

Darwin Initiative Main: Annual Report

To be completed with reference to the “Project Reporting Information Note”:
(<https://www.darwininitiative.org.uk/resources/information-notes/>)

It is expected that this report will be a **maximum of 20 pages** in length, excluding annexes)

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Darwin Initiative Project Information

Project reference	30-016
Project title	Avoiding degradation through sustainable honey production in the miombo
Country/ies	Mozambique
Lead Partner	Micaia Foundation
Project partner(s)	University of Eduardo Mondlane, University of Edinburgh
Darwin Initiative grant value	£513,048
Start/end dates of project	01/04/2023 – 31/03/2026
Reporting period (e.g. Apr 2022 – Mar 2023) and number (e.g. Annual Report 1, 2, 3)	April 2023 – March 2024; Annual Report 1
Project Leader name	Milagre Nugunga
Project website/blog/social media	
Report author(s) and date	Andrew Kingman

1. Project summary

The project is addressing a growing threat to the Miombo woodlands of Mozambique, which are critical for local livelihoods, biodiversity, and carbon stocks. The threat comes from the increasing demand for honey in the expanding urban centres of Mozambique. The Miombo woodlands are experiencing significant degradation, and it is believed that honey production is a key cause, as traditional methods involve killing important trees and overuse of fire, leading to severe biodiversity loss. Given the importance and potential of honey production for local livelihoods, the project is trying to maximise the livelihood benefits of honey production whilst avoiding degradation and conserving biodiversity.

Commercial honey production is a new, large-scale threat to the miombo, but also offers important new pathways out of poverty. The project is working in four economically poor areas of Mozambique where honey production in miombo woodland is long-established and, in some cases, increasing rapidly and driving overharvesting of key tree species, and overuse of fire. Novel remote sensing by our team (9) confirms a substantial 13% woodland degradation in the

last 10 years and we expect honey trade in the target areas to expand, driven by population growth and poverty. There is currently no support for beekeepers and honey-harvesters, so the threat to biodiversity grows while potential benefits of commercial beekeeping remain unrealised due to the weak position of producers in the value chain.

In the last 8 years, Micaia's work with beekeepers in the buffer zone of the Chimanimani National Park has highlighted how equitable access to the commercial honey market can boost livelihoods, while reducing forest degradation. This project expands the scope and scale of this prior work to enable an estimated 600 beekeeping families, and their communities, to increase their capability to enhance livelihoods in conjunction with sustainable management of the miombo woodland. In doing so, the project helps address the key challenge of rural poverty and marginalisation which have been highlighted in national surveys and reports published in 2022, demonstrating that rural spending per month in 2019-20 was just \$20 per person, down from \$29 in 2014-2015, and less than half of the median urban monthly expenditure.

Micaia Foundation was established in 2009 and has operational programmes only in Manica Province. The Foundation has worked extensively in the three focal districts of this project (Sussundenga, Macossa, and Mavonde), and in all cases, has had direct involvement in the past with beekeepers. As the founder, via its linked social enterprise (Eco-Micaia Ltd), of the Mozambique Honey Company, Micaia has also been directly involved in the development of commercial honey value chains in the province and has deep knowledge of the existing informal trade.

With a strong presence in the buffer zone of Chimanimani (working with almost 1,000 beekeepers), Micaia was eager to work in the 'outer buffer', which has had little support. This includes the large miombo woodland areas to the south of Dombe, a new municipality. Community visits identified the existence of large numbers of people involved in honey harvesting from traditional, mostly bark, hives, and confirmed community interest in participating in the project. The principal focal communities are Chibue and Pambanissa.

Macossa District, which is dominated by miombo, to the north of Manica Province, is included in Micaia's 'Lower Zambezi Valley' landscape programme. Although, due to limited resources, the Foundation has not been as active in Macossa as in Sussundenga District, it has maintained a level of community engagement. Moreover, the Mozambique Honey Company does buy limited volumes of honey from selected beekeepers who have been involved in previous training by Micaia (a project in 2012-14). However, most honey goes into a well-established informal trade that supplies major markets including Maputo. Despite the significant level of trade, Micaia's outreach during the design phase of this project found a high level of enthusiasm among beekeepers who wanted to improve productivity and gain new more reliable markets. The main focal communities in Macossa District are Mussangadzi, Capimbi, Catiquenzaia, Murodzi, Rios dos Elefantes and Camoto

The third focal area of the project is Mavonde, in Manica District. This is not one of Micaia's core landscapes, but the Foundation did work in Mavonde (on natural resource management planning and community land delimitation) in 2010-2011 and so had some background knowledge of the area and its community. Until 2017, when renewed conflict between the government and the opposition made it unsafe to do so, MHC bought honey in the Mavonde area. The project is working in two communities, Muswata and Mucono.

2. Project stakeholders/ partners

Micaia Foundation has collaborated with both the University of Eduardo Mondlane (UEM) and University of Edinburgh (UoE) in previous research initiatives, though this is the first time that Micaia has been the lead partner. In this project, Micaia's field experience and capability needed to be joined with high level research capacity, which is why we reached out to the two universities. The project was designed in a collaborative way, and the same approach is being taken to implementation.

From the start of the project, it was agreed that the partners would hold a regular project management team meeting. During key phases of work, for example, the household survey, the meetings have been held on a weekly basis. These meetings have given the project manager and the research associate the opportunity to provide updates to and discuss issues with the lead academic advisors/consultants and Micaia’s senior management. The meetings have been open and held in a spirit of shared commitment to the project’s objectives.

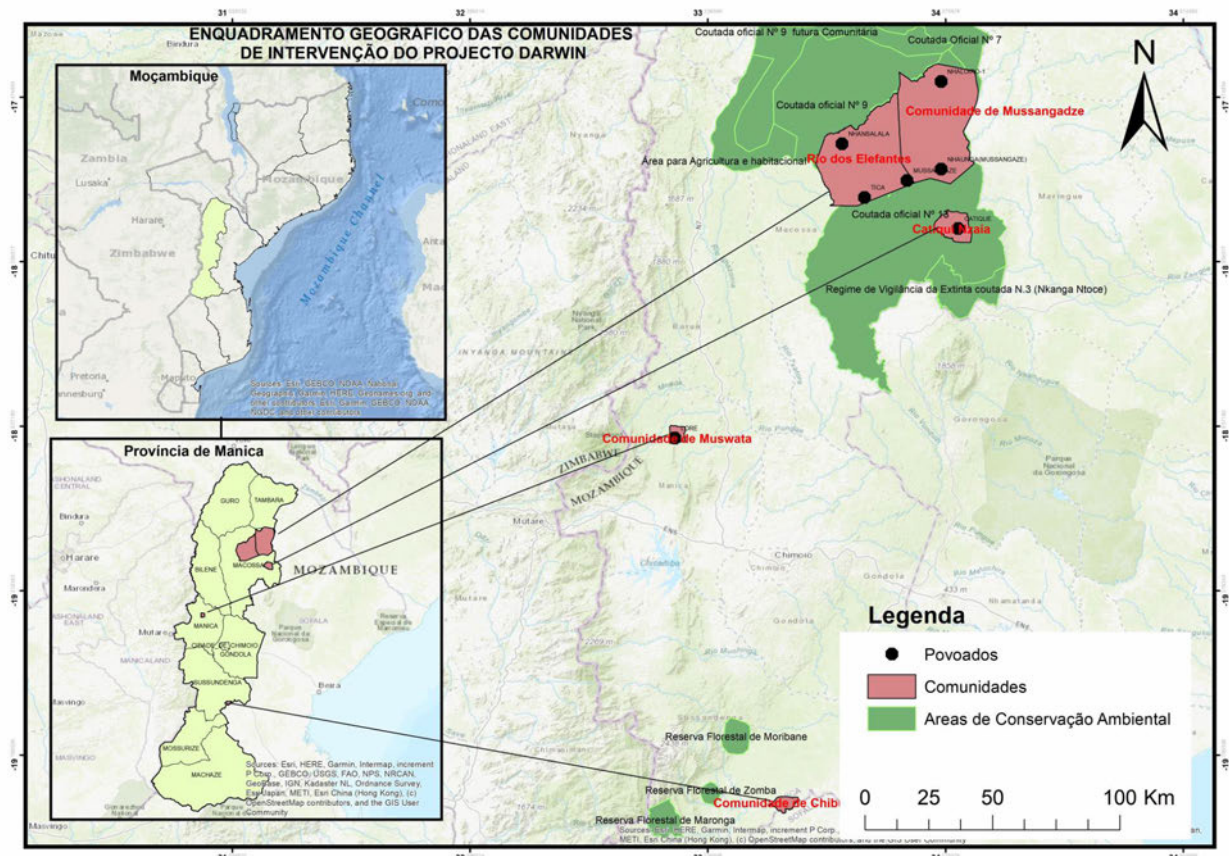
As we describe later in the report, unanticipated personal events of the UEM’s project assistant, and unanticipated work commitments for the UEM lead consultant caused a delay in some aspects of UEM’s engagement in the project. However, this will not affect the overall delivery of the key outputs. The nature of the partnership has enabled transparent discussion of challenges, and a route towards addressing them.

