



seed **madagascar**

sustainable environment, education & development

A proposal for

Project Renitantly: Developing beekeeping as a sustainable livelihood in rural communities

Prepared for

GlobalGiving



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SEED Madagascar

Suite 7, 1a Beethoven St, London, W10 4LG, United Kingdom
Villa Rabemanda, Ambinanikely, B.P. 318, Tolagnaro, Madagascar

Tel: +44 (0)208 960 6629

Email: projects@seedmadagascar.org

Web: madagascar.co.uk

UK Charity No. 1079121, Company No. 3796669

1. Summary

Project Title: Project Renitantely: Developing beekeeping as a sustainable livelihood in rural communities.

Project Objective: To increase incomes, reduce dependence on natural resources and improve biodiversity in endangered forest environments through the development of beekeeping as a sustainable livelihood practice in the Anosy region of southeast Madagascar, increasing the value chain by 250% and building urgent regional resilience against varroa mite infestations.

Location: Rural Mahatalaky Commune, Anosy Region, southeast Madagascar

Project Duration: 3 years

Executive Summary:

Madagascar is one of eight countries in the world that has a lower per capita income in 2010 than in 1960¹. 81.3% of the population live below the poverty line (<US\$1.25/day) and 35.4% live in severe poverty (>50% on MPI score)². Nationally, the average annual income for agricultural households is 923,000 Ariary, approximately £205. In the Anosy Region of southeast Madagascar, poverty is seen in its most extreme form, with average annual agricultural household income at just 686,000 Ariary, approximately £150³.

In rural communities of southeast Madagascar, there is a strong tradition of honey harvesting amongst small-scale farmers. However, a lack of infrastructure, training and resources negatively affects yields and restricts access to market for honey products. Beekeeping is an agricultural pluriactivity that has the potential to generate more than 50% of global household incomes⁴. The economic value of beekeeping through pollination is also estimated to be worth at least ten times the production value of honey⁵. Apiary is a non-labour intensive, non-time intensive skill that can be utilised to create increased income streams for the country's most vulnerable inhabitants. The urgent need to build beekeepers' capacity in Anosy has been heightened by the detection of varroa in the region in February 2016, a destructive mite that has contributed to the global rise in honeybee Colony Collapse Disorder. With 75% of Madagascar's flora and fauna dependent on insect pollination for survival,⁶ developing beekeeping as a sustainable livelihood will protect honeybee populations whilst simultaneously helping to defend the communities and wildlife that rely on the endangered Tsitongabarika rainforest.

Project Renitantely (*renitantely* meaning 'honeybee' in Malagasy) will work across six *fokontany* (village clusters) to develop beekeeping as a sustainable livelihood practice. Following a beekeeping

¹ World Bank, 2015

² UNDP, 2013

³ INSTAT, 2010

⁴ GIZ, 2014

⁵ GIZ, 2014

⁶ DIREL, 2015

pilot and international review on the challenges of beekeeping projects in the region, SEED Madagascar (SEED) will develop and expand an intensive capacity-building programme for motivated beekeepers, whilst also safeguarding long-term sustainable benefits to the wider community. Drawing on a Farmer's Field School (FFS) approach, SEED will support beekeepers to identify the most sustainable, useful, regionally-appropriate techniques and equipment to increase the honey value chain. SEED will establish a collaborative network of 78 motivated 'primary beekeepers' and promote 'Train the Trainer' capacity-building. Quarterly training sessions will be delivered to the wider community of 1,500 households⁷ at community apiaries established by SEED, and information, education and communication (IEC) materials will be distributed to all attendees.

Project Renitantly will utilise the potential for beekeeping to improve gender equality and support vulnerable members of the community to generate additional income. SEED will mobilise women in a culturally sensitive way, ensuring that male beneficiaries feel supported and not displaced by mutually beneficial activities. SEED will collaborate with government bodies, regional and national organisations to accelerate progress in finding sustainable solutions for preventing and treating varroa, including sharing data and resources and promoting coordinated action.

