Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

Project report
May 2017

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ACKNOWLEDGEMENTS

African Beekeeping Resource Centre (ABRC) would like to thank the Franciscan Brothers, in particular Br Gerald Smith and Br Tony Dolan, for their support in making this project happen; and Misean Cara and Combined Services who provided financial support.

ABRC would like to thank the staff of the two Franciscan managed colleges in Kenya and Uganda (Baraka Agricultural College, Molo and Adraa Agricultural College, Nebbi) for their collaboration and support.

ABRC would also like to thank our partners the Kenya Honey Council/Kenya Apiculture Platform and the Uganda National Apiculture Organisation (TUNADO) for their facilitation and backing including Mr Kithuma Nzainga of the Kenya Honey Council and Mr Stephen Kagio of the Kenya Apiculture Platform, along with Mr Dickson Biryomumaisho and Sarah Mugoya of TUNADO.

We are grateful for the support of the respective Ministries of Agriculture in Kenya and Uganda, at national, county, district and local levels – people too many to mention but exemplified by Mr Robin Mbae Chief of Apiculture in Kenya, Ms Alice Kangave, the Principal Entomologist at the Ministry of Agriculture, Uganda, Grace Asiko Head of the National Bee Station Nairobi, and county beekeeping officers such as Philip Owiti in Nakuru.

Finally, we would like to thank all involved in the beekeeping sector in Kenya and Uganda who shared their beekeeping experiences with us. We thank them sincerely for being so welcoming, and sharing with us their successes and challenges.
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EXECUTIVE SUMMARY

African Beekeeping Resource Centre (ABRC) is a Kenya-registered non-governmental organisation. It addresses beekeeping development across Africa, researching, educating and lobbying for knowledge and environments that will maximise bee husbandry, increase the trade in bee products, protect and enhance bee forage and habitat, and find ways to use beekeeping and honey hunting for wider benefit.

Despite innumerable projects to support the development of beekeeping in East Africa over the past 50 years, and the supply of thousands of “modern” bee hives in recent years, beekeeping has not developed as anticipated. Current honey production levels in both Kenya and Uganda are only a fraction of the potential, and traditional beekeeping systems still predominate.

ABRC, with funding from an Irish agency, Misean Cara, set out to learn lessons from the reality of beekeeping, under field conditions, in Kenya and Uganda, during 2015 and 2016. Some 53 of the best Kenyan and Ugandan beekeepers were interviewed in depth on their farms, the legacy of 12 beekeeping projects was examined, and key stakeholders were consulted.

Our examination indicates there have been some sound interventions but these are a minority. Many initiatives are failing to provide sustained economic benefits to the targeted communities, and investment in the sector seldom translates into widespread tangible livelihood benefits. There has been limited lesson-learning from preceding initiatives, and there is little evidence to show which project approaches work (or do not work). Some agencies promoting beekeeping lack the technical capacity to impart essential skills to beekeepers. Few trainers have in-depth husbandry experience and many trainee beekeepers are often ill-prepared for opening hives. Training input is sometimes classroom based and impractical, yet the husbandry practices they promote are very advanced. Many also assume that progressive beekeeping is easy, and that the provision of modern equipment will drive the sector forward. There is growing evidence to suggest that this is not a balanced interpretation. East African countries are modernising their beekeeping systems with technologies and husbandry methods developed for different sub-species of bees in more temperate environments. There has been little reflection on the suitability of these systems to the bees and environments of Kenya and Uganda. The focus on technology transfer has not been justified, while the wealth of traditional knowledge and local expertise is poorly recognised.

There is a very strong link between beekeeping and entrepreneurship. The most successful beekeepers often make a very significant proportion of their income from a wide range of beekeeping-related activities, but this is not always exploited. Sustainability is a significant issue. Given the high proportion of unused modern hives, the widespread failure to demonstrate an increase in honey production, and the number of groups that give up beekeeping when projects end, there are justifiable concerns over the methods adopted by many agencies engaged in the sector.

Beekeeping does need to modernise, but modernisation should build from what exists, rather than replacing it. There are many exemplary beekeepers able and willing to participate in this process, but development agencies frequently by-pass them.
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Our project findings concur with other recent studies on the beekeeping sector in East Africa. Carroll et al., 2013, from a study of beekeeping in Kenya, emphasised the need to build skills and knowledge on beekeeping rather than just promoting modern bee hives. Muli et al., 2015, looked at the adoption of frame hives by beekeepers in Kenya. What they found was poorly made frame hives, inadequately trained beekeepers and the need to focus on access to beekeeping accessories such as bee suits. Research by Amulen et al., 2017, in Uganda concluded that “the donation of hives to the exclusion of protective equipment and training is likely to fail to improve beekeeping households’ well-being”.

To improve the potential of beekeeping to enrich the livelihoods of poor rural communities in both Kenya and Uganda, we make several key recommendations. A central beekeeping database is required for each country which documents the progress and outcomes of beekeeping interventions. We must learn and build on the lessons of past interventions and not repeat past mistakes. The beekeeping database in each country should be available to project designers.

The design of all new projects in the beekeeping sector should build from technical assessments of proposed project areas and an assessment tool to facilitate this should be developed. Monitoring and evaluation and clear exit strategies need to be built in from the very beginning.

We need to move away from an inordinate focus on the provision of more expensive modern frame hives, with more emphasis on building practical beekeeping skills.

We need to target increased productivity (per hive) rather than increasing hive numbers. We also need to ensure beekeepers have access to adequate protective equipment, given the defensive nature of East African bees. The narrative which is frequently espoused in the mainstream media in East Africa – that beekeeping is simple and low input – needs to be challenged. The enterprise, in fact, requires considerable expertise to be successful and it is vital that practical hands-on training be provided. Fortunately, we do have a cadre of experienced beekeepers in East Africa with considerable knowledge, and their expertise needs to be further researched and shared more widely.

There is also a risk factor in keeping defensive bees which needs to be openly acknowledged and addressed during training.
**ABBREVIATIONS AND ACRONYMS**

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<tr>
<td>ABRC</td>
<td>African Beekeeping Resource Centre</td>
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<tr>
<td>BBC</td>
<td>Bunyangabu Beekeepers Coop (Uganda)</td>
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<tr>
<td>CABESI</td>
<td>Camels, Bees &amp; Silk (Kenya)</td>
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<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<td>FIELD LESSONS</td>
<td>Project titled “Lessons from the Field: Building from field experience to improve support for beekeeping in Kenya and Uganda”</td>
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<tr>
<td>FOAG</td>
<td>Farmers Overseas Action Group</td>
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<tr>
<td>ICIPE</td>
<td>International Centre of Insect Physiology and Ecology (Kenya)</td>
</tr>
<tr>
<td>KABECOS</td>
<td>Kamwerege Bee Keepers Cooperative Savings and Credit Society</td>
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<tr>
<td>KAP</td>
<td>Kitui Agricultural Programme (Kenya)</td>
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<td>KHC</td>
<td>Kenya Honey Council</td>
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<td>KTBH</td>
<td>Kenya Top Bar Hive</td>
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<tr>
<td>MAAIF</td>
<td>Ministry of Agriculture Animal Industry and Fisheries (Uganda)</td>
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<tr>
<td>MOALF</td>
<td>Ministry of Agriculture Livestock and Fisheries (Kenya)</td>
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<tr>
<td>NAADS</td>
<td>National Agriculture Advisory Services (Uganda)</td>
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<tr>
<td>NGO</td>
<td>non-governmental organisation</td>
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<tr>
<td>SITE Enterprise Promotion</td>
<td>Kenyan NGO for the promotion of employment opportunities and economic growth among small-scale producers</td>
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<td>SSA</td>
<td>sub-Saharan Africa</td>
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<td>TUNADO</td>
<td>The Uganda National Apiculture Development Organisation</td>
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1. INTRODUCTION

This report describes the implementation and findings of work undertaken in 2015 and 2016 on the project titled “Lessons from the Field: Building from field experience to improve support for beekeeping in Kenya and Uganda”. Throughout the text the project will be referred to as Field Lessons. This project (Field Lessons) was implemented by the African Beekeeping Resource Centre (ABRC), with funding from the Irish agency Misean Cara provided through the Franciscan Brothers.

1.1. Rationale for the project

Beekeeping has considerable potential in Africa to improve rural incomes and diversify livelihoods, (Nel et al., 2000) and is frequently promoted by both non-governmental organisations (NGOs) and government organisations. However, honey production in sub-Saharan Africa (SSA) generally falls far short of its estimated production potential. In Kenya, for example, the Ministry of Agriculture has determined a production potential of 100,000 tonnes of honey per year but estimates only 20 per cent of this amount is being produced (NALEP, 2017). Carroll et al., 2013, estimated that production was much lower at only 6.8 per cent of that potential. The country remains a consistent net importer of honey to meet its own needs. Uganda is estimated to have a production potential of over 500,000 tonnes of honey per year, of which only 1,800 tonnes are of exportable quality (TUNADO, 2012).

African honey yields average 8kgs per hive per annum (Segeren, 2004), which is just 40 per cent of the world average of 20kgs. Kenyan annual yields are only about 4kgs per hive i.e. half the African average (Carroll et al., 2013).

Honey production is low despite numerous interventions to introduce improved systems. Modern beekeeping has been promoted in Kenya since the 1950’s. In the last 15 years, interventions have often focussed on the introduction of American-style Langstroth bee hives but evidence suggests that a technology-led approach is not working. Research by Muli
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et al., 2015, found that beekeepers adopting frame hives face technical and management challenges.

Field Lessons set out to learn from farmers and beekeeping development projects at field level in Kenya and Uganda. The design of the project was based on observations and the experience of beekeeping specialists over more than a decade, supported by research, which suggested donor-supported interventions in beekeeping in Africa were generally inadequate; with inappropriate emphasis placed on the introduction of “improved technology” (the provision of modern bee hives).

Field Lessons investigated the reality of beekeeping on the ground, as practiced by ordinary beekeepers, in Kenya and Uganda. The project’s goals were to develop improved beekeeping training guidelines and develop and deliver an advocacy campaign to influence the kind of support provided to the sector by donors and development agencies.

The intention was to learn lessons from successful local beekeepers and past beekeeping projects, and to share these with beekeeping stakeholders so they can be applied to improving support to the sector. It was to help narrow the large gap between actual and potential production in the beekeeping sector in East Africa.

Thus, Field Lessons was conceived as a strategically important intervention that has the potential to change the way that donors, governments and NGOs support the beekeeping sector in East Africa. It sets out to represent the expertise, views and perspectives of beekeepers, particularly those who have experiences (both positive and negative) of externally supported beekeeping interventions. It now presents the findings of 53 in-depth and on-farm interviews with established exemplary local beekeepers, beekeeping project beneficiaries and stakeholders in over 20 districts/counties in the two focus countries.

1.2. Purpose and objectives of the study

Field Lessons was designed with three project outcomes:

1. To help development actors and other stakeholders across Africa to recognise the need for a paradigm shift in approaches to beekeeping sector interventions.

2. To help beekeepers and others in the honey value chain to benefit from better-formulated projects, and more appropriate training and support for beekeeping development, in Kenya and Uganda.

3. To help the wider population, especially the poor, have a clearer understanding of the potential of beekeeping, and to increase their access to locally appropriate beekeeping inputs and training that can lift them out of poverty.

Field Lessons anticipated the following key products:

- A comprehensive review of completed and ongoing projects in the beekeeping sector in Kenya and Uganda with analysis of the development benefits (and long-term contributions to poverty alleviation).

- A series of case studies and lessons on sound practices and locally appropriate practices from exemplary local beekeepers in Eastern Africa, describing what makes them successful, sustainable and profitable.
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- Analysis of the potential for beekeeping/honey sector projects to provide an entry point to wider development process and local capacity building for poor people.

- A framework curriculum for beekeeper training that builds from the lessons learned on successful methods, systems and approaches, to beekeeping and sector development in Kenya and Uganda (piloted in Franciscan-managed colleges – Baraka Agricultural College, Kenya and Adraa Agricultural College, Uganda).

- A project document detailing pilot initiatives for two comprehensive beekeeping development projects (in Kenya and Uganda respectively) that build on the lessons and strategies developed during this initiative.

- Advocacy products on how to provide more effective support to beekeeping sector development influencing stakeholders including government, donors, NGOs teaching institutions, research centres and the public, in Kenya and Uganda.
Robert Aloni Abaasiku in his apiary in Ewa Parish, Ajia Sub-County, Arua district, Uganda

2. **THE FIELDWORK**

2.1. **Overview of methodology**

The project worked with relevant government, county and district teams in Kenya and Uganda, and with the representative bodies of TUNADO and the Kenya Honey Council/APK (Apiculture Platform of Kenya). The target groups for this research project comprised, primarily, exemplary beekeepers in Kenya and Uganda, beekeeping projects and their beneficiaries, key beekeeping stakeholders such as government beekeeping officers at local and national level, NGOs and private sector actors.

In Kenya, we selected a cross-section of counties to work in, namely Nakuru, Narok, Laikipia, Kitui, Baringo and Tharaka Nithi counties. We believed these areas were representative of both the cooler highland and hotter lowland areas of the country. Baringo, Laikipia and Kitui counties have some of the best beekeeping areas in Kenya. We also interviewed people outside the above counties when they were identified to us as being exceptional beekeepers. As a result, we visited three additional areas – Kakamega, Muranga and Bomet counties.

We also identified seven projects for review.

In Uganda, we liaised with our partner, Adraa Agricultural College, and local district entomologist’s offices, to identify and interview some of best beekeepers in the north of the country. This led to interviews with 17 beekeepers from Arua, Zombo, Nebbi, Maracha, and Yumbe districts. We also worked with TUNADO, which helped us to identify and visit ten further beekeepers in the south and west of Uganda – in Luwero, Bulisa, Masindi, Hoima, Kabale, Bushenyi and Kamwenge districts. In total, the study interviewed 27 exemplary beekeepers in Uganda, and examined five projects.

See Annex D for a map of beekeepers interviewed.
2.2. **Key informant interviews**

An interview checklist was developed consisting of, primarily, open ended questions. Key informant interviews were conducted with these stakeholders to provide an overview of beekeeping in the county/district, and to identify the beekeeping sector challenges, identify the best beekeepers, the best groups and previous on ongoing beekeeping projects and capture perceptions on the successes and failures of these projects.

See “Interview checklist – Key informants interviews” (Annex A).

2.3. **Beekeeper interviews**

An interview guide for beekeepers was developed in consultation with stakeholders, and tested (see Annex C).

Exemplary beekeepers identified by key county/district stakeholders were interviewed on-farm. (This was a key part of the project. The intention was to interact with a range of beekeepers. It entailed considerable travel, and visits to remote areas.)

The interviews typically started with a tour of the beekeeper’s apiary, and discussions in situ. Interviewers recorded observations and notes on the beekeeping enterprise. Photographs/videos of the apiary were taken. The beekeeper was then interviewed with a set of open and closed questions that covered: personal and family details; economic activities; apiary details; beekeeping seasons; bee management practices; knowledge of bee health/pests/diseases; harvesting systems; handling and storage methods; value addition; membership of community/beekeeping groups; and the beekeeper’s key challenges. This structured interview then led to a more informal discussion to explore details of each person’s skills, knowledge, methods, opinions or experiences.

The apiary visit, in-depth interview and broader discussion typically lasted three or more hours. The process allowed interviewers to really get to know each beekeeper. On average, only two interviews per day were possible (depending on distances between sites).

Beekeeping interviews were written up as case studies and uploaded along with accompanying photographs to the file sharing website drop box where they were available for analysis. Key learning points from each case study were identified by the ABRC team.
2.4. **Beekeeping project beneficiary interviews**

A third interview guide (see Annex F) was developed and piloted to examine previous beekeeping projects. This guide was used in discussions with groups of beekeeping project beneficiaries to discuss the legacy of past completed projects. We did not interview the beneficiaries of ongoing projects because we felt beneficiaries would have a more detached and objective view when projects were completed. We sought information on project inputs, strategy, outputs, the scale of the intervention, sustainability and the project’s broader contribution to development. In addition to group discussions, the interviewer visited and viewed the inputs remaining post-project such as honey refining equipment, facilities and bee hives. Project documentation was reviewed, where available, to support the analysis.