At local level in the three districts, Micaia’s field team has established very effective working relations with the districts’ departments for agriculture and economic activities (SDAE). This has included providing frequent briefings on the activities of the project.

The communities in which the project is active remain fully engaged, mostly through the participating beekeepers (600), but also through the Regulos (chiefs) and elders – some of whom are also beekeepers. This central involvement of traditional authorities is essential as the project activities start to include work with communities on natural resource management planning.

Overview map

The map below shows the main project intervention areas in relation to the Province. More detailed maps are included as Annex 4 to this report – submitted as a separate PDF document.



Soon after the start of the project, Micaia’s senior management visited the FCDO office in Maputo and presented the project (having shared the draft with FCDO prior to submission of the proposal). A mid-year meeting to report on progress was also held, and at this second meeting, Micaia was informed that the High Commissioner was keen to visit the project. This

visit was held on 17 April. Although it was therefore technically in Year 2 of the project, we report it here as it marked the culmination of the first year's activities. The visit included a meeting with 8 beekeepers who had been trained as Lead Beekeepers (see below). The discussion was very informative, and the High Commissioner and FCDO team expressed their satisfaction that much was evidently being achieved even in the first year of the project. Micaia posted a report of the visit (which included other Micaia work – though the Darwin project was the core focus – and the Mozambique Honey Company in Chimoio).

<https://web.facebook.com/MicaiaMozambique/posts/pfbid0NJjWte7mR4eGtw6jrovpH7hyKJwBVvVyQSSPprBRoXpNN4SbARve6fjYxVaYrefyl>.

3. Project progress

3.1 Progress in carrying out project Activities

Output 1: Data from four miombo areas on the nature, scale and impact – on people, forest trees and biodiversity - of beekeeping and honey harvesting.

Activities:

1.1 Participatory assessment of beekeeping and honey collection practices and their impact

The Micaia team held 10 focus group meetings, one per village, with traditional beekeepers in the following villages: Mussangadzi, Capimbi, Catiquenzaia, Murodzi, Rios dos Elefantes and Camoto (Macossa District), Muswata and Mucono (Manica District), and Chibue and Pambanissa (Sussundenga District). These ten selected villages were assumed to be representative of the 32 villages targeted by the project. Each focus group was made up of 10 members of the village who were beekeepers and had extensive experience in this area. The discussions were semi-structured, but most of the data was collected as responses to questions pre-entered in the Kobocolect application. At these meetings, aspects relating to honey production were discussed (quality, quantity, techniques used and impact on the community in general) and mapping was also carried out to understand the limits of the communities, and a profile of the community was established (infrastructure, services, market channels). The meetings enabled the production of draft maps marking the limits of the communities, as well as a list of beekeepers and the type and quantity of their hives. This information was subsequently used for sampling and implementation of the social monitoring framework. The participatory assessment was planned and executed within the time proposed in the project Schedule.

1.2 Development of sustainable harvesting plans with each participating community, using survey data and best practice references

While it is possible to open up discussion about sustainable harvesting on the basis of general experience, community recognition of beekeepers' use of key species, and assessment of the current scale of honey production and marketing, the development of harvesting plans can only gain community support if there is solid locally sourced data on which to base those plans. The household survey generated a wealth of data but the analysis is only now being completed. Meanwhile, as we explain below, implementation of the biodiversity monitoring was delayed. Achievement of the output will not be affected. Work on harvesting plans was due to start in the final quarter of year one, and some discussion did start with Lead Beekeepers during the training sessions, but this activity was planned mostly for Year 2.

1.3 Development of a biodiversity and social monitoring framework incorporating participatory monitoring, bio-acoustic and camera trap approaches, household surveys and focus groups, radar remote sensing, and long-term panels of households.

For the social monitoring framework Village Survey and Household (HH) Survey tools were designed and the surveys were implemented. The village survey defined the basis and structure of the district (carried out in focus groups), while the HH Survey was designed to measure the

quality of life and the impact of honey production on household wellbeing. The surveys are included as Annex 5 to this report. The HH Survey will be implemented in 3 different waves, the first of which (completed) will serve as a basis for comparing well-being in the community through the implementation of the project.

Concerning the biodiversity monitoring framework, after field visits and discussions in the villages, the research team designed the biodiversity assessment protocol that uses a combination of methods to collect vegetation and fauna data through the pairing design method proposed in the attached document. Fauna data will be collected through bio-acoustic equipment and camera traps. This approach was modified in relation to what was initially proposed as was requested in the award letter, and accommodates questions raised during focus group discussions held to understand the process of honey production in communities.

These instruments (social and biophysical) were prepared for implementation within the period foreseen in the project, except for the biophysical instruments, which were not implemented in year 1 of the project (their implementation was expected to occur in the first quarter of 2024, but due to late heavy rains that caused inaccessibility to the areas, its implementation was postponed to May 2024 on a pilot basis and September 2024 for the dry season and December for the rainy season). It is worth noting that the central region of Mozambique is experiencing an El Niño-linked serious drought, and it will be of interest to note the significance of beekeeping if/when crops fail, as well as the impact of drought on honey yields.

1.4 Implementation of social monitoring framework: Identification of control communities; baseline household survey and focus group discussions; development of a panel for long term social monitoring; annual household surveys for the panel;

For this activity, the first wave of the HHsurvey was carried out in the communities of Mussangazi (village of Mussangazi-sede) and Catiguenzai (village of Catiguenzai-sede) in the District of Macossa, the community of Chibue (villages of Chibui-sede and Mathoi) in the District of Sussundenga, and the community of Muswata (villages of Muswata-sede and Chinhamugano) in the district of Manica. In each of the four communities, the survey team surveyed 100 households (with the exception of Manica, which were 103), making 403 families surveyed in 2023. Of these families, households led by men and women, honey producers and non-producers were surveyed. The instruments used for households will capture any significant changes in quality of life and well-being during the implementation period of the project. The entire population covered in the first wave will again be surveyed. The second wave of surveys will be carried out in November 2024, a period similar to the first wave in 2023.