2. Organisational background

SEED Madagascar (previously Azafady UK) is a British-registered charity (1079121) established in 1994 and registered in England & Wales in 1999. The acronym SEED (sustainable environment, education and development) reflects the organisation's holistic approach to projects; all of which are built around the most pressing and directly expressed needs of disadvantaged communities. Cross-departmental collaboration between SEED's four programmes – Community Health, Sustainable Livelihoods, Environmental Conservation and Education – maximises progress towards SEED's central mission: to build local and international capacity to lead and support effective conservation and sustainable development initiatives.

SEED works on the ground to design, plan, implement, monitor and evaluate projects, either independently with its local staff or alongside partner organisations such as ONG Azafady. Collaboration between international and Malagasy teams provides projects and programmes with the vital expertise and regional knowledge necessary to achieve conservation and development goals. SEED's specialist international staff and volunteers build professional and organisational capacity amongst local staff members and partners, optimising the sustainability of interventions.

SEED retains responsibility and accountability for financial management for all SEED-funded operations. With 87% of income spent in direct pursuit of SEED's charitable aims, administration costs are minimal. SEED has benefited an estimated 125,000 over the last fifteen years; building a healthier and more educated and skilled region whose socioeconomic progress complements rather than harms the uniquely rich natural environment.

⁷ Estimate based on number of households in Sainte Luce, determined by earlier SEED project.

3. Project Rationale

Madagascar is one of the world's most impoverished and least developed countries in the world, ranking 155/187 in the UNDP 2013 Human Development Index. In rural Anosy, the spiral of poverty and associated environmental degradation is seen in its most extreme form. The average annual income for an agricultural household in the region is 686,000 Ariary (£150), which is 25% less than the national average⁸. Chronic poverty and food insecurity is associated with limited livelihood diversification as repeated drought and failed harvests are common in the harsh climate.

Madagascar has also been identified as one of the world's highest conservation priorities (Myers, et al. 2000; Ganzhorn, et al. 2001). The island is renowned for its rich biodiversity and endemic flora and fauna; however unique habitats face multiple immediate threats including illegal logging, land clearance and mining. Madagascar's honeybee, *Apis mellifera unicolor*, is one of the country's 150,000 endemic species that is at risk from habitat loss⁹. The remaining southern littoral forests are one of the most threatened and fragmented habitats in the country. Within a 377 ha forest fragment of the project target area, 98% of the 189 plant species are endemic to Madagascar and at least 40 plant species are endemic to the littoral forest of the region.

With limited alternative livelihood opportunities, communities are forced to rely on unsustainable practices, whilst forest and marine resources face external exploitation, leading to habitat destruction and loss of biodiversity. As a non-time intensive, non-labour intensive, agricultural pluriactivity that compliments existing farming techniques used by communities, beekeeping has the potential to increase global household incomes by 50%¹⁰. Beekeeping not only creates a valuable income stream, which reduces pressure on natural resources, it also actively supports biodiversity in a country where 75% of flora and fauna is dependent on insect pollination for survival¹¹.

The urgent need to build beekeepers' capacity in Anosy was heightened by the recent detection of varroa in the region. As bee scholar Nikolaus Bieger said in his 2014 report: "Currently, it is still the forests supplying beekeepers with bees. With the arrival of varroa, wild bee populations will be greatly reduced and it will be the beekeepers who will supply nature with bees from their hives." Aware of the key role that honeybees play in both the preservation of the rainforest and as income-generators, DIREL (Direction inter-régionale de l'élevage) has directed all beekeepers to transfer to modern hives. In rural Anosy, beekeepers require more than the basic distribution of resources to modernise hives; due to a knowledge gap on using such hives and a lack of available replacement parts and equipment. Through its pilot project, SEED designed a simplified version of the Langstroth modern hive which can be built entirely from locally-sourced, sustainable materials and does not require investment in expensive additional equipment. Project Renitantly will promote the

8 INSTAT 2010

9 Daley, 1997

10 GIZ, 2014

11 DIREL, 2015

effective, sustainable transition to modern hives, whilst also collaborating with government bodies and regional NGOs to develop a rigorous disease prevention programme.

