seed madagascar

sustainable environment, education & development

Project Renitantely
Project Year 2 Annual Report

September 2018

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1. Executive Summary

Madagascar is one of the least developed countries in the world, ranking 161/189 on the UNDP Human Development Index 2018[1]. In the remote south-eastern Anosy region, over 80% of the population live below the global poverty line of $1.25/day[2]. Furthermore, rapid population growth of 2.8% per year[3] is rendering traditional income generation increasingly inadequate, and communities are often forced to rely on unsustainable practices, which lead to overexploitation of both terrestrial and marine resources.

In rural communities of southeast Madagascar, there is a strong tradition of honey harvesting amongst subsistence farmers. However, a lack of infrastructure, training and resources negatively affects yields and restricts access to market for honey products[4]. Since September 2016, Project *Renitantely,* meaning 'honeybee' in Malagasy, has been building the capacity of beekeepers across six rural communities in Anosy to develop beekeeping as a sustainable livelihood. The project aims to improve modern beekeeping skills to improve honey yield and quality, strengthen routes to market, and enhance disease prevention and treatment across the region.

This period (1st January – 31st August 2018) has seen the continuation of quarterly training for Project Year 1 (PY1) and Project Year 2 (PY2) beekeepers, equipment distribution for PY2 beekeepers, community engagement sessions and the recruitment of 30 new beekeepers for the PY3, the final project year. The period under review has also seen the implementation of a new team structure for Project Renitantely, and a subsequent strategic review of project activities and progress towards intended outcomes has resulted in the development of a revised project strategy for Project Year 3 (PY3).

In August 2018, the project team undertook the PY2 Annual Survey with project beekeepers across the six target *fokontany* (village clusters), and through an in-depth analysis of the results we have seen a 61% increase in honey yields amongst beekeepers able to harvest honey, and a 99% increase in sale price of honey for PY1 and PY2 beekeepers. Despite this progress, major challenges continue to be faced by beekeepers in the Anosy region: the destructive varroa mite remains a threat to the health of both wild and hive colonies; access to materials and equipment remains a major barrier for new beekeepers; and routes to more lucrative markets continue to be difficult to access due to the remote location of target communities. SEED will continue to work with the collaborative network of beekeepers established over the past two years to address each of these barriers through the final 12 months of Project Renitantely.

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[1] UNDP. (2018) Human Development Index.
[2] UNDP. (2015) Human Development Report 2015: Work for Human Development.
[3] World Population Prospects. (2017 Revision) United Nations population estimates and projections.
[4] Bieger, N (2014) *Analyse Approfondie De La Chaine de Valuer Miel et Realisation d'une Enquete de Base Dans Les Regions Androy, Anosy et Le District Vanagaindrano* (GIZ: Berlin).

2. Activity Detail (January – August 2018)

This report covers activities undertaken from January to August 2018; for further detail on project activities up to December 2017, please see the 'Project Renitantely Interim Report, December 2017',which is available on our website.

2.1 Beekeeper Skills Training

Since January, the SEED project team has continued to work with the 48 PY1 and PY2 beekeepers across six *fokontany* to further develop modern beekeeping skills. Training workshops use the Visual Learning Aids (VLAs) developed during PY1 to reinforce learning and ensure beekeepers have access to information following the training. Workshops facilitated during the period under review include:

2.1.1 Hive Splitting

Splitting an existing bee colony is a complex but vital skill that helps beekeepers expand their apiaries and can also be used to strategically build resilience to disease and pests. Using the 'Train the Trainer' model, PY1 beekeepers, with the support of SEED's Beekeeping Technician, led PY2 beekeepers in both a theoretical discussion and practical demonstration of successful hive splitting. 51 hives across six *fokontany* were successfully split as part of these trainings, supporting beekeepers to practise these skills whilst expand their apiaries.

2.1.2 Honey Quality Control

A variety of techniques can be used to ensure all honey harvested meets quality requirements. During quality control training sessions, beekeepers learnt how to determine the water content of their harvest, a standard measure of honey quality. Training delivered to all 48 beekeepers focused on quality control measures in order to sell to more lucrative markets and practical training in determining water content levels by identifying capped honey comb and filtration.

Left: Beekeepers in Sainte Luce identify which equipment to invest in with the help of the Local Beekeeping Technician;
Right: SEED's Community Liaison Officer delivering training with PY1 beekeepers in Tsanghoria

2.2 Equipment Distribution

Project Renitantely uses a Farmers Field School (FFS) approach to support beekeepers in identifying the most sustainable and contextually-appropriate beekeeping techniques. Integral to this approach is providing opportunities for beekeepers to trial and experiment with different equipment that can improve yields and product quality, without exposing them to financial risks normally associated with equipment investment. In April, a range of beekeeping and harvesting equipment was distributed according to beekeepers' specific, self-identified needs. Items included smokers, protective hats, gloves, bee suits, ladles, sieves and saucepans. As in PY1, all equipment distributed was purchased locally or produced from locally-available, low-cost materials in order to promote sustainable access to beekeeping equipment.

2.3 Community Engagement

The Project Renitantely team have continued to regularly facilitate community workshops, where the benefits of modern beekeeping are discussed and key project messages are disseminated to the wider community. Two community meetings were held in each *fokontany* during the period under review:

2.3.1 Promoting Healthy Hives

The team held community sessions in each of the six *fokontany* to discuss the project's 'Traffic Light Monitoring' system (*see Section 3*), and how this can be adapted by beekeepers to support the ongoing maintenance and health of their hives. Whilst beekeeping can be a relatively non-labour intensive, ongoing assessment of hive health is vital to ensure quality honey can be harvested. The team also reinforced core project messages focussing on quality hive construction, disease and pest management, and product quality control.