2.5. **Stakeholder workshop**

In the final stages of data collection, a stakeholder workshop held in Kisumu, Kenya, brought together Kenyan and Ugandan beekeepers (14) and selected beekeeping stakeholders (government and NGO representatives). The workshop was attended by 40 participants (28 male and 12 female) of which 28 were Kenyans and 12 Ugandans. The 14 participating beekeepers had all been interviewed on-farm.

The preliminary findings of the project were presented and validated during this workshop. Group discussions and presentations were used to validate the data collected by the project and to solicit additional views and information. Discussions were also held on how the sector in Kenya and Uganda might move forward. See Annex H for details of the discussion on what makes an effective beekeeping project, and a list of the workshop participants.
2.6. **Summary of data collected**

The data collected included information from:

- In-depth interviews with 26 of the best Kenyan and 27 of the best Ugandan beekeepers that were identified, i.e. a total of 53 beekeepers.
- Interviews with county stakeholders in Kenya and Uganda.
- Examination of the legacy of 12 beekeeping projects (in Kenya and Uganda).
- A validation exercise (of project findings and the way forward in the sector) with 40 beekeeping stakeholders from Kenya and Uganda.

2.7. **Challenges in undertaking the project**

Many beekeeping areas are remote, and many of the accomplished beekeepers are located long distances from administrative centres, urban centres and main roads. There was considerable travelling time to meet beekeepers that are not often consulted; and a lot of time spent in the apiaries so that first hand observations could be made, and discussions could be held in context. The study was time-consuming and arduous.

The study intended to document the legacy of sampled projects. This proved challenging as there is no centralised location for past project documentation, project documents were hard to locate, records were difficult to obtain, and former stakeholders often had only poor recollections of past initiatives. We had to rely on key beekeeping stakeholders (such as beekeeping beneficiaries, government officers, NGO staff and the private sector actors) to discuss memories of previous projects, combined with on-site visits, to build adequate pictures of what was implemented.
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3. **SUMMARY OF FINDINGS**

The following are the key findings from the study. The following section (“4. Details of findings”) provides further details.

3.1. **Technical assessment**

3.1.1. There was little evidence confirming technical assessments were routinely undertaken during the formulation of beekeeping projects. Natural habitat, the characteristics and behaviour of different races of bees, seasonal patterns, local knowledge and local beekeeping practices were not consistently analysed and reflected in project design. No tools for gathering assessment material were identified.

3.2. **Lessons-learning**

3.2.1. Well-conceived initiatives that built on progressive experience in the sector were identified, but many new actors in this field were repeating past mistakes.

3.2.2. Many development organisations regard beekeeping as a low-input intervention (even if modern beekeeping systems are promoted), and a considerable number have established projects based on high-tech equipment that is, arguably, of questionable relevance in East Africa (see point 3.7.3 below).

3.3. **Technical competence**

3.3.1. Several specialist organisations with considerable beekeeping expertise have been working in Kenya and Uganda. Inexperienced agencies have also implemented beekeeping projects, many without seeking technical support or building partnerships. Practical experience in the management of apiaries, hives and bees is essential to implementing effective interventions.

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Francis Abau from Offaka Sub-County, Arua district, Uganda, is a happy man when he is in his apiary (Note: this was not an example of a good apiary as there were too many hives kept very close together)
3.3.2. Despite growing evidence that traditional technologies are suitable for the sub-species of bees in East Africa, there has been insufficient work to adapt and evolve traditional low-tech, low-cost systems to improve husbandry and honey harvesting.

3.3.3. Traditional beekeeping skills and knowledge are being lost.

3.4. **Selecting beneficiaries**

3.4.1. The most successful beekeeping groups comprised members with shared objectives and similar interests. Where objectives and interests were not adequately shared, commitment was weak and groups often failed.

3.4.2. Projects were generally more successful when experienced and inexperienced beekeepers formed groups together. Experienced beekeepers brought knowledge and enthusiasm, and were motivated to support their novice colleagues.

3.4.3. Most beekeeping groups comprised older people, but groups with younger men and women were found to be successful. (Young people often have no rights or access to land, and lack capital. They are a good target group for apiculture, with energy and an understanding of how to develop a business.)

3.5. **Project design**

3.5.1. Projects often had poorly defined objectives. Those designed to alleviate environmental issues seldom recognised that beekeepers are generally (by temperament and their work) highly committed to protecting and nurturing their local resources. Projects with income generating objectives seldom went further than producing honey and wax-based value-added products, despite many successful beekeepers finding diverse ways of making money from bees. They are often good entrepreneurs, generating income by providing beekeeping services to others.
3.5.2. Projects did not appear to consider the risk-factor in keeping defensive bees on small farms, and helping beekeepers mitigate these risks.

3.6. Building beekeeping groups

3.6.1. Projects that address capacity building are more likely to be sustainable, but this wider development experience was not widely adopted in beekeeping projects. Access to adequate working capital, financial management and mechanisms to strengthen group accountability were often missing. (Many beekeeping groups are, essentially, attempting to run a business but few had been adequately prepared.)

3.6.2. None of the interventions examined appeared to differentiate the roles and responsibilities that group members could adopt, to reflect their individual preferences, confidence, competence and knowledge.

3.7. Project inputs

3.7.1. Bee suits, gloves and smokers are beekeepers’ most sought-after project inputs. They recognise that adequate protection is fundamental to good beekeeping and clean harvesting. Groups needed training on repairing and making suits. Individually owned equipment was generally better cared for than bee suits owned and kept by groups.

3.7.2. Many projects have worked to increase production rather than increase productivity, so projects have tended to focus on having more hives rather than producing more honey from each hive. (This strategy requires greater investment in equipment and more work for the beekeepers.)

3.7.3. There is growing evidence that removable-frame (Langstroth-type) hives are not suitable, in their present form, for the most common sub-species of bee, and the physical conditions and socio-economic environment in much of Kenya and Uganda. Few beekeepers have used these hives to optimise husbandry and maximise productivity, and financial returns from removable-frame hives have seldom justified investment.

3.7.4. The logistics of harvesting removable-frame hives also impacts on their suitability. We found that most beekeepers use Langstroth-type hives in the same way they use top-bar hives (by cutting out the comb with honey). Few move honey boxes to and from extracting facilities because it is so impractical, and few can move extractors to harvesting sites.

3.7.5. Removable-frame hives are difficult to use when sourced from different manufacturers. The incompatibility of parts (from different batches) can lead to greater pest problems, absconding, clumsy handing and poor husbandry. Apart from those produced by some of the larger manufacturers (or imported), standardisation is generally poor, timber is often poorly seasoned and quality control is inconsistent.

3.7.6. Many beekeeping projects ignored (or failed to recognise) the expertise and knowledge of existing beekeepers, and introduced modern equipment and methods that were inappropriate. Traditional beekeepers were often excluded from (or not consulted by those implementing) projects. Many projects failed because they did not attempt to build on local expertise.
3.7.7. To date, few development agents or commercial specialists have documented effective management systems that maximise productivity from the predominant bee in East Africa – *Apis mellifera scutellata* – and justify investment in removable-frame hives. By contrast, experienced beekeepers use effective low-cost methods to manage *scutellata* bees to maximise productivity from traditional or top-bar hives.

3.7.8. While some projects have worked with beekeepers using log or basket hives, many have supplied modern top-bar or removable-frame hives without recognising that traditional hives are still widespread, and that they remain the hive-of-choice for a large proportion of experienced beekeepers. They provide most of the honey harvested in the two countries. Many experienced beekeepers claim that bees favour them over modern hives, and there is circumstantial evidence to support this. There have been few efforts to maximise the productivity of traditional hives, and even fewer projects building on the successful traditional hive systems used by good local beekeepers.

3.7.9. The top-bar hive has been widely promoted as it is inexpensive, allows for brood inspection and swarm control, and is simple to make and use. Experienced beekeepers often modify the basic design (usually to improve internal hive temperatures) which suggests that the design requires more work.

3.7.10. Some well-conceived processing units have been provided to groups with robust, appropriate equipment. However, there was considerable investment in inappropriate units, and some projects seemed to have ignored the processing component completely, or provided centrifugal extractors designed for use with frame hives that are harvested with the honey combs left in the frames (which is seldom practiced).
3.7.11. Beekeeping groups were generally more successful if they negotiated honey sales in large volumes, but to bulk-up and trade on behalf of their members, groups needed access to working capital. Typically, where groups have inadequate funds, beekeepers sold a proportion of their crop to smaller traders for cash, which (in turn) weakened the group. Access to working capital (and skills to manage such a fund effectively) is important.

3.8. Training

3.8.1. Several agricultural colleges provided specialist training courses with detailed curricula and practical training, and some projects also provided practical training and extension support. However, we also came across other initiatives which delivered short, classroom-based theory training which did not prepare beekeepers for the realities of working with bees in their apiaries.

3.9. Managing hives and apiaries

3.9.1. Most successful beekeepers (working with Apis mellifera scutellata) managed their bee hives, not their bees. They usually favoured traditional or top-bar hives. Their core management activities were documented as: siting hives in good locations; attracting swarms; cleaning hives; keeping pests at bay; deciding the best time for harvesting; and collecting the honey. Very few beekeepers opened their hives for routine inspections to manipulate the brood nest. They relied on regular observations and timely responses to observed needs.

3.9.2. There was no evidence that Langstroth hives were managed more intensively than any other hive design.

3.9.3. Apiary siting was generally good, and pests and wildlife were an ever-present problem that better beekeepers generally managed; but apiaries sometimes had more hives than the location could probably support.
3.9.4. Committed beekeepers maintained their apiaries regularly, and recognised that frequent checks and cleaning were central to high honey production, but most beekeepers were struggling to maintain good levels of apiary management.

3.9.5. Highly-committed beekeepers checked their hives and kept them clean and tidy throughout the year, but most beekeepers seldom cleaned or maintained their hives.

3.9.6. Defensive bees are a problem in some areas. Defensive bees can kill or injure livestock and sometimes people. The risk factor in beekeeping needs to be taken into consideration.

3.10. Increasing honey production

3.10.1. Increases in honey production have generally been achieved by increasing the number of hives (rather than raising yields per hive).

3.10.2. Few projects, and fewer beekeepers, had clear ideas on how to increase hive productivity but there are traditional beekeepers achieving significant yields from Apis mellifera scutellata bees. Many competent, talented and innovative individuals (using traditional or modern equipment) have developed their own (effective) management systems. (They are often ignored by beekeeping development projects.)

3.11. Beeswax

3.11.1. A small proportion of beekeepers were selling beeswax, but most discarded it as waste, unaware that (weight-for-weight) beeswax has the same or higher value than honey.

3.11.2. Most beekeepers had little understanding of wax moth, knew only a little about its devastating impact on weaker colonies, and paid no attention to its control.

3.12. Entrepreneurship

3.12.1. Some of the most successful beekeepers provided services to other people, collecting swarms, inspecting hives, harvesting, training, providing tours of their apiaries and removing colonies from the walls of homes, etc. Many appeared to make as much, or more, money providing these services, as from keeping bees and selling honey themselves.

3.13. Monitoring and evaluation

3.13.1. Project monitoring and evaluation was generally weak, and there are no generic indicators for assessing the effectiveness of beekeeping projects.

3.14. Exit strategies

3.14.1. Few of the smaller initiatives had strategies for winding-up their direct involvement with beekeeping groups, or building adequate confidence and capacity to sustain beekeeping activities beyond the life of a project. Typically, activities stopped when external support ended.
Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

4. DETAILS OF FINDINGS

Interviews were conducted with 53 exemplary beekeepers (26 of the best Kenyan and 27 of the best Ugandan beekeepers) identified in targeted areas, as well as through our partners. These interviews were written up as case studies, and key learning points analysed. Lessons learned from these 53 case studies, along with lessons learned from the key informants and the legacy of 12 beekeeping projects (in Kenya and Uganda), inform the findings presented below.

In each section, the Key finding from Part 3 of this report ("3. Summary of findings") is repeated (in a text box) and followed by details of the finding.

### 3.1. Technical assessment

3.1.1. There was little evidence confirming technical assessments were routinely undertaken during the formulation of beekeeping projects. Natural habitat, the characteristics and behaviour of different races of bees, seasonal patterns, local knowledge and local beekeeping practices were not consistently analysed and reflected in project design. No tools for gathering assessment material were identified.

Natural habitat

The potential for honey production (and other hive products) reflects the habitat and its health. It should also dictate the concentration of hives in an area (and the number of hives in an apiary). Local beekeepers knew that the availability of suitable nectar producing plants, and their seasonality, were primary factors influencing the productivity of hives. Field Lessons failed to identify tools for assessing the honey-producing potential of a prospective project location, and identified few cases where experienced beekeepers had been consulted on local potential by project designers. However, we must state that documentation in relation to projects in general was difficult to access so this may have been undertaken in some cases.
The characteristics of different bees

Bees have different behaviours (from relatively docile to very defensive) and varying predispositions for swarming and absconding. They also present different management opportunities (and challenges) that require different interventions in apiary management, bee husbandry, hive selection and harvesting systems, etc. From the interviews conducted, bees in the north of Uganda appear to be particularly defensive.

Many beekeepers knew their bees well, and some also recognised different races of bees locally (with different appearances and behaviours). They knew which bees could produce good quantities of honey, and which produced little. However, beekeepers were generally unaware of the bigger picture – the diversity of honey bees in Africa and the extent and regionalisation of most of these races. Two experiences illustrate this issue.

Beekeepers from Nebbi in northwest Uganda described a field visit to the southwest of the country. In contrast to their own bees (which were very defensive and hard to manage) the colonies they encountered were gentle and could be worked in daylight (rather than by torch at sunset). The beekeepers returned to Nebbi believing that they were causing their own bees’ defensive behaviour. They were unaware that different bees have different characteristics. The Nebbi beekeepers were keeping the more defensive *Apis mellifera scutellata* bees (which predominate in much of East Africa), but may have encountered *Apis mellifera adansonii* on their field visit to the south-west.

The second example, from Rwanda, is similar. (Although Rwanda was not part of this study it is included here because it helps to illustrate the point.) A commercial company has been working with beekeeping cooperatives, promoting movable-frame hives as part of its package of support. The overseas trainers expected the Rwandan bees to be extremely defensive (as elsewhere in much of East Africa) and were sceptical of promoting moveable-frame hives (given the cost of these hives, versus the feasibility of using them to maximum advantage). But they found the bees quite docile. Routine inspections and daytime harvesting were realistic.

Field Lessons found no assessments or reports suggesting that implementing organisations understood the varying characteristics of bees, or were aware there were different races.

Local knowledge, skills and practices

There was little evidence to suggest that projects built from local knowledge or previous initiatives. (We found that this type of information was not readily available so it is not entirely the fault of the project planners.) Projects were generally delivered without establishing the status quo (which varied considerably from one community/culture/region to another). There were different technologies, practices, beliefs and management systems.

Access rights

Legal access to gazetted forests, wildlife reserves and national parks is important if beekeepers are to maximise production from these protected areas, and Field Lessons found projects and beekeeping groups working with government offices and parastatals for this purpose. Members of the New Bairunyi Beekeepers Cooperative members in Tharaka Nithi County (Kenya) and Kakamega Beekeepers (in Kakamega forest, Kenya) were collaborating with Mount Kenya National Park Rangers and Kakamega Forest Service, respectively, with support from the International Centre of Insect Physiology and Ecology (ICIPE). They were
permitted to place their hives inside the park/reserve (where there is abundance of bee forage).

3.2. Lessons-learning

3.2.1. Well-conceived initiatives that built on progressive experience in the sector were identified, but many new actors in this field were repeating past mistakes.

3.2.2. Many development organisations regard beekeeping as a low-input intervention (even if modern beekeeping systems are promoted), and a considerable number have established projects based on high-tech equipment that is, arguably, of questionable relevance in East Africa (see point 3.7.3. below.)