Throughout Madagascar, women are typically restricted from accessing income-generative activities as a result of domestic responsibilities, cultural expectations and a lack of earning opportunities. As an activity that can be based near to the home, generating maximum profits with a minimum investment of time, beekeeping provides an excellent opportunity for women to redress this imbalance. Whilst there is a strong tradition for bee *foraging* techniques to be passed from father to son in Anosy, *beekeeping* methods are new to the community¹² and fit with traditional domestic roles for women, such as subsistence agriculture. SEED's pilot project identified community-led opportunities to involve women in beekeeping and found that male and female beekeepers can share responsibilities without disrupting traditional roles; particularly if men are encouraged to perform bee foraging activities such as catching swarms and building hives, and women are supported in learning domestic bee husbandry techniques. Project Renitantly will proactively promote gender equality in the region drawing on learnings from SEED's pilot, other projects such as Stitch Sainte Luce¹³, and comparable international development initiatives that have successfully mobilised women.

4. Project Detail

4.1 Outcomes

- Honey value chain increased by 250% through improved beekeeping practices leading to increased honey yields and enhanced product quality.
- Beekeepers equipped with training and resources to apply modern beekeeping techniques to their local context, leading to healthier honeybee populations and strengthened resistance against varroa infestations.
- Improved prevention, identification and treatment against infestations and diseases, with regional and national coordination on defence against varroa infestations.
- Collaborative network of motivated beekeepers established, gender equality promoted, and income-generating opportunities developed for vulnerable members of society.
- Routes to market for honey and honey by-products secured and developed in line with increased yields.

4.2 Outputs

- Increased honey value chain for 78 households by 250% through product branding, marketing and the development of a sustainable route to market 'from farm to fork,' with the community mobilised to transport, package and deliver honey to regular buyers.

¹² This includes feeding bees; identifying, treating and preventing disease; swarm prevention.

¹³ Stitch Sainte Luce is a SEED Madagascar project that promotes embroidery as a sustainable livelihood source for women in the community of Sainte Luce, which has had considerable success in redressing gender balance in the area. See www.stichsainteluce.org for details.

- Collaborative network of 78 ‘primary beekeepers’ established to manage community apiaries and 12 quarterly training sessions delivered, drawing on a Farmer’s Field School (FFS) approach as outlined below.
- Increased capacity of up to 1,500 households through delivery of 12 registered training events at community apiaries for the wider community. IEC materials distributed to attendees and new equipment made available through structured loans.
- 24 monthly cascade training sessions conducted, enabling primary beekeepers to contribute towards the capacity-building of new intakes.
- 50% female representation secured in the second and third intake of primary beekeepers to promote gender equality. Gender workshop held to ensure that output is handled in a culturally-appropriate, sensitive way.
- Collaboration with DIREL and regional NGOs to establish a national network of stakeholders, coordinating activities to deliver key messages, gather crucial data on the spread of disease and share learnings on sustainable alternatives to currently recommended varroa treatments.
- Dissemination of project learnings at regional, national and international forums to promote wider knowledge-sharing and collaboration.

4.3 Activity Detail

4.3.1 Capacity-Building

SEED will draw on findings from previous projects to ensure that capacity-building is developed in a coherent and sustainable way. Initially focusing on a small group of motivated beekeepers, SEED will develop best practice models before scaling up beneficiary numbers and replicating more widely. SEED will assign 18 motivated beekeepers, previously identified in a pilot project, for the first intake of primary beekeepers. Primary beekeepers (18: Year1; 48: Year2; 78: Year3) will be given the autonomy to choose which materials and practices they invest in and will receive ongoing support through quarterly training sessions. SEED will establish a community apiary in each of the six *fokontany*, to be managed and maintained by the primary beekeepers in coordination with SEED. This will provide a space where training can be delivered and autonomous, collaborative decisions made about investment of resources. Adopting Farmer’s Field School (FFS) techniques and drawing on the expertise of an International Beekeeping Specialist and a local Beekeeping Technician, primary beekeepers will be encouraged to experiment with new techniques and equipment during quarterly training sessions.