Above: The project team lead a community meeting in Mahialambo

2.3.2 Beekeeping & Gender Equality

Establishing beekeeping as an income-generating activity for women in rural communities is a key element of Project Renitantely. In the Anosy region, beekeeping is not principally seen as a male-dominated income generating activity, as seen with other activities such as sea fishing. This leads to a significant potential for a focus on women to participate in project activities and build capacity as beekeepers.

In July and August, Gender Equality workshops were held in each *fokontany*. These workshops were designed to build understanding within communities about the benefits of beekeeping for both men and women, emphasising that, with the right skills and support, anyone can be a successful beekeeper. The workshop also focussed on the specific benefits for women, in particular that beehives can be kept close to home, allowing beekeeping to fit alongside other household responsibilities (a key barrier to developing women's access to livelihood activities).

2.4 Project Year 3 Beekeeper Recruitment

Alongside encouraging community members to take up beekeeping, community engagement sessions also help the project team to determine motivated individuals for each new project year. In August, the Project Renitantely team recruited new beekeepers for the third year of the project. The largest cohort to date, 32 PY3 beekeepers were selected; five from each *fokontany*, and an additional two in Tsagnoriha to replace previous project beekeepers who had moved away. Participants were selected by the project team based on expressed motivation for beekeeping, previous attendance at Project Renitantely community meetings and recommendations from existing project beekeepers. Unlike previous years of the project, very few of the new intakes have previous beekeeping experience, and additionally 71% of PY3 beekeepers are women, bringing the total female representation across all project beekeepers to 44%.

Left: Beekeeping Specialist, Darcy, interviews a female beekeeper in Fara Fara Vatambe during the Annual Survey
Right: a PY2 beekeeper with a newly built hive in Mahialambo

2.5 Value Chain Development

A key aspect of Project Renitantely is developing secure routes to market that provide project beekeepers with a fair and sustainable marketplace for their honey and beeswax. SEED secured formal agreements with two local honey and beeswax product retailers (Honey & Soga and Natur'l) in June 2017 securing prices of 7,000 MGA per litre of honey and 10,000 MGA per kilogram for beeswax. Throughout 2018, the relationships have been further developed, alongside regional promotion of the project and beekeeper activities.

2.5.1 Honey & Soga Site Visit

In February, beekeepers in Fara Fara Vatambe hosted representatives from Honey & Soga to establish direct communication and visit the community. Beekeepers also took the opportunity to independently negotiate the price stated in the Memorandum of Understanding (MoU), as they felt the original price did not account for the high transport costs to Fort Dauphin. As a result, Honey & Soga agreed to increase the price by 1,000 MGA per litre of honey and per kilogram of beeswax for beekeepers delivering their product directly to the Honey & Soga warehouse in Fort Dauphin. This not only increases incentive for beekeepers to access this improved sale price, but also works towards removing SEED and the project team from this relationship.

2.5.2 Fort Dauphin Rural Livelihoods Fair

In June, 12 project beekeepers travelled to Fort Dauphin for the inaugural Anosy Rural Livelihoods Fair. Beekeepers presented Project Renitantely alongside the project team and embroiderers from SEED Madagascar's Stitch Sainte Luce project. Participation in this event provided beekeepers with the opportunity to sell their products and network with other community-based livelihoods associations. In addition, the project's Community Liaison Officer presented the project on stage, further promoting the project and beekeeper's products.

Left: The Project Renitantely team, beekeepers and representatives from *Honey & Soga* in Fara Fara Vatambe
Right: beekeepers at the Fort Dauphin Rural Livelihoods Fair with a display of project Visual Learning Aids.

2.6 Strategic Project Development

2.6.1 Project Team Structure

In July, SEED recruited an International Beekeeping Specialist, Darcy Gray, into the Project Renitantely team. With Darcy's arrival and the end of PY2 came a review of Project Renitantely's field team structure, leading to the recruitment of two new local Beekeeping Technicians, Victoire and Haussman, and the promotion of Juvenal from Community Liason Officer to Project Coordinator.

2.6.2 Training Curriculum

With this new structure in place, the team undertook the first major review of the project training curriculum content and resources since the project began in 2016. Through this strategic review, a number of improvements have been made, and will be implemented within the PY3 training schedule (*see Section 5)*.

2.6.3 Visual Learning Aids

This strategic review has also led to the identification of topics to develop into new Visual Learning Aids (VLAs). In 2016, a set of 11 VLAs were developed as part of the beginning of Project Renitantely, and laminated copies have so far been distributed to all PY1 and PY2 beekeepers. In August, the team developed four new 'populating hives' VLAs to bridge gaps in the resources and to complement the developed PY3 training curriculum. Additional topics for future PY3 VLAs include: keeping a healthy hive; treatment for varroa mite; quality control measures for honey and beeswax; and an annual beekeepers calendar, outlining key seasonal challenges and opportunities.

A selection of new VLAs developed in August, topics clockwise from top left: how to collect a wild colony; how to split a healthy hive; how to collect a swarm; how to transport a wild colony to your apiary

Focus on: Bee Banks

In response to the high number of hive losses recorded by PY1 beekeepers over Year 2, the project team set up 'Bee Banks' in four central project *fokontany*: Sainte Luce; Fara Fara Vatambe; Beandry; and Tsangoriha. These Bee Banks were originally intended as both a method of repopulating hives lost to varroa and as a demonstration site for best practice hive management training. Despite the delivery of 33 Bee Banks across the four communities, during a monitoring visit in June 2018 some major challenges with the Bee Bank model were identified. The predominant challenge was the poor state of the bee hives used for the Bee Banks, and the clear lack of quality control implemented by the project team. The poor quality of the hives had quickly resulted in the Bee Banks falling into disrepair and, where hives had been populated, the majority of colonies had absconded. In order to quickly and efficiently address these issues, all 33 hives were assessed by the Project Coordinator, Project Specialist and newly recruited Beekeeping Technicians. Ten of the hives were immediately brought back to Fort Dauphin, where the Technicians began refurbishing work.

