

# Building On a Commercially Viable CIDA/Kenya Beekeeping Collaborative Program To a Transformative, Self-sustaining Enterprise

**Asiko Grace<sup>2</sup>, Kimtai Harry<sup>1</sup> and Ossiya sarah<sup>3</sup>**

1. Ministry of Agriculture, Livestock and Fisheries, P/S, State Department of Livestock
2. University of Nairobi, College of Agriculture and Veterinary Sciences, Department of Animal Production
3. African Union-Inter-African Bureau of Animal Resources

# Abstract

Beekeeping in Kenya was already being practiced by some communities using traditional log hives, which produced little honey (5 Kgs per hive/year). A survey by The Kenya Freedom from Hunger and a feasibility study by Oxfam (1967-1969) proved that beekeeping could play a major role in improvement of livelihoods, particularly in rural areas

## Cont...

A ten-year joint project between The Government of Kenya and The Canadian Government, through the Canadian International Development Agency, CIDA, focused on: Training and extension, quality assurance and standards, hive equipment and honey refinery set-up, group and co-operative formation, for marketing of value-added products, mainly honey and beeswax

## Cont...

The Kenya Top Bar Hive innovation, with tremendous potential for beeswax and quality honey production (30 Kgs/hive/year), was a milestone to the enterprise. In the mid '80s, Kenya produced approximately 8000 tonnes of honey and was ranked top in Africa whereas the Co-operative Movement, which was a tool for market access, was rated second in the world (Paepard, 2010)

## Cont...

The industry at the time was engulfed in sustainability issues. The world Bank and The International Monetary Banks' rationalization program of '90s to curb overspending and cushion young economies from collapsing, focused on privatization and commercialization of public services, wood workshops and honey refineries inclusive, before relinquishing them to local communities

## Cont...

The untimely exit plans put communities at a disadvantage and resulted in ownership problems. This led to the near collapse of the enterprise. Many partners, however, came on board with tangible solutions on how to keep the initiative afloat. Inclusive were: Aggressive trainings, exhibitions, Agricultural shows, farmer visits, media interviews to create awareness, educational visits and diversification of products.

## Cont...

To date, there is evidence of supplementary family income derived from beekeeping. Apitherapy is embraced and the “health conscious” are enjoying a wide range of low-priced beauty products from the hive. The average honey production is currently 27,000 tonnes contributing Ksh.7.43 Billion to the GDP, with additional advantage in pollination as an ecological service of great economic value

# Cont...

Beekeeping is now emergent in fulfilling the Sustainable Development Goals number 1 to 3, guided by well-established Government structures and legal implements, through Public/Private/Partnerships and collaborators.

**key words: Beekeeping program, transformative, collaborative, self-sustaining**

# **Findings of A survey and Feasibility study by the Kenya Freedom From Hunger and Oxfam, local and foreign NGOs, respectively**

## **BEEKEEPING:**

- **Was pivotal in alleviation of rural poverty**

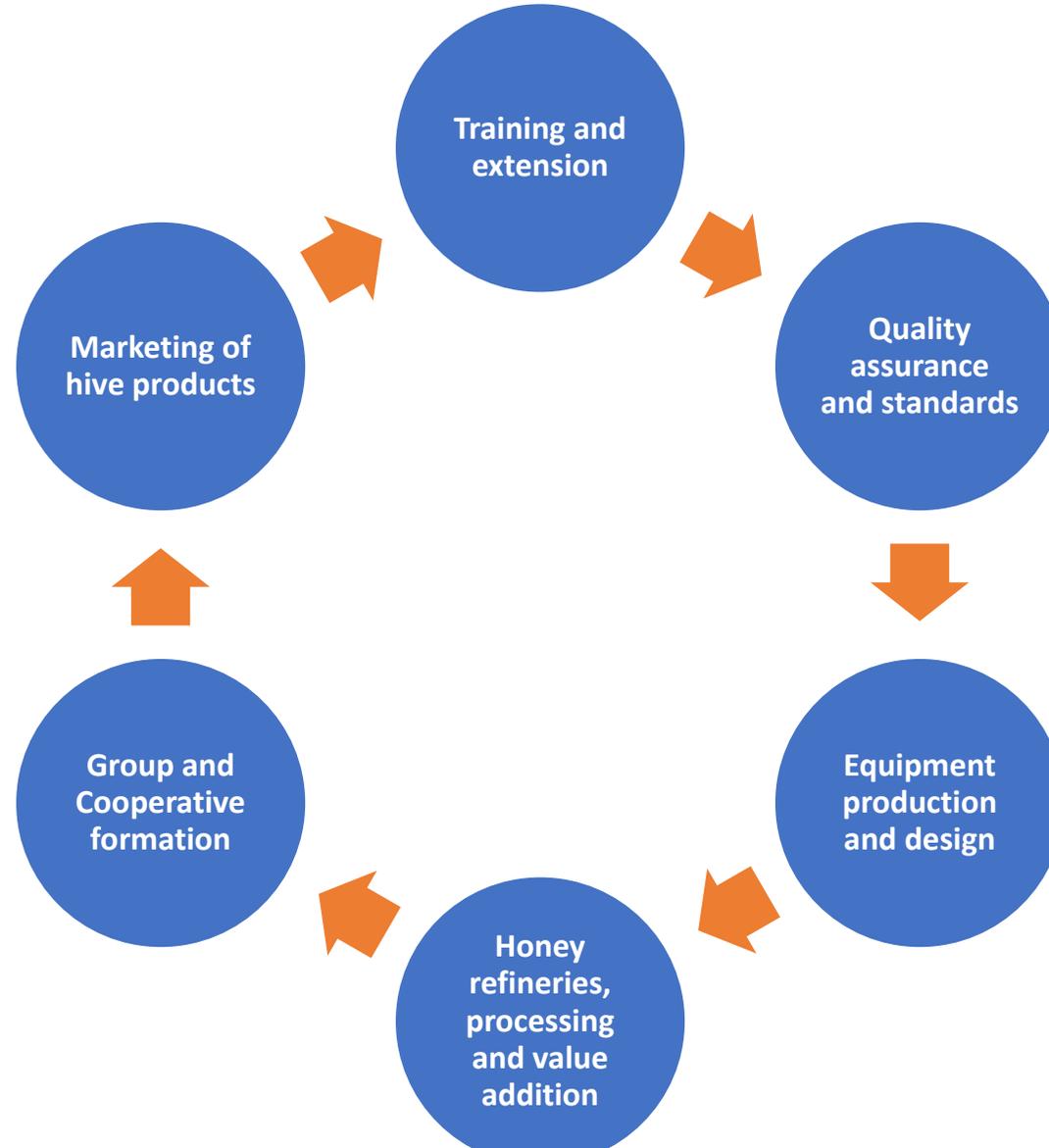
- **It was instrumental in employment creation**