To safeguard long-term sustainability, SEED will commission locally-sourced, sustainable resources wherever possible during the collaborative trials of new equipment such as queen excluders, queen cages, nucleus boxes and hive monitoring trays. SEED will provide one piece of complimentary equipment for each community apiary to trial, inviting primary beekeepers to purchase further equipment at a heavily subsidised rate. Additional equipment will be awarded to motivated

beekeepers at the conclusion of every quarter to maintain beneficiary engagement. In a region where internationally-recognised equipment and disease treatments may not be appropriate, this model ensures that activities are suited to the local context, thereby promoting long-term sustainability. SEED will support primary beekeepers to establish a *dina* (customary local law) enabling them to loan out equipment to the wider community. This will mitigate a commonly-cited problem that remote locations and large distances between hives can limit value chain development¹⁴.

Additional quarterly registered training events will be held at community apiary sites to build the capacity of the wider community in beekeeping, reaching up to 1,500 households or 7,500 individuals¹⁵. IEC materials relating to each training session will be distributed to all registered attendees. Households where women are the primary income-generator will be primarily targeted, alongside owners of traditional beehives. The latter will support DIREL's guidance of transferring traditional beehive colonies to modern hives as soon as possible in order to limit the spread of varroa.

4.3.2 *Establishing collaborative networks and promoting gender equality*

Project Renitantly will establish a collaborative network of beekeepers to ensure that best practice and learnings are shared and enforced across target *fokontany*. Coordinated action will increase the potential for individual beekeepers to expand their hive numbers and resources and reduce the risk of spreading diseases and infestations. SEED's pilot project has shown that it is most effective to develop best practice with a smaller group of motivated beekeepers, enabling them to reap demonstrable rewards and thereby incentivising the wider community to adopt the same methods. New primary beekeepers will be introduced incrementally each year (18: Year1; 48: Year2; 78: Year3), enabling SEED to replicate and scale-up proven successful training models.

Remaining sensitive to delicate social infrastructures and drawing on community consultations, SEED will host an equal opportunities workshop in year one to discuss the benefits of training women and vulnerable members of society in beekeeping activities. This will serve to highlight the mutual benefits of women engaging with new bee husbandry techniques which are consistent with traditional roles of subsistence farming. SEED will encourage equal gender representation in the second and third beneficiary intakes and women will be targeted to attend registered quarterly training sessions for the community (referred to in section 4.3.1).

¹⁴ GIZ, 2014, and SEED's 2015 beekeeping pilot found that the remote distances between beneficiaries who have a small number of hives are a limiting factor in honey value chain. By establishing community apiaries, SEED can develop both the capacity of its team and utilize the following benefits of having a greater number of hives in one location:

- i. Methods such as transferring frames of brood and queen cells between hives can be demonstrated and considered, with their merits and demerits
- ii. The community can experiment with different disease detection methods at one time
- iii. Greater minimum harvest guaranteed if resources are pooled, thereby helping to secure routes to market

¹⁵ Based on average household size for Anosy Region in 2010 (www.knoema.com/atlas/Madagascar/maps/Average-household-size)