An additional challenge faced by the Bee Bank model was the difficulty in populating the hives with healthy colonies. The primary method by which to populate hives in most communities is to collect wild colonies from the surrounding forest. However, as the project team quickly discovered, there are very few wild colonies remaining in these forest fragments and beekeepers from five of the six *fokontany* were unable to locate wild colonies. This had direct implications for the Bee Banks, where only nine of the 33 hives were populated within the first three months. To combat this, the project team are working with beekeepers in the community of Soanaranu (close to Fort Dauphin), to populate the Bee Bank hives before transporting them to target communities.

Once re-established, the Bee Banks will provide community beekeepers with a reliable source of healthy colonies with which to populate their hives, provide a demonstration site for hive management and hive splitting training.

Left: Juve and Victoire refurbishing Bee Banks
Right: Checking populated Bee Banks in Soanaranu before transporting hives to Sainte Luce

3. Monitoring, Evaluation & Learning

3.1 Methodology

To assess progress towards Project Renitantely's outcomes and indicators, the project uses the following framework:

1. Annual Survey: Data collected on individual's apiculture skills, beekeepers' demographic data, varroa infestation and management monitoring, and honey yield, sales, and routes to market.
2. Traffic Light Monitoring: Regularly updated by the technicians both as a motivational tool and to monitor beekeepers' effort and skills.

3.1.1 The Annual Survey

In August 2018, the Annual Survey was conducted in all six target communities over a one week period. The aim of the survey was to assess technical beekeeping skills, identify the routes to market used by beekeepers and assess recent honey yields and sale prices. The survey used a short-answer questionnaire format, and for the skills assessment, key points were ticked off as beekeepers mentioned them. To allow for comparative analysis, the survey used the same scoring method as the 2017 Annual Survey and 2016 Baseline Survey. The 2018 survey was conducted with 75 of the 78 project beekeepers, with three reporting absences for illness or out of town. Since the data collected in the questionnaires was self-reported, it is limited by the potential for biased or untruthful answers. As in previous years, some reported quantities for honey collection seemed improbable, likely due to high rates of illiteracy and innumeracy in the Anosy region.

In determining the current state of varroa infestations among beekeepers, a similar issue arose, stemming from the nature of questionnaire data collection. Many of the beekeepers reported that their hives "left" which in beekeeping could indicate either a swarm or a hive absconding. A swarm indicates a healthy growing colony, and absconding suggests the opposite. Since beekeepers often could not identify which event they had experienced, data on the health of colonies cannot be accurately analysed and is therefore not presented in this report. Questions about timing of varroa infestations and swarms also received vague answers since it was difficult for survey participants to estimate timing. In order to gain clarity on the status of varroa, the field-based Technicians will be regularly monitor varroa levels across all beekeeper hives, and record swarms as they occur.

3.1.2 Traffic Light Monitoring (TLM)

TLM is a system where beekeepers were assigned a colour to indicate their motivation and beekeeping skills as well as their ability to cope with pest infestations. Based on a specific set of criteria (*see Table 1*) hives are either red, amber, or green, and those with red or amber are given guidance for improving the status of their hives. TLM was initially planned for use as a method for monitoring individual beekeepers while motivating participants. The practicalities for using TLM as a monitoring system proved to be too challenging, especially in

the first half of the year with only one technician travelling between all six *fokontany*. Regularly collecting data on beekeeper ratings in addition to data on the health of the hive was therefore not possible. However, as a motivational tool, TLM proved to be very effective with beekeepers encouraged to move towards a green rating.

Table 1: Criteria used for TLM

Red	Amber	Green
- Modern hive with many holes and gaps. - Populated with weak colony, indicated by insufficient workers with only 3 or 4 frames of honeycomb. - Hive is on the ground. - Apiary is not clean.	- Modern hive with no holes or gaps. - Colony is not strong yet, indicated by 6 or 7 frames of honeycomb. - Hive is raised off the ground. - Apiary is not clean.	- Modern Hive with no holes or gaps. - Colony is strong, indicated by presence of queen, workers, drones, brood, larvae, eggs and all frames hold honeycomb. - Hive is raised off the ground. - Apiary is clean.

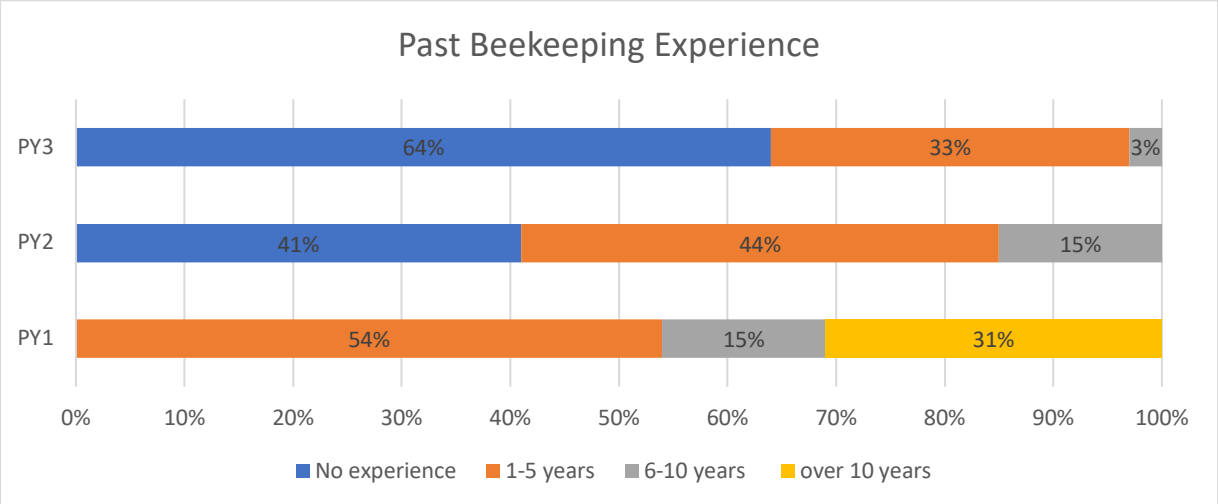
3.2 Project Beekeeper Demographics

With the final cohort of project beekeepers recruited in August, beneficiary demographics were assessed following the Annual Survey:

- **223 beehives** owned by **75 beekeepers**, 45% of which are owned by PY1 beekeepers
- **44% female representation** amongst all project beekeepers, and 71% amongst PY3 beekeepers
- **378 household dependants support** from income generated through beekeeping

In the first year of the project, beneficiaries were selected based on their past beekeeping experience, since the project sought to evaluate and improve skills of beekeepers transitioning to modern techniques. For the recruitment PY3 beekeepers, selection was based on their motivation for the project and, as a result, 64% of the new recruits have no beekeeping experience.