Low-input/high-input interventions

The study found that many projects in Kenya were based on the commonly held belief that beekeeping is a simple enterprise; a low-input intervention. Some new beekeepers thought it easier than crop production, and their major husbandry activity (apart from harvesting) was taking water to the apiary in the drought season. But beekeeping is only a low-input intervention if traditional beekeeping systems are used i.e. where most hives, tools and equipment are made locally (with little standardisation or quality control). Standardisation or quality control are not necessary because the technology is simple, and the equipment makers are usually beekeepers themselves (who know what they want).

There were examples of good projects. In Laikipia (Kenya), Bees Abroad delivered a good (if rather ambitious) approach that was highly output focused. Baraka Agricultural College (Kenya) left behind skills and knowledge which are still in use in many sites in the Rift Valley; and Koriema Beekeepers in Baringo, who were supported by SITE, continue to utilise equipment and market their honey.

Balancing act – this hive was close to falling down

By contrast, Field Lessons found many projects had been based on removable-frame hives and very little else. Removable-frame hives are designed to maximise honey production.
They allow beekeepers to inspect and manipulate colonies to maintain the highest population of bees; and to re-use drawn comb in the honey supers. To benefit from the design and to justify removable-frame hives, beekeepers must use centrifugal honey extractors and a whole range of related equipment. They also need replacement sheets of wax (foundation) and wooden parts that must be produced to precise standard specifications. Few projects in Kenya have addressed the supply-side of recurring inputs for removable-frame hive beekeeping. Frame-hive beekeeping is, in fact, high input; and the infrastructure to support it in East Africa is still poorly developed. So, while the focus of many recent projects has been on the distribution of capital items, the recurring inputs are seldom produced, poorly standardised and are often inaccessible to rural beekeepers.

Field Lessons research confirmed that beekeeping can be promoted in either way, but the approaches needed in low-input or high-input systems are markedly different.

The study found some projects had often supplied capital equipment (removable-frame hives) that were seldom (or sometimes never) used, or had not yielded anything; and then provided the same package of inputs to other communities on the same basis (which were also never used/not used correctly). We found multiple examples of: additional hives being provided to groups that already had under-utilised hives; or new, unused removable-frame hives stored and spoiling; and additional donations of hives when the recipients had neither asked for, expected, nor been trained in their use.

Many projects did not appear to have been evaluated. Access to lessons is difficult. Mistakes appear to be repeated without analysis of whether a preceding project had been successful. We found little evidence of lesson learning – no assessment of what was going right and what was going wrong.

### 3.3. Technical competence

3.3.1. Several specialist organisations with considerable beekeeping expertise have been working in Kenya and Uganda. Inexperienced agencies have also implemented beekeeping projects, many without seeking technical support or building partnerships. Practical experience in the management of apiaries, hives and bees is essential to implementing effective interventions.

3.3.2. Despite growing evidence that traditional technologies are suitable for the subspecies of bees in East Africa, there has been insufficient work to adapt and evolve traditional low-tech, low-cost systems to improve husbandry and honey harvesting.

3.3.3. Traditional beekeeping skills and knowledge are being lost.

### Expertise of organisations

There are competent organisations and companies specialised in beekeeping that have implemented projects, but there were few examples of experienced organisations contracted to provide technical advice to others on a consulting or collaborative basis. Many projects were therefore delivered without adequate expertise. Some agencies appear to have treated beekeeping projects as tendering processes for the supply of modern bee hives (and little more). This was done on the simple assumption that a lack of “modern” equipment was the only constraint to beekeeping.
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Alitema Natal with an almost completed mud and stick hive. Alitema is from Offaka Sub-County in Arua district, Uganda

Some projects provided comprehensive training and extension programmes but others conducted classroom trainings without any practical work in apiaries; and did not have staff with practical skills. This type of training does not prepare beekeepers for the reality of hands-on work with bees (and the few groups that remain committed, despite their problems, were left struggling with inadequate skills and knowledge for years e.g. Murema beekeepers in Laikipia (Kenya).

Traditional knowledge

Beekeeping remains an occupation that must be sensitive to, and wholly reliant on, local environments and individual expertise, but one of our most significant field observations was the rate of loss of traditional beekeeping skills and indigenous knowledge on plants, insects, climate and seasons, bees and honey. Sons and daughters were seldom learning from their fathers and mothers. Beekeeping has not been promoted in higher learning institutions to any great extent. Except for a small number of institutions that do have specialised beekeeping courses, beekeeping is, at most, mentioned in livestock production modules in agricultural colleges and higher learning institutions. Many beekeeping projects seemed to be accelerating this process, with little or no reference to traditional methods and understanding. Modern technologies and management systems were being imported wholesale from Europe and North America, without assessing their relevance or adapting them to local races of bees, habitat and the beekeepers themselves.
Despite many traditional beekeepers having a wealth of traditional skills and knowledge, there were few efforts (that we are aware of) to document this, or to research and build on traditional systems. Most organisations working in the beekeeping sector appear to be promoting “modern knowledge” without considering that traditional knowledge is of value.

There were also many examples of modern technology being introduced without consideration for prevailing attitudes. Beekeepers from Laikipia County (Kenya) felt that traditional log hives were the best, and could not accept modern hives even if they were freely available. They were happy with traditional log hives, and claimed their bees are reluctant to occupy modern hives. Chiakariga group in Tharaka Nithi County received top-bar hives from a government donor but did not hang them. They believed their traditional hives were best, with higher occupation rates and better honey production. They left the top-bar hives where they were delivered. The donor had not considered the suitability or acceptability of modern hives locally. There was little consultation at the grassroots level to find what was suitable for each area. Beekeepers in Baringo also believed that their traditional bee hives were better adapted to the local environment and that modern bee hives were not liked by their bees.

3.4. Selecting beneficiaries

3.4.1. The most successful beekeeping groups comprised members with shared objectives and similar interests. Where objectives and interests were not adequately shared, commitment was weak and groups often failed.

3.4.2. Projects were generally more successful when experienced and inexperienced beekeepers formed groups together. Experienced beekeepers brought knowledge and enthusiasm, and were motivated to support their novice colleagues.

3.4.3. Most beekeeping groups comprised older people, but groups with younger men and women were found to be successful. (Young people often have no rights or access to land, and lack capital. They are a good target group for apiculture, with energy and an understanding of how to develop a business.)

Participation and needs

The most successful beekeeping groups comprised members with shared objectives and similar interests, but the process of selecting beneficiaries in some projects was inadequate. The study also found repeated examples of existing groups identified for beekeeping projects regardless of their (lack of) common interest in beekeeping. This clearly compromised the project’s sustainability, and many groups dropped the activity when the implementing organisation closed the project. This was seen in Laikipia North, Kenya, where a group at Ilpolei was formed, received husbandry training and was given bee hives and other equipment. The project was left to one person (the hives were sited at his home). There was minimal apiary management and the project collapsed. Similar stories were found in Kitui (Kenya), Tharaka Nithi (Kenya) and Luwero, Katikamu (Uganda).

The study frequently found that vested interests negatively influenced beekeeping cooperatives and groups. There were examples of this in Mwingi Central and Tharaka Nithi (Maara Sub Location) where the original chairpersons of “market places” and cooperatives appear to have made decisions that were damaging. The allotment of duties to specific individuals e.g. for product collection, processing, packaging and marketing often created
tensions and ill-feelings as these members then participated in workshops, trainings and related events. The majority had no access to these benefits. We also found there were misplaced assumptions on who was most suitable for making leadership decisions, with less scrupulous leaders manipulating other members. This was more common where the selection of individuals and groups was undertaken by a small number of members (and/or by the supporting organisation) without adequate involvement of the wider community or group members. It created instability, and groups founded in this way frequently collapsed once the intervention had ended.

Established beekeepers

The study team found groups that had been formed without any local experienced beekeepers in both Kenya and Uganda. Most of these groups had been provided with modern equipment and training, but failed despite all the advantages these inputs might have provided. Projects often worked from the basis that: existing beekeepers are either established so do not need support; or the existing beekeepers are old fashioned and would not benefit from new ideas, equipment and opportunities.

By contrast, in Mwingi (Kenya) and Hoima (Uganda), we found experienced beekeepers working actively in groups, helping new beekeepers. These groups were succeeding. Established beekeepers brought their knowledge, skills and enthusiasm; they benefited from inputs and training; they were motivated to support their novice colleagues; and probably influenced and guided the kind of support being provided to the group, by making it more appropriate to local opportunities and needs. For example, in both Kamwenge Beekeepers Cooperative and Bunyagabu Beekeepers Cooperative (Uganda), established beekeepers were identified as model farmers, demonstration apiaries were set-up in their homesteads, and community-based trainings were offered at agreed times. Experienced beekeepers also provided one-on-one practical training for a small charge.

Josephine Omataru in her apiary, in Oribu-aleju parish, Offaka Sub-County, Arua district, Uganda
Older and younger people

Younger men and women often have no rights or access to land; they are frequently disenfranchised. It is difficult for them to start beekeeping as they lack capital and assets. They are often the very people that beekeeping is said to be able to help.

While most beekeeping groups comprised older people, groups with younger men and women were often more successful. Older people often dominated. They had greater status, land, and the experience of working and influencing groups; but were often less needy than youth.

Many groups called themselves “youth groups” despite most members being older.

Individual youth were keen to describe their experience. Friday Bajoki was a member of Kabale Municipal Beekeepers’ Cooperative (Uganda) and Daniel Kiiza belonged to Aikiriize (also in Uganda). Both were successful young beekeepers. Friday inherited beekeeping from his father and focused on it to support his family. He had over 300 basket hives in different locations, and apiary sites given freely by community members. He was trained through his group and used his knowledge and skills to assist other beekeepers (for a small fee). Daniel Kiiza had a passion for bees, was trained through TUNADO and now focused on training other beekeepers. He also constructed local bee hives and sited them on his farm along the river. Other examples of successful youth from Kenya were David Sembele from Narok who was developing a beekeeping business, and Raymond Kirui from Baringo who had purchased a motorbike for himself from honey sales. Despite this, we were told a number of times that the youth were not interested in earning a living from the land and wanted to go to towns. Perhaps this was an education issue and they were unaware that they could earn a living from beekeeping.

The study also found that county and district staff in Kenya and Uganda had limited records on who were the best and most influential beekeepers in their areas. Local officials often had limited information about the progress of groups, and tended to refer us to projects supported by NGOs who usually target specific areas.

Women beekeepers

We found some excellent women beekeepers. Of the 53 best beekeepers interviewed, 43 were male (81 per cent) and ten were female (19 per cent) – six women beekeepers in Kenya and four in Uganda. We found that the best women beekeepers were at least equal in competence to the best male beekeepers; which demonstrates the potential for women to take-up beekeeping, and succeed.
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We found some inspiring role models. Leah Kimani from Nakuru, Kenya, increased the size of her farm with beekeeping income; and Florence Ojok from Nebbi district Uganda owns over 100 hives, markets her own honey and buys and sells from other beekeepers. She has managed to build a permanent house from the proceeds of her beekeeping enterprise.

We also came across frequent examples of husband and wife teams sharing beekeeping activities. Women were more likely to be involved in value adding and marketing activities.

We also came across barriers to women getting into beekeeping. Cultural blocks were frequently encountered, where traditions indicated that beekeeping was a male activity – particularly where traditional systems involved climbing trees to place and harvest hives. However, these barriers were, in places steadily being overcome either by progressive women, or by women beekeepers hiring men to harvest hives in trees.

Qualities of a beekeeper

We also looked at what makes a good beekeeper; what are the characteristics and qualities of people who seem to be successful? This represents a lesson, especially in relation to the formation of community groups. It suggests that successful beekeepers are not always typical people within a community.

Invariably we found that successful beekeepers were particularly intelligent. Their lives were seldom typical and they stood out in their communities: not because they were wealthy or respected as leaders, but in the very careful ways in which they lived their lives. They were usually very practical people so, even if relatively poor, their homes were well made and farms well-managed. They were exacting and methodical in most of their ways.

Typically, good beekeepers were naturally observant and inquisitive – Munyoki Kimwele (Mwingi, Kenya), Mapurkei Mamai (Laikipia, Kenya), Tom Ngotiek (Laikipia, Kenya), Diana Khavetsa (Kakamega, Kenya), Nicodemus Mwangi (Nakuru, Kenya), Simon Chesang (Baringo, Kenya), Baliija Jackson (Hoima, Uganda), Friday Bajoki (Kabale, Uganda), Godfrey Atuhura (Buliisa, Uganda), Jeniffer Tumwine (Kamwenge, Uganda), Margaret Malaseko (Luwero, Uganda) and Olimi Kalyajubwa (Masindi, Uganda). These people were aware of the environment and interested in trees, insects and plants. They were systematic, checking
their hives regularly and noticed details that provide clues to what is happening in their hives, to their bees and to the local conditions.

Many, like Nicodemus Mwangi (Nakuru, Kenya), were also innovative – natural researchers experimenting with their own ideas and testing out things they had seen. Nicodemus was passionate and knowledgeable, and had made fixed queen excluders in his top-bar hives so that whenever he, or another member of his family, was harvesting there could be no mistakes with the queen. Leah Kimani (Nakuru, Kenya) was also curious and enterprising, overcoming her fear of bees and experimenting with all types of hives (eventually deciding that the top-bar hive was best for her needs). She also decided on her own (unusual) strategy of not concentrating her hives in one place but spreading them out across her small farm (described in section 3.9. “Managing hives and apiaries – Apiary siting”).

Beekeepers are usually self-reliant and often prefer to work on their own. Tom Ngotiek (from Laikipia County, Kenya) took up beekeeping as his full-time job. He was adamant that he waits for nobody (including organisations) but gets on and does things, and was keen for new knowledge without depending on any one source.

We also asked the key informants what they thought made people good beekeepers. These are some of their answers: they have many hives; make good quality hives (with the best wood and the right size and space); have big log hives that can yield 30 to 60kgs of honey; they manage their hives well and check them frequently. They also explained that beekeepers can supervise themselves, are hard workers and are not afraid of bees. They make good money from beekeeping (treating beekeeping as a business), are interested, committed, knowledgeable and confident. They adopt new ideas, are innovators, carry out research regularly and can provide different products from their hives. There are close similarities in both lists, suggesting that beekeepers are seen as being a little different to most people within their communities.

### 3.5. Project design

3.5.1. Projects were identified to have poorly defined objectives. Those designed to alleviate environmental issues seldom recognised that beekeepers are generally (by temperament and their work) highly committed to protecting and nurturing their local resources. Projects with income generating objectives seldom went further than producing honey and wax-based value-added products, despite many successful beekeepers finding diverse ways of making money from bees. They are often good entrepreneurs, generating income by providing beekeeping services to others.

3.5.2. Projects did not appear to consider the risk factor in keeping defensive bees on small farms and helping beekeepers mitigate the risks involved.

### Purpose

Many projects appear to have poorly defined objectives; it was not clear what they wanted to achieve. Many had objectives based on income generation or environmental conservation but it was difficult to verify this on the ground as project planning seldom translated this into effective methods for delivering appropriate information, technologies and methodologies.
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Income generation

Successful beekeepers often find diverse ways of making money from beekeeping. Their income is from more than just honey. Munyoki Kimwele from Mwingi, Kitui County (Kenya) is a good example of somebody who has turned beekeeping into a diversified business by stocking other people’s hives, harvesting for others, providing husbandry training, removing bees from houses and charging for tours of his apiary. Jackson Baliija from Bugahya County (Uganda) has a similar approach. He lectures on beekeeping at St. Andrea Kaahwa’s College, charges for visits to his apiary, harvests for other beekeepers and sells colonies of bees. This diversification is critical for people with few assets or little land. The best and most successful beekeepers are very entrepreneurial.

Environmental conservation

Successful beekeepers are generally highly committed to protecting and nurturing their local resources. They are often very observant, and their work relies on the health of their environment. (This is discussed further in section 3.4 “Selecting beneficiaries” “Qualities of a beekeeper”.)