In year two, a second intake of 18 primary beekeepers will be introduced through an 'Associate model'. Here, each of the first year primary beekeepers will be invited to select someone to mentor and support as an Associate Beekeeper, likely to be a relative, friend or neighbour. SEED will identify a further 12 beneficiaries, based on motivation. SEED will provide 'Train the Trainer' sessions to first year intakes, who will then deliver monthly cascade training to new intakes, with oversight from the SEED Beekeeping Technician and project staff. SEED will discuss the 'Associate Beekeeper model' with primary beekeepers at the Annual Income-Generating workshop, highlighting the potential revenue-building opportunities that can be utilised such as loaning tools and equipment to Associates, selling brood, queens or nucleus and pooling honey yields for an increased harvest guarantee. Previous projects have shown that 'train the trainer' methods are more successful when beneficiaries are given the autonomy to involve family and trusted community members. The model will also allow beekeepers to autonomously mobilise women in their own household or wider family, thereby promoting gender equality.

SEED's third intake of 30 primary beekeepers will be allocated at the start of year three. They will be selected from those who have attended registered community training sessions and demonstrated high levels of motivation, with a balanced gender intake. Just as the initial 18 primary beekeepers received resources to build hives during the project pilot, the second and third intakes will be given training and resources to build and populate a modern beehive. SEED will purchase these colonies from primary beekeepers wherever possible to ensure that rigorous varroa checks have been carried out thereby reducing the risk of spreading disease and infestations. This will also support additional income-generating activities that incentivise cascade training and reinforce the strength of the collaborative network. When bees are not available to purchase from primary beekeepers, SEED's Beekeeping Technician will source wild colonies or purchase locally after carrying out rigorous varroa and disease checks.

SEED will host an Annual Beekeepers Celebration each year, rewarding best practice through certificates and equipment prizes to encourage motivation, knowledge-sharing and to strengthen the collaborative network.

4.3.3 Collaboration with government and regional bodies on disease prevention strategy

The region's urgent response to the arrival of varroa, which was discovered in Anosy in February 2016, presents an opportunity for collaboration with local, regional and national partners. SEED is an integral member of this network and contributed to the first regional data collection on disease monitoring activities in the area. In February 2016, SEED's International Beekeeping Specialist demonstrated disease identification techniques for other regional NGOs during the pilot project and has been invited to collaborate with GIZ's¹⁶ varroa specialist to ensure consistent messages in IEC materials on disease prevention, strengthening the region's defence against varroa.

SEED will ensure that beneficiaries access emergency government-supplied resources and follow DIREL-approved advice on best practice, such as using Apistan and Apiguard to treat varroa.

¹⁶ Deutsche Gesellschaft für Internationale Zusammenarbeit

Alongside this, SEED will promote the development of sustainable, affordable alternative treatments that are recognised within the agricultural community. Beekeepers will be supported to build modern hives and additional complimentary equipment using locally-sourced, affordable resources, drawing on modern techniques in a culturally-appropriate, sustainable way¹⁷. SEED's International Beekeeping Specialist is working with experts at The Laboratory of Apiculture and Social Insects (LASI) at the University of Sussex; Urban Beekeepers; Bee Friendly Trust and Bees for Development, to trial sustainable, affordable varroa treatments. These will be piloted in community apiaries using the FFS approach described above to ensure their suitability to the local context. Findings will benefit wealthier regions since the varroa mite has grown resistant to recommended treatments internationally¹⁸.

SEED will deliver rigorous training and provide locally-appropriate IEC materials, including visual learning aids, on the identification, prevention and treatment of diseases and infestations. SEED's understanding of the challenges faced by the most vulnerable communities in Madagascar will continue to inform the development of IEC materials and SEED will share these materials with national, regional and government bodies to encourage sustainable best practice nationwide. The collaborative network of primary beekeepers and community apiaries will be utilised to inform beneficiaries about new beekeeping *dinas*, which are currently being proposed to legally require beekeepers to use modernised hives.

As described in section 4.3.2, the model of increasing beekeeping capacity has been carefully designed to ensure that thorough inspections are carried out on any newly-sourced colonies. Project Renitantly is built around a holistic model where the financial incentive for beekeepers to follow best practice is synonymous with robust disease prevention. By instilling good husbandry, SEED will enable beekeepers to keep their bees for sustained periods of time, allowing colonies to produce more honey than needed. Strong, healthy colonies produce increased, dependable honey yields, and are better able to defend against disease and infestation.