We modified our approach so that the control households come from *within* each community. We feel this will be more accurate than having control households in control villages, as there are few candidate villages that could meaningfully act as controls. Instead, control households are those that do not participate in the Project. We will statistically match them to households that do participate to account for any consistent differences between these groups.

Instead of the panel being a subset of the wave 1 households, we have decided to implement a full resurvey of all households in each year. This simplifies the analysis of the data, and although it entails more fieldwork, this is manageable within the current budget.

1.5 Implementation of Biodiversity monitoring framework: Identification of control communities and indicator species or taxa; indicator species/taxa and vegetation structure monitoring; remote sensing monitoring of degradation

Activity 1.5. has been partially implemented. For the BDM, it was necessary to choose a community that presents few ecological disturbances, where inferences on honey production were conclusive. The selected community is Musangazi, located in the district of Macossa. It was selected because the biophysical conditions (flora and fauna) are partially intact, mostly due to the community's proximity to coutada 9, a privately managed conservation area (with controlled hunting). The area has a high faunal diversity, thus allowing an analysis of the impact on fauna

to be easily measured, when compared with other communities in the districts covered, where the faunal community is low. The species indicating the existence of honey and the trees commonly used for the manufacture of beehives were identified during the discussion groups and HH survey, as well as their estimate in terms of quantity in the surrounding areas. Camera traps were also set up in the control community, for a period of three months, to assess the quantity and quality of fauna in the area.

We no longer plan to implement SEOSAW-style plots to monitor the vegetation. Instead we will implement small vegetation plots as part of the biodiversity monitoring plan.

A paired design methodology will be used to quantify the impact of trees being debarked or felled for honey production. This allows us to focus on the key mechanism by which we think honey production in these communities impacts bird and mammal diversity. We will compare biodiversity between locations with a living tree of suitable size and species, similar locations with a debarked tree, and a felled tree. using camera traps to examine terrestrial mammal diversity and eco-acoustic methods (audiomoths recorders) for bird and bat diversity. In total, 9 cameras and 9 audiomoths will be installed, where one pair will consist of 3 cameras and 3 audiomoths in living, debarked and stump conditions. Tree pairs will be mounted for data collection at the same time and moved for different location after 30 days of recording. Data will be recorded in the same area both in dry and wet seasons. In total, 1620 cameras traps days and 1620 audiomoth sound record days, are anticipated, assuming 60 days at 9 sites with 3 cameras and audiomoth each.

To carry out the assessment of large trees and their condition, transects will be carried out within a radius of 500 meters from the target tree (used/cut for honey production) and information related to species, height and diameter at the breast height (DBH) will be recorded (including tree location with GPS). The protocol for large trees assessment, camera trap and audiomoth recording is detailed in the Annex 6 (See BDM Framework Updated document).

1.6 Data analysis and ongoing community feedback

For activity1.6, the HH data was not completed before the end of the year, so we have not yet been able to provide feedback to the communities. The data analysis will be sufficiently completed to provide headline data to communities during the roll out of training to beekeepers and the start of discussions regarding natural resource management, from May 2024.

Output 2: 600 people trained and supported in sustainable beekeeping

2.1 Community mobilization, identification of existing and interested beekeepers in participating communities

This activity was completed in conjunction with the initial participatory assessment of beekeeping practices in the ten selected villages. While the focus groups were held, Micaia’s Field Officer visited other villages in the community, gathering data on existing beekeepers. Annex 7 presents a summary table of all beekeepers (male and female) identified by district, community, and villages, and stating the beekeepers’ numbers of traditional and ‘improved’ beehives. In summary, the mobilization activity identified 928 existing beekeepers, including 41 women and 887 men. Between them, these beekeepers hold a total of 23,359 beehives, and just 115 beekeepers reported owning any ‘improved’ hives. We can assume that these were provided as part of some previous project, and that the total numbers are small. The vast majority of beehives in the focal villages are of traditional varieties.

Summary table:

District	Community	Total no. bee-keepers	Total no. male	Total no. female	Total no. hives	No. beekeepers owning 1+ ‘improved’ hive
Macossa	Catiquenzaia	267	266	1	10,401	5
	Massangadzi	332	318	14	8,344	34

	Rios dos Elefantes	39	39	0	1,969	0
Manica	Muswata	106	98	8	1,222	15
	Mucono	56	55	1	442	38
Sussundenga	Chibue	84	72	12	596	0
	Pambanisa	44	39	5	385	23
TOTALS		928	887	41	23,359	115

2.2 Design and development of technical improvements in the design of bark hives and their use;

In the course of the first year of the project, this activity was expanded in scope to incorporate use of hollowed out trunks from fallen trees. The use of bark for hives is generally discouraged, though in the course of training and interaction with beekeepers, the option of partial debarking (i.e. not taking the entire ring of bark) was discussed. Beekeepers gave a positive response to the idea, and a pilot has been set up in which bark hives will be made using variations on the extent of bark used (to test the best option, but up to a maximum of 70%) of the ring of bark. The trees from which the bark is removed will be georeferenced to allow for annual monitoring.

Beekeepers also responded well to the proposed use of dry trees either standing or fallen for manufacturing hives. Log hives were generally far less common than bark hives because their additional weight made them more difficult to lodge in trees. However, when combined with the recommendations relating to setting fixed apiaries (see 2.3 below), the beekeepers were much more positive. Also, a new design for log hives was introduced, making the manufacturing process much easier. Traditionally, the logs would be hollowed out – a difficult and time-consuming process. The approach being presented in this project is different; the core technology recommended is an adaptation of the ‘improved’ top-bar hive. This means that the dry log can be opened on one side, making it much easier and faster to carve out. A set of bars is then made to fit across the opening, and some sort of cover is fabricated to protect the bars and forming combs. This development is potentially very significant given the assumption that the use of dead (standing or fallen) trees for production of beehives is damaging to biodiversity. If we can demonstrate the utility of top bar systems, a new strategy will open up: converting tree-stationed hollow logs into fixed apiary top-bar hives. Given the very large number of traditional hives, a conversion strategy (log and bark hives) theoretically should have a very significant impact in helping reduce the extent of debarking or felling. Photographs of traditional hives and the modified top bar versions are presented in Annex 8.

2.3 Training beekeepers in sustainable beekeeping including apiary siting and management, colony management, and low impact harvesting techniques

Discussion about the issues highlighted in the activity description began during the mobilization phase and the identification of potential Lead Beekeepers. However, the logic of the project design requires the Lead Beekeepers to disseminate key messages and provide technical support to other beekeepers in their village, so we had to begin with training Lead Beekeepers. Decentralized training, supported by the project team but led by the Lead Beekeepers, will take place in Q1 of the second year of the project.

2.4 Development of individual beekeeper production plans (and financial models) linked to the overarching sustainable production plan

This activity was planned for Year 2

2.5 Facilitating meetings between MHC representatives and beekeepers – leading to formal contracts

The Mozambique Honey Company is known to some beekeepers in the Macossa and Manica district communities, and in some cases (Macossa), MHC does buy honey locally. Formal meetings between MHC representatives and beekeepers were not planned for the first year. However, the project team introduced the possibility of selling to MHC. Many beekeepers complain about the insecurity and inconsistency of current market access, relying as they are on informal traders. The potential of a guaranteed market access via MHC was attractive. However, one key issue will be price. Informal market dynamics can make price at source relatively high because the traders in the short value chains have few overheads, very low production costs, and no taxes. MHC's experience in Macossa District is that the company can meet the informal market price, and given the added benefits of working with an established formal company (linked training, supply of harvesting equipment, market information etc), informal discussions with beekeepers in the project villages suggest that many will prefer to link with the company.