Table 2: Graph showing past beekeeping experience of project beekeepers as at August 2018



3.3 Apiculture Skills Assessment

The Annual Survey included an assessment of the specific skills taught during project training workshops over the last year. One set of questions asked about skills including harvesting and cleaning honey, harvesting wax, building a hive, and splitting a healthy colony into two hives. Since knowledge among skills was variable for each beekeeper, there was no overall knowledge score assigned to beekeepers.

Table 3: Graph to show PY1 Beekeeper Skills Assessment as at August 2018

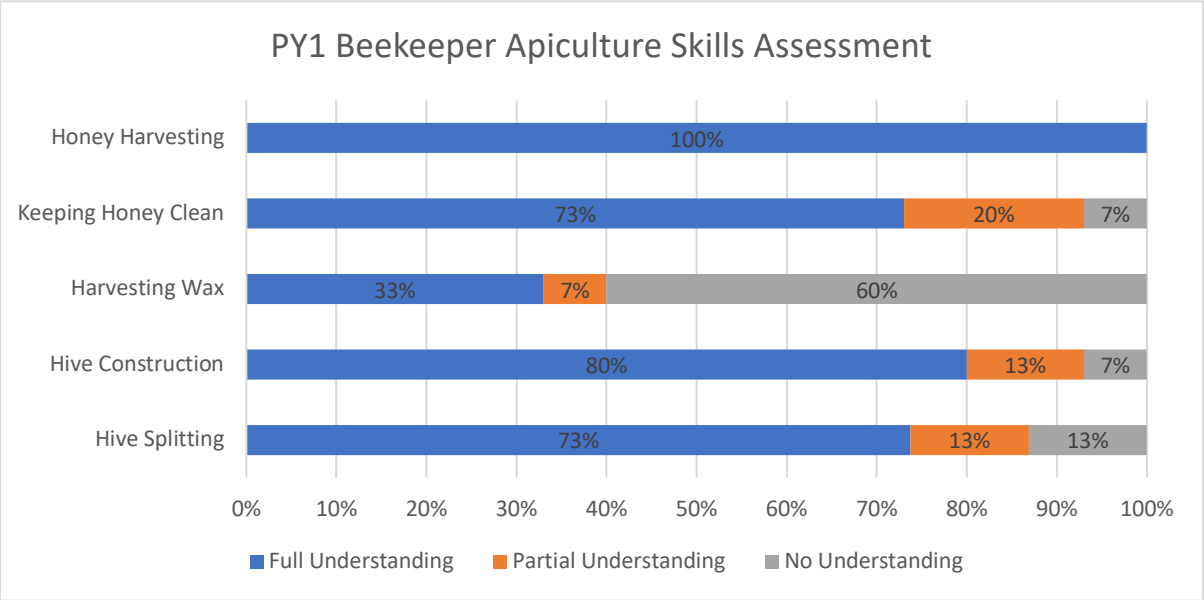
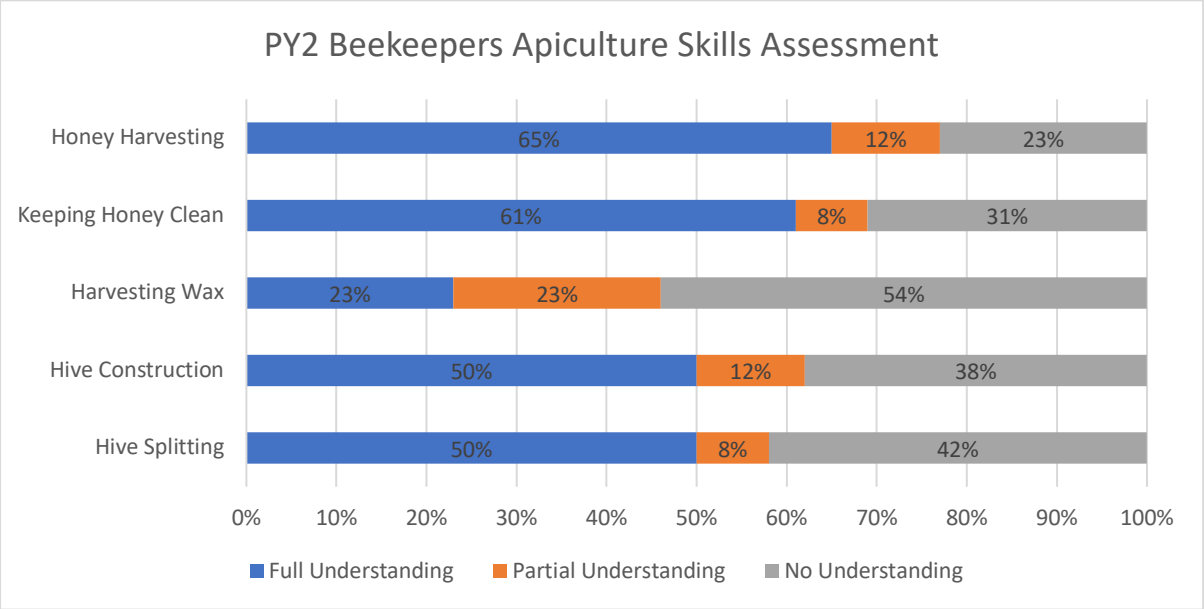


Table 4: Graph to show PY2 Beekeeper Skills Assessment as at August 2018



As expected, PY1 beekeepers have the highest overall understanding, since each has attended each training workshop twice over the two project years. However, some key skills for PY1 beekeepers remain lower than expected, indicating that during PY3 these topics will need specific attention from the project team. PY2 beekeepers reflect a similar balance of skills,

particularly with regards to the low understanding of the wax harvesting process. Improved knowledge retention will be a significant focus in the third year, and the revised project strategy includes the use of additional VLAs and a more individualised approach to building the skills of each project beekeeper.