- **Bees and hive products were useful in Apitherapy, as an alternative form of medicine**

- **Value addition of products would spur industrialization and commercialization for sustainability**

- **Climate change would have diverse influence on beekeeping enterprise**

# CIDA/Kenya Beekeeping Project Objectives



# **CIDA/Kenya Beekeeping Project Objectives**

- TRAINING AND EXTENSION
- QUALITY ASSURANCE AND STANDARDS
- EQUIPMENT PRODUCTION
- PROCESSING
- VALUE ADDITION
- GROUP AND COOPERATIVE FORMATION
- MARKETING OF HIVE PRODUCTS

# **POLICY AND LEGAL FRAMEWORK**

- **Policy (Agriculture, Livestock and Beekeeping, 2013)**
- **Livestock and Beekeeping Strategic Plan (2013-2018 & 2018-2022)**
- **Legal Framework (Honey Monitoring Plan, KEBs Specific Commodity Quality Standards)**
- **Nema Act, Kenya Forestry Act, 2007**
- **The National Constitution of Kenya, 2010**
- **Agricultural Sector Development Strategy, ASDS, 2009-2020**
- **United Nations Sustainable Development Goals, 2017**
- **Vision 2030 and ‘The BIG 4 Agenda,’ of the Government of Kenya**
- **Kenya Climate change Strategic Plan, 2013-2018**
- **Kenya Climate Smart Strategy, 2017-2022**



# Instrumental Programs in the growth of the Beekeeping Sector in Kenya

S/N	Program	Objective	Achievement/ milestone	Comments
1	Kenya Freedom from Hunger	A local Initiative Committed to eradicating Hunger among Kenyan Communities	Initial survey on the importance of Beekeeping as a rural Livelihood	Collaborated well with the UK-based NGO, Oxfam, to prove this scenario
2	Oxfam	Collaboration with local Partners to impact on community Development	Feasibility study on the viability of Beekeeping in uplifting rural livelihoods	The partnership with the Kenya Freedom from Hunger was the basis of a long-term

S/N	Program	Objective	Achievement/milestone	Comments
3	CIDA/Kenya Beekeeping Project	1. Equipment design and development 2. Quality assurance and standards 3. Market promotion of value added products, honey and beeswax 4. Establishment of honey refineries and cooperatives 5. Training and extension	KTBH  NBI Laboratory & training Institute  Group and cooperative mobilization Income generation to alleviate poverty	Hive of choice HMP Training curriculum in place. Numerous groups with 21 cooperatives whose equipment has been relinquished to surrounding communities/ Institutions

S/N	Program	Objective	Achievement/ milestone	Remarks
4	Asal-based Livestock Livelihood support Program, ALLPRO	Capacity building and Market access	Training on residues in honey and Securing Laboratory equipment/machines for the Honey Monitoring Plan	This was a big rescue for Kenya, which had been de-registered for non-compliance to the quality standards due to inconsistent HMP records. The country had machine readings in PPM. The new

S/N	Program	Objective	Achievement/ milestone	Comments
5	NALEP	Onfarm Extension services	Farmer & Staff training, Innovations	Onfarm creativity and Technology uptake
6	ASDSP	Prototype of NALEP	Farmer training & Innovations	Extension/Research linkage
7	RPLRP	Marketing and Resilience in the ASALs	Gaps highlighted and action e.g Insurance & drought resistant crops	World Bank supported
8	GTZ	Capacity building	Tot & Training materials	Referral material & Video
9	Asal-based rural livelihood	Development of	Equipping	The National