3.6. Building beekeeping groups

3.6.1. Projects that address capacity building are more likely to be sustainable, but this wider development experience was not adopted in all beekeeping projects. Access to adequate working capital, financial management and mechanisms to strengthen group accountability were often missing. (Many beekeeping groups are, essentially, attempting to run a business but few had been adequately prepared.)

3.6.2. No interventions we examined appeared to differentiate the roles and responsibilities group members could adopt, to reflect their individual preferences, confidence, competence and knowledge.

Important information

The study found little evidence to suggest that most groups knew exactly what a project was going to do, and for how long it would run; so their expectations were seldom realistic.

Financial matters and the ownership of assets

The formation and running of community development groups established around income generation and savings, is fraught with difficulties, and beekeeping groups are no different. The critical issues often involve money.

Beekeepers often want payment for their honey, on delivery. Less scrupulous group leaders have exploited members desperate for cash (buying honey from members at low rates, then pocketing the difference when sold on to buyers at regular prices). In other cases, leaders had volunteered their land for a group project, then grabbed it back (with hives or structures) in the absence of proper agreements.
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We also found many group members had not understood that prices depended on the quality of products, and the value added to them by basic processing. (Raw honey in Kenya and Uganda typically sells for an average of Ksh 150 or UGX 5,000 (Euro 1.35) per kilogram; semi refined for Ksh 350 or UGX 10,500 (Euro 3.20) and refined at an average of Ksh 500 or UGX 15,000 (Euro 4.50) per kilogram.) Most good beekeepers in both Kenya and Uganda like to sell their honey refined and packed because they make more money from their products. Those who are not so skilled sell crude or semi-refined honey depending on the customers’ taste. (In many rural areas people still prepare local brew, so crude honey is in high demand.)

Strong leadership and group dynamics, appropriate member expectations and good transparency, effective bye-laws and regular meetings all play a part in strengthening groups. There are some good examples of such groups with good governance. In Uganda, the Kabarole Cooperative in Fort Portal, Bunyagabu Cooperative in Fort Portal and Kamwenge Cooperative in Kamwenge all have regular meetings, with good records of purchases, sales, staff payments and meetings. Projects that address capacity building adequately seem less likely to encounter problems with sustainability.

Multiple interventions

Many organisations engaged with beekeeping projects work independently. This confuses beekeepers who may be receiving conflicting extension messages where projects have overlapped. Most farmers/beekeepers believe that those assisting them have adequate and relevant expertise, but some equipment producers may offer inadequate training. Collaboration should improve complementarity, with stakeholders understanding each partners’ strengths, allowing each to focus on what they are good at. This has seldom been the case.
Differentiating interests and roles

The study also considered whether all members of a self-help group should be trained in the same things. Self-help groups typically comprise individuals of mixed skills and interests. We have already looked at the disadvantages of not including experienced and knowledgeable local beekeepers, and the dangers of groups dominated by people’s self-interest or eagerness to access handouts from the implementing organisations. Beekeeping is a very specialised field and the typical qualities of a successful beekeeper are unique. We found that the strongest groups typically comprised 25 members, with: 15 to 20 practising beekeepers (usually having plenty of experience, knowledge and commitment); three women (who are often reliable, practical and proactive in wanting new skills); and three youth (who typically bring energy, take on new ideas and develop beekeeping into a modern enterprise). It is important to encourage groups to form because of individual interests in beekeeping, but it is also important for each developing group to maintain a balance so that different sectors of society come together with their different qualities and capacities, so a wide range of qualities and expertise will be shared for collective benefit. Not everybody will have skills in documentation and record keeping, or an interest in value addition and processing, or the confidence to handle the bees. A good group mix should also enable appropriate sharing of responsibilities.

Our analysis also looked further at the issue of confidence. In weaker groups the number of group members who were comfortable handling bees was typically low, around two in every ten members. We considered the extent to which it is important to train everybody to manage their bees. Within active groups there was often a natural differentiation around this. While three or four members might be comfortable catching swarms, checking colonies and harvesting honey, most members were less keen to open hives and handle their bees. Some of these people managed their apiaries and observed their hives from a distance, and arranged for their more hands-on colleagues to harvest their honey etc. (They generally paid a fee, or a proportion of the honey crop, for these services.) We recognised that everyone in a group is a “hive-keeper” (owning bee hives), but only a few are real “beekeepers”. In Laikipia County (Kenya) the chairperson of Lai Beekeepers owns the site of the group apiary. She does not handle the bees herself but relies on others to carry out inspections and other hive management tasks. Similar examples were found elsewhere in Kenya; and in Uganda (at Kamwenge Beekeepers Cooperative in Kitagwaenda County) we met individuals who avoided apiary management but concentrated on making cosmetics from hive products, and other groups where individuals focused on selling honey or keeping financial records, who cared for their apiaries but relied on their colleagues to work their bees.

Field Lessons found no interventions that differentiated the roles and responsibilities that people could adopt to reflect their individual preferences, confidence, competence and knowledge.
3.7. **Project inputs**

3.7.1. Bee suits, gloves and smokers are beekeepers’ most sought-after project inputs. They recognise that adequate protection is fundamental to good beekeeping and clean harvesting. Groups needed training on repairing and making suits. Individually owned equipment was generally better cared for than bee suits owned and kept by groups.

3.7.2. Projects reviewed often worked to increase production rather than increase productivity, so projects have tended to focus on having more hives, rather than producing more honey from each hive; but this strategy requires greater investment in equipment and more work for the beekeepers.

3.7.3. There is growing evidence that removable-frame (Langstroth-type) hives are not suitable, in their present form, for the most common sub-species of bee, and the physical conditions and socio-economic environment in much of Kenya and Uganda. Few beekeepers have used these hives to optimise husbandry and maximise productivity, and financial returns from removable-frame hives have seldom justified investment.

3.7.4. The logistics of harvesting removable-frame hives also impacts on their suitability. We found that most beekeepers use Langstroth-type hives in the same way they use top-bar hives. Few move honey boxes to and from extracting facilities because it is so impractical, and few can move extractors to harvesting sites.

3.7.5. Removable-frame hives are difficult to use when sourced from different manufacturers. The incompatibility of parts (from different batches) can lead to greater pest problems, absconding, clumsy handling and poor husbandry. Apart from those produced by some of the larger manufacturers (or imported), standardisation is generally poor, timber is often poorly seasoned and quality control is inconsistent.

3.7.6. Many beekeeping projects ignored (or failed to recognise) the expertise and knowledge of existing beekeepers, and introduced modern equipment and methods that were inappropriate. Traditional beekeepers were often excluded from (or not consulted by those implementing) projects. Many projects failed because they did not attempt to build on local expertise.

3.7.7. To date, few development agents or commercial specialists have documented effective management systems that maximise productivity from the predominant bee in East Africa – *Apis mellifera scutellata* – and justify investment in removable-frame hives. By contrast, experienced beekeepers use effective low-cost methods to manage scutellata bees to maximise productivity from traditional or top-bar hives.

3.7.8. While some projects have worked with beekeepers using log or basket hives, many have supplied modern top-bar or removable-frame hives without recognising that traditional hives are still widespread, and that they remain the hive-of-choice for a large proportion of experienced beekeepers. They provide most of the honey harvested in the two countries. Many experienced beekeepers claim that bees favour them over modern hives, and there is circumstantial evidence to support this. There have been few efforts to maximise the productivity of traditional hives, and even fewer projects building on the successful traditional hive systems used by good local beekeepers.

3.7.9. The top-bar hive has been widely promoted as it is inexpensive, allows for brood inspection and swarm control, and is simple to make and use. Experienced beekeepers often modify the basic design (usually to improve internal hive temperatures) which suggests that the design requires more work.

3.7.10. Some well-conceived processing units have been provided to groups with robust, appropriate equipment. However, there was considerable investment in inappropriate units, and some projects seemed to have ignored the processing component completely, or provided centrifugal extractors designed for use with frame hives that are harvested with the honey combs left in the frames (which is seldom practiced).

3.7.11. Beekeeping groups were generally more successful if they negotiated honey sales in large volumes, but to bulk-up and trade on behalf of their members, groups needed access to working capital. Typically, where groups have inadequate funds, beekeepers sold a proportion of their crop to smaller traders for cash, which (in turn) weakened the group. Access to working capital (and skills to manage such a fund effectively) is important.
Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

Bee suits

Bee suits, gloves and smokers are beekeepers’ most sought-after project inputs. They recognise that adequate protection is fundamental to good beekeeping and clean harvesting. However, most groups are poorly equipped; and suits are often poor quality, people are not trained to use them properly or people climb trees in them to harvest traditional hives which tends to tear the suit.

Individually owned equipment was generally better cared for.

The study found that one bee suit per group is insufficient. Beekeepers like to work as a team, sometimes four or five people going to harvest or check hives together. They therefore need four or five suits; more if new members are joining them to learn.

Groups needed training on repairing suits, and making new ones (as they will eventually wear out).

Bee hives

There are two popular myths: that the best way to get more honey is to have more hives; and that the removable-frame hive produces more honey. Neither is necessarily true, but with most organisations this is the principle on which beekeeping projects seem to have been designed.

More hives, more honey?

To get more honey the critical question for project planners is whether to help beekeepers achieve greater production simply by having more hives; or achieving better productivity by getting more honey from each hive. Having more hives means spending more money on equipment, with each hive adding only a little bit more to the beekeepers’ total production. The alternative (improving productivity) relies on better husbandry, so that each individual hive is managed to maximise its yield. Raising productivity per hive reduces capital investment and reduces the workload of supervising, cleaning and harvesting lots of hives.

Maffu Mophat was pleased to show us his apiary at his home in Apo sub-county, Yumbe district in northern Uganda
These are very different approaches, but the ideal is to do both – first to raise productivity per hive, and then to increase the number of hives (all of which are being managed optimally). This seldom happens.

**Removable-frame hives produce more honey?**

The removable-frame hive was originally developed for use with the less defensive European races of bees. The design allows beekeepers to take out and return combs of brood or honey without damaging them, and with minimal disturbance to the bees. The most common type of removable-frame hive used in East Africa is the Langstroth. The removable-frame hive is the most complicated and most expensive type of hive on the market in East Africa.

Hives are homes for honey bees. Hives do not produce honey; bees produce the honey. The removable-frame hive is designed to improve the management of a colony of bees. Beekeepers need to maximise the number of bees in a colony, and more bees produce more honey. Because the removable-frame hive allows beekeepers to take out and inspect frames of brood, they can make regular inspections of the brood chamber to prevent swarming (that would reduce the population of bees in a hive) and control pests and diseases (which also reduce the bee population). Beekeepers also need to harvest the maximum amount of honey, and to harvest the honey at the best time. Because they can also take and remove combs of honey, beekeepers can extract and return empty combs without damaging them. Removable-frame hives allow beekeepers to optimise management and yield, but these hives will only produce good crops of honey if beekeepers take advantage of the hive’s design to manage their bees properly.

Hive choice is a contentious issue. The typical East African dilemma is that government extensionists, NGOs and the commercial sector generally favour the removable-frame hive over “traditional” or “top-bar” hives because it is believed that removable-frame hives produce clean honey which is suitable for national and international markets.

However, Kenyan and Ugandan field-experience suggests that the use of this type of hive is not always justified. While the removable-frame hive has distinct advantages over traditional hives (and, to some extent, over top-bar hives as well) allowing for easier inspection of the brood area and easier harvesting, this advantage is only significant with relatively docile European-type bees. The race of bee that predominates in East Africa (Apis mellifera scutellata) is generally difficult to husband. It is very defensive.

Because Apis mellifera scutellata is so defensive, most East African beekeepers tend to use removable-frame hives in the simplest way, i.e. in the same way as traditional and top-bar hives. Inspections are kept to a minimum, and the hives are usually harvested like log or top-bar hives by cutting out combs and collecting them in buckets to mash and strain through cloths later. The opportunities provided by removable-frame hives (for better husbandry) are seldom taken because of the nature of the bees themselves. For most East African beekeepers, the removable-frame hive provides no advantage at all – no bigger populations, no better swarm control, no improved pest and disease management, no re-use of drawn comb and no increases in yield.
Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

Other problems with removable-frame hives

Mr Joshua Munyoki Kimwele of Waita Division in Mwingi central, Kitui County (Kenya) owns a centrifuge with over 50 Langstroth hives. He has been harvesting his hives and extracting honey to optimise production, and has made a good income. Through sales of honey he has educated his children to university level. He has successfully used the Langstroth frame hive technology.

However, for most beekeepers there are further issues with the theory of modern beekeeping, and using removable-frame hives in East Africa. For most beekeepers and groups, investment in centrifugal extractors and the logistics of transporting supers to and from an extracting shed, make this kind of equipment unrealistic. Shifting supers of honey from apiaries to extraction points and back again is hard work, is often unhygienic and is frequently impractical. For example, in Kitui County (Kenya), groups with no extractors removed honey supers from their hives and used to take them to a central site for extraction. The supers were moved by bicycle or by on public transport along dusty roads. This process was abandoned, and beekeepers reverted to the old methods.

Another problem resulted from beekeepers and local woodworkers copying removable-frame hives. The copies were often poor resulting in some surprising variations (from unopenable boxes to distorted structures made from unseasoned wood that had twisted and split). These hives were unusable (as removable-frame hives).

Removable-frame hives were also being made by competent woodworkers, but many of these artisans had not been trained on hive dimensions. In removable-frame hives the internal dimensions are most critical. Adherence to bee space means that measurements on the inside of bee hives are more important than overall external measurements. This is especially true for brood boxes.

A further problem is the lack of standardisation, and the difficulty of standardisation with basic hand tools. This means that the various components of locally-made removable-frame hives often differ in size (even if the hive is well made). While one complete hive may have complimenting external dimensions for the floor, brood box, super, coverboard and roof, another hive may be different; often resulting in frames from one hive not fitting another, gaps between the different components (like floors and brood boxes) which are big enough for bees (and pests) to enter freely, and roofs that do not fit (so the hives are not always rain-proof).

Removable-frame hives are expensive, complicated and have a more limited life than most other types of hive used in East Africa. Honey Care Africa, one of East Africa’s biggest honey-based enterprises, scaled back on their work with Langstroth beekeepers as they found it very expensive to manage the field resources; and the production of most hives was lacklustre. Currently, Honey Care sources more than 90 per cent of its honey from more traditional producers. At the beginning of 2015 they stopped manufacturing and selling Langstroth hives (for the first time in Honey Care’s 15-year history) and no longer provide any support for them.

Based upon this analysis there seems little justification for investing in these hives until realistic husbandry systems allow us to take advantage of their technology when working with very defensive bees, and beekeepers have access to the range of technologies and services needed to sustain a beekeeping system based on removable-frame hives. Field Lessons found that many experienced beekeepers had also found reasons for questioning their value and use.
Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

Julius Melubo from Narok (Kenya) thinks that modern hives are not only expensive but that they are difficult to get, and that very few experienced beekeepers in Kenya or Uganda have adopted removable-frame hives. He says beekeepers can maximise the production of honey by managing their bees as effectively as possible (given their nature). The challenge, he says, is managing the bees, not adopting the hives.

Other reasons for disliking the removable-frame hives were expressed by traditional beekeepers. Peter Chelelgo of Baringo (Kenya) does not like them because they must be placed at ground level. Most local beekeepers put their hives high up in trees. Peter said that the removable-frame hives do not fit with their existing system because their bees are too defensive to be kept at ground level. Friday Bajoki is an experienced beekeeper with the Kabale Municipal Beekeepers Cooperative (Uganda). He believes that basket hives are best and easiest to use around the Kabale area; and said that hives are good for all weather conditions.

Many beekeepers in Kenya and Uganda also believe that their local bees do not like the sort of removable-frame hives that are commonly available (the Langstroth). Some believe they get too hot (especially in Kitui, Laikipia North, and Low lands of Marigat) and others believe it is too big for the average colony. Tom Ngotiek (Laikipia, Kenya) said that occupancy of Langstroth hives is very low and its function has not been understood in the area (which is why they decided to continue using traditional hives).
There are some misconceptions. Like many beekeepers using removable-frame hives in Kenya and Uganda, Peter ole Tompoi (from Narok County, Kenya) wrongly thought that Langstroth hives had a small space because they typically came with only one super. (At the height of the honey season, one super confines the space available to bees, and can contribute to swarming.) In Laikipia, Murema Beekeepers did not know that you could add extra supers to a Langstroth. This is also linked to the lack of practical training provided to them by a beekeeping project.

