



INCLUSIVE GREEN ECONOMY
NETWORK-EAST AFRICA
(IGEN-EA)

ENHANCING WOMEN PARTICIPATION IN APICULTURE FOR LIVELIHOOD AND ENVIRONMENTAL CONSERVATION IN THE ALBERTINE GRABEN:

A CASE OF WOMEN BEEKEEPERS IN KYAKABOGA OIL REFINERY RESETTLEMENT



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REGIONAL

A RESEARCH BRIEF
By
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About IGEN-EA

This research brief has been produced by the Inclusive Green Economy Network-East Africa (IGEN-EA) as part of IGEN-EA's efforts to promote green economic alternatives in Uganda.

IGEN-EA is a network of over 26 civil society and private sector players that advocates for the promotion of sustainable and inclusive green economic activities. The network focuses on the promotion of organic agriculture and sustainable fishing, clean energy, tourism and agro-forestry.

IGEN-EA's membership includes civil society and private sector associations that represent the interests of workers, women and youth in the above economic sectors.

The network is currently hosted by Africa Institute for Energy Governance (AFIEGO).

For more information on the network, visit: <https://www.igen-ea.org/home>

Abstract

The beekeeping industry (apiculture) in Uganda has great potential to economically empower rural women and to reverse forest degradation^{1,2}. Uganda's annual honey production potential is estimated at half a million tonnes. However, the country produces only 5,000 metric tonnes of honey estimated at \$2.5 billion. This is only 1% of the national annual production potential³.

If invested in, Ugandans could earn more from beekeeping. Environmental conservation would also be encouraged. This is because beekeeping is a non-destructive forest extractive economic activity offering positive externalities to the environment.

The Albertine Graben, whose forests have come under increased sugarcane growing, oil exploitation, oil infrastructure and other pressures, could benefit from successful apiculture. However, in spite of the ecological conditions and floral diversity favouring beekeeping in the Albertine Graben, the region is unpopular for honey production^{4,5}.

This gap (lack of green economic alternatives) is among the factors driving deforestation in the Albertine Graben. To address this challenge, a study on how apiculture can be scaled up across the Albertine Graben to promote livelihoods and environmental conservation was conducted by the Inclusive Green Economy Network-East Africa (IGEN-EA)⁶. IGEN-EA is hosted by Africa Institute for Energy Governance (AFIEGO).

Using Kyakaboga women beekeepers in Hoima district as a case study, the factors aiding and/or undermining successful apiculture in the Albertine region were

1 CIFOR. 2008. Beekeeping in Zambia. Forest Livelihood Brief no. 7.

2 Nicola B 2009 Non-Wood Forest Products 19: Bees and their role in forest livelihoods A guide to the services provided by bees and the sustainable harvesting, processing and marketing of their products. FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS Rome, 2009

3 Horn, H., 2004. Results of honey analysis: Honey production by district. Unpublished report to United Nations Industrial Development Organization (UNIDO). Beekeeping Development Project (BDP) –UGANDA YA/UGA/02/425/11-52.

Nadelman, R., Silliman, S., Younge, D., 2005. Report on Women and Beekeeping: Opportunities and Challenges in Uganda. SEEDS, the New School Graduate Program in International Affairs. New York, USA

4 TUNADO, 2017 API News Issue XX. A publication of The Uganda National Apiculture Development Organization (TUNADO)

5 Kilimo Trust, 2012. Development of Inclusive Markets in Agriculture and Trade (DIMAT): The Nature and Markets of Honey Value Chains in Uganda. Kampala, Uganda.

6 About IGEN-EA: <https://www.igen-ea.org>

determined. Results showed that basic knowledge in traditional beekeeping obtained from exposure and training visits, large expanse of farmland serving as a ready source of bee forage along with social capital, markets, locally available raw materials and others aided apiculture among the targeted women.

The study also showed that women beekeepers had reaped benefits such as increased earnings to afford school and medical fees as well as home necessities. There was also reduced domestic violence in participating households.

However, lack of branding, protective gear, enough apiary space, improved bee hives combined with bee pests, farm sprays, bee swarming, poor hive colonisation, climatic changes and others challenged successful apiculture especially among women beekeepers in the region. As a result, the honey volumes harvested by the Kyakaboga women beekeepers declined from time to time. For instance, about 11, nine and five litres of honey were harvested from 18, ten and three bee hives across three seasons.

To aid successful apiculture in the Albertine Graben, strategies to improve beekeeping should target to do the following: remove barriers such as lack of apiary tools like bee suits and harvesting tools; address low honey volumes by promoting improved technologies such as improved bee hives; encourage bee-sensitive farming and agroforestry; and skill women beekeepers in entrepreneurship as well as hands-on apiculture through exposure and coaching.