# Technologies for Honey Production



# The Langstroth Hive

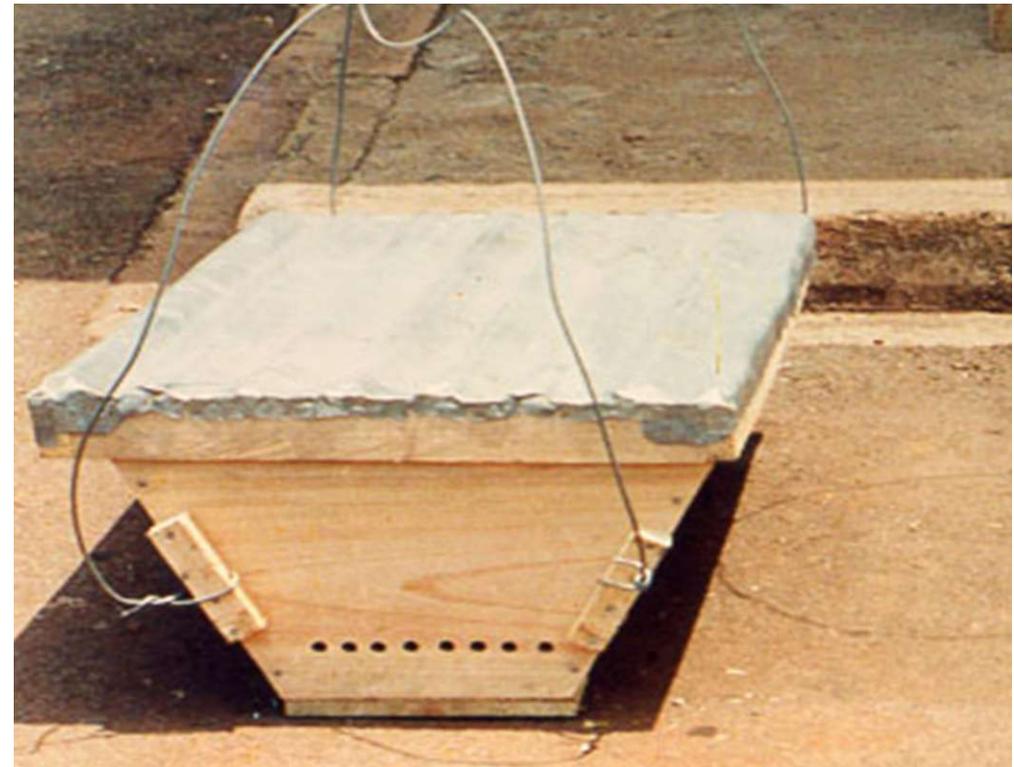


# The Kenya Top Bar Hive

Opened



Closed



Innovation by the late Prof. Isaac Kirea Kigatiira.  
Msc, Project, 1972, University of Guelph, Canada

The idea of movable top bars was a borrowed technology from the Langstroth Hive, for ease of hive Management and quality honey production.

**Features:** KTBH, like Langstroth hive, has movable Top Bars for easy manipulation during inspection and honey harvesting (borrowed technology)

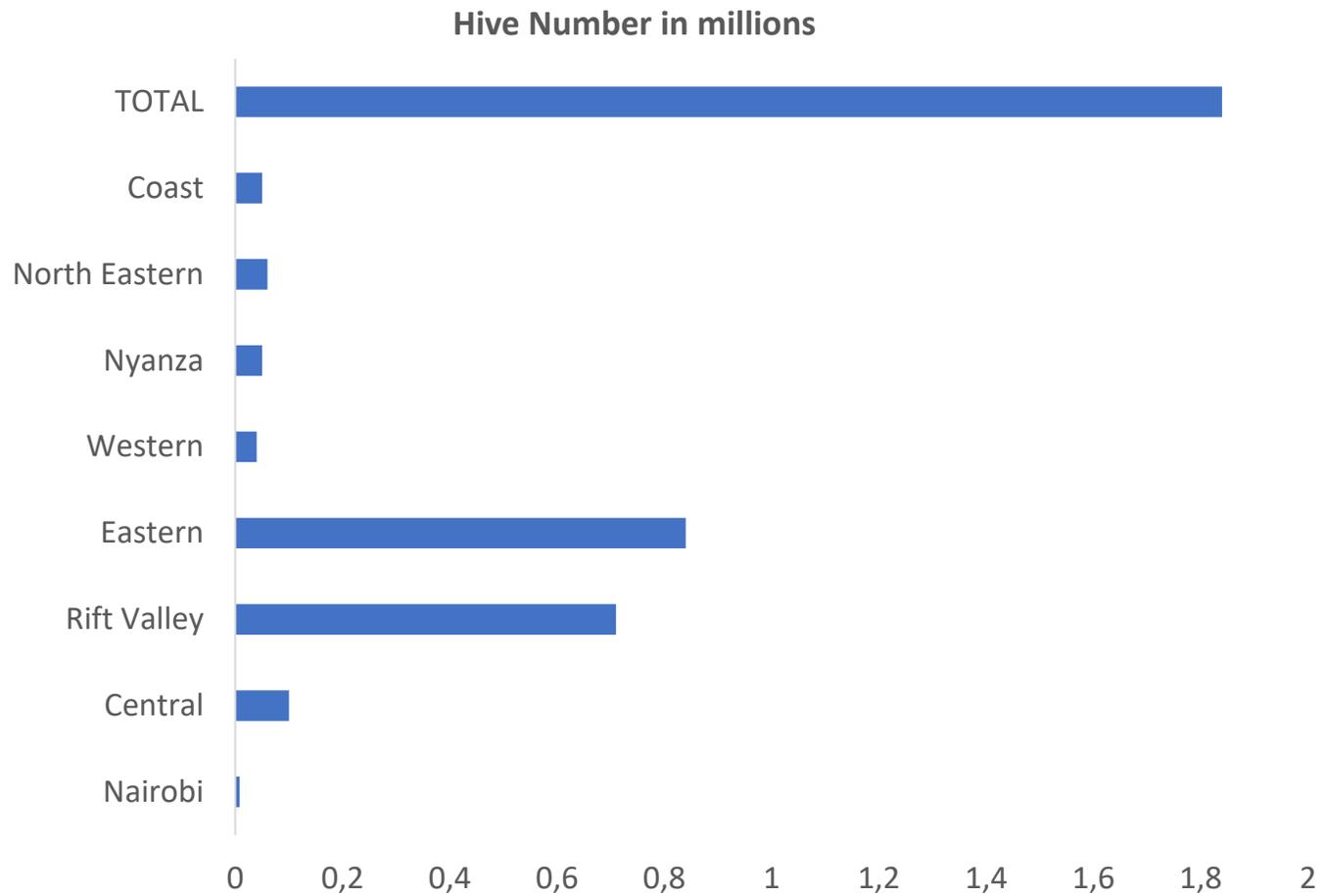
be facilitative, especially on public service delivery. **With the relatively new KTBH**, together with its accessories, one is expected to dress in 'a protective kit,' defined as, "veil, gloves, coverall and boots." This allows easy hive inspection and honey harvesting, for quality and up-to standard products, suitable for value addition. Without protective clothes, young men would venture into 'honey hunting' with bare chests, to allow application of natural bee repellants. The hive-products harvested would be far below the recommended quality and standards, as specified in FAO's Codex Alimentarius, EU regulations or directives, National laws and Trade specifications, hence fetching low prices, as opposed to premium. In the recent past, honey adulteration by unscrupulous middlemen earned the industry a bad image. To date, the presence of many players has brought about competition, which is self-regulatory.