Skills of specific concern include wax harvesting for both PY1 and PY2 beekeepers as well as hive construction and hive splitting for PY2 beekeepers. One possible reason for the low knowledge retention in these areas may stem from challenges with the project team; the time between the departure of the previous beekeeping Technician and the recruitment of the new Technicians spanned two months. The lack of internal staff capacity has now been resolved with the new team structure, and the two Technicians will each not only focus on three of the six communities, but also be based predominantly in the field. This will ensure more time is available to conduct in-depth and tailored training workshops with all project beekeepers. In addition, the International Beekeeping Specialist will deliver regular internal capacity building sessions with both Technicians, to ensure international best practice continues to be combined with contextually-appropriate training methods.

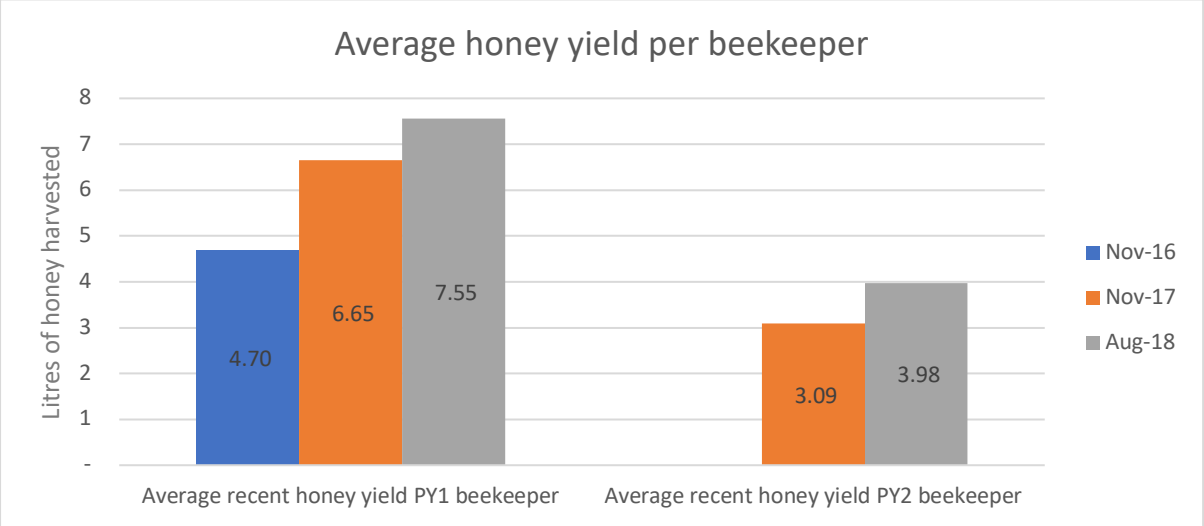
3.4 Beekeeper Income

In order to examine the economic impact of beekeeping since the start of the project, the team analysed changes in honey yield, sale price of honey, routes to market, and livelihood diversification. This data was collected during the 2018 Annual Survey and compared to the 2017 Survey and 2016 Baseline responses as appropriate.

3.4.1 Honey yield

Project beekeepers have seen an overall increase in honey yield of 61% since baseline. This increase in yield not only demonstrates the success of beekeeper training workshops focussed on modern beekeeping techniques, but also demonstrates the motivation of beekeepers across all six *fokontany*, despite the continued challenges.

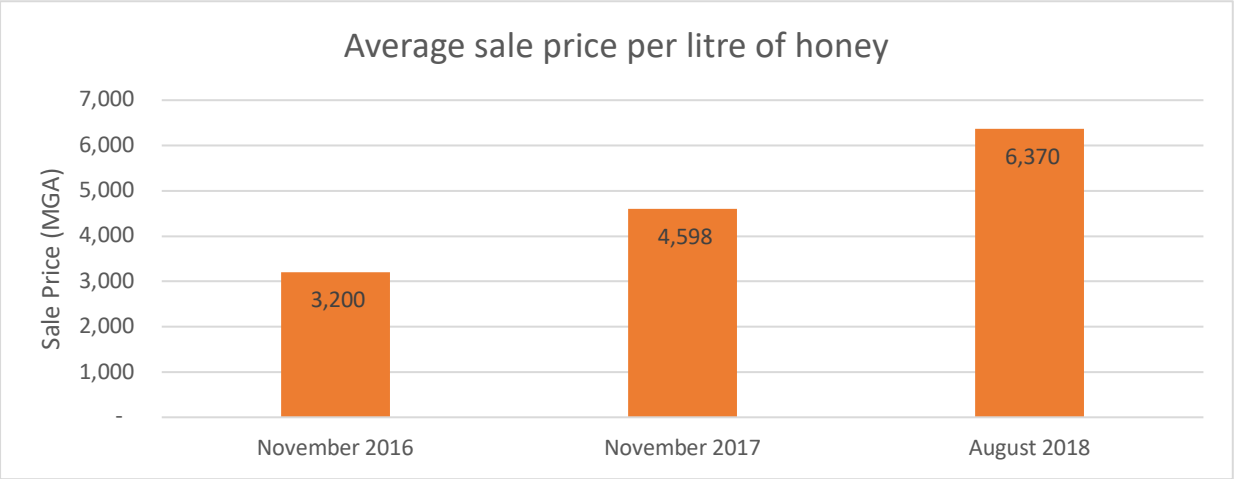
Table 5: Graph to show average honey yields reported by PY1 and PY2 beekeepers over the past six months



3.4.2 Sale price

Among project beekeepers selling honey in 2018 there has been a 99% increase in the average price of honey since baseline. The price has steadily risen each year, a reflection of both the increase in quality, and therefore value, of honey, and also access to more lucrative markets, such as selling regularly to Honey & Soga. At baseline, the average selling price of honey was 3,200 MGA, and in August 2018 had increased to 6,370 MGA.