Key words: Beekeeping; Honey production, Forest restoration, Resettlement camps, Green economy



Some of the research participants during a Focus Group Discussion (FGD)

Introduction to the study

Uganda is endowed with favourable ecological conditions, floral diversity and endemism particularly in the Albertine Graben. The graben is home to 6,409 plant varieties from 1,537 genera and 233 families. This represents 14% of mainland Africa's plant species^{1,2}. Of the plant varieties, 551 species are endemic to the graben. It is notable that of the 6,409 plant species in the Albertine Graben, 821 are tree species, 499 grass species, 186 climber species, 360 fern species and the rest are other herbs as well as shrubs.⁵

The richest sites for only tree species are found in the Albertine Graben. These include Budongo and Bugoma Central Forest Reserves (CFRs) with 449 and 257 species^{5,6} respectively. These should be offering a great deal of natural capital and comparative advantage for beekeeping in the Albertine Graben.

It is notable that bee keeping (apiculture) presents a suitable green alternative to livelihood improvement and sustainable forest management in Uganda. This is because bee keeping is a non-destructive forest extractive economic activity offering positive externalities to the environment.

In spite of the potential of the apiculture industry, Uganda produces only 5,000 metric tonnes of honey per year estimated at \$2.5 billion. This is only 1% of the national annual production potential estimated at 500,000 tonnes^{3,4,4}. The Northern and West Nile regions produce the most honey in Uganda followed by Western Uganda⁴. The north and West Nile produce 640 metric tonnes of honey per annum.

The Albertine region, which houses the richest sites for only tree species, that is the Budongo and Bugoma Forest Reserves, along with an array of planted forests, wildlife reserves, game parks and unique plant species, is not listed among the major honey-producing zones.

Problem statement

In spite of beekeeping's great potential to create attractive economic prospects for rural women and sustainable forest management, several systemic barriers make it challenging for women in particular to effectively participate in apiculture. In the Albertine Graben for instance, forests on which beekeeping would rely are declining tremendously. Forest degradation and deforestation⁵ are eminent in the Albertine Graben with forests or forest landscapes being converted or cleared for sugarcane plantations and oil sector infrastructure such as roads and others. This is evidenced by the clearance of Bugoma forest⁶ in Hoima district^{7,5,12} for sugarcane growing as well the construction of oil roads through Budongo forest and Murchison Falls National Park

1 Plumtre A. J., Davenport T. R. B., Behangana M., Kityo R, Eilu G, Ssegawa P, Ewango C, Meirte D, Kahindo C, Herremans M., Peterhans J.K., Pilgrim, J. D, Wilson M, Languyi M, Moyer D. 2007. The biodiversity of the Albertine Rift. *Biological Conservation* 134 (2007) 178–194

2 Plumtre A., Akwetaireho S., Hänni D. C., Leal M., Mutungire N., Kyamanywa J., Tumuhameye D., Ayebale J. and Isoke S. 2010 Biodiversity Surveys of Bugoma Forest Reserve, Smaller Central Forest Reserves, and Corridor Forests South of Bugoma. World Conservation Society

3 Horn, H., 2004. Results of honey analysis: Honey production by district. Unpublished report to United Nations Industrial Development Organization (UNIDO). Beekeeping Development Project (BDP) –UGANDA YA/UGA/02/425/11-52.

4 Nadelman, R., Silliman, S., Younge, D., 2005. Report on Women and Beekeeping: Opportunities and Challenges in Uganda. SEEDS, the New School Graduate Program in International Affairs. New York, USA

5 Forest Landscape Restoration Opportunity Assessment Report for Uganda (2016), Ministry of Water and Environment – Uganda; IUCN. x + 42pp.

6 Bugoma Forest Reserve hosts some of the globally threatened species (Plumtre, 2002).

7 Kanyamibwa, S. (Editor) 2013. Albertine Rift Conservation Status Report. Albertine Rift Conservation Series No 1. ARCOS Network, March 2013.



(MFNP). Oil drilling is also planned in MFNP.

In some instances, leaders and communities have supported the destruction of forests such as Bugoma as they believe that sugarcane growing and oil exploitation will lead to job creation and improved household incomes⁸.

To promote livelihood enhancement and environmental conservation, there is need to devise scalable strategies to improve green economic alternatives such as beekeeping in the Albertine Graben.

Hardly any case studies are available on challenges faced by beekeepers especially women in the Albertine Graben. This means the available information is inadequate to clearly understand the existing challenges faced by beekeepers more so women in order to put in place realistic and women-friendly interventions to scale up beekeeping in the Albertine Graben for livelihood enhancement and environmental conservation.