For a hive innovation or new product to be acceptable to the resource-poor, it should be without compromising on quality. This has

The idea of movable top bars was a borrowed technology for quality honey production from the Langstroth Hive

## HIVE POPULATION IN KENYA (CENSUS 2009 DATA)

<b>PROVINCE</b>	<b>NUMBER</b>
<b>NAIROBI</b>	<b>7,585</b>
<b>CENTRAL</b>	<b>95,972</b>
<b>RIFT VALLEY</b>	<b>706,765</b>
<b>EASTERN</b>	<b>842,857</b>
<b>WESTERN</b>	<b>36,765</b>
<b>NYANZA</b>	<b>48,124</b>
<b>NORTH EASTERN</b>	<b>59,189</b>
<b>COAST</b>	<b>45,239</b>
<b>TOTAL</b>	<b>1,842,496</b>



**Figure 4: Hive population in Kenya (Source: Census Report, 2009 – Kenya Bureau of Statistics)**

# THE KTBH technology

Has the following attributes:

- Adaptability
- Flexibility
- Replicability
- Durability
- Acceptability- usage coverage
- Gender sensitivity
- Compatibility
- Commercialization- ease of production en-mass, industrialization
- Productivity
- Simplicity

# PERCEIVED SUSTAINABILITY

- Resilience- choose adaptive technology (log, KTBH, Langstroth, any of them)
- Climate-smart Agriculture- growing in a greenhouse
- Adaptation and Mitigation
- Conservation- of what is already existing
- Re-forestation/tree planting
- Bee pollination for quality and quantity production cum biodiversity
- Training and re-training, both vertical and lateral for productivity and technology adoption

Beekeeping is the appropriate enterprise that can bridge the gap in food production, food security and sustainability (+ technology)

Manufacturing and employment creation (to reduce poverty)

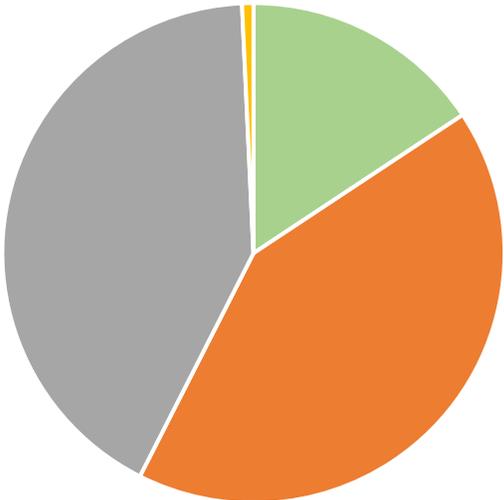
# Hanged log hives as a bee hotel



# CUSTOMIZED TRAINING AT THE NATIONAL BEEKEEPING INSTITUTE, NAIROBI-KENYA

## Training in Beekeeping, 2017/2018

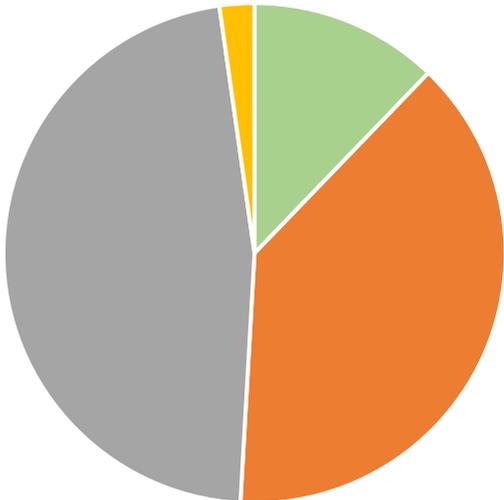
Total number trained



- Farmer and Artisan Training
- Institutional Training
- Professional consultations
- Student Attachees