The field work also recorded that many removable-frame hives had no frames. They had top-bars or nothing at all – so they were effectively expensive log hives.

Removable-frame hives are usually suspended on wires. We found many instances where posts holding the wires had fallen due to termite damage. They broke under the weight of honey, leading to stinging problems and livestock deaths. When removable-frame hives end up on the ground, termites make quick work of the softwood timber (as we found in Kitui and Baringo Counties (Kenya). A hive can be seriously damaged in just a few days.

Members of Yike Wekwe beekeeping group in Kitui County (Kenya) explained that when their posts were destroyed, some of his hives were eaten overnight. Some beekeepers in Kitui now use metal posts to hang their hives.

Many beekeepers consider removable-frame hives as complicated high-tech units, and are unwilling to repair them themselves. In some cases, this was exacerbated by implementing organisations and commercial companies repairing damaged hives for beekeepers. When projects ended, the hives fell into disrepair. We found numerous cases of beekeepers reluctant to repair removable-frame hives by themselves.

Many experienced beekeepers like Munyoki Kimwele of Kitui County (Kenya) and Alice Njoroge of Muranga County (Kenya) also believe that inspections of the brood area, even with minimal disturbance and in purpose removable-frame hives, is likely to lead to absconding. Unlike European races, East Africa honey bees are easily induced to find a new nest site, often abandoning brood in the process. This further questions the suitability of regular inspections and the sort of husbandry typically promoted in a technology-transfer approach.

Discussion with experienced beekeepers and stakeholders in Uganda and Kenya suggest that the adoption of removable-frame hives is driven more by media attention, fashions and aspirations for a modern enterprise, rather than any proven advantage from using them with the predominant race of bee in East Africa (Apis mellifera scutellata).

There is little evidence to show that removable-frame hives work in this environment, and until usable models for different ecological zones are developed and promoted, most established beekeepers will remain sceptical about their use.
Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

Tom Ngotioek in his apiary in Laikipia, Kenya

Traditional hives

In the dryland areas of Kenya and Uganda, traditional hives are generally made from logs and baskets. They are not ideal for modern beekeeping as it is almost impossible to inspect the brood combs properly, and difficult to harvest, but bees like them, they are inexpensive and the log hives have a very long life. Experienced beekeepers generally prefer these hives despite their shortcomings. In Bogoria, Baringo County (Kenya) local beekeepers had developed their own solutions for making traditional bee hives more suited to progressive husbandry. The Kapkuikui super-log-hive can be opened so beekeepers can practice swarm control and have queen excluders separating the brood chamber and the honey storage section. The top two-thirds could be lifted off to expose the combs of honey and brood. The Kapkuikui beekeepers developed this modification under the leadership of Simon Chesang, and it was being used by most members of the group as well as other beekeepers in the area. Group members explained that the honey is cleaner as it is not mixed with brood, and there is no interference with the queen so the bees are less likely to abscond. They also say that the bees can regulate the temperature of log hives more easily than in removable-frame and top-bar hives, and they are cheaper to make. Friday Bajoki of Kabale Municipal Beekeepers’ Cooperative (Uganda) believed that traditional basket hives were the best, and that bees did not abscond during the dry season. He said these hives were easily made from readily available materials and were easy to transport to an apiary.

Many beekeepers also believed that bees found it easier to protect themselves in log hives.

Few projects have sought ways to build from competent beekeepers’ preferences and experience by sharing and promoting effective management systems using traditional hives. Most have side-lined traditional systems completely, and focused on so called modern hives.
Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

Top-bar hives

The top-bar hive is a modern bee hive which is basic enough to be inexpensive, allows for easy brood inspection and swarm control, and is simple to make. Designs vary between makers. This is not a problem, providing the top-bars are the same length. Varying size might be an advantage as hive volume can be varied according to regional differences (in forage, seasons and bee races).

Some experienced beekeepers had modified the basic design to suit local needs, particularly to improve internal hive temperatures (using grass, plastic and timber as lids).

Even though many experienced beekeepers have some of these hives, more research, adaptation and capacity building is needed; but Leah Kimani of Nakuru (Kenya) is an experimenter and has tried all hive types, and the top-bar hive is her favourite because she can harvest both honey and wax (which gives her more income than harvesting just honey).

Improved management

The study found that most active beekeepers managed their bee hives and not their bees. They used traditional hives placed high-up in trees. Peter Chelelgo (Baringo, Kenya) explained that their expertise focused on making hives, placing hives in good locations, attracting swarms, cleaning hives, keeping pests at bay, deciding the best time for harvesting, and collecting the honey. These seem to be the core activities of good beekeepers working with Apis mellifera scutellata bees. The hives are not opened for routine inspections, but are observed regularly, and necessary actions are taken according to what has been seen.

Removable-frame hives are designed for a greater level of management (as discussed above). They are also designed for use in different apiaries – typically located at ground level, hung on wires in an open apiary, or on stands inside a bee house. However, most beekeepers place removable-frame hives on stands in open apiaries or in tree tops. It is impractical to inspect removable-frame hives regularly when they high up in trees; and hives outside on wooden stands at ground level are very vulnerable to pests and predators, and to theft.

Top-bar hives can also be placed on stands in a bee house, or hung on wires on posts in the open. Regular inspections are possible, but they tend to be managed in the same way as traditional hives.

Few development agents or commercial specialists have documented effective management systems to maximise productivity from scutellata bees which justify investment in removable-frame hives. By contrast, experienced beekeepers use effective low-cost methods to manage scutellata bees, to maximise productivity from traditional hives. Their methods need to be promoted.
Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

Florence Achiro Ojok of Ramogi, Adijire in Uganda, has improved her livelihood through beekeeping

Processing equipment

Koriema Beekeepers in Baringo (Kenya) and Osutwa Beekeepers Association in Laikipia County (Kenya) both received support from SITE for honey refineries and training. Mwingi Honey Place in Kitui County (Kenya), New Bairunyi Association in Tharaka Nithi County (Kenya) and CABESI, West Pokot (Kenya) all received support from ICIPE and other development partners to construct honey refineries and offered beekeeping training to cooperative members. Bunyagabu Beekeepers Cooperative in Fort Portal (Uganda) received support from Horizont3000 to construct their honey refinery and training centre, and the Bushenyi Connoisseur Cooperative in Bushenyi (Uganda) received support from the UK Farmers Overseas Action Group (FOAG) that enabled them to construct a training centre. Kabale Beekeepers Cooperative in Kabale (Uganda) received support from the Food and Agriculture Organization of the United Nations (FAO) to construct a processing facility and the purchase of honey-processing equipment, carpentry machines and tailoring machines. In Baringo (Kenya) SITE addressed the needs of beekeepers using modified log hives by providing them with fabricated and modified honey extraction machine with comb cages to spin honey from wild comb. (This was a very sound intervention. Many other organisations provided standard centrifuges, despite being inappropriate for extracting honey from wild comb from log or top-bar hives. (See notes above on the difficulties of using removable-frame hives.)

Training on managing assets

The study found that most groups seemed to be dependent on NGOs and other development partners. Yike Wekwe Women group in Kitui County (Kenya), for example, was provided with hives and bee suits in 2004 and, although the suits were worn out, they had not bought replacements or discussed what to do. They were waiting for another NGO to address the problem. There was little to show that they were owning the process, taking
Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

responsibility for repair and purchasing replacements or having the skills and commitment to repair and make their own.

Working capital

We seldom found groups or cooperatives with adequate funds to buy honey from members. This is a major reason why beekeepers sell to individual traders instead of the organisation they belong to. They struggle for the cash they need, and cannot wait for the group or cooperative to bulk-up, sell and then disperse the income to members, even if they receive lower prices on the open market. This is a critical point for groups and cooperatives. Without the loyalty of members, they are unlikely to flourish; but without the cash to buy from their members the groups and cooperatives are unlikely to maintain their members’ loyalty. Thus, access to working capital is a very big challenge for beekeeper organisations. Camels, Bees & Silk (CABESI) in West Pokot (Kenya) has a good structure for purchasing honey from beekeepers. They helped them work together in clusters, with several beekeepers trained in quality control, the type of honey to be harvested, the processing and storage, to bulk-up honey at central locations. It is a good model, but their funds are limited and they cannot take all the honey harvested during a season.

The Bees Abroad project in Laikipia (Kenya) trained beekeepers on resource mobilization (Ruai Beekeepers obtained financial support from the Laikipia County Government for renovating their factory, and for organizational capacity building through staff training.) Resource mobilization is an area to be addressed through policy development and strengthening, and with resources provided through development bodies by diverse stakeholders to ensure project sustainability.

3.8. Training

3.8.1. Several agricultural colleges provided specialist training courses with detailed curricula and practical training, and many projects also provided practical training and extension support. However, we also came across other initiatives which delivered short, classroom-based theory training which did not prepare beekeepers for the realities of working with bees in their apiaries.

Beekeeping training was often weak, although some projects had put considerable effort into husbandry training without much success in raising yields. Most groups had failed to increase productivity. Most organizations provided short, theoretical sessions in a classroom. Few seemed to have provided practical work in the apiary, so the difficult issues affecting production (good hive management etc.) were not addressed. Many experienced beekeepers in Kitui rural and Mutomo, Kakamega County, Laikipia (all in Kenya) and Hoima (Uganda) were critical of this, and felt the best training was provided by Baraka Agricultural College in Kenya as it was longer, and combined theory and practice.

Training materials

Good training materials were available in Uganda. These were developed by TUNADO, and translated into local languages.

In Kenya, access to effective training materials was more difficult. Many county offices with responsibility for beekeeping lacked any suitable reference or training materials, or possessed outdated materials. Access to the Internet was a constraint, but those able to connect and download material were often using inappropriate information for the targeted area.
By contrast, Bees Abroad, which worked with beekeepers in Laikipia County (Kenya), tailored their project training programme to local circumstances, interests and opportunities; and recruited experienced staff with knowledge of beekeeping and the local environment from among the target communities. Those with local language skills were given priority. Recruitment of local staff was also designed to ensure community resource persons would continue providing services after the project closed.

In Kenya, local beekeepers typically lacked written information, or were provided with locally inappropriate technical manuals (sometimes in the wrong language, or for different ecological zones or markedly different socio-cultural-economic groups). Limited access to the Internet is part of the problem.

### 3.9. Managing hives and apiaries

3.9.1. Most successful beekeepers (working with Apis mellifera scutellata) managed their bee hives, not their bees. They usually favoured traditional or top-bar hives. Their core management activities were documented as: siting hives in good locations; attracting swarms; cleaning hives; keeping pests at bay; deciding the best time for harvesting; and collecting the honey. Very few beekeepers opened their hives for routine inspections to manipulate the brood nest. They relied on regular observations and timely responses to observed needs.

3.9.2. There was no evidence that Langstroth hives were managed more intensively than any other hive design.

3.9.3. Apiary siting was generally good, and pests and wildlife were an ever-present problem that better beekeepers generally managed; but apiaries sometimes had more hives than the location could probably support.

3.9.4. Committed beekeepers maintained their apiaries regularly, and recognised that frequent checks and cleaning were central to high honey production, but most beekeepers were struggling to maintain good levels of apiary management.

3.9.5. Highly-committed beekeepers checked their hives and kept them clean and tidy throughout the year, but most beekeepers seldom cleaned or maintained their hives.

3.9.6. Defensive bees are a particular problem in some areas. Defensive bees can kill or injure livestock and sometimes people. The risk factor in beekeeping needs to be taken into consideration.

**Apiary siting**

We found that apiary siting was generally good. Beekeepers recognised the need for shade (but knew the importance of avoiding cold and damp conditions). In Kitui (Kenya) some beekeepers also recognised there could be problems with heat radiated from sandy ground to the hive bottoms.
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Mapurkei Mamai, from Il Polei, Laikipia, Kenya, and one of his traditional mud/stick hives

Most beekeepers were also concerned about their own safety and the safety of their neighbours and farm animals. Yike Wekwe Women group in Kitui County (Kenya) and Mapurkei Mamai, a beekeeper in Laikipia County (Kenya) were among those who consciously planned to reduce risk by siting apiaries to minimise problems; but they were also concerned about theft (which varies considerably across both countries). We found many beekeepers had made difficult decisions, siting apiaries near to their homes (so that they might see thieves with their torches at night, whilst locating them so livestock were least vulnerable to stinging.

Some beekeepers like Diana Khavetsa (Kakamega, Kenya) asked local farmers to allow her to site her bee hives on their land as she had nowhere of her own. She did free hive inspections for those who provided space for her bees, working on the owner’s hives when checking her own. When she started beekeeping, Diana was living in a rented house but her beekeeping activities (inspections, trainings etc.) provided sufficient income to purchase land, and build a home and construct a beekeeping workshop.

Most beekeepers placed their hives in clusters, usually to make inspection and apiary management easier, but Leah Kimani (Nakuru, Kenya) had hives scattered around her four-acre farm. She found this made harvesting easier. Working on relatively isolated hives (rather than many close together in a typical apiary) meant that she only disturbed the bees from the hive she was working on. Bees from other hives were not disturbed at all.

Almost all beekeepers recognised that bees need access to water, and that this is especially important in the dry season. They are often active in the protection of adequate water points. Many, like Tom Ngotiek (Laikipia, Kenya) provide their bees with water in containers.
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Pests and wildlife

Termites were a common problem in semi-arid areas like Kitui County (Kenya) and Hoima District, Bugahya County (Uganda). We found a wide range of methods used to keep hives off the ground, from placing hives in trees, hanging them or placing them on stands. Different systems were used from area to area for varying reasons, e.g. soil type and pests.

In some areas, beekeepers need to protect their apiaries from elephant damage. Tom Ngotiek (Laikipia, Kenya) uses a single ordinary wire around his apiary to scare away them away. He reasoned that private ranches put electric fences around their land to keep wild animals in (or out). Elephants have experienced this so when they come near to Ngotiek’s place, they think it is electrified.

Apiary size

We found a surprising number of apiaries with an excessive numbers of hives. Typically, modern beekeepers would keep 20 or so hives per fixed site (so the bees do not compete for forage), so it was surprising to find apiaries with 100, 140 and even 200 hives. We found 140 Langstroth hives in an apiary owned by Twala Women Group in Laikipia County (Kenya). Only one was occupied. In Mount Kenya National Park (Tharaka Nithi County, Kenya) beekeepers had placed more than 200 hives together, which made inspections easy but harvesting and wild animal attacks on the hives somewhat challenging. The groups came together and identified “courageous” individuals to care for the hives in the forest, following a well-planned routine.

By contrast, Alice Njoroge had 100 bee hives at her home (Murang’a, Kenya). They were kept under a bee shade and, when we visited, around 80 per cent of the hives were occupied. The area where she has the apiary has few or no beekeepers locally, and there is plenty of bee forage (including coffee and banana plantations, natural forest, and several river tributaries).

Apiary management

The most serious beekeepers kept their apiaries clean by cutting grass and shrubs, preventing pests and diseases and minimising intrusion by other people. Tom Ngotiek of Laikipia County (Kenya) used a wire around his apiary as if it was an electric fence to deter the elephants. Jackson Baliija of Hoima (Uganda) has used live-fences to prevent the bees, animals and humans coming into contact. Baliija Jackson introduced water points across his farm to ensure that bees can access water at all times.

Good beekeepers, who were managing their apiaries well, seem to experience lower levels of bees absconding. They also harvested more honey per hive than those colleagues who paid less attention to the condition of their apiaries.