Output 3: 60 people trained and active as Lead Beekeepers and contracted to Mozambique Honey Company

3.1 Identifying and training 90 beekeepers to take one of the 60 positions of Lead Beekeeper

The project team first identified potential Lead Beekeepers from each village. Depending on the numbers of beekeepers identified, and thus the target numbers for participation in the project per village, one or two potential Lead Beekeepers were selected. The ideal ratio of Lead Beekeeper to others is between 1:10 and 1:15, depending on the experience of beekeepers i.e., it is normally assumed that Lead Beekeepers need to give more support to new entrants. However, in this project, we are mostly concerned with trying to introduce new practices to established, experienced beekeepers, and this can be more challenging than training new entrants.

The criteria and process used for selection were discussed in each village in a pre-arranged meeting, ensuring a good level of participation, including community leadership. The role and tasks of the Lead Beekeeper were explained, along with the ideal profile (see the Profile and Tasks of the Lead Beekeeper attached as Annex 9). There was then an open process in which names of active beekeepers were proposed as candidates for Lead Beekeeper. All community members present had the opportunity to vote for the candidate that they felt best met the profile. Voting was done freely and secretly, with beekeepers placing a stone on the name of their favourite candidate in a place where no other beekeepers were present. The votes obtained were counted openly and the candidate who obtained the highest number of votes was selected. In the villages in which two Lead Beekeepers were needed, the candidate with the second highest number of votes was also selected.

Given the cost of residential training, it was decided to only train the target 60 Lead Beekeepers. This was felt to be reasonable given a) the participatory community-led selection process that placed great stress on personal qualities and experience, and b) the high degree of engagement of the project team with each village, meaning that if a Lead Beekeeper doesn't carry out their tasks well, it will be quickly noted and alternative beekeepers can be easily and quickly identified.

Owing to the delayed start to the project, and the time-consuming labour-intensive participatory assessments and household survey, and then the onset of the rains, training of Lead Beekeepers was pushed back to the latter part of Q4. The training took place in two (2) Districts, Sussundenga and Macossa; the lead beekeepers of Sussundenga and Manica were trained in Sussundenga at Ndzou camp, and Lead Beekeepers of Macossa were trained at a venue in Macossa village, the District headquarters. The training was carried out in two phases and each lasted two full days. Participant lists are available. In the first phase, training topics were:

1. Harvesting honey and other bee products;

2. Practical procedures of honey harvesting in beekeeping;
3. Fire management;
4. Practical processing of honey and associated conservation aspects;
5. Hygiene and commercialization
6. Communication, Organisation of beekeepers
7. Use of instruments (e.g, refractometer)

In the second phase of training, the topics covered were:

1. Techniques for manufacturing log beehives
2. Practical steps for manufacturing and compliance with hive handling and rules
3. Assembling beehives
4. Appropriate places for assembling beehives
5. How to Monitor Hives (When, How Often, Advantages and Disadvantages)



3.2 Facilitating exchange visits for newly trained and selected Lead Beekeepers to learn from the experience of established Lead Beekeepers in MHC's Chimanimani (Sussundenga District) supply chain

This activity was planned for Year 2.

3.3 Procurement of top bar hives and protective clothing

This activity was planned for Year 2.

3.4 Establishing demonstration apiaries of top bar beehives run by Lead Beekeepers

This activity was planned for Year 2.

Output 4: 20 communities supported in producing a natural resource management plan, incorporating guidelines on beekeeping

The activities relating to this Output will commence in Year 2, as planned.

Output 5: Policy briefings and reports produced and used to inform national and regional approaches to sustainable beekeeping in miombo woodland

5.1 Review of data and issues arising from field research, practical work with beekeepers, and community engagement.

The review of data from the household survey is nearing completion at the end of Year 1 and summarized data will be prepared.

Other activities under this Output will begin in Year 2.

3.2 Progress towards project Outputs

Output 1: Data from four miombo areas on the nature, scale and impact – on people, forest trees and biodiversity - of beekeeping and honey harvesting.

In general, the project is on track with the set of activities linked to output 1, though as noted above, there were some delays and a partial redesign of the biodiversity monitoring protocol.

The starting position (baseline) was that we had only anecdotal data concerning beekeeping in the focal communities. Thus, the initial participatory assessment of beekeeping practices was very effective in providing a baseline understanding for the project, and this confirmed both field research and desk review of other cases (Zambia, etc) that had been carried out in the design phase. The key findings covered species preferred for making bark hives (Nfute – *Milicia excelsa* and Nfula – *Sclerocarya caffra*), method of preparing hives and harvesting honey (use of Honeyguide bird to find hives in tree cavities; extensive use of fire – for instance, a fire is built to protect the beekeeper and if the swarm is in a place that is difficult to access, the tree is felled and the fire is used to scare away the bees so that they can extract the honey), the seasonal calendar, and market access. In all communities, there was an awareness of the negative impact of current beekeeping practices on the forest. Although some beekeepers used fallen trees to make hives from the hollowed trunks, bark hives were more common, and in most cases the whole bark was used. Also, beekeepers acknowledged that it is quite common for fire to spread out of control.

Similarly, the household survey provides the first detailed data on socio-economic conditions of households in the focal communities. The household survey covered 100 households from each community. The Control Panel will be the same aggregates and the HH survey (second wave) will be carried out in November 2024.

Despite the delay in implementing inventory activities, the quality and quantity of adult trees will be measured when carrying out the pilot work in May 2024 and at the data collection times in September and December. This will be done through the pairing design approach, where sampling circle plots of 50 m diameter and transects of 500 m will be covered in relation to the adult tree identified to mount the trap camera and audiomoth. In this transect, all adult individuals with the potential to produce honey, will be identified, counted and recorded in terms of health and vigor. For dead trees, an estimate of the year of death will be made, as well as the potential cause. This data will be collected 100% in the second year of research (2024), in the dry and rainy season, ready for analysis from December 2024 and publication in 2025.

A biodiversity monitoring protocol was designed and is ready to be implemented fully from the start of Year 2. As a pilot activity, trap cameras were set up in the control community to test the functionality of the cameras. It was interesting to note the range and frequency of animals (including elephant, buffalo and a variety of antelopes) that were captured by the cameras. This data will be collected 100% in the second year of research (2024), in the dry and rainy season, ready for analysis from December 2024 and publication in 2025. Since the BDM Framework will be performed in Y2, camera traps and audiomoth will be set both on dry and wet season, to assess the type and frequency of occurrence of animals in the paired design.

One of the changes in the approach to data collection relates to the proposed use of remote sensing data. This data will not now be analysed having changed the approach to the pairing design protocol. However, existing data will be used to analyse the degradation and avoid errors in the scale of analyses. Also, an analysis of degradation based on the pairing design protocol will be carried out to assess the degree of degradation by honey production to the ecosystem.

At this stage in the project, there was no expectation of preparation or publication of scientific articles. However, we are already generating valuable data on which to base future articles for

both the social and biodiversity data. From the HH data, an analysis of who produces honey, and how their livelihoods and wellbeing compared to non-producers, will be the first piece of work. The analysis of biophysical data will consist of identifying the impact of removing large trees for honey production on the ecosystem. At the moment, no articles have been submitted, however, the project expects that by mid-2025, 2 articles will be in the submission process for peer review for publication.

As data collected from surveys is analysed, it will be shared with participating communities. To date, other than in very general ways, this has not been possible because the data is still being analysed (HH survey) or monitoring processes are in the early stages of implementation.