## Training in Beekeeping, 2018/2019

Total number trained



- Farmer and Artisan training
- Institutional Training
- Professional consultations
- Student Attachees

# CONSTRAINTS IN BEEKEEPING

## Constraint

- Honey marketing
- High cost of production & processing equipment
- Pests & diseases
- Climate variability
- Low honey production
- Poor quality honey



## Implementation strategy

Develop market hubs/platforms, enhance Group formation & revolving fund

Collective approach & avail credit facilities

Bee Health Laboratory

Plan for resilience & monitor emerging bee pathogens

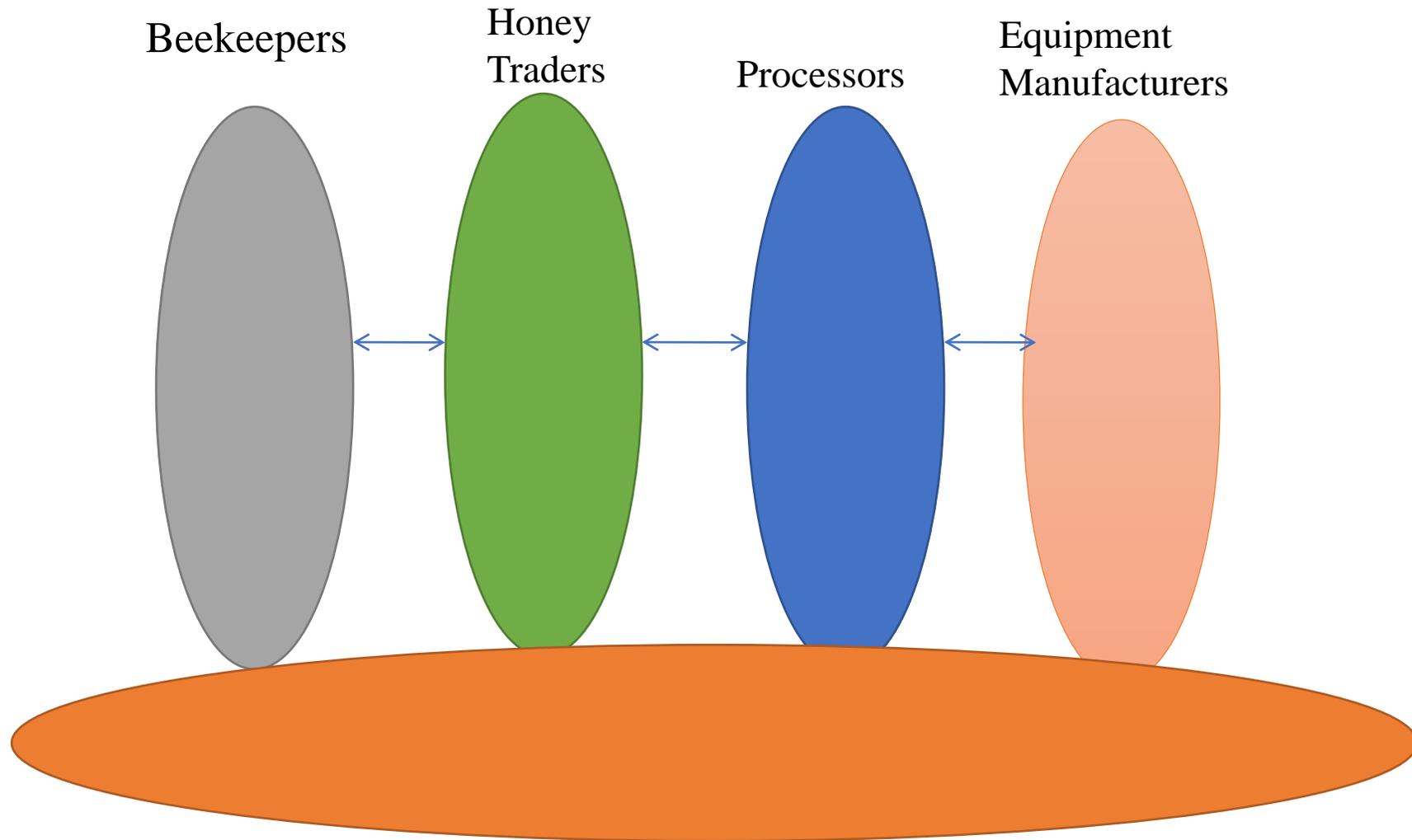
Create incentives & ensure market availability