Study objectives

In light of the above, this study, which was aimed at generating information to scale up the green economic alternative of beekeeping in the Albertine Graben, was conducted by IGEN-EA. The study specifically sought to: (i) Determine the factors aiding successful apiculture by women in the Albertine Graben; (ii) Determine the challenges that undermine engagement of women in apiculture in the Albertine Graben; (iii) Make recommendations to scale up apiculture among women in the Albertine Graben.

Significance of study

The results of this study are summarised in this research brief. They demonstrate beekeeping as one viable economic alternative that can support livelihoods on one hand and environmental conservation on another. The success of women beekeepers in Kyakaboga resettlement demonstrates bee keeping as a feasible survival strategy that can be scaled up to new areas and communities like other oil-affected and/or refugee-host communities in Uganda. Specifically, this research brief will be used by IGEN-EA⁹ members and their partners to promote beekeeping as a green economic alternative.

Scope and justification of the study

The study was conducted among women beekeepers of Kyakaboga resettlement in Hoima district. This is because the Kyakaboga resettlement camp and the women beekeepers there are a unique unit. After displacement for an oil refinery starting in 2012, these women were some of the people that were resettled by government into the Kyakaboga camp-like resettlement in 2018. The women had limited livelihood options after losing their farmlands and social networks to the oil refinery project. The women took up beekeeping from scratch using available local resources. They hoped that through the sale of hive products, their survival would be assured.

The women's success in beekeeping can be used to inspire others to take up the green economic alternative. This is why this study was specifically focused on the women beekeepers in the Kyakaboga oil refinery resettlement.

⁸ Atusigunza, S. (2020). Sugarcane growing in Bugoma will not reduce poverty: <https://observer.ug/view-point/67125-sugarcane-growing-in-bugoma-forest-will-not-reduce-poverty-in-bunyoro>

⁹ IGEN-EA is a network of over 26 civil society and private sector members whose main objective is to promote inclusive and sustainable green economic activities in Uganda and the East African region at large

Methodology

Women belonging to Albertine Pure Natural Honey of Tuyende Mbere Savings and Credit Group were engaged in Focus Group Discussions (FGDs) in April 2022. The women were stratified systematically basing on age groups that is to say youth (18-35 years) and adults (36 years and above) for the FGDs. The FGDs focused on the following: hive products harvested; markets; apiary management; benefits; constraints faced by the women bee-keepers and others. Key Informant Interviews (KIIs) were also conducted for data triangulation. Among the notable key informants (KIs) contacted were the Project Manager of Albertine Pure Natural Honey; Field Officer of Oil Refinery Residents' Association (ORRA) and Secretary of Kyakaboga Local Council One (LC1).

Findings

General characteristics of women bee keepers in Kyakaboga resettlement

Adult (36-60 years) and married women constituted majority (69%) of the women beekeepers in Kyakaboga. All the women beekeepers had very low levels of formal education and lacked a common language to use in group activities. They needed an interpreter from time to time (Table 1). The low levels of education contribute to limited women participation, ineffective communication and hinders acceptance of improved technologies in beekeeping enterprises.¹⁰

Apiary size, location and tenure: The apiary was less than quarter an acre and was stocked with 34 traditional bee hives (basket hives) with 12 hives colonised. The apiary was surrounded by small plots of crop fields with mostly maize and beans.

Apiary management: A number of apiary/bee colony management activities were done by women. These included: (i) Weeding; (ii) Debris/rubbish removal by sweeping (iii) Bee-feeding and watering especially in the dry season. Water in containers and cassava flour were placed in the apiary for bees to feed and drink respectively.

Other apiary management activities by the women included: (iv) Bee forage plants and shade trees planted and managed around the apiary; (v) Erecting pillars to support the hives, and (vi) Hive protection by using either black heavy duty polythene sheets, grass and/or iron sheets to protect the hives from rain and/or sun.

The women beekeepers in Kyakaboga were able to start and manage the apiary because the group received training in beekeeping from civil society groups. The women were supported to undertake exchange learning visits to Kigaaga bee farmers' group in Hoima. Through the visits, the women were able to learn more about beekeeping. The women were also supported with start-up capital from civil society groups.