4.3.4 *Establishing secure routes to market*

The project will establish a sustainable, regional route to market for honey products and increase the value chain in incremental stages, in line with increased honey yields. SEED will assist primary beekeepers in building business models, including through an annual Income-Generating Workshop and by encouraging beekeepers to loan out equipment to the wider community of approximately 7,500 people. The first regional market that the project will exploit will mobilise the community to sell their honey in Fort Dauphin at an increased profit margin. At this stage the honey will be packaged using readily available local resources and sold to the Malagasy market. A pilot will be carried out after six months and twelve months.

¹⁷ The hive has been designed by a local Beekeeping Technician and trialed in SEED's pilot project. Any hive developments will be made as part of a collaborative exercise in our community apiaries to guarantee long-term sustainability and affordability.

¹⁸ LASI, 2015

In year two, SEED will support beekeepers to market honey to appeal to tourist and expat markets. Packaging and labelling will be designed to appeal this demographic, and incorporated into a sustainable value chain. In partnership with primary beekeepers, SEED will create positive branding which communicates the project's aims and conduct annual regional pilots. In year three, SEED will review the route to market, utilising positive relationships developed regional and national stakeholders to promote access to national markets and explore possibilities of export.

SEED's Head of Environment, International Beekeeping Specialist and local Beekeeping Technician will carry out a research trip to HELVETAS and *Association Intercooperation Madagascar's* project, Project MAMAFAI, in central Madagascar. Project MAMAFAI has been recognised by specialists as a particularly successful example of a honey value chain being sustainably increased in a country where export laws, infrastructure and corruption present unique challenges. When a sustainable route to the tourist market has been established for honey products, SEED will carry out market research and pilot the sale of wax products, incorporating key players in the honey value chain and using locally-sourced, sustainable resources.

4.3.5 Monitoring and evaluation and the dissemination of findings

Ongoing Monitoring, Evaluation and Learning (MEL) will be vital to ensuring project activities are appropriate and responsive to changing beneficiary needs. Baseline and End Project Evaluation Surveys will be conducted to assess impact and evaluate the success of the project against its stated objectives. The surveys will determine beekeeping practices, knowledge and income-generation amongst primary beekeepers and the wider community.

Progress will be measured against smart, measurable, achievable (SMART) key performance indicators (KPIs), reviewed and measured on a quarterly basis. The International Beekeeping Specialist and Beekeeping Technician will conduct regular monitoring visits to community apiaries and household beehives to monitor practices and motivation, coordinating with quarterly training sessions. Beekeeping techniques will be informally tested to assess beneficiary understanding of previous training sessions. Results will inform project development and ensure any necessary changes are made to improve training sessions and allow for enhanced capacity-building.

Traffic light coding, visibly marked on the side of beehives, will be used to measure motivation and beekeeping practices. This was trialled successfully in a pilot project, with green beekeepers rewarded for fulfilling their objectives in good beehusbandry through certificates and extra training. Yellow beekeepers were given ways they could reach objectives and make improvements to their husbandry practice to achieve a green rating. Red beekeepers were given one month's notice to make improvements towards the minimum standards expected of beneficiaries. Annually, SEED will conduct surveys with primary beekeepers to measure progress against expected outcomes related to honey yields, access to markets and income-generation. The Annual Celebration Event will also be used to informally assess understanding of techniques and skills developed throughout the year, as well as identify motivation for the coming year.

Findings from Project Renitantly will be disseminated through regional, national and international platforms, including organisations, think-tanks and publications. SEED will build on existing

relationships with The Bee Friendly Trust and Bees for Development to share learning on beekeeping in developing countries. Reports will be produced for project funders twice yearly and, as with all SEED projects, detailed financial monitoring will be in place throughout project operations.