Equip honey residue labs & capacity built

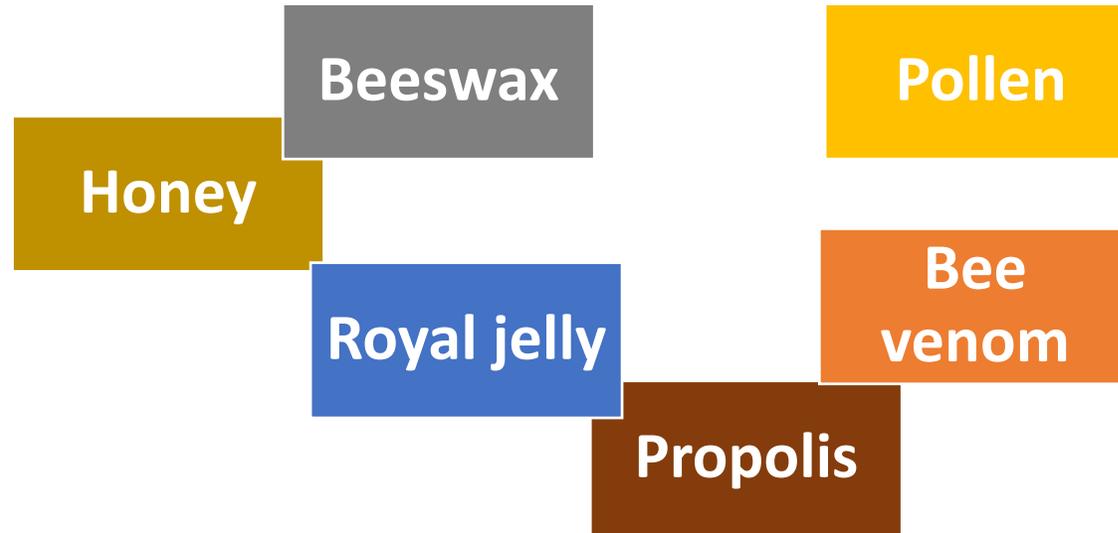
# CHALLENGES

<u>CHALLENGE</u>	<u>SUGGESTED SOLUTION</u>
• Low research	-Research initiatives and projects
• Inadequate resources	-Partnerships
• Inadequate skills	-Capacity built
• Low technology adaption	-Extention/awareness
• Inadequate infrastructure	-Sharing/pooling
• High cost of equipment	-Coop, lease
• Climate change	-Mitigation/adaptation

# Value Chain as interception points for training



# HIVE PRODUCTS



Honey packaging leading to  
Employment creation  
*Courtesy: Tharaka honey*



# Selected honey brands in Kenya



Green forest

Aberdare

Honey care

PROPOLIS IN SOYA

PROPOLIS SUSPENSION



NATURAL FLORAL  
HONEY

THARAKA  
HONEY

Honey care

MAKAMBU

MAJOR BEE  
PRODUCTS DEALERS

PROPOLIS  
PROPOLIS

# Packaging Innovations & Product diversity



# Transformative

Industrialization: pharmaceuticals, cosmetics, food industries, technology/greenhouse

Hence contributing to the:

1. Big 4 Agenda:

Food security:

Alleviation of extreme hunger and poverty

Gender mainstreaming

2. Sustainable Development Goals (SDGs) 1,3 and 5

3. Vision 2030 and Agenda 2063 of African Union

# Honey Quality

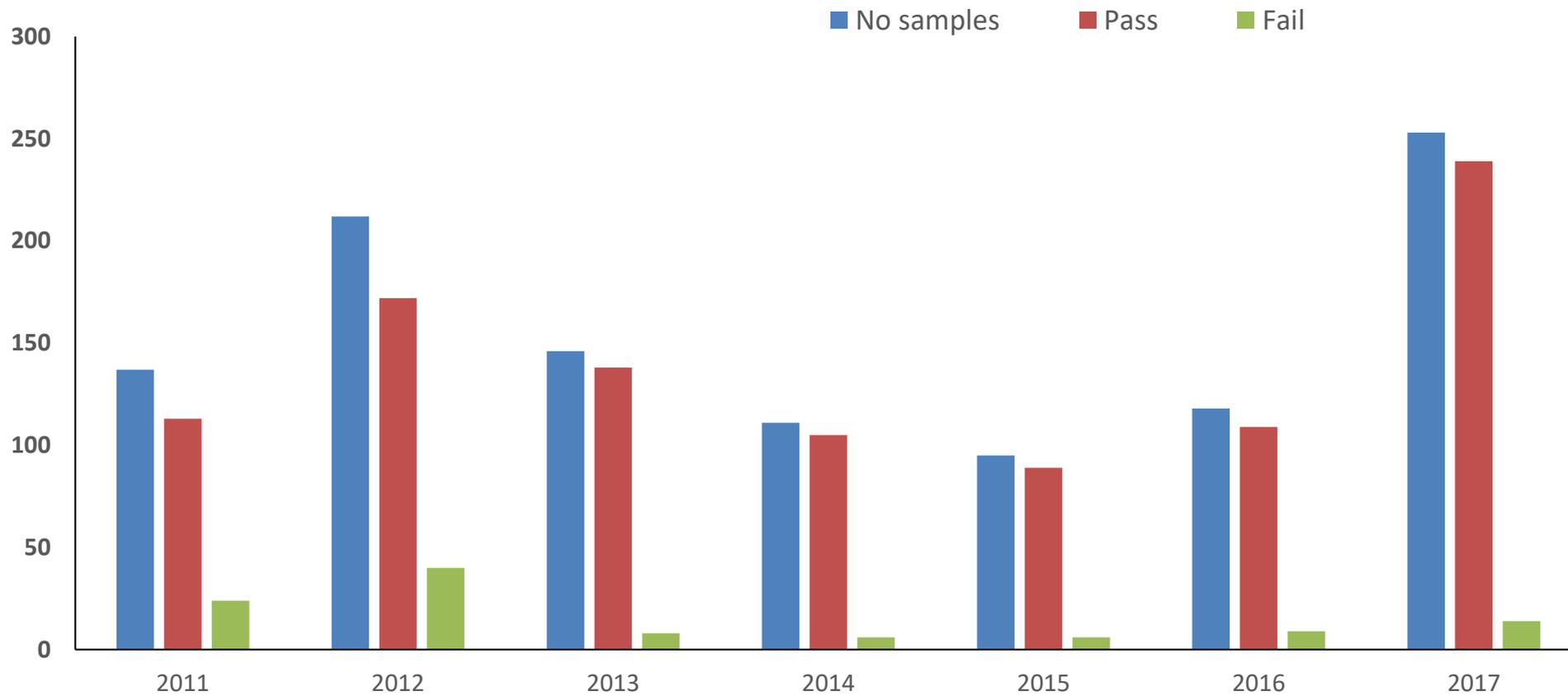


Figure 1: Honey quality as depicted from laboratory analysis samples, 2011-2017

Group of substances	compounds analysed	Analysis /Method	Detection level	Level of action	No. of samples	Laboratory
B1-Antibacterial substances, including sulphonamides, quinolones						
B2c- Carbamates and pyrethroids						
B3a- Organochlorine compounds including PCBs						
B3b- Organophosphorus compounds						
B3c- Chemical elements						

# Export and import of honey

EXPORTS				IMPORTS		
YEAR	QTY KGS	VALUE KSH	AVERAG E KSH	QTY KGS	VALUE KSH	AVERA GE KSH
2003	284	92,635	326.20	9,988	2,113,996	211.65
2004	8760	860,028	98.20	83,628	5,251,793	62.80
2005	2256	310,635	137.70	81,119	10,034,151	123.70
2006	4036	571,094	141.50	94,209	10,947,086	116.20
2007	4216	68,344	162.10	97,642	12,4981,76	128.00

## EXPORT AND IMPORT OF BEESWAX CONT...

EXPORTS				IMPORTS		
YEAR	QTY KGS	VALUE KSH	AVERA GE KSH	QTY KGS	VALUE KSH	AVERA GE KSH
2008	-	-	-	1182	347,494	294.00
2009	10,301	1,475,520	143.24	1556	255,067	163.90
2010	6,714	1,460,966	217.60	1836	351,410	191.40
2011	11,216	2,7165,15	242.20	2314	4685,85	202.50
2012	9,427	2,8403,55	301.30	3015	755,258	250.50

# Marketing Platforms

S/N	Platform	Sponsor	Remarks
1	Baringo	ASDSP	A conglomeration of several beekeeping groups. Training ongoing
2	Samburu	ASDSP	Consists of several beekeeping groups
3	West Pokot	ASDSP	Several beekeeping groups
4	Apiculture Platform of Kenya	AU-IBAR	Replicated in most African States to assist Beekeepers and stakeholders market their hive products

# HONEY MARKETING PLATFORMS

## **Locally:**

- ✓ The Baringo Honey Marketing Platform
- ✓ The Samburu Honey Marketing Platform
- ✓ The West pokot Honey Marketing Platform
- ✓ Apiculture Platform of Kenya

## **Regionally:**

- African Apiculture Platform
- ApiTrade

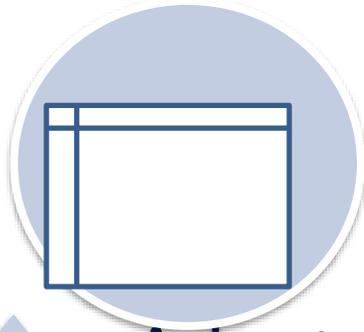
## **Globally:**

- Apimondia

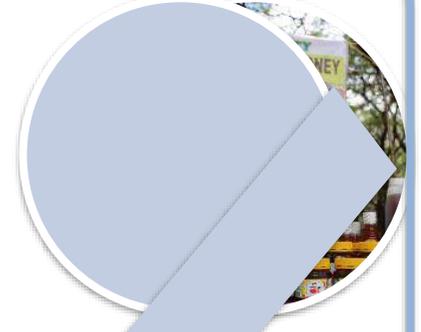
# PROJECT OUTCOME



Institution for  
practical bee  
training



Adaptable  
technology with  
commercialization  
prospects



Diverse hive products  
for generation of  
income and  
marketing platforms



# OPPORTUNITIES

- Pre-existing honey cooperatives
- Long history of beekeeping in some communities in Kenya
- Policy support
- Availability of funding opportunities: Uwezo fund, women and youth funds
- Banks and micro-finance institutions: Faulu, K-rep, Equity, KCB etc
- National beekeeping Institute and other training centres
- Many NGO players: SITE, Honey Care, Christian Aid, ABL, Makambu, Tharaka etc
- Public/Private/Partnerships Initiative
- Kenya Beekeeper's Association (being re-evaluated to cope with the changing work and physical environment)
- KHC

