- David Ochoro, a youth from soko B group, Magunga cluster, has had all his three hives harvested in one initial harvest in March 2013. He received a total of Ksh, 1,700/= (one thousand seven hundred) which he plans to use to buy local poultry for breeding to get more income.

- Joseph Ochien’g, from Magunga cluster, has had two of his hives harvested in one single harvest. He received Ksh. 2000/= (two thousand) which he used to a female sheep and its lamb for breeding to get more income.

- Susan Sikuku from Magunga 2 self group has had all her three bee hives harvested in a single harvest. She received Ksh. 5,000/= (Five thousand) which she used to pay fee arrears for her son at Tonga boy’s secondary school.



Interviews with members of Amka Twende group, Busia County.



Young hive inspectors from Amka Twende group, Busia



‘I had never handled such cash, I plan to buy local poultry to breed’ – David Ochoro

- Eunice Adhiambo Odunga, from Magunga 2 self help group has had two of her hives harvested in two harvests. She has received Kshs. 8,000/= (Eight thousand) in total in March 2013. She added a bit of cash and bought an ox-plough in April 2012. She has used her ox-plough in two seasons and managed to plough up to 4 acres of her farm each season. Before buying the ox-plough, she was only able to plough up to 2 acres per season. As a result of the ox-plough, she can now harvest up to 10 bags of maize grain up from a maximum of 5 bags before, without the ox-plough. (*see picture at social impacts*)

- Maurice Odunga 33 years, of Magunga 2 self help group had developed immense interest in bee keeping for self employment. His efforts were recognized by Honey Care Africa, a development partner with KUMEA, who took him for further training and employed him as their contact person on the ground. He was given a motorcycle, bee kit, and receives an allowance from HCA for inspecting bee hives for the members of three groups at Magunga cluster.



'I got training and a satisfying job!' - Maurice Odunga

- Peter Nandasaba has had two of his bee hives harvested once. He received a total of Kshs. 5,610/= (Five thousand six hundred and ten) from sale of honey. He used the cash to offset school fees for his son studying at Tonga boy's secondary school.

ECONOMIC BENEFITS OF BEEKEEPING

- Mama Hendrica Anyango, wife to Zacharia Okanya of Amka twende group, harvested beans in quantities that she had never realized since she got married in Busibwabo area. She had managed to harvest 60kgs of beans up from a maximum of 8kgs of beans before from the same portion of land. Her produce increased seven fold! She attributes this increase to the bee project.
- Bananas planted around Segero apiary was seen to have developed big banana bunches attributed to bees pollination- confirmed by Joseph Juma, the group patron.



'A better bean yield, thanks to the bees! - Hendrica and grandchildren

- God Mesa apiary has 16 hives which are all heavily colonized. 14 of the total hives were harvested in March 2013 giving a total honey weight of 72kgs. The hives were due for harvesting at the time of evaluation.
- Mzee Michael Odundo from Soko B group, Magunga has had his hives harvested three times. He received a total income of Ksh 6,000 (six thousand) part of which he used to pay school fees for his son at Tonga Secondary School. He also bought two sheep – an ewe (female sheep) and its lamb at Ksh.2, 400/= from a local market for breeding. The cash was from his sale of hive products.
- Caren Ager from Soko group Magungu also has had her hives harvested three times and received a total of Ksh 1,700 (one thousand seven hundred).



God Mesa apiary with most hives supered, ready for harvesting



'From bees, I bought sheep'- Michael Odundo

GROUP STRATEGIES IN PLACE AND PROPOSED TO IMPROVE THE ECONOMIC IMPACTS

1. The groups are in the process of reducing the number of hives per apiary from the current average of 20 hives per apiary to at most 10 hives per apiary.
2. The farmers requested for more training on bee- keeping to improve and up date their knowledge on bee-keeping. These will include on- farm training and exchange tours to visit better performing groups.
3. The farmers have heeded advice from HCA to avoid disturbing the hives frequently. They will allow one hive inspector, identified from their community and trained by HCA, to be inspecting their bee hives when necessary and advising them accordingly.
4. The farmers have plans to grow sunflower and other relevant trees that bees forage on. These will be grown within one kilometer radius of the apiaries to reduce flight distances for foraging bees

and help them make more honey. This will reduce the significant rate of abscondment realized in most apiaries.