Output 2: 600 people trained and supported in sustainable beekeeping

The project is on track to achieve this output. For the first time, there is detailed data on the scope and scale of traditional beekeeping in these important miombo areas. Further work will be done to verify the number of Kenya Top Bar hives ('improved' hives) in use by the 115 beekeepers who reported using KTBs. Similarly, further verification is needed of the reported number of traditional hives. Resources don't allow for detailed inventories of every participating beekeeper. However, using the Lead Beekeepers, some sampling should be possible. Detailed data on beehives and productivity has rarely been kept by traditional beekeepers – for instance, addition of hives, decommissioning of old/broken/damaged hives. It was a little surprising, therefore, that in the beekeeper assessment, beekeepers provided so much detail about the number and state (colonization) of their hives. However, the (high) numbers of hives and relatively low % of colonization reported were not surprising.

On the basis of consultation in the focal villages, and with reference to examples drawn from pre-project study visits to Tanzania (by Micaia personnel), as well as existing manuals, a set of technological and practice-based modifications to traditional beekeeping were developed. As described above, these included giving priority to the use of log hives over bark, though with the added dimension of utilizing the top-bar design with the logs rather than hollowing out. Another key change being promoted is the transition from widespread distribution of hives in trees, towards the establishment of ground-level apiaries, with hives on posts. Regarding processes, one of the main changes that the shift towards apiaries allows, is the more efficient use of smoking rather than fire. Beekeepers certainly appreciate the theoretical advantages. The task for the project team is now to support the roll-out and adoption of the new approaches.

The total numbers of active beekeepers identified, and the small size of villages, means that the project will probably surpass the target of training 600 people. A bigger challenge is to meet the targets for involving women. The established baseline shows that there are only 41 women involved in beekeeping, just over 25% of the project target of 200 women. At this early stage, it is difficult to state with any degree of confidence that we can meet the target. However, during the interactions with beekeepers, the project team found no fundamental opposition from men to women being involved. Rather, there was recognition that traditional practices, involving climbing high up into trees and walking long distances alone into the forest, were not appealing to many women. There is an assumption, borne out by Micaia's work in Chimanimani, that beekeeping using top bar hives and ground level apiaries is much more attractive to women. As the project moves into its second year, efforts will be made to draw more women into the activity.

With the Lead Beekeepers completing their initial training (see below), the project is now moving into the phase of disseminating new technologies and practices, and is in a position to monitor (using the Lead Beekeepers supported by field staff) the extent of adoption by the target beekeepers.

Output 3: 60 people trained and active as Lead Beekeepers and contracted to Mozambique Honey Company

The project is on track to have 60 experienced beekeepers trained and active as Lead Beekeepers. As noted above, the first phase of training (done in two sections) has been delivered. Field visits soon after the training, including in the accompaniment of the British High Commissioner and FCDO representatives, suggested that Lead Beekeepers are genuinely excited by the potential gains from the new technologies and practices. It is too early to assess how well the Lead Beekeepers do in passing on that enthusiasm to other beekeepers. However, in terms of the timetable and output target, the project is on track.

Unfortunately, we are not on track with the target of having 20 women beekeepers as Lead Beekeepers. To date, just one woman was trained as a Lead Beekeeper. Given the very low numbers of current women beekeepers, it was not surprising that few women were proposed as possible Lead Beekeepers. Moreover, we have to acknowledge that even in Chimanimani, where Micaia's work has led to a dramatic increase in the number of women involved in beekeeping (as much as 60% of all beekeepers in some communities), the dominant patriarchal norms make it difficult for men to accept a woman in a leadership role, including as a Lead Beekeeper. In the case of Chimanimani, Micaia has addressed this challenge in several ways, including work within the communities to facilitate discussion of such norms and build confidence of women to claim more space. More practicably, as the number of women beekeepers has increased, it has been possible to train women Lead Beekeepers to work with other women, with some supporting a mixed group of female and male beekeepers. We hope that this will be possible in the Darwin project.

It is early yet to facilitate formal contact between the beekeepers and MHC. The Company's quality standards are high, and it will need to see evidence of training interventions on key elements such as careful use of smoke, hygienic handling, and switch to top-bar technologies for the Company to buy larger volumes of honey from the participating beekeepers. However, MHC is involved in the project, and remains keen to be the off-taker.

Output 4: 20 communities supported in producing a natural resource management plan, incorporating guidelines on beekeeping

Activities aimed at delivering this output will start in early Year 2. Micaia has appointed a Natural Resource Management Field Officer, and will now start interacting with communities and specific villages on natural resource assessment and management planning. As a point of clarification, we are focusing on 20 villages as the target, not communities; the project is only working in seven communities, but 32 villages.

Output 5: Policy briefings and reports produced and used to inform national and regional approaches to sustainable beekeeping in miombo woodland

As planned, work towards achieving this output will commence in Year 2. However, with the data already gathered, we are confident that targets for data sheets and policy briefings will be met.

3.3 Progress towards the project Outcome

The project outcome is stated as: *Beekeeping makes an increasing financial contribution to 600+ families and is managed within the regenerative capacity of the miombo.*

The activities design assumed that improved technologies and practices could both help beekeepers produce more honey and earn more money as a result, and reduce the negative impacts that traditional beekeeping has on the miombo. In the first year of the project, we did not

expect to make substantial progress towards achieving this outcome. However, essential foundational steps have been taken.

The household data survey provides a baseline including income from beekeeping and this will be used to assess progress using Outcome indicator O.1 *Beekeeping families report increased income from honey sales* (baseline for income to be established in Y1; project target 600 families report increase of 20%+). This indicator is adequate and the target is realistic.

Considerable progress has been made, primarily thus far via selection and training of Lead Beekeepers, in creating the basis for widespread adoption of more sustainable beekeeping practices. The next stage in the project is support the cascading of training, via the Lead Beekeepers, to the target population of beekeepers, and to support their adoption of new technologies and practices. At this stage, the Outcome Indicator O.2 - *Beekeepers have the knowledge and practice sustainable beekeeping methods introduced in the project* (baseline: none; project targets: 600 beekeepers with knowledge of sustainable approaches; 70%+ putting knowledge into practice) – and the targets, remains adequate and achievable.

Regarding the third key Outcome Indicator O.3 *Increase in the quantity (Kg per hive) of honey produced* (baseline to be established in Y1; project target tbc), the reality is that beekeepers have not traditionally maintained records, so any data is at best anecdotal. Moreover, people are often quite reluctant to reveal data about income or production. Still, the data gathered does provide some sort of baseline, suggesting that in 2023, the mean level of production per beekeeper was 80Litres, though with a wide spread of volumes, and an average price of 100MZN per litre. Looking ahead, it should be quite easy to gather data about the quantity produced from modified, new or additional hives using new technologies, and to make assessments, based on beekeeper consultation, about the comparative gains (or losses) in terms of yield from the modified/new hives.

During the initial mobilization and community profiling phase, we confirmed that none of the 32 villages or 7 communities have a natural resource management plan. The project is now moving into its second year and, as planned, will start to focus on natural resource management planning. The Outcome Indicator, O.4 - *Participating communities create natural resource management plans incorporating beekeeping guidelines and limits* (baseline: no communities have a plan; project target: 100% of participating communities) remains valid and adequate, and the targets realistic. However, we draw attention to the confusion between the target at output level (20 communities with a plan) and the outcome indicator. There are 32 villages and 7 communities. An early stage activity in Year 2 will be to consult with the Regulos (Chiefs) in each community about the level at which management plans should be prepared. One option – preferred by Micaia – will be to facilitate the development of community level plans, but with village level ‘annexes’ identifying any locals issues and providing the specific beekeeping plans, procedures and limits (as appropriate).