## **OPPORTUNITIES CONT...**

- County/Apitrade/Apimondia Honey marketing platforms
- A wide EAC, COMESA and ECOWAS common market outlets
- Regional bodies like IGAAD and African Union
- AU-EU Bee health Laboratory at ICIPE
- Location of ILRI and UN Headquarters in Nairobi
- Climate change body, NEMA, with multi-sectorial mitigation and adaptation strategies
- Projects: ASDSP, jointly with GoK, supporting beekeeping
- Favourable trade agreements with friendly emerging Markets: China, India, EU, USA, Canada

# ADAPTATION/MITIGATION

1. Drought resistant crops
2. Tree planting, with a target of 10% forest cover
3. Bee-hive fences for elephants in farmlands surrounding parks
4. Introduction of green awards
5. Tax reduction incentives for companies promoting environmental conservation
6. Cleaner production technologies
7. Recycling of waste
8. Eco-tourism
9. Upgrading of low-income houses

# Adaptation



# Resilient stingless bees



## **POSSIBLE AREAS OF REGIONAL/INTERNATIONAL COLLABORATION**

1. Clean energy production (Hydro, Solar, wind, Geo, Bio-mass) technologies
2. Research, technology and innovation (equipment manufacture and technology packaging)
3. Training for career advancement and skills acquisition
4. Low carbon production (Green house, tree planting)
5. Value addition of hive products
6. Development of Infrastructure/strengthening of beekeeping institutions

## **POSSIBLE AREAS OF REGIONAL/INTERNATIONAL COLLABORATION CONT...**

7. Sports and culture to promote honey as an Instant Energy Food
8. Bee Health Project
9. Quality and Standards (screening and confirmatory tests for honey and honey residues)
10. Climate Change adaptation/mitigation
11. Seminars and Workshops
12. Honey Marketing and Promotion Platforms

# Acknowledgement

- Government of Kenya/Ministry of Agriculture, Livestock and Fisheries
- State Department of Livestock
- National Beekeeping Institute
- Canadian Government/CIDA
- University of Nairobi
- AU-IBAR
- Listed Partners
- 46<sup>th</sup> Apimondia International Apicultural Congress

## ACRONYMNS

AU	African Union
EU	European Union
ICIPE	International Center for Insect Physiology and Ecology
KALRO	Kenya Agricultural and Livestock Research Organization
KBA	Kenya Beekeeper's Association
KEBs	Kenya Bureau of Standards
NGOS	Non - Governmental Organizations
KHC	Kenya Honey Council
KPI	Kenya pollinator Initiative
UoN	University of Nairobi

# ACRONYMNS

ADB-ALLPRO	African Development Bank-supported Agriculture and Livestock Rural Livelihoods Support Project
ASDSP	Agricultural Sector Development Support Program
EAC	East African Community
COMESA	Common Market for Eastern and Southern Africa
CF	Competency Framework
ECOWAS	Economic Community of West African States
GoK	Government of Kenya
IGAAD	Inter-Governmental Authority On Drought Management
ILRI	International Livestock Research Institute
NEMA	National Environment Management Authority
SLM	Mainstreaming Livestock Into Agro-pastoral Systems in Arid areas of Kenya
UN	United Nations
USA	United States of America

# References

**Asiko G.A, Nyamasyo G.H.N and Wanja Kinuthia.** Enhanced Integrated Stingle Beekeeping for Rural Development in Kenya. A Presentation to Apimondia, 29<sup>th</sup> September - 4<sup>th</sup> Otober2013,Ukraine

**Beekeeping Technical Handbook, 2012.** A publication of the National Beekeeping Station, Nairobi, Kenya

**Bradbear N, Fisher E and Jackson H (eds), 2002.** Strengthening Livelihoods; Exploring the role of Beekeeping in Development. Bees for development, UK

**Ester Judith Slaa, Luis Alejandro Sanchez Chaves, Katia Sampaio Malagodi-Braga, Frouke Elizabeth**

**Hofstede, 2006** Stingless ees in applied pollination: Practice and perspectives. Apidologie, Springer Verlag, 2006, 37 (2), pp. 293-315. Hal-00892203

**Eva Crane, 1993.** The Hive and the Honey bee. 1324p. Dadant

**Kenya Bureau of Statistics, 2009.** Kenya population census report

**Kigatiira K.I, 1984b.** Bees and Beekeeping in Kenya

**Kiptarus J, Asiko G A, Muriuki J M and Biwott A K, 2011.** Kenya Counry Paper. Apimondia 2011, Argentina

**Mutisya C.K, 1979.** Kenya Standards Specification for Natural beeswax, KS05-1279, KEBS

**Nzano P.N, Nyamasyo G.H.N and Asiko G.A.** Beekeeping Hive Technology Vis-á-vis Honey Quality in kenya. A Presentation to Apimondia, 29<sup>th</sup> September - 4<sup>th</sup> October 2013, Ukraine

**United Nations Sustainable Developmenyt Goals, 2017**

**Paepard, 2010**