10 Shackleton, S., Paumgarten, F., Kassa, H., Husselman, M., Zida, M., 2011. Opportunities for enhancing poor women's socioeconomic empowerment in the value chains of three African non-timber forest products (NTFPs). *International Forestry Review*, 13: 136-151.; Fonjong, L.N., 2008. Gender roles and practices in natural resource management in the North West Province of Cameroon. *Local Environment*, 13: 461-475.; Kalanzi F., Nansereko S., Buyinza J., Kiwuso P., Turinayo Y., Mwanja C., Niyibizi G., Ongerep S., Jude Sekatuba J., Mujuni D. 2015. Socio-economic analysis of beekeeping enterprise in communities adjacent to Kalinzu forest, Western Uganda. *International Journal of Research on Land-use Sustainability* 2: 81-90, 2015. DOI: 10.13140/RG.2.1.2647.4329

Table 1: General characteristics of beekeeping women in Kyakaboga resettlement (n=16)

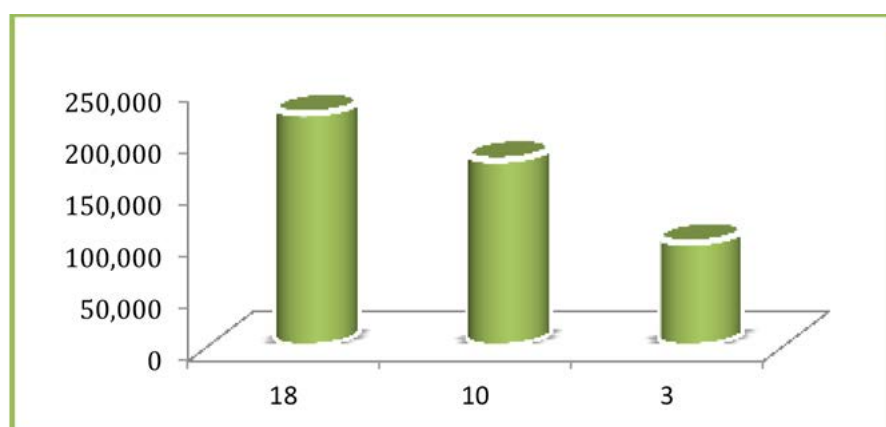
Attribute	Frequency/ Per cent
Age (Years)	
18-35	5 (31%)
36-60	11 (69%)
Education level	
Primary	9 (56%)
No education	6 (44%)
Marital status	
Married	11 (69%)
Single	5 (31%)
Phone contact	
Yes	10 (63%)
No	6 (37%)
Common language	
Luo	13 (81%)
Runyoro	3 (19%)

Honey incomes and number of hives harvested

Generally low volumes of honey were collected by the women in Kyakaboga resettlement as compared to number of hives harvested (Figure 1). The honey quantities have been declining in subsequent harvests so does the income earned from the honey (Figure 1). This could be due to the poor hives used as well as extreme weather events. The heat and cold during the dry and rainy seasons exacerbated by climate change respectively lead to frequent bee swarming.

Honey was the only hive product so far being harvested as other products like beeswax and grains among others were too little to make economic sense. One kilogram of processed and packed honey cost about UGX20,000 while quarter a kilogram cost UGX7,000 at farm gate. The honey was sold locally at one of the member's shops in the Kyakaboga resettlement.

Figure 1: Income earned and number of hives harvested per season by female beekeepers in Kyakaboga resettlement



Benefits of beekeeping

Through the money got from selling their honey, the women were able to:

- ♣ Pay school fees thereby keeping children in schools;
- ♣ Afford medical bills especially for the elders and children. A case in point is a 61-year-old research participant who used to suffer from eye problems and headaches but was unable to pay. Now however, she can cater for her medical bills.
- ♣ Contribute to daily home necessities like salt, soap and others. *'I could not even afford buying salt at home before the beekeeping project,'* one respondent said.
- ♣ In families, it has also contributed to reduced domestic violence that existed among spouses emanating from lack of money to cater for daily home necessities. *'We now receive fewer cases of domestic violence with families in the beekeeping project as compared to non-member families,'* said a leader at the resettlement.
- ♣ Women have been able to borrow money (capital) to start up small-scale businesses like retail shops, stalls and others. Being a resettlement, shops, markets and stalls were located far. *"With limited transport means, it was difficult for women to access these,"* a leader at the resettlement said.
- ♣ In addition, the group has been able to build networks with outside communities to learn more beekeeping and life skills.
- ♣ Further, the group has served as a model for other community members to establish and maintain their social and economic groups. Youth as well as men's saving and credit groups have been inspired.

Challenges and opportunities

A number of challenges and opportunities were identified and are hereby summarised in table 2. There were more weaknesses than strengths to beekeeping among women in Kyakaboga.