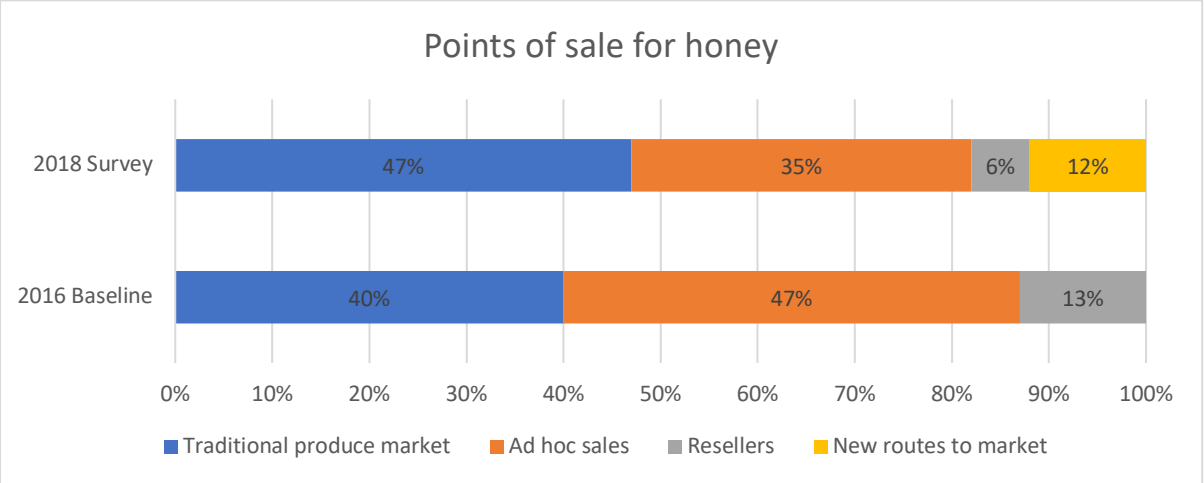
Table 6: Graph to show average sale price per litre of honey in November 2016, November 2017 and August 2018



3.4.3 Points of Sale

Since the start of the project, points of sale for project beekeepers have continued to diversify. Initially, 47% of honey sales were ad hoc, 40% were to local markets, and 13% were to resellers. At the end of PY2, only 35% of sales were ad hoc, 47% were to local markets, 6% to resellers, and 12% to new routes to market. Percentage of ad hoc sales and sales to resellers have significantly decreased, suggesting that rather than selling honey incidentally, beekeepers now have more consistent and secure routes to market. Notably, the percent of sales to traditional markets has remained relatively consistent, demonstrating the ongoing importance of local points of sale, despite improved access to new routes to market.

Table 7: Graph to show points of sale for honey accessed by beekeepers at baseline and in August 2018