Managing hives

Many beekeepers said they did not need to look at their bee hives every day. They believed they could hang their hives and wait for harvest. These opinions might be shared by some non-specialist NGOs and novice beekeepers, but most experienced organisations and successful honey producers had contrasting views. Joshua Munyoki Kimwele from Mwingi, Kitui County (Kenya) checked his hives at least twice a day. He said that there was a lot to check for, both in the apiary and in individual hives; he woke up “thinking about bees”. He ensured his apiary was secure from intruders and kept apiary/hive records to help him track progress as this was his sole source of income.
Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

Similarly, beekeepers interviewed in Baringo county (Kenya) regularly checked empty bee hives for wasps, other pests and vermin, and cleaned them. To destroy or discourage ants, they put powder or ash around tree trunks. In Laikipia County (Kenya), beekeepers worried about honey badgers and elephants. They placed their hives securely and so they could not be knocked down by the badgers; and ensured that the hives were occupied (which kept the elephants away).

In general hives were not well-managed, except by the best beekeepers, who checked their hives and kept them clean and tidy throughout the year – repairing, cleaning and rehanging their hives whenever the need arose.

**Defensive bees**

Defensive bees were a particular problem in some areas in Northern Uganda and parts of Kenya. We came across numerous cases where beekeepers had lost livestock to stinging by bees. Economic losses due to bees attacking and killing livestock were considerable in some cases. Causes of bees becoming “wild” and attacking people and livestock are varied. Hives may fall where termites eat and weaken the hanging wooden posts. Livestock knock against hives and disturb bees. Inexperienced beekeepers attempt to harvest honey at the wrong time and aggravate the bees. Children throw stones at hives. When Alice Wahome in Laikipia, Kenya, tried to add supers to her hives, the bees became defensive and she lost six dairy goats due to stinging. In other cases, cows have been killed by stinging, particularly when tethered near to apiaries. We also noted an incident near Pakwach, Northern Uganda, in 2010, when a five-year old girl was killed by stinging. (The bees were disturbed initially by other children throwing stones at the hives.)

We saw little evidence that the organisations promoting beekeeping took steps to mitigate losses due to defensive bees.
3.10. Increasing honey production

3.10.1. Increases in honey production have generally been achieved by increasing the number of hives (rather than raising yields per hive).

3.10.2. Few projects, and fewer beekeepers, had clear ideas on how to increase hive productivity but there are traditional beekeepers achieving significant yields of from *Apis mellifera scutellata* bees. Many competent, talented and innovative individuals (using traditional or modern equipment) have developed their own (effective) management systems. (They are often ignored by beekeeping development projects.)

As discussed above (section 3.7. “Project inputs”) honey-production increases were generally achieved by increasing the number of hives (rather than raising yields per hive). Few projects, and fewer beekeepers, had clear ideas for increasing hive productivity. Where productivity had been considered, it was mostly tackled through theoretical training about husbandry methods used in Europe or North America. Except for the work of Baraka Agricultural College’s beekeeping unit, there has been little analysis of the need to adapt European and North American methods to local circumstances in East Africa, and there are few accessible guidelines on how to manage scutellata bees to increase hive productivity.

The study concluded there is considerable potential for improving the management of *Apis mellifera scutellata* bees (to maximise productivity) by tapping the knowledge of progressive traditional beekeepers. We found many competent, talented and innovative individuals but most had been ignored by beekeeping development projects.

- Peter Chelelgo, Baringo, says local beekeepers essentially “manage the hives and not the bees”. Their expertise is to make hives, place hives in a good location, attract swarms of bees into clean hives, keep pests at bay, watch for signs of harvesting and harvest.

- In Kenya, Mapurkei Mamai of Ilpolei in Laikipia North, has used a natural herb called “Olkidirgai” (Maasai name) to attract bees to hives. And Steven Kithure of Chiakariga in Tharaka Nithi County uses a combination of propolis, wax and a root of a herb called “Muretha” (Meru name) to attract bees in the hives. Joseph Kabui, Nakuru, uses a herb called “Makori” to attract bees.

- Tom Ngotiek (of Ilmotiok in Laikipia North, Kenya) smears cow dung on his traditional hives to help reduce excessively high hive temperatures. This prevents bees from absconding during the dry season/in hot weather conditions.

- Peter Chelelgo (Baringo, Kenya), David Sembele and Julius Melubo, (both of Narok, Kenya) get rid of small colonies and lazy bees by leaving their hives open to make the bees abscond.

- Pest control methods – using small ants to control big ants (Peter Chelelgo, Baringo, Kenya).

- Friday Bajoki (Kabale, Uganda) spreads his hives across different locations as his beekeeping colleagues want space to keep their own hives. He also ensures the bees have access to plenty of water.

- Elly Mugisha (Bushenyi, Uganda) has promoted environmental conservation by creating awareness through local leaders’ meetings, churches and schools.
Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

- Kabarole Beekeepers Association (Fort Portal, Uganda) has collaborated with the Ministry of Forest to allow them site their apiaries inside the forest as they help conserve the forest resources.

3.11. Beeswax

3.11.1. A small proportion of beekeepers were selling beeswax, but most discarded it as waste, unaware that (weight-for-weight) beeswax has the same or higher value as honey.

3.11.2. Most beekeepers had little understanding of wax moth, knew only a little about its devastating impact on weaker colonies, and paid no attention to its control.

The study found that a large proportion of beeswax was thrown away or wasted. After extracting honey, many beekeepers discarded the wax. This was noted particularly in Mutomo, Kitui County and Tharaka Nithi County (both in Kenya).

There was also little knowledge of the cause (or life-cycle) of wax moths, and even less attention to their control. In Ololulunga, Narok County (Kenya), we found wax moth destroying comb in group-owned Langstroths. (We also saw this where hives had been abandoned by bees.) Wax moths feed on waste comb, eat wax discarded during the honey harvest and invade empty hives; and their larvae also eat honey comb in hives with weak colonies, often leading to the colony’s death. In Kitui County (Kenya), beekeepers in Mutomo and Kitui Rural removed frames infested with wax moth and put them in the sunshine to kill the wax moth larvae. After several days, they replace the frames without further cleaning.

A Langstroth hive riddled with wax moth after bees have absconded

Apiary hygiene (the removal of old comb) is important in controlling wax moth (and other insects); but beeswax also has value. It is usually worth as much as honey (by weight) and can be an important source of income to beekeepers. It takes little effort to collect and
Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

process, has a long shelf life and can be transported easily. Kapkuikui and Koriema Beekeepers in Baringo County (Kenya) practised good husbandry, keeping their apiaries clean which, in turn, provided better honey yields and income from good quantities of wax.

3.12. Entrepreneurship

3.12.1. Some of the most successful beekeepers provided services to other people, collecting swarms, inspecting hives, harvesting, training, providing tours of their apiaries and removing colonies from the walls of homes etc. Many appeared to make as much, or more, money providing these services, as from keeping bees and selling honey themselves.

- Munyoki Kimwele (in Mwingi Central, Kenya) inspects hives for other beekeepers, offers beekeeping training, charges for those visiting his apiary (and he has a price list for the services he offers).

- Diana Khavetsa (Kakamega, Kenya) has also made beekeeping an enterprise which, she claimed, changed her life. Beekeeping is her sole source of income. She has trained farmers and other development agents (including government line-Ministry staff) on beekeeping practices, has a beekeeping equipment workshop within Kakamega town, and employs two staff. Income from this wide range of beekeeping activities has enabled her to buy a car and a piece of land, where she has constructed a house and a beekeeping equipment factory.

- Alice Njoroge from Muranga County (Kenya) refines honey and makes value-added products from beeswax (e.g. body cream and candles) that she sells in Nairobi’s Central Business District. She breeds queens for stocking her own bee hives and is planning to sell the queens to other beekeepers.

Joshua Munyoki Kimwele from Kitui, Kenya, treats beekeeping as a business and has a price list for the range of services he provides.
• Peter Kitui Tangus (Bomet, Kenya) started as a beekeeper, progressed to selling bee hives and other equipment to local people and development agencies, and then expanded to providing training and consultancy services. He also felt that beekeeping has really changed his life for the better, not least because he had taken his basic skills and developed a range of related activities that earned him good money.

• Nicodemus Mwangi (Nakuru, Kenya) is a farmer-to-farmer trainer who trains other beekeepers and offers other beekeeping services (inspecting and harvesting) at a fee; and David Sembele (Narok County, Kenya) is very sophisticated in his approach, and provides a discount on hive stocking if clients buy the hive from him as well.

• Balia Jackson from Hoima, Uganda, partners with St. Andrews Kaahwa College where he teaches and offers his technical assistance to the college apiary (for a fee). He also runs open days in his apiary for schools and colleges (also for a fee).

• Friday Bajoki from Kabale, Uganda, offers his expertise to groups within and beyond Kabale municipality (and charges for this). He is frequently invited by the Entomology Department of the Ministry of Livestock in Kabale Municipality to give presentations during their meetings and is paid for the work done.

### 3.13. Monitoring and evaluation

3.13.1. Monitoring and evaluation was generally weak, and there are no generic indicators for assessing the effectiveness of beekeeping projects.

It was difficult to obtain official documentation that recorded progress and achievements through the lives of many projects. The study also failed to access evaluations, and did not identify any generic indicators used to define the effectiveness of beekeeping interventions.

There was a limited lesson-learning environment recording successes and failures, and there seems to be no repository of knowledge – nowhere for agencies to review past or current projects, research, etc. No lesson learning documents were obtained.

Organizations are often reluctant to share information (base-line material, reports on project implementation, or monitoring and evaluation studies). Successes and failures have seldom been published or shared among the stakeholders.

### 3.14. Exit strategies

3.14.1. Few of the smaller initiatives had strategies for winding-up their direct involvement with beekeeping groups, or building adequate confidence and capacity to sustain beekeeping activities beyond the life of a project. Typically, activities stopped when external support ended.

Our findings suggest that, like many development projects in other sectors, everything works well during implementation but activities are likely to collapse when projects end. While the Mutomo Soil and Water Project (in the 1990’s) was running, beekeepers were doing well. They had funds for honey, technical training and other inputs, but when it ended everything seems to have been abandoned. There seems to have been little local ownership, no handing over and no sustainability. The next project in Kitui was the Kitui Agricultural Programme (KAP) that targeted farmers with agricultural trainings and farm inputs. The program was implemented in all counties through the Ministry of Agriculture, Livestock and
Fisheries and was funded by external donors. Through KAP, farmers were retrained and activities were re-established, but when this project ended the groups fell apart again. Many farmers lost interest and neglected their bees (although the original experienced beekeepers continued). In total, there were four major beekeeping projects in the Mutomo area. County officers explained that hundreds of Langstroth hives were given out, with many months of training, but felt the legacy of the projects was just a handful of people still professionally engaged in beekeeping. After 30 years of support, beekeeping has hardly progressed, from a small number of producers using traditional log hives, selling honey locally at low prices.

The departure of these four projects from the Mutomo area was either poorly planned, or the plans went wrong. In giving this example we are describing a typical scenario in which beekeeping activities fail once a project closes. There are many components in projects like these that need careful planning and adequate preparation for phasing out. Most critical is that some projects seem to strengthen dependence. We found numerous examples of projects that appeared to pay little attention to thinking beyond their close: how bee hives and bee suits will be repaired; how groups would finance new inputs; finding new links to markets; building networks between beekeepers for knowledge and influence or continuing to access technical advice.
5. **CONCLUSIONS**

Beekeeping has attracted a lot attention in the last ten years. The media, donors, government and implementing organisations have been positive in promoting interest in the sector. Support for the sector continues to grow, and interest among new entrants is high.

A large proportion of interest in beekeeping appears to assume that beekeeping projects are low-input, fast delivery and will provide quick returns. Many also assume that progressive beekeeping is relatively easy, and that the provision of modern equipment will drive the sector forward. There is growing evidence to suggest that this is not a balanced interpretation.

There have been some sound interventions that recognise the need for a balanced approach to project delivery (that includes practical training, drawing on the skills of existing beekeepers, providing protective clothing and developing production systems to suit local circumstances) but these are a minority.

We found that many initiatives are failing to provide sustained economic benefits to the targeted communities. Investment in the sector seldom translates into widespread tangible benefits to beekeepers. Given the high proportion of under-utilised, empty or generally non-performing modern hives, the widespread failure to demonstrate an increase in honey production, and the number of groups that gave up beekeeping when projects ended, there are justifiable concerns over the methods adopted by many agencies engaged in the sector. There are many reasons for this failing.

There has been limited lesson-learning documentation and sharing. Little evidence has been gathered to show which project approaches work (or do not work), and nothing to confirm (or challenge) assumptions. Past problems have not been flagged, and mistakes are repeated.

East African countries are modernising their beekeeping systems, with technologies and husbandry methods developed for different sub-species of bees in more temperate environments and in different socio-economic circumstances. There appears to have been inadequate reflection on the suitability of these systems to the bees and environments of Kenya and Uganda. Evidence from the field experience of beekeepers in Kenya and Uganda suggests that the focus on technology transfer has not been justified.
Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

The wealth of traditional knowledge and local expertise, and the competence of those active in Kenya and Uganda’s vibrant beekeeping sector, is poorly recognised by agencies. Beekeeping does need to modernise, but modernisation should build from what exists, rather than replacing it. There are many exemplary beekeepers able and willing to participate in this process.

There is a lack of hands-on beekeeping expertise among implementing agencies. Many agencies deliver only classroom-based instruction. Few trainers have in-depth husbandry experience and many trainee beekeepers are often ill-prepared for opening hives. There is frequently insufficient practical training in apiaries.

Beekeepers are usually highly observant people who are committed to their local environment. They often have a sound understanding of plants and wildlife, and are frequently active conservationists. Their commitment usually goes beyond their immediate need for pollen and nectar-producing plants and water. Their commitment can be harnessed in many ways from tree planting to influencing local charcoal burning activities.

There is a very strong link between beekeeping and entrepreneurship. The best beekeepers have often built businesses based on more than just honey production, finding numerous ways to generate income from their interest and experience by providing services and selling inputs. The most successful beekeepers often make a very significant proportion of their income from these broader activities.

Alice Wahome, prepares and sells a wide range of hive products from her hives at Sweetwaters in Laikipia, Kenya

There is a link between beekeeping and building human capital. Through beekeeping beekeepers can learn many new skills and build confidence and pride in themselves and their communities. They learn skills which are much broader than honey production. They learn business skills and how to pack and market their products. They gain environmental awareness, knowledge of trees and plants and frequently initiate tree planting or tree nurseries. They also learn how to cooperate and work together in groups and practice leadership skills.
Interest and investment in East African beekeeping is certainly justified. Despite concerns over declining habitat and bee diseases, the sector has high potential. The market is strong, demand for honey and wax is high (and growing) and prices are good. Production can be raised (not only by increasing the number of hives but also by increasing the productivity of hives). To achieve this, stakeholders in the beekeeping sector must review their strategies. With careful investment, appropriate projects, suitable policies and training programmes, and the right kind of publicity, beekeeping can be modernised. It can generate greater incomes for rural people, contribute more significantly to local and national economies, and beekeepers can be harnessed to increase their contribution to environmental conservation.
6. **RECOMMENDATIONS**

The key recommendations coming out of the project are presented below.

6.1. **Sharing information and knowledge**

A. A centralized beekeeping database is required for each country. National bodies that bring together beekeeping stakeholders should provide a central repository for information on past and current beekeeping projects (including project plans and reports, evaluations and analyses of lessons learned). These should be available to the public (perhaps through a website) to provide a resource for agencies developing and rolling-out new projects in the sector.

6.2. **Research**

B. Development actors must appreciate, research and understand traditional knowledge.

C. The knowledge and practices of progressive and innovative African beekeepers must be integrated with scientific understanding and relevant technologies, to develop realistic husbandry systems to maximise honey production from local bees. These husbandry systems must be documented and promoted as modern interventions for beekeepers working with very defensive races like *Apis mellifera scutellata*; and this strategy should be extended to address similar needs across Africa.

6.3. **Publicity for the sector**

D. Beekeeping media-coverage should provide a more balanced view. The publicity surrounding beekeeping (in both Kenya and Uganda) is positive (in terms of encouraging people to engage in the enterprise) but needs to convey the complexity of beekeeping husbandry, and concerns about the realities of the “low investment/high return” assumptions. It should also report on increasing concerns.
about the promotion of removable-frame hives and technology-dominated approaches, and their relevance with the sub-species of bees in East Africa.