With the management plans in place, there will be a basis for enabling communities via their Natural Resource Management Committee to monitor the scope and scale of beekeeping in the community. The Lead Beekeepers will be critical resources in this process. For now, the Outcome Indicator O.5 - *Participating communities actively monitor beekeepers and honey harvesting* (baseline: none; project target: 70% of participating communities) – remains adequate and the target realistic.

Regarding Outcome indicators 0.6.1 *Habitat indicators of biodiversity (large trees and the woodland degradation rate) are higher in the project area compared to matched control communities. (baseline: project areas are the same as controls; target: all communities show significantly improved metrics cf controls)* and 0.6.2 *Indicator species and taxa, known to be sensitive to the impacts of current honey production, are more abundant / diverse in project areas than control communities. (baseline: no difference; target: all communities show significantly improved metrics cf controls)*. – despite the modified approach to the biodiversity monitoring, the indicators are still appropriate.

3.4 Monitoring of assumptions

Outcome Assumptions:

We assume that the demand for quality honey will continue to increase nationally and internationally and that without intervention, the regenerative capacity of the miombo will be surpassed. Anecdotal evidence – from MHC’s monitoring of the number of honey products in supermarkets coupled with the increasing numbers of such shops, suggests that demand for honey is increasing. Given what we found about the traditional use of key species in the miombo, we have no reason to question the assumption that without change in technologies and/or practices, the regenerative capacity of the miombo, certainly for those key species, will be surpassed.

We assume that most people currently involved in harvesting honey for sale in the informal market will be willing to switch to a more formal relationship with a commercial honey company, assuming that the price is equal to or better than that offered in the informal market. Discussions with participating beekeepers suggest that this assumption is reasonable, though the key point in communities with established informal market access, will be the price. Moreover, there are issues yet to be tested that could affect the assumption; for instance, a commercial company such as MHC requires tests on quality and is likely to reject any poor quality or suspect honey, whereas the informal trader will not usually care about quality. This could affect the willingness of established beekeepers to transfer into the formal market. Nevertheless, the assumption is still reasonable.

We assume that community leaders, larger-scale beekeepers, and local government officers will help create support for natural resource management plans that are likely to require changes in behaviour and practice by local people. This assumption is yet to be tested, but given the new Forest Law, and the draft regulations on managing Community Conservation Areas, there has never been a higher degree of emphasis on community engagement in natural resource management, so there is good reason to believe that the assumption is reasonable and remains current.

We assume that the data produced in the project will be of a sufficient quality both to demonstrate change in the rate of degradation and biodiversity in the four focal areas and to provide a base of evidence for papers and policy briefings that can be shared with other stakeholders in Mozambique and beyond. - This assumption is realistic, given the fact that overlapping degradation rates, associated with land ownership and places with greater numbers of hives, can help to associate beekeeping with forest degradation or not.

The following three indicators are yet to be tested, but we continue to believe that they are realistic.

We assume (from past work) that large trees and the degradation rate are proxies of biodiversity change. We also assume that both can be measured accurately enough to detect change, which we have tested in past projects. -

We assume that the selected species/taxa are impacted by current honey production and can increase in diversity / occupancy once honey production is improved. Furthermore, we assume that we can identify suitable species that are relevant to both the academic researchers and the local communities. –

We also assume that we can estimate diversity and occupancy of the key taxa / species to the required accuracy with the resources available.

Output Indicators:

Output 1:

We assume that our methods developed in other parts of Mozambique and Zambia will work in the study locations and will require similar effort. Regarding the HH survey, we have

demonstrated this assumption to be true. For the revised biodiversity monitoring work, the assumption remains to be tested.

We assume we will be able to train community technicians in hh survey, biodiversity monitoring and tree inventory work, and there will be enthusiasm to undertake this work for appropriate pay and the work will be supported by the community. The HH survey was carried out successfully and there was enthusiastic participation by the communities involved.

We assume that we will be able to find key species which are good indicators of the diversity of the ecosystem and which are sensitive to the impacts of unsustainable honey production. – existent species of flora and fauna (birds), are good indicator for ecosystem diversity, and they will be assessed during the field trip for the circle plots and camera traps, audiomoths and transects. However, this is still an untested assumption. From discussions in the community it appears that there are suitable spp present, at least in the community that borders the coutada. Whether they are affected by honey production is as yet unclear.

We assume our method for monitoring degradation based on radar remote sensing (McNicol et al 2018; Ahrends et al 2021) will work at this site, and that the required radar data will continue to be available free of charge from the Japanese Space Agency (as it is at the moment).

The required radar data are still freely available, and have been released for 2023. The fieldwork in June 2023 suggested that the remotely sensed analysis are, qualitatively, consistent with reported land cover change in the districts. As such there is no reason to thinking that the method will not work at this site.

We assume we will be able to hire a capable researcher in Mozambique to conduct the day-to-day work. The project is benefiting from a dedicated and highly capable researcher from UEM.

Output 2:

Assumption: We know that the target areas are significant local honey production zones, so we assume that people involved in honey harvesting and beekeeping will be keen to learn how to increase their yields and incomes. The enthusiastic response to the project opportunity from established beekeepers and others keen to get involved indicates that the assumption is sound.

Assumption: We assume that this incentive will be sufficient to engage people in learning about the long-term impact of degradation and deforestation on their lives and livelihoods, and to convince them to adopt new techniques and practices that can allow for regeneration and maintenance of biodiversity. This assumption is yet to be tested but discussions with beekeepers highlight their understanding of the damage done to the miombo by fires and their acknowledgement that overharvesting of key tree species is a reality. Learning is already taking place; now we will see if the incentives generated through the project are sufficient to prompt widespread adoption of new approaches.

Output 3:

Assumption: We assume that the Lead Beekeeper model, working well in other areas where top bar hives predominate, can transfer to a context in which traditional beekeeping is the norm. The proposed Lead Beekeeper approach was enthusiastically accepted by the participating villages, and it was possible to identify 60 potential lead beekeepers.

Assumption: We assume that women will be interested in getting more involved, especially if changes in technology and/or approach make it more feasible to do so. On the basis of experience in Chimanimani, this remains a fair assumption, but the baseline indicates the scale of the challenge faced in the project in terms of involving women.

Assumption: We also assume that beekeepers will accept to sell comb honey and not process themselves (MHC prefers to buy in comb for quality control reasons). Initial discussions with beekeepers indicate that as long as the price is good, beekeepers will be happy to sell in comb.

Output 4:

Assumption: *We assume that there will be a willingness in the targeted communities (chosen because of the high number of people involved in beekeeping in the area) to engage in learning about change in the miombo and its implications, and to discuss ways in which to better manage the resource. We assume that local government will be supportive.*

Output 5:

Assumption: *We assume that the data gathered in the project, and the innovations developed and tested, will be sufficiently interesting and new to warrant publication. We assume that there will be interest among other stakeholders.*

Assumption: *We assume that there will be interest in government and among other stakeholders to engage with the project.*

At this stage, there is no basis for questioning either of these assumptions.

3.5 Impact: achievement of positive impact on biodiversity and poverty reduction

The impact to which this project is designed to contribute is: *Beekeeping livelihoods expand in Mozambique's miombo forests, in ways that lead to long-term reductions in rates of forest degradation and biodiversity loss.*

In relation to the higher-level impact on biodiversity conservation, we expect to see reduced rates of degradation and unmanaged fires in the four miombo areas in which the project is working, compared to matched control areas. The reduced rates of degradation are expected to translate into biodiversity benefits in the project areas, tracked by locally agreed and co-developed indicators of biodiversity change and the focus on key indicator species. We expect to halt the decline in the number of large trees, and increase the diversity and occupancy of the indicator species, relative to the control areas. At this early stage in the project, we are still in the process of gathering primary data and implementing monitoring protocols.