SOCIAL IMPACTS OF BEE KEEPING

- Henry Nyaranga and Elizabeth Obanya (teacher) not group members, live 500m and 50m away from Amka Twende apiary respectively. They came and followed the evaluation team with the requests for bee-hives.
- Esau Machoki, young man who was Amka Twende's group member was employed by honey care Africa as a hives inspector for the Busia county bee keepers. This has motivated other young men to take on bee keeping more seriously.
- The Groups keeping bees in Busia County have earned the respect and confidence of community leaders and county Agriculture officers who now recognize them for visits and invite them for exhibitions at public training.
- The Ministry of livestock has trained ten members from Amka Twende group on local poultry keeping. Each of the ten members was supplied with a kit consisting of 5 pullets (female birds), 1 cock, 3 iron sheets for the project. During long rains 2012 (march- may 2012), all the 32 members of Amka Twende group and NASDA groups each received 2kgs of sorghum seed to plant towards food security- from ministry of Agriculture officers.
- The officials of bee keeping projects in Busia county are being approached by other NGOs e.g. PALWECO, Farm concern to help with community mobilization.
- Equity bank has targeted the bee keeping group members and trained them on credit and credit management aspects.
- Many community members around groups are still suffering from "Apis phobia"- fear of bees.
- Bee keeping farmers from different groups across the project area have known each other and share experiences on bee keeping and other farming enterprises.
- Cross pollination from bees has helped farmers who had lost indigenous seeds like "Nyamula" maize. They now get some seed among their hybrid maize harvests following pollination process by bees.
- Children have appreciated bees having tasted some honey from the harvested bee hives. This positive attitude can contribute to sustain the project in future.



'Hey? How can we get the bee hives?' - Henry and Elizabeth



Caroline Egesa, far right, from Amka twende group benefited with poultry project

- Women who were previously thought to be cowards of bees are now taking bee keeping as a business. Eunice Adhiambo Odunga cited at economic benefits bought an ox plough from sale of her hive products. She has gone further to use the training given; she put on the group's bee suit and harvested products from her own hive. She says she would do it for other members. She hopes to become a bee hive inspector in her community.



'Yes! I can do it, I want to be a hives inspector' – Eunice

ENVIRONMENTAL IMPACTS OF BEE- KEEPING

- Farmers are growing more trees for apiaries sheltering and for bee forage. There are trees recommended for these purposes.
- There is improved crop production realized by farmers due to the cross pollination facilitated by foraging bees. More beans, bananas and soya beans were realized. (see economic impacts) These were however not direct objectives.
- The previously unproductive forest reserves around Magunga are now being used to set up apiaries. Magunga group officials have agreed with Government forest officers to use the forest reserves for beekeeping thereby improving productivity of the reserves.

CHALLENGES FACING BEE-KEEPERS

These are not many but have direct negative impacts on the bee-keeping project and threaten sustainability. Most of these are easy to manage by improved apiary management.

- Ants invasion
- Rat invasion

These pests have caused bees to abscond

- Few incidents of bee attacks on people and livestock aggravating "Apis Phobia" – fear of bees by those not trained.

MOTIVATION FOR BEE-KEEPING

- Ready market for hive products by HCA
- Farmers get technical assistance on bee-keeping from KUMEA, HCA and lately visit by officers from Government Ministry of livestock.
- Bee keeping is a low-input and high output enterprise which fits in well with the low income small holder farmers in the KUMEA project areas. A farmer can harvest twice during one crop season!
- Bee keeping requires a small portion of land than other livestock enterprises.
- If well managed, beekeeping can give produce throughout the year!
- HCA has introduced incentives for expansion of bee-keeping by farmers. A bee hive (lungs troth) costs about Ksh 5,000. A farmer will only pay Ksh 1,000 (20%) of cost of a hive to receive five additional hives-on credits.
- Crops pollination services by honey bees has led to higher yields in crop production and in developed countries, the services of cross pollination by honey bees is paid for by farmers with crops adjacent to the bee hives.

INDICATORS OF/FOR SUSTAINABILITY NOTED OF THE BEE KEEPING PROJECT

- The group apiaries holding more than ten bee hives are having hives decentralized for better management by individual farmers.
- The farmers have a group policy for saving one Kilogram of honey from every hive harvested for future expansion.
- The local target farmers are being involved in technical supervision and management of the bee hives.
- The farmers from the three groups around Magunga cluster are- Pamoja youth group, Magunga 2 self help group and soko health and development groups.

These groups have had their officials come together to plan for formation of a community based organization (CBO) called PASOMA, Standing for the group names. They are in the process of registering the CBO.

- The Magunga cluster of farmers has a hive products collection centre at Magunga centre. The harvested hive products are weighed, processed and forwarded to HCA for purchase and payments.
- Honey care Africa, a development partner for KUMEA, has put in place a bee keeping expansion strategy which allows farmers to acquire bee hives. A farmer can now get on credit, five langstroth beehives by paying Kshs. 1000/= (one thousand). One hive actually costs between Kshs.5, 000/= and Kshs.6, 000/=.
- The Amka twende group in Busia County is already diversifying group enterprises in addition to the bee-keeping. This is positive for risk aversion and source for alternative income from other projects. The projects can support each other.