6.4. Project design

E. An assessment tool is required. The design of all new projects in the beekeeping sector should build from technical assessments of proposed project areas, ensuring plans reflect analysis of a wide range of critical factors including: natural habitat; sub-species of bees; seasonal patterns; local knowledge; local beekeeping practices; the experience of previous projects; and the experienced local beekeepers. Donors and government and county/district level bodies should encourage the adoption and use of these assessments.

F. Projects must provide clear goals and impact indicators with measurable outcomes.

G. Project designers should recognise that beekeepers are usually very entrepreneurial and find diverse ways to make their beekeeping enterprise successful. Diversification is often a key to the viability of a beekeeper’s business, especially in the low-cost areas of service provision.

H. Bee suits, gloves and smokers (in sufficient numbers) are essential components of a beekeeping project. Adequate protection is a priority for safety, confidence and good management and effective husbandry.

I. Projects should target increased productivity (per hive) and then, as skills increase, aim to increase the number of hives to further raise production. Raising skills is the first step to raising honey yields.

J. Until evidence is produced to support claims that Langstroth-type (removable-frame) hives justify their considerable cost (through improved husbandry providing higher
Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

yields in the East Africa context), or husbandry systems are developed and shared to optimise their local use, there is little justification (at present) for promoting these hives in Kenya or Uganda.

K. Measures to control and maintain the quality and standardisation of modern (top-bar and removable-frame) hives must be addressed.

L. Agencies embarking on beekeeping development projects must have personnel with hands-on beekeeping skills, or should partner with suitably experienced specialist organisations. Beekeeping requires expertise and commitment from trainers and trainees alike. Practical skills, and confidence in handling bees in the apiary, are essential. Organisations must also have suitable training materials and equipment for effective knowledge transfer.

M. It is essential to draw on the expertise of traditional beekeepers, and to involve them directly in any beekeeping development initiative. They can provide local knowledge, enthusiasm and experience, and often provide continuity and improve sustainability. These are the people already committed to the business. Although some of their practices may seem outmoded, they have adopted their methods for a reason. They are often innovators and can continue to develop their beekeeping systems.

6.5. Selecting beneficiaries and building groups

N. Working with groups remains the best and easiest way to deliver information and services to beneficiaries. However, the project activities should be done by individuals to ensure maximum benefits and to encourage independence and participation.

O. Projects must build beekeeping groups from people with shared interests in beekeeping. Ideally, groups should be comprised of both experienced beekeepers and newcomers to the business. Groups also tend to be stronger and more successful if they consist of men and women, older people and youth.

P. Projects that place significant effort in group capacity building are generally more successful. Access to adequate working capital and financial management and transparency mechanisms are similarly important.

Q. Beekeeping is not for everyone, nor does it have to be. Different group members can have different roles. Not everybody in a group will be comfortable with hands-on beekeeping, even if they are active in managing their apiaries and processing honey. Husbanding bees is not always an easy and pleasant task, and project designers should recognise that groups comprise people with different skills and aspirations. This is a positive point. The different skills and aspirations should be nurtured to build collaboration and complementarity among members, and develop different roles. For example, those who are uncomfortable handling bees can have a role in packing and marketing bee products or managing the accounts, etc.

6.6. Training

R. Training institutions and organizations need to possess training materials and equipment for effective knowledge transfer. Organizations involved in the beekeeping sector are advised to have competent staff who are confident in handling bees.
S. Beekeeper training must be (mostly) apiary-based so that trainees learn the practicalities of keeping bees. Apiary-based training must include aspects of beekeepers' behaviour and develop their observation skills.

T. Beekeeping (particularly with Apis mellifera scutellata) should focus less on routine intrusive husbandry activities, and more on the core tasks of siting and maintaining apiaries, cleaning and repairing hives, and deciding when to harvest, etc. It should concentrate on regular apiary visits and timely responses to observations.

6.7. Beeswax

U. The collection and processing of beeswax should be encouraged. Beeswax is a valuable by-product from honey harvesting that is typically equal in value (weight for weight) to the honey itself. Collecting beeswax is also important to control pests. There are both economic and hygiene reasons for collecting and processing wax.

6.8. Winding-up projects

V. As with all development projects, beekeeping interventions must be evaluated against their goals and outcomes/outputs as a basis for determining their impact. Reporting the number of hives delivered, or the number of trainings held, does little to determine whether the project has improved peoples' well-being or contributed to conservation. It is important to analyse a project’s lessons (and these must be shared).

W. Exit strategies are essential. Beekeeping is a long-term investment requiring long-term commitment and continued access to advice, inputs and markets far beyond the life of most projects. Exit strategies should be planned in the earlier stages of project implementation, with the participating groups aware of the project timeframe, and fully engaged in designing sustainability.
ANNEX A: INTERVIEW CHECKLIST – KEY INFORMANT INTERVIEWS

List of points to cover with the county/district beekeeping staff:

1. Introduction to ABRC and the project.
2. Beekeeping in the county overview.
3. Currently active beekeeping interventions in the county.
4. Past projects within last ten years and impact/outcomes.
5. Best beekeepers – who, where and rationale for being the best.
6. Any other thoughts on good beekeeping/pitfalls to avoid and challenges.
7. Any other question/issue.
### ANNEX B: KEY INFORMANTS CONSULTED BY THE PROJECT

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
</tr>
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<tbody>
<tr>
<td>Mr Kithuma Nzainga</td>
<td>Chairman, Kenya Honey Council</td>
</tr>
<tr>
<td>Mr Dickson Biryomumaisho</td>
<td>Executive Director, The Uganda National Apiculture Development Organisation (TUNADO)</td>
</tr>
<tr>
<td>Ms Sarah Mugoya</td>
<td>The Uganda National Apiculture Development Organisation (TUNADO)</td>
</tr>
<tr>
<td>Mr Robin Mbae</td>
<td>Chief of Apiculture, Kenya</td>
</tr>
<tr>
<td>Mr Francis Kamau and staff</td>
<td>Baraka Agricultural College, Kenya</td>
</tr>
<tr>
<td>Dr Grace Asiko</td>
<td>Director of the National Beekeeping Station, Kenya</td>
</tr>
<tr>
<td>Mr Madison Ayer</td>
<td>Honey Care Africa Limited</td>
</tr>
<tr>
<td>Mr Ernest Simeoni</td>
<td>African Beekeepers Ltd (ABL)</td>
</tr>
<tr>
<td>Mr Philip Owiti</td>
<td>Beekeeping Officer, Nakuru County, Kenya</td>
</tr>
<tr>
<td>Mr Benjamin Tanui</td>
<td>Ministry of Agriculture, Baringo County, Kenya</td>
</tr>
<tr>
<td>Ms Edna Songol</td>
<td>Ministry of Agriculture, Baringo County, Kenya</td>
</tr>
<tr>
<td>Mr Ruben Cherutich</td>
<td>Ministry of Agriculture, Baringo County, Kenya</td>
</tr>
<tr>
<td>Mr Duyu</td>
<td>Kenya Agriculture and Livestock Research Organization (KALRO)</td>
</tr>
<tr>
<td>Mr David Palla</td>
<td>State Department of Livestock, Kenya</td>
</tr>
<tr>
<td>Ms Jacinta Wachira</td>
<td>Officer in Charge if Emerging Livestock, Narok County, Kenya</td>
</tr>
<tr>
<td>Mr Lameta</td>
<td>Livestock office, Kilgoris, Kenya</td>
</tr>
<tr>
<td>Mr James Mungere</td>
<td>Ministry of Agriculture, Livestock and Fisheries, Laikipia, Kenya</td>
</tr>
<tr>
<td>Mr Martine K. Mwangi</td>
<td>Ministry of Agriculture, Livestock and Fisheries, Laikipia, Kenya</td>
</tr>
<tr>
<td>Ms Esther K. Rimberia</td>
<td>Regional Coordinator – Meru and Laikipia, Ewaso Nyiro North Development Authority (ENNDA)</td>
</tr>
<tr>
<td>Mr David Njuguna</td>
<td>Bees Abroad, Laikipia, Kenya</td>
</tr>
<tr>
<td>Mr Paul Muthoka</td>
<td>Sub-County Livestock Officer, Kitui, Kenya</td>
</tr>
<tr>
<td>Mr Clarke Wambua</td>
<td>Kitui Development Centre, Kitui town, Kenya</td>
</tr>
<tr>
<td>Mr Jacob Nzioka</td>
<td>Catholic Diocese of Kitui Development Programme, Kitui town, Kenya</td>
</tr>
<tr>
<td>Mr Urbanas Kavoi</td>
<td>Livestock Department, Kitui South, Kenya</td>
</tr>
<tr>
<td>Mr Shadrack Mutinda,</td>
<td>Livestock Department, Kitui South, Kenya</td>
</tr>
<tr>
<td>Name</td>
<td>Organisation</td>
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</tr>
<tr>
<td>Mr Robert Vivaa</td>
<td>Livestock Department, Kitui South, Kenya</td>
</tr>
<tr>
<td>Mr Tutus Mutami King’ang’i</td>
<td>Chairman Mwingi Honey Market, Mwingi, Kenya</td>
</tr>
<tr>
<td>Mr Chris Nzuki</td>
<td>CEO The Hive Limited (The Hive operates in both Kenya and Uganda)</td>
</tr>
<tr>
<td>Br Tony Dolan &amp; staff (Esp. Collins &amp; Ezekiel)</td>
<td>Adraa Agriculture College, Nebbi, Uganda</td>
</tr>
<tr>
<td>Mr Were</td>
<td>SNV, Laikipia, Kenya</td>
</tr>
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ANNEX C: INTERVIEW CHECKLIST – EXEMPLARY BEEKEEPERS

ABRC
Case study of exemplary beekeepers – Interview guide

Notes for Interviewer:

- The information will be confidential unless the beekeeper gives permission for his/her name to be published. If the beekeeper wishes he/she can remain anonymous/use a pseudonym
- Interviews to take place as far as possible in the apiary/farm of the beekeeper/nearby the apiary site
- Photographs to be taken (with permission) of the hives with the beekeeper and his/her family if possible (for PR material)
- Photographs to be taken of points of interest about the beekeeping enterprise which will illustrate the case studies
- If possible/appropriate video to be captured of the beekeeper/hives/bees
- If possible/appropriate/safe/practical a hive can be opened if the beekeeper wants to demonstrate a point etc.

Name of beekeeper _____________________________ Contact number _________________________________
Date ___________ Interviewer __________________ Location _________________________________

Who selected this beekeeper for interview? ___________________________________________________

What is really special about this beekeeper and why was this beekeeper selected for interview?
1. ………………………………………………………………………………………………………………………………
2. ………………………………………………………………………………………………………………………………
3. ………………………………………………………………………………………………………………………………

Interview guide

1. Introductions
   Introduce ABRC and what we aim to do in general. Explain the project “Lessons from the Field” and the purpose of the interview/visit. Explain that we are collaborating with the Kenya Honey Council, the Ministry of Agriculture and the County team. Say that we would like to learn from his/her experiences so that other beekeepers can learn from the best. Agree privacy issues/that we will keep the information confidential/use a pseudonym if the beekeeper wishes.

2. Background
   a) Tell us about your farm enterprise/how you make your living
   b) Tell us about yourself and your family....note estimated age _____________
   c) Describe your beekeeping in general – what do you do in beekeeping/with bees?
d) Probe around the reasons why this beekeeper was selected for interview.

e) Where did you acquire your beekeeping skills?

f) Discuss what contribution beekeeping makes to the livelihood of the beekeeper and his family (in income and other livelihood benefits).

3. Visit apiary site(s)

Visit the apiary site/sites with the beekeeper and take photographs to illustrate the case study.

Note where the apiary is sited: shade, bee house, source of water, nectar bearing plants nearby, pest control seen etc.

Note whether the site is tidy, cluttered or easy to work in, security etc.

Note anything unusual/innovative/creative and discuss.

Discuss any problems with bees stinging people or livestock.

**Hives and equipment:**

<table>
<thead>
<tr>
<th></th>
<th>Apiary 1</th>
<th>Apiary 2</th>
<th>Apiary 3</th>
<th>Apiary 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No. of hives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. hives occupied</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. empty hives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types of hives (supported by photos)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source of hives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note issues about the hives – anything different/unusual/modifications/quality of craftsmanship</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bee suit (Yes/No)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoker (note type)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Seasons

Describe the beekeeping year (swarming seasons, attracting swarms, where bees come from and go to, harvest seasons, bee plants etc.)

5. Management of bees

Describe how the beekeeper manages his or her bees.

a) How often do you observe you hives – what do you look for?

b) How often do you open your hives – what do you do?
6. **Bee health/pests and disease**
   Discuss bee pests and how the beekeeper deals with bee pests
   a) Are bees more or less available than previously?
   b) Has the beekeepers noticed any changes in bee health recently?

7. **Honey harvesting, handling, storage, value addition and sale**
   a) Do you keep records on your beekeeping? (if so please share)
   b) How many Kgs do you harvest from all your hives in the last year?
   c) Describe harvesting, storage, handling, value addition etc.
   d) Describe what you do with your honey (consume, medicine, sell etc.)
   e) Does the beekeeper use bee products apart from honey? Discuss.
   f) How important is the sale of bee products to your income?

8. **Community/beekeeping group**
   Note if interviewee more aware/able to contribute to other development processes
   a) Membership and contribution to a beekeeping group?
   b) Benefits of membership in the group?
   c) Challenges of membership in the group?
   d) Involvement in the wider community
   e) Local conservation efforts/Natural Resource Management issues/Tree nurseries initiated?

9. **Key problems and lessons:**
   a) What are your biggest problems in beekeeping?
   b) If you were to go back and give advice to your younger self when you were beginning beekeeping what would that advice be?
   c) What are the three most important things that you do which make you a good beekeeper?

10. **Anything else?**
    Any other issues you would like to discuss about your beekeeping/anything important that we might have missed/any questions you have?