Table 2: Challenges and opportunities of beekeeping by women in Kyakaboga resettlement

<p>Strengths</p> <ul style="list-style-type: none"> ▪ Training in bee keeping ▪ Locally available materials for bee keeping ▪ Locally available market for honey (honey harvested is sold locally in member's shop) ▪ Labour availability (Willingness and interest of most group members) ▪ Affordability of packaging materials ▪ Social capital in form of trust, love and leadership ▪ Supportive of local leadership institutions ▪ Realization by group members that bee keeping was a profitable enterprise boosting their interest 	<p>Weaknesses</p> <ul style="list-style-type: none"> ▪ Lack of trees for offseason bee foraging and shading ▪ Poor apiary and hive protection (Use of inappropriate materials like heavy duty polythene sheet, old cloth etc) ▪ Use of poor-quality hives which are not wind-, heat-, moisture- or insect proof ▪ Limited capital to invest in bee keeping ▪ Group dynamics –some members are not cooperative in feeding/watering bees in dry season, cleaning apiary etc ▪ Small-scale operations limiting specialisation and product diversification ▪ Limited application of economic knowledge ▪ High group entry fees for new members standing at UGX100,000 discouraging recruitment ▪ Limited mobilisation and recruitment of new members ▪ Low formal education level of group members ▪ Lack of common language for communication among group members (Language barrier) ▪ No branding and labelling of honey on market ▪ Limited harvesting equipment (smokers, bee suits, containers, processing and storage gadgets) ▪ Wide use of unimproved poor quality traditional hives ▪ Limited hive product range harvested; processed and marketed (Limited value addition) ▪ Insect pests and reptiles (Monitor lizards, black ants etc.) ▪ Increased bee swarming ▪ Poor colonisation of hives ▪ Limited market outlets in cases of increased honey production ▪ Inadequate land/space available for bee keeping activities
<p>Opportunities</p> <ul style="list-style-type: none"> ▪ Large expanse of farmland near the apiary for bee foraging during the cropping season ▪ External funding, training and research sources 	<p>Threats</p> <ul style="list-style-type: none"> ▪ Farm sprays from neighbouring crop farms that injure bees ▪ Apiary tenure insecurity ▪ Limited cropping enterprises (Beans and maize grown are grown most yet these have less showy flowers) ▪ Limited growing of bee friendly plants such as sunflower, rosemary, sesame, Lantanas, Marigolds, Markhamia, Vernonia and others ▪ Climate change and its associated negative effects

Conclusion

All women beekeepers in Kyakaboga were illiterate with the most formally educated, 56%, having attained only a primary level certificate. The rest had no education at all.

The women beekeepers however possessed basic knowledge in traditional beekeeping obtained from exchange training visits that were supported by civil society groups. Combined with availability of local materials to use in beekeeping and social capital, the women have been able to successfully engage in apiculture. The benefits so far reaped by women beekeepers in Kyakaboga include ability to pay school and medical fees and affordability of home necessities as well as reduced domestic violence. More support is however needed to scale up the beekeeping and boost honey volumes as well as incomes earned by the participating women.

Recommendations

The following recommendations are made by this study:

- (i) Communities should adopt good apiculture technologies such as bee friendly agricultural practices. They should: avoid farm spraying during bee-active time, grow sweet-scented flowering crops, use improved hives like replica KTB and facilitate hive colonisation through baiting. The communities should also engage in queen bee rearing and colony division techniques as well as improve hive protection and management.
- (ii) Government should improve tree integration (agroforestry) in the Kyakaboga resettlement site and adjacent landscapes. Through the relevant local government structures, government should distribute trees in Kyakaboga. Mixed tree-herb species for example Marigolds like *Tithonia diversifolia*, sunflower, sim-sim, indigenous tree species such as *Markhamia lutea*, *Prunus africana* and others should be planted for adequate bee foraging and shading. This will also increase the supply of forest/tree ecosystem services on farm/landscape leading to avoided-forest degradation and deforestation thereby supporting forest restoration.
- (iii) Government and civil society groups should skill women beekeepers with functional literacy and numeracy plus entrepreneurship and hands-on apiculture knowledge through exposure and coaching to improve honey value addition, effective communication, harvesting and hive product diversification, apiary management and record keeping. Additionally, protective gear and harvesting gadgets need to be provided to ease honey-harvesting.
- (iv) Generally, there is need to unlock the potential of honey-production in the Albertine Graben to tap into the favourable ecological conditions. This can be done through a profitability analysis and dissemination of such information by researchers to beekeepers in this area. By understanding the costs and benefits involved on commercial scale in various micro-climates, beekeeping can be adopted from an informed point of view. This can be promoted through beekeeping innovation Platform (IPs) leveraging on synergies of engaging various stakeholders in this industry.

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