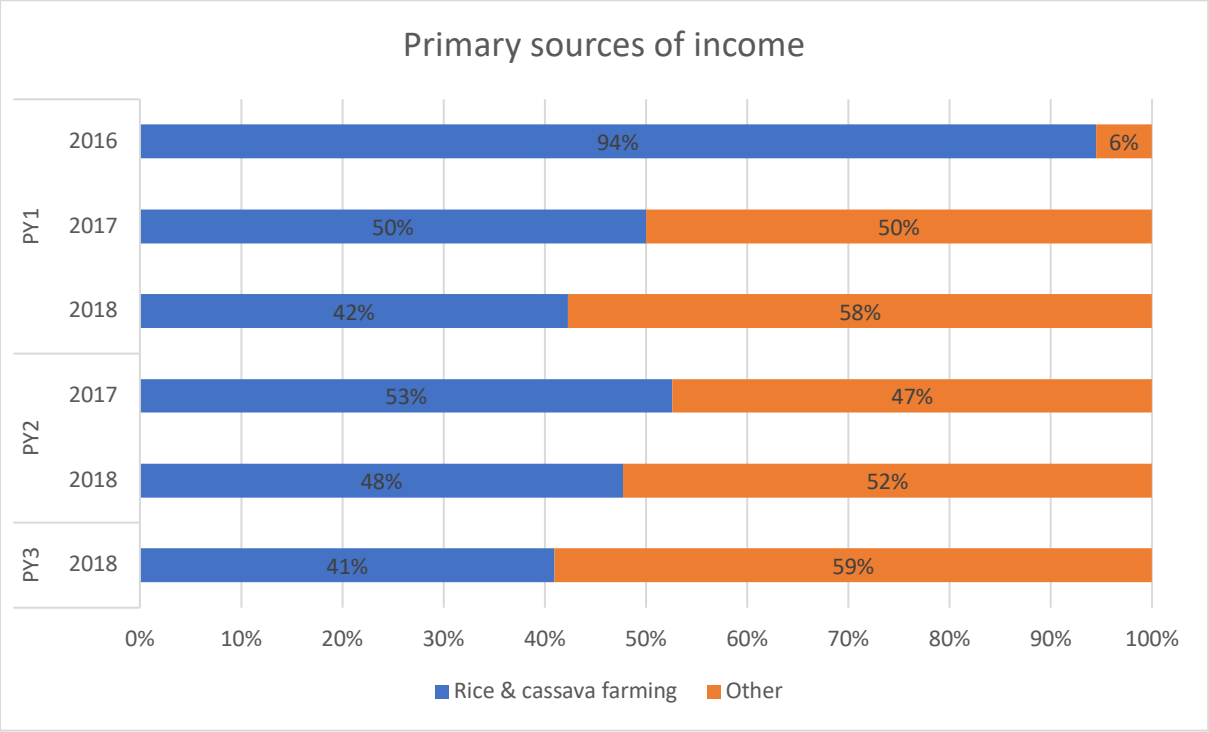
3.4.5 Livelihood Diversification

The diversification of primary income sources for project beneficiaries is used as a proxy for the improved sustainable livelihoods development through Project Renitantely. With the majority of the population of the Anosy region wholly reliant on subsistence fishing and farming, additional sources of income are vital for both providing more financial security, and decreasing pressure on natural resources. 'Other' income sources identified during surveys includes: farming high value crops (coffee, banana, pineapple, vanilla, sugarcane); breeding livestock; weaving; and additional occupations such as shopkeeper; teacher and night guard.

The 2018 Annual Survey indicates that most PY1 beekeepers have significantly diversified their income, with a 52% reduction in beekeepers reporting rice and cassava farming as a primary livelihood since baseline. PY2 beekeepers demonstrated a similar pattern, but with a higher diversity of occupations at baseline in 2017. This is possibly because there were more PY2 beekeepers than PY1, and they were selected based on their enthusiasm for beekeeping, rather than their past beekeeping experience. Among PY2 beekeepers, reports of rice and cassava farming decreased by 5%, again replaced by a number of alternative income sources.

Compared to PY1 and PY2 beekeepers, PY3 beekeepers had the most diverse income sources at baseline, and the smallest percent reporting subsistence rice and cassava farming. This is likely due to many of the PY3 beekeepers being women, amongst whom occupations like weaving, shop keeping, and teaching are more common.

Table 8: Graph to show primary source of income identified by PY1 and PY2 beekeepers



3.5 Disease & Pest Management

The Annual Survey also investigated the beekeepers' skills regarding varroa identification, monitoring and management. PY1 beekeepers showed higher understanding than PY2 beekeepers in all of these areas, which is consistent with the increased attention given to pest management training in PY2. Beekeepers' understanding of how long to leave Apistan (chemical treatment widely used to combat varroa) in the hive was particularly low among both PY1 and PY2 beekeepers. This was also the case in 2017 and is likely due to conflicting advice from other NGOs. Following the survey, this was explained to beekeepers that gave incorrect answers, and will be further reinforced in the pest control workshop and further training sessions, and regularly by the technicians. Skills in monitoring varroa using rum and sugar are also expected to further increase, with the Technicians conducting quarterly monitoring with the beekeepers. In this way, the spread of varroa can be accurately observed, and the capacity of beekeepers to detect the pest will increase.

Table 9: Graph to show PY1 beekeeper disease and pest management skills as at August 2018

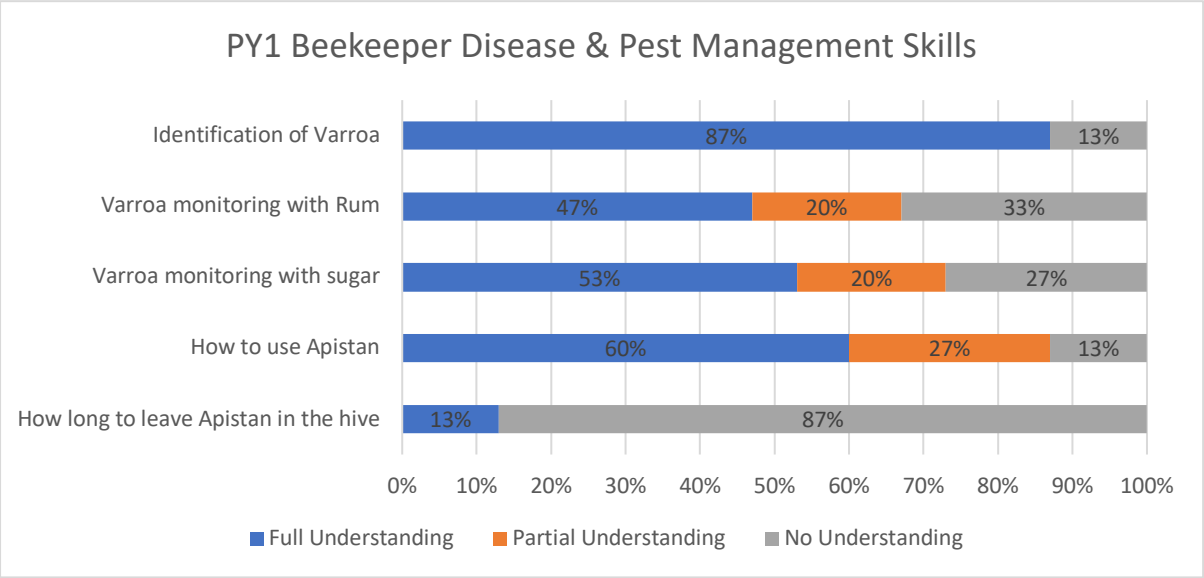
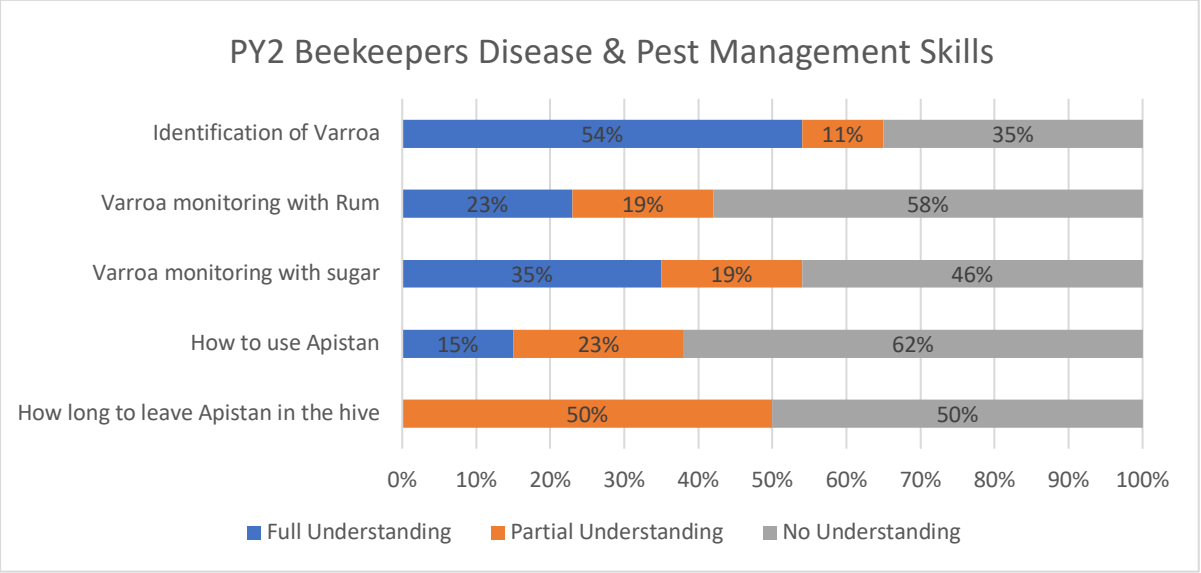