Wilson Andiego (Chairman of Magunga Self Help Group- Homabay Harvesting Honey)



CONCLUSION

Bee keeping value chain usually has marketing of hive products as a major drawback for most projects. This is however well taken care of by the FARAFOS project. It is therefore no doubt that in just one year, farmers are already benefiting from sales and getting motivated to carry on. The other challenge is usually lack of capital to expand the enterprise. This challenge has also been well taken care of by the HCA partner in the hive numbers expansion plan for more production. Considering that the Government Ministries of livestock in the project areas have not been paying much emphasis on bee keeping projects in the past, the FARAFOS project is already a model bee keeping project that well deserves full support of the Government, donors and well wishers who have small holder farmers at heart for development. There is unlimited potential and goodwill from farmers. Any Support, physical or financial for this worthwhile course will no doubt touch lives positively in rural Kenya,

ANNEX 1: FARMERS WHO PARTICIPATED IN THE EVALUATION EXERCISE

AMKA TWENDE GROUP: BUSIBWABO

Name	Gender	Age	Tribe	Maximum Education
1.Peter Egesa	M	48	LY	P
2.George Ouma	M	44	LY	p
3.Hannington omudede	M	38	LY	P
4.Evans Nalisi	M	33	LY	S
5.Nashon Machoki	M	65	TS	S
6.Selestine Makecho	F	50	TS	P
7.Harrison Omwigi	M	52	LY	P
8.Pamela ajiambo	F	53	TS	P
9.caroline Egesa	F	37	LY	P
10.Pamela Nekesa	F	52	LY	P
11.Jesca Naliaka	F	52	LY	P
12.Leonida kwoba	F	68	LY	P
13.Caroline Onyango	F	29	LY	P
14.Samuel Odongo	M	37	LY	P
15.Patrick Wandera	M	40	LY	P
Totals	8M 7F	698		P-12,S-3
Means		46.5		

Key: M- Males, F- Females, LY- Luhya, TS- Teso, P- Primary, S- secondary, Col- College

NASDA GROUP MEMBERS: BUSIA

Names	Gender	Age	Tribe	Maximum
1.Denise Ojwan'g	M	22	LY	P
2.Peter Makana	M	42	LY	P
3.Juliet Mboya	F	30	TS	P
4.Albert Mudenge	M	57	LY	P
5.Caro Juma	F	40	LY	P
6.Paustine Achien'g	F	42	LY	P
7.Phanice Amakobe	F	30	LY	P
8.Wilfrida Akinyi	F	50	LY	P
9.Rosemary Nekesa	F	43	LY	P
10.Priscilla	F	40	TS	P
11.Eliud Ouma	M	27	LY	College
Totals	4M, 7F	423		P-10,col 1
Means		38.5		

Key: M- Males, F- Females, LY- Luhya, TS- Teso, P- Primary, S- secondary, Col- College

RIZIKI GROUP MEMBERS: BUSIA

Name	Age	Tribe	Maximum
1.Wandera Francis	M	LY	P
2.Phylis Anyango Ochien'g	F	LY	P
3.Elizabeth Mwenda	F	Kamba	P
4.Marialis Agola	F	LY	P
5.Sylvia Akinyi	F	LY	P
6.Margaret Oduma	F	LY	P
7.Beatrice Juma	F	LY	P
8.Rosemary Oketch	F	LY	P
9.Sylvester Achoka	M	LY	P
10.Godwin Ochien'g	M	LY	P
11.Sylvester Bwire	M	LY	S
12.Margaret Ouma	F	Luo	P
13.Mildred Khayoko	F	LY	P
14.Joseph Juma Onyango	M	LY	S
15.Benard Achoka	M	LY	S
16.Joseph Bwire	M	LY	P
Totals	7M,9F		10P,3S

MAGUNGA CLUSTER OF FARMERS: HOMABAY

	Names	Gender	Age	Tribe	Maximum	Social status	Family size
1	Bernard Matunga Seko	MALE	61	Suba	PRIMARY	MARRIED	
2	Janes Kitoro Odera	MALE	51	Suba	PRIMARY	MARRIED	
3	Joanes Odera Nyambaria	MALE	40	Suba	PRIMARY	MARRIED	
4	Philip Ogutu	MALE	63	Suba	PRIMARY	MARRIED	
5	Wilson Andiego Shikuku	MALE	50	Luo	SECONDARY	MARRIED	
6	Millicent Akinyi Owana	FEMALE	35	Suba	PRIMARY	WIDOWED	
SOKO B							
7	Michael Odindo Aono	MALE	54	Suba	PRIMARY	MARRIED	6
8	Maurice Ochieng	MALE	35	Suba	PRIMARY	MARRIED	4
9	David Otieno	MALE	24	Suba	PRIMARY	MARRIED	5
10	David Ochuro	MALE	22	Suba	PRIMARY	MARRIED	4
11	Joseph Ochieng'	MALE	45	Suba	PRIMARY	MARRIED	9
12	Rose Aoko						
13	Susan Sikuku						
14	Eunice Adhiambo Oduya	FEMALE	32	Suba	PRIMARY	MARRIED	6
15	Maurice Odinga	MALE	33	Suba	PRIMARY	MARRIED	6
16	Peter Nandasaba	MALE	45	Luhya	SECONDARY	MARRIED	6
	Totals	2F,14M	673.6				46
	Mean		42.1				5.8