    **Thank you very much**

---

**NOTE:** Interviewer’s immediate conclusions after the interview on what makes this beekeeper special/what makes him/her a bee muse:
ANNEX D: MAP OF CASE STUDIES CONDUCTED WITH EXEMPLARY BEEKEEPERS

The map below provides an overview of the distribution data collected for the project. This map can be viewed online at the ABRC website which allows you to zoom in and out. Clicking on a particular case allows you to click through to a write-up of the underlying case study conducted.¹

# Annex E: Names, Location of Beekeepers Interviewed

## A. Kenya

<table>
<thead>
<tr>
<th>Beekeeper</th>
<th>County</th>
<th>Interview date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leah Kimani</td>
<td>Nakuru</td>
<td>15/3/2015</td>
</tr>
<tr>
<td>Peter Chelelgo</td>
<td>Baringo</td>
<td>03/11/2015</td>
</tr>
<tr>
<td>Joseph Kabui</td>
<td>Nakuru</td>
<td>06/11/2015</td>
</tr>
<tr>
<td>Nicodemus Mwangi</td>
<td>Nakuru</td>
<td>06/11/2015</td>
</tr>
<tr>
<td>David Sembale</td>
<td>Narok</td>
<td>11/11/2015</td>
</tr>
<tr>
<td>Nixon Ole Kamwea and his son Harun Parsoi</td>
<td>Narok</td>
<td>12/11/2015</td>
</tr>
<tr>
<td>Julius Melubo</td>
<td>Narok</td>
<td>13/11/2015</td>
</tr>
<tr>
<td>Peter Ole Tompoi</td>
<td>Narok</td>
<td>13/11/2015</td>
</tr>
<tr>
<td>Mapurkei Mamai</td>
<td>Laikipia</td>
<td>18/11/2015</td>
</tr>
<tr>
<td>Tom Ngotiek (Osutwa Group)</td>
<td>Laikipia</td>
<td>19/11/2015</td>
</tr>
<tr>
<td>Francis Wagaga Kinuthia</td>
<td>Laikipia</td>
<td>20/11/2015</td>
</tr>
<tr>
<td>Alice Wahome</td>
<td>Laikipia</td>
<td>20/11/2015</td>
</tr>
<tr>
<td>Justus Munyao Isika</td>
<td>Kitui</td>
<td>24/11/2015</td>
</tr>
<tr>
<td>Simon Mwanza Mkumbe</td>
<td>Kitui</td>
<td>24/11/2015</td>
</tr>
<tr>
<td>Hannah Mwanzi</td>
<td>Kitui</td>
<td>25/11/2015</td>
</tr>
<tr>
<td>Joshua Munyoki Kimwele</td>
<td>Kitui</td>
<td>27/11/2015</td>
</tr>
<tr>
<td>Mulandi Nzama</td>
<td>Kitui</td>
<td>27/11/2015</td>
</tr>
<tr>
<td>Raymond Kirui</td>
<td>Baringo</td>
<td>30/11/2015</td>
</tr>
<tr>
<td>Peter K. Tangu</td>
<td>Bomet</td>
<td>08/03/2016</td>
</tr>
<tr>
<td>Aran Boen</td>
<td>Nakuru</td>
<td>01/12/2015</td>
</tr>
<tr>
<td>Mbae Kanampiu</td>
<td>Tharaka- Nithi</td>
<td>09/12/2015</td>
</tr>
<tr>
<td>Joyce Wacheke</td>
<td>Tharaka- Nithi</td>
<td>09/12/2015</td>
</tr>
<tr>
<td>Alice Wanjiru Njoroge</td>
<td>Muranga</td>
<td>12/03/2016</td>
</tr>
<tr>
<td>Diana Khavetsa</td>
<td>Kakamega</td>
<td>16/03/2016</td>
</tr>
<tr>
<td>Gichuru Family (Lappiz Company Limited)</td>
<td>Nakuru</td>
<td>22/03/2016</td>
</tr>
<tr>
<td>Walter Ngotho Kimani</td>
<td>Nakuru</td>
<td>22/03/2016</td>
</tr>
</tbody>
</table>
B. Uganda

<table>
<thead>
<tr>
<th>Beekeeper</th>
<th>District</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alitema Natal</td>
<td>Arua</td>
<td>17/02/2016</td>
</tr>
<tr>
<td>Josephine Omataru</td>
<td>Arua</td>
<td>17/02/2016</td>
</tr>
<tr>
<td>Fred Bayo Buzo</td>
<td>Arua</td>
<td>18/02/2016</td>
</tr>
<tr>
<td>Francis Abau</td>
<td>Arua</td>
<td>18/02/2016</td>
</tr>
<tr>
<td>Owing Peter</td>
<td>Zombo</td>
<td>19/02/2016</td>
</tr>
<tr>
<td>Emirious Ochun</td>
<td>Zombo</td>
<td>20/02/2016</td>
</tr>
<tr>
<td>Patrick Onegei</td>
<td>Nebbi</td>
<td>20/02/2016</td>
</tr>
<tr>
<td>Peter Owundi</td>
<td>Nebbi</td>
<td>20/02/2016</td>
</tr>
<tr>
<td>Florence Achiro Ojok (Wife to Emmanuel Fred Ojok)</td>
<td>Nebbi</td>
<td>20/02/2016</td>
</tr>
<tr>
<td>Anyoli Tho Lonjine</td>
<td>Nebbi</td>
<td>21/02/2016</td>
</tr>
<tr>
<td>Ongeira Godfrey</td>
<td>Nebbi</td>
<td>21/02/2016</td>
</tr>
<tr>
<td>Robert Alioni Abaasiku</td>
<td>Arua</td>
<td>22/02/2016</td>
</tr>
<tr>
<td>Acini Camillus</td>
<td>Maracha</td>
<td>22/02/2016</td>
</tr>
<tr>
<td>Adrole Ajua Eshiol</td>
<td>Maracha</td>
<td>22/02/2016</td>
</tr>
<tr>
<td>Aguta Julius</td>
<td>Maracha</td>
<td>23/02/2016</td>
</tr>
<tr>
<td>Opima Asher</td>
<td>Maracha</td>
<td>23/02/2016</td>
</tr>
<tr>
<td>Maffu Mophat</td>
<td>Yumbe</td>
<td>23/02/2016</td>
</tr>
<tr>
<td>Margaret Maseleko</td>
<td>Luwero</td>
<td>29/8/2016</td>
</tr>
<tr>
<td>John Tumwebaze</td>
<td>Luwero</td>
<td>29/8/2016</td>
</tr>
<tr>
<td>Aby K. Hambuki</td>
<td>Buliisa District</td>
<td>30/08/2016</td>
</tr>
<tr>
<td>Godfrey Atuhura</td>
<td>Buliisa District</td>
<td>30/08/2016</td>
</tr>
<tr>
<td>Daniel Kahiigwa Kiiza</td>
<td>Masindi</td>
<td>31/08/2016</td>
</tr>
<tr>
<td>Olimi Kalyajubwa</td>
<td>Masindi</td>
<td>31/08/2016</td>
</tr>
<tr>
<td>Jackson Baliija</td>
<td>Hoima</td>
<td>01/09/2016</td>
</tr>
<tr>
<td>Friday Nelson Bajoki</td>
<td>Kabale</td>
<td>03/09/2016</td>
</tr>
<tr>
<td>Julius Tuineomujisha</td>
<td>Bushenyi</td>
<td>04/09/2016</td>
</tr>
<tr>
<td>Jennifer Tumwine</td>
<td>Kamwenge</td>
<td>04/09/2016</td>
</tr>
</tbody>
</table>
ANNEX F: INTERVIEW CHECKLIST – PAST BEEKEEPING PROJECT BENEFICIARIES

ABRC

Project legacy on the ground – Interview guide

Discuss these questions with a representative group of the beneficiaries of the completed beekeeping project under review.

**Note:** The interview to focus on the particular project in question (there may have been other bee projects).

- Project Title
- Project Implementer
- Location of Project
- Dates of Implementation
- Date of Interview
- Interviewer
- Interviewees/Contacts & Positions

**Selection of interviewees?**

**Location of Interview**

---

A. Introduction

Introduce yourselves, ABRC and the Lessons from the Field project. The objective of the interview is to learn lessons to make future beekeeping projects better.

1. What other bee projects have you had apart from the project in question above, how have they helped you and why?

*Please advise the interviewees that we are focussing our discussion on the particular project in question from this point on.*
B. Inputs/strategy
List evidence/lack of evidence of continuing benefit of activities implemented by the project
1. What physical inputs did the project provide? (List in the table below)
2. Against each of the things listed are these still being used and how with examples

<table>
<thead>
<tr>
<th>Input</th>
<th>Still in use/examples</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

C. Outputs
List evidence/lack of evidence of project impact
1. Identify local perceptions of the what the project was supposed to do for the community (List in the table below)
2. Against each of the things listed explain whether it has been achieved

<table>
<thead>
<tr>
<th>Local perceptions on what the project was supposed to do</th>
<th>Achieved Yes/No</th>
<th>Explain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
D. Scale
Identify/list evidence of inputs expansion in size and geographic scale

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes/No</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are more people keeping bees?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there more hives?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are yields higher than they were?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have other groups copied what has been done?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have production levels increased?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have levels of collaboration between members increased?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have levels of collaboration outside the group increased?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

E. Sustainability
Identify/list evidence of projects benefits sustained
1. Are you continuing to learn new things? (from where – inside/outside the group)

2. Are you accessing beekeeping equipment? (from where – making/buying and is it good?)

3. Are you finding new ways of selling your honey?

F. Broader contribution to development
Identify evidence of any continuing broader development benefits as a result of the project
1. Has what you have done in this beekeeping project helped you with other activities?
G. **Successes** – Summarise the legacy of the project on the ground

1. How has this project helped this community?

2. How can you prove this?

3. Knowing what you know now if the implementer came back to implement the project again what would you suggest they do differently?

4. Did the project implementer do the right things? Why?

5. Knowing what you know now what would you have done differently as a group/community?

6. Was the project a success? Yes/No/Partly

7. If the project was successful what made it successful?

8. If the project failed what made it fail?

9. What parts of the project could have been done better?

10. Where will your beekeeping be in 5 years’ time?

11. What else would you like to say?

**Thank You!**

Interviewer’s immediate impressions after the interview of the project:
ANNEX G: PAST BEEKEEPING PROJECTS EXAMINED

A. Kenya

<table>
<thead>
<tr>
<th>Project name</th>
<th>Location</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kapkuikui Beekeeping Group</td>
<td>Baringo</td>
<td>16/3/2015</td>
</tr>
<tr>
<td>Koriema Beekeepers</td>
<td>Baringo</td>
<td>04/11/2015</td>
</tr>
<tr>
<td>Hobeli Beekeepers</td>
<td>Nakuru</td>
<td>06/11/2015</td>
</tr>
<tr>
<td>Murema Beekeepers in Mutiriri Nanyuki</td>
<td>Laikipia</td>
<td>17/11/2015</td>
</tr>
<tr>
<td>Twala women group, Laikipia county</td>
<td>Laikipia</td>
<td>18/11/2015</td>
</tr>
<tr>
<td>New Bairunyi Beekeepers Association</td>
<td>Tharaka Nithi</td>
<td>09/12/2015</td>
</tr>
<tr>
<td>Camel Bees and Silk (CABESI) Project</td>
<td>Kapenguria</td>
<td>15/03/2016</td>
</tr>
<tr>
<td>Rachemo Beekeepers</td>
<td>Baringo</td>
<td>30/11/2015</td>
</tr>
<tr>
<td>Mwingi Honey Refinery</td>
<td>Kitui</td>
<td>26/11/2015</td>
</tr>
<tr>
<td>Bees Abroad</td>
<td>Laikipia</td>
<td>Aug-16</td>
</tr>
</tbody>
</table>

B. Uganda

<table>
<thead>
<tr>
<th>Project name</th>
<th>Location</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kabale Municipality Project Legacy</td>
<td>Kabale Municipal</td>
<td>03/09/2016</td>
</tr>
<tr>
<td>Bushenyi Connoisseur Honeys Project</td>
<td>Bushenyi</td>
<td>04/09/2016</td>
</tr>
<tr>
<td>Kamwenge Cooperative Project</td>
<td>Kamwenge</td>
<td>05/09/2016</td>
</tr>
<tr>
<td>Bunyangabu Beekeepers Coop</td>
<td>Bunyangabu</td>
<td>07/09/2016</td>
</tr>
<tr>
<td>Kabarole Beekeepers Association Project</td>
<td>Kabarole</td>
<td>07/09/2016</td>
</tr>
</tbody>
</table>
ANNEX H: VALIDATION WORKSHOP PARTICIPANTS AND DISCUSSION ON EFFECTIVE BEEKEEPING PROJECTS

As discussed in section 2.5, a stakeholder workshop was held in Kisumu, Kenya in December 2016 for participants from Kenya and Uganda. Preliminary project findings were presented and the opportunity was also used to solicit views from the group on issues/concerns related to beekeeping. One of the issues discussed which is of particular relevance to the findings of this project was “What makes an effective beekeeping project?”. To facilitate the discussion participants were divided up into the following groups:

A. Uganda beekeeping farmers
B. Kenya beekeeping farmers
C. Training and Research Institutions (Kenya and Uganda)
D. Non-Governmental Organisations (Kenya and Uganda)

The outcome of the discussions is presented below in respect of each of the above discussion groups.

A. Uganda beekeeping farmer’s perspective

- Have clear project goals and project objectives that are realistic
- Have good leadership and governance that is accountable and transparent
- Have a bottom up approach involving beekeepers
- Use appropriate technologies and extension services
- Promote increased quantity and quality of bee products and value-addition
- Help develop a sustainable market for bee products
- Promote farmer empowerment in terms of capacity and capability
- Build in sustainability strategies
- Incorporate environmental issues and conservation
- The project should ensure the availability of the needed resources (financial, physical, software, human resources)

B. Kenya beekeeping farmer’s perspective

- Work with beneficiaries who have love for bees
- Work with farmers who are ready to invest in setting an apiary
- Be open to all types of bee hives
- Promote good apiary management and skills
- Support market development
- Help farmers understand the type of bee hives and bees
- Help benchmark performance against other bee keepers
- Have consideration for climate change
Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

- Help farmers with colony multiplication

**C. Training and research institution’s perspective**

- Complete a systematic background survey, needs assessment and environmental suitability assessment
- Identification clearly the target population for the project
- Build on available basic skills to increase production.
- Involvement of all stakeholders along the value chain
- Design courses for various stakeholders along the value chain
- Benchmarking performance against best practice
- Strengthen linkages along the value chain
- Encouraging entrepreneurship amongst project participants
- Publicity of the project and customer awareness raising
- Strengthening research
- Enhance quality assurance, branding and traceability
- Documentation of indigenous knowledge
- Monitoring and evaluation as an inbuilt mechanism

**D. Non-Governmental Organisation’s perspective**

- Recruit skilled project technicians
- Have comprehensive beneficiary targeting
- Have an informative needs and capacity assessment report
- Build the capacity of Trainers of Trainers (ToTs)
- Plan market linkages and value addition targets
- Utilise appropriate technologies
- Identify and support contextualized policies
- Synergise beekeeping with conservation based agriculture
- Develop a comprehensive implementation strategy
### Workshop participants:

<table>
<thead>
<tr>
<th>Name</th>
<th>Country</th>
<th>Organisation</th>
<th>Position</th>
<th>Email address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christopher Davey</td>
<td>Kenya</td>
<td>ABRC</td>
<td>Program Director</td>
<td><a href="mailto:Cdavey@Africanbeekeeping.Org">Cdavey@Africanbeekeeping.Org</a></td>
</tr>
<tr>
<td>Dr. Tom Carroll</td>
<td>Kenya</td>
<td>ABRC</td>
<td>Technical Director</td>
<td><a href="mailto:Tcarroll@Africanbeekeeping.Org">Tcarroll@Africanbeekeeping.Org</a></td>
</tr>
<tr>
<td>Fredrick Otieno Odera</td>
<td>Kenya</td>
<td>ABRC</td>
<td>Project Officer</td>
<td><a href="mailto:Fred.Otieno@Africanbeekeeping.Org">Fred.Otieno@Africanbeekeeping.Org</a></td>
</tr>
<tr>
<td>Cornelius Kasisi</td>
<td>Kenya</td>
<td>ABRC</td>
<td>Project Officer</td>
<td><a href="mailto:Ckasisi@Yahoo.Com">Ckasisi@Yahoo.Com</a></td>
</tr>
<tr>
<td>William Keya</td>
<td>Kenya</td>
<td>ABRC</td>
<td>Facilitator</td>
<td><a href="mailto:Williamkeyah@yahoo.co.uk">Williamkeyah@yahoo.co.uk</a></td>
</tr>
<tr>
<td>Bagonza Adolph</td>
<td>Uganda</td>
<td>Kabarole Beekeepers</td>
<td>Chairperson</td>
<td><a href="mailto:Adolphbagonza@yahoo.com">Adolphbagonza@yahoo.com</a></td>
</tr>
<tr>
<td>Sarah Mugoya</td>
<td>Uganda</td>
<td>TUNADO</td>
<td>Communications Officer</td>
<td><a href="mailto:Msarah@Tunadobees.org">Msarah@Tunadobees.org</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><a href="mailto:Mugoyasarah47@gmail.com">Mugoyasarah47@gmail.com</a></td>
</tr>
<tr>
<td>Magezi Eli泽</td>
<td>Uganda</td>
<td>BBC</td>
<td>Manager</td>
<td><a href="mailto:Magezieliez@Yahoo.co.uk">Magezieliez@Yahoo.co.uk</a></td>
</tr>
<tr>
<td>Mugabi Evas</td>
<td>Uganda</td>
<td>Kabale District</td>
<td>Beekeeper/Vice Chairperson</td>
<td></td>
</tr>
<tr>
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Lessons from the field: Building from field experience to improve support for beekeeping in Kenya and Uganda

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ANNEX I: REFERENCES