In relation to higher-level impact on human development and well being (poverty reduction), the project targets increasing revenue from sales of honey for 600 beekeepers, while also increasing their knowledge, organizational capacity, and engagement with the formal economy. These are all measures of wellbeing, and the early indications are that at the project level, there will be significant impact.

4. Project support to the Conventions, Treaties or Agreements

By addressing a key non-timber forest product in Mozambique - honey, especially with regards to improving traditional practices and the overall sustainability of the value chain, this project has potential to contribute to the NBSAP in Mozambique. Directly, the project will contribute to Strategic Objective A, Target 4 and Target 5) and indirectly to all other SO. Specifically, the project will improve the capacity of local communities in Manica to implement sustainable honey production practices and reduce the impact on miombo forests, one of the main forest ecosystems in the country. Recently the government of Mozambique has signed (and is leading) the Maputo Declaration on Miombo Sustainable Forest Management, which is a regional initiative to protect the ecosystem through among others improve management (including traditional) practices. Thus, our project, will directly contribute to it.

5. Project support to poverty reduction

The project targets economically poor communities in four miombo areas of central Mozambique. Household data will confirm this, but we assume that a very high proportion of the target of 600 families have household income below the \$1.90 per day indicator of monetary poverty. In

addition, data gathered will illustrate some key indicators of poverty in relation to non-monetary dimensions of poverty across health, education and standard of living. In particular, we gathered data relating to education (attendance and years of schooling), access to services, water and sanitation, housing, energy, and assets. This baseline will be used to monitor change over the next two years whilst the project is being implemented.

The project does seek and expect direct poverty impacts. Specifically, it is expected that participating beekeepers will earn additional income from honey sales as a direct result of the project interventions – reference Outcome Indicator 1: Beekeeping families report increased income from honey sales.

The project also seeks to ensure the sustainability of those income gains by transforming the nature of beekeeping in the miombo. In this way, improved natural resource management by communities will contribute to long-term poverty alleviation.

6. Gender equality and social inclusion

Please quantify the proportion of women on the Project Board ¹ .	Two (of four)
Please quantify the proportion of project partners that are led by women, or which have a senior leadership team consisting of at least 50% women ² .	Micaia Foundation is led by a woman.

GESI Scale	Description	Put X where you think your project is on the scale
Not sensitive yet	The GESI context may have been considered but the project isn't quite meeting the requirements of a 'sensitive' approach	
Sensitive	The GESI context has been considered and project activities take this into account in their design and implementation. The project addresses basic needs and vulnerabilities of women and marginalised groups and the project will not contribute to or create further inequalities.	X
Empowering	The project has all the characteristics of a 'sensitive' approach whilst also increasing equal access to assets, resources and capabilities for women and marginalised groups	

¹ A Project Board has overall authority for the project, is accountable for its success or failure, and supports the senior project manager to successfully deliver the project.

² Partners that have formal governance role in the project, and a formal relationship with the project that may involve staff costs and/or budget management responsibilities.

Transformative	The project has all the characteristics of an 'empowering' approach whilst also addressing unequal power relationships and seeking institutional and societal change	
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Micaia is committed to working within a Gender Equality and Social Inclusion (GESI) framework in project design and implementation. At this stage, we feel that we are justified in claiming that the project is GESI Sensitive. For instance, data collection procedures were designed to be gender balanced and this was achieved in practice. It has been more challenging, thus far, to make progress towards the project targets for the number of women getting involved in beekeeping. Currently, however, the project has focused on existing beekeepers, from whom the Lead Beekeepers were selected. We have not yet had the opportunity to test the assumption that the promoted new approaches to beekeeping, particularly the establishment of apiaries, will be more appealing and accessible to women. Efforts will be made in the roll-out of training and support via Lead Beekeepers, to encourage women to participate. This may involve wives of existing beekeepers getting involved i.e., making it more of 'family business', but also we will make effort to reach female-headed households and promote beekeeping as a potential livelihood opportunity.

We have already noted the positive reaction to the project and its introduction of new technologies by people with physical disabilities (one of whom participated in the meeting with the High Commissioner). This new technology is empowering for this specific marginalized group. If we can make similar progress in involving more women because the technology is accessible, then we will be on the way to establishing the project as GESI Empowering.

7. Monitoring and evaluation

Micaia's approach to Monitoring, Evaluation and Learning is to integrate key responsibilities for each element in all activities and across staff teams. Basic monitoring data relating to activities in the field is gathered by the Field Officers and reported to the Project Manager. More specific monitoring, for example in this case, the household survey sample and control sample, will have its own protocol and assigned personnel. In this case, social and biodiversity monitoring is under the responsibility of the lead researcher, in collaboration with the Project Manager, under the oversight of the two university partners. In relation to monitoring change, i.e. making progress from activities/outputs towards achieving outcomes, Project Managers play a lead role. They are expected to gather stories of change, to analyse quantitative data from monitoring processes and draw conclusions from more qualitative indicators. Senior management works with project teams to focus on learning and how what is being learned in a project can have more systematic application.

In this project, there is a mix of quantitative and qualitative indicators. Quantitative indicators cover a wide range and a substantial volume of data covering beekeepers (production of honey, revenue from sales, work with Lead Beekeepers, market channels), households and communities (socio-economic data, community management plans for natural resource access), and biodiversity (data on key species, etc). Qualitative indicators largely relate to measures of change, for instance, the extent of adoption by beekeepers of new practices, or the extent to which communities implement their management plans.

One element of the project outcome – an increasing financial contribution to families from beekeeping – is relatively easy to track within the confines of the project participants through annual surveys. It should be quite clear if productivity from new style hives and practices is greater than from old style bark hives and practices, and assuming the honey is sold, this will demonstrate the direct link from activity and output to outcome.

The second element of the outcome – that the beekeeping activity is managed within the regenerative capacity of the forest – is a little more challenging to prove. However, the targeted outputs and linked activities relating to data collection will generate both a set of assumptions about sustainable levels of beekeeping, a picture of change over three years, and a basis for future tracking (assuming that communities continue to manage plans and data collection from beekeepers).

8. Lessons learnt

In general, the project management approach worked really well. The use of weekly or bi-weekly team meetings involving the senior management and consultants, as well as the Project Manager and lead Researcher, proved to be an effective way to monitor progress in implementation, discuss often quite complex operational issues and challenges, and facilitate collective decision-making.

As we have noted in other sections of this report, several changes were made in the course of the year to the design of the biodiversity monitoring framework. This was done to ensure that the approach was manageable within the constraints of available time and resources (people and budget).

9. Actions taken in response to previous reviews (if applicable)

Not applicable.

10. Risk Management

No major new risks have arisen in the first year of the project that were not previously accounted for. However, in an extension of one previously noted operational risk – the reliance on a small staff team and effective interaction with partners – implementation in the first year was affected by delayed participation by the University of Eduardo Mondlane. This was due to overlapping/competing commitments on the part of UEM's senior consultant and appointed researcher that were not known/predicted at the time of the project design. The issues have been addressed through the project management system established by the partners.