Table 10: Graph to show PY2 beekeeper disease & pest management skills as at August 2018



5. Looking Forward

Throughout PY2, a number of challenges were identified and, with a new team structure in place and the analysis of the monitoring results complete, a new strategy has been developed. Building on the past successes of Project Renitantely, learnings from PY2 and results of the Annual Survey, the key aspects reviewed for PY3 include:

Training Curriculum

The team have restructured the training content for PY3 in order to better address the identified needs of the beekeepers and improve long-term knowledge retention. In response to requests from many project beekeepers, additional workshops were planned on the topics of: populating hives; maintaining healthy hives; and financial management training.

Additionally, standardisation and accuracy of training content will be increasingly important with each Technician delivering trainings in three of the target communities. In order to ensure that the information disseminated is consistent across all communities, a structured curriculum for each workshop will be developed. The Coordinator and Specialist will research topics and design workshop content and resources in collaboration with the Technicians.

Varroa Management

Considering the high incidences of varroa infestation amongst hives throughout PY1 and PY2, varroa management will be central to the training workshops in PY3. In addition to a workshop specifically focusing on the life cycle and management of varroa mite, strategies to treat, manage and combat the pest will be built into each workshop. For example, the populating hives workshop will include training on how to split a hive in a way that helps prevent the spread of varroa. Additional treatment strategies will also be further investigated by the project team, and trialled alongside Government directives regarding the use of chemical treatments. Networking with key regional stakeholders will also continue in PY3, with the *Platform de Miel* expected to be reinstated by its founding organisation, GIZ, in 2019. Knowledge and experience sharing meetings will be held with members of the *Platform*, other local NGOs and Government officials to share information on the challenges faced by beekeepers, and the treatments and prevention methods used across the region.

Train the Trainer

After an analysis of the progress of the 'Train the Trainer' model, it became clear that for this to have long-term success, primary trainers require significantly more support from the Technicians than was previously possible. With the new team structure splitting these responsibilities between two Technicians, the team will be better placed to ensure the model's success. In addition to increased support for community trainers, the team will look at pairing communities to deliver trainings where possible, and to facilitate cross-visits for trainers to further build capacity and motivation.

Beekeeper Skills Analysis

Whilst the Annual Survey provides a valuable assessment of beekeeper skills, this data is limited when looking at individual beekeeper capacity building, and subsequent progress tracking. Part of the strategic review undertaken by the project team identified the inability of the previous Technician to be reactive to specific beekeeper training needs within the set project training timetable. With two Technicians now recruited, and both based predominantly in the field, the team have significantly more opportunity to offer one-to-one, tailored support for beekeepers. With the majority of PY3 beekeepers having no past experience, this level of contact will be vital in ensuring skills are developed effectively. In line with this increase in capacity, the team have developed an in-depth 'Beekeeper Analysis' framework for use by the Technicians to regularly track the progress of each individual beekeeper in their skills development; additional training needs; health and quality of their hives; infestations and treatments for varroa; access to improved routes to market; and specific additional challenges faced by project beekeepers.

Community Engagement

Whilst community engagement activities have had some success in PY2, feedback gathered during the Annual Survey showed that wider community members are requesting more specific technical beekeeping workshops, alongside the general discussions on the benefits of beekeeping. To this end, the Technicians and Specialist will work to develop more robust, in-depth content for community workshops, including: practical demonstrations; beekeeper presentations; and displaying VLAs within the community. In addition, the team plan to investigate the feasibility of implementing a basic system to improve access to materials and equipment for communities, to further support beekeeping activities in the region.

6. Conclusions

Overall, Project Renitantely is on track to achieve its key objective of developing beekeeping as a sustainable livelihood for a collaborative network of 78 beekeepers across six *fokontany* in the Anosy region. While skills development, increase in honey yield, increase in honey sale price and expanded routes to market have all been seen throughout PY2, the ongoing environmental challenge of varroa remains a major barrier to improved income opportunities for beekeepers. As outlined in this report, significant focus will be placed on increasing beekeeping skills within communities, as well improved knowledge retention and dissemination throughout PY3 trainings. Through collaboration across multiple stakeholders and further research into international best practice, the project team will focus on ensuring long-term solutions to varroa are in place by project end. In addition, routes to markets in Fort Dauphin will continue to be promoted and developed by SEED, focussing on the sustainability of beekeeper/retailer partnerships.