11. Sustainability and legacy

The project is ending its first year and has not yet included significant profiling work. However, the project has been presented at district and provincial levels of government and has been very well received. Given the new Forest Law, which has significant potential implications for honey production and marketing, depending on the framing of regulations to implement the Law, the project is more likely than might otherwise have been the case, to receive significant attention from government. Similarly, the ongoing (April 2024) process to design a Honey Regulation, will have implications for beekeepers and traders of honey alike. This project, by demonstrating how previously informal economy participants in the miombo honey trade can be better connected to the formal sector, thus creating the conditions for data collection, traceability and quality assessment, is likely to attract considerable attention. In Year 2 of the project implementation, more efforts will be made to raise the profile of the project.

In terms of the assumed post-project benefits, nothing has changed.

12. Darwin Initiative identity

As noted above, the project was relatively low-key for much of its first year. However, Micaia's management did interact with FCDO Maputo, and this led to a quite high-profile visit by the British

High Commissioner and FCDO team members from Maputo. Micaia’s own posts on this visit linked with the Darwin Initiative social media channels.

13. Safeguarding

Has your Safeguarding Policy been updated in the past 12 months?	No
Have any concerns been investigated in the past 12 months	No
Does your project have a Safeguarding focal point?	Yes – Milagre Nuvunga, Executive Director. [REDACTED]
Has the focal point attended any formal training in the last 12 months?	No
What proportion (and number) of project staff have received formal training on Safeguarding? Only in-house informal training.	Past: % [and number] Planned: % [and number]
Has there been any lessons learnt or challenges on Safeguarding in the past 12 months? Please ensure no sensitive data is included within responses. No	
Does the project have any developments or activities planned around Safeguarding in the coming 12 months? If so please specify. The annual review of Micaia’s Safeguarding Policy will take place and be discussed by the Foundation’s Board.	

14. Project expenditure

Table 1: Project expenditure during the reporting period (1 April 2023 – 31 March 2024)

Project spend (indicative since last Annual Report)	2023/24 Grant (£)	2022/23 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)	[REDACTED]	[REDACTED]	[REDACTED]	
Consultancy costs	[REDACTED]	[REDACTED]	[REDACTED]	We had anticipated hiring research assistants from Chimoio for the surveys but this did not prove necessary.
Overhead Costs	[REDACTED]	[REDACTED]	[REDACTED]	
Travel and subsistence	[REDACTED]	[REDACTED]	[REDACTED]	
Operating Costs	[REDACTED]	[REDACTED]	[REDACTED]	
Capital items (see below)	[REDACTED]	[REDACTED]	[REDACTED]	

Monitoring & Evaluation (M&E)				
Others (see below)	██████████	██████████	██████	
TOTAL	£184,814.00	£168,109.60		

Table 2: Project mobilising of matched funding during the reporting period (1 April 2023 – 31 March 2024)

	Matched funding secured to date	Total matched funding expected by end of project
Matched funding leveraged by the partners to deliver the project.	██████████ ██	██████████
Total additional finance mobilised by new activities building on evidence, best practices and project (£)		

Annex 1: Report of progress and achievements against logframe for Financial Year 2023-2024

Project summary	SMART Indicators	Progress and Achievements April 2023 - March 2024	Actions required/planned for next period
<p>Impact</p> <p>Beekeeping livelihoods expand in Mozambique's miombo forests, in ways that lead to long-term reductions in rates of forest degradation and biodiversity loss</p>			
<p>Outcome</p> <p>Beekeeping makes an increasing financial contribution to 600+ families and is managed within the regenerative capacity of the miombo</p>	<p>0.1 Beekeeping families report increased income from honey sales (baseline for income to be established in Y1; project target 600 families report increase of 20%+).</p> <p>0.2 Beekeepers have the knowledge and practice sustainable beekeeping methods introduced in the project (baseline: none; project targets: 600 beekeepers with knowledge of sustainable approaches; 70%+ putting knowledge into practice.)</p> <p>0.3 Increase in the quantity (Kg per hive) of honey produced (baseline to be established in Y1; project target tbc)</p> <p>0.4 Participating communities create natural resource management plans incorporating beekeeping guidelines and limits (baseline: no communities</p>	<p>Baseline established using data from HH survey.</p> <p>Participatory assessment, HH survey, and field visits confirmed very limited extent of more sustainable beekeeping. Lead Beekeepers (60) now with good level of understanding of potential and actual damage to forest from current practices, and of the multiple benefits of transition to more sustainable approaches.</p> <p>Baseline established</p> <p>Activity planned for Y2, though it was confirmed that no communities or villages have a plan</p>	<p>All beekeepers will be asked to start keeping records and data will be recorded from 2024 season. Connection made with MHC as main buyer.</p> <p>Cascading of training from Lead Beekeepers to others in the community, supported by project staff. Second round of training of Lead Beekeepers.</p> <p>Data to be gathered from all participating beekeepers at harvest from LB and MHC records</p> <p>Facilitated community discussions and management planning starts</p>

	<p>have a plan; project target: 100% of participating communities)</p> <p>0.5 Participating communities actively monitor beekeepers and honey harvesting (baseline: none; project target: 70% of participating communities)</p> <p>0.6.1 Habitat indicators of biodiversity (large trees and the woodland degradation rate) are higher in the project area compared to matched control communities. (baseline: project areas are the same as controls; target: all communities show significantly improved metrics cf controls).</p> <p>0.6.2 Indicator species and taxa, known to be sensitive to the impacts of current honey production, are more abundant / diverse in project areas than control communities. (baseline: no difference; target: all communities show significantly improved metrics cf controls).</p>	<p>Work on habitat indicators was delayed into Year 2.</p> <p>The launch of Biodiversity monitoring was delayed into Year 2, though a revised protocol was developed</p>	
<p>Output 1.</p> <p>1. Data from four miombo areas on the nature, scale and impact – on people, forest trees and biodiversity - of beekeeping and honey harvesting.</p>	<p>1.1 Amount and quality of QA and QCd household survey data for both the study villages and matched controls. Target: initial survey completeness >90%; panel surveys >95%).</p> <p>1.2 Amount and quality of tree inventory data curated according to international quality standards (SEOSAW 2021). Target: number of large trees can be estimated in</p>	<p>Household survey was designed and carried out, with >90% completeness. See section 3.1 of the report and Annex</p> <p>We no longer plan to implement SEOSAW-style plots to monitor the vegetation. Instead we will implement small vegetation plots as part of the biodiversity monitoring plan. See section 3.1 of the report and Annex Y</p>	

	<p>each community with a precision of 20% of the mean.</p> <p>1.3 Amount and quality of biodiversity data collected, analysed and made public. Target: occupancy and richness data are accurate enough to detect a >20% change in occupancy of indicator species, and a loss of richness >25%.</p> <p>1.4 Availability of useful measurements of degradation from radar remote sensing for relevant years and locations (control and study communities). Target: control communities are statistically well matched so that we can detect meaningful changes in degradation i.e 20% difference in rates.</p> <p>1.5 No. of data sets used in high quality peer-reviewed publications and no. of presentations at appropriate meetings / conferences. Target: we expect one publication on the biodiversity data in a journal such as Conservation Biology and one publication of the social impacts in e.g. Ecological Economics.</p> <p>1.6 No. of events where the results of the data collection are shared with and discussed with the community. Target – one meeting per quarter.</p>	<p>Biodiversity monitoring approaches were tested, and a revised monitoring plan was developed. See Annex Y.</p> <p>This data will not now be analyzed having changed the approach to the pairing design protocol. Existing data will be used to analyse the degradation and avoid errors in the scale of analyses. Also, an analysis of degradation based on the pairing design protocol will be carried out to assess the degree of degradation by honey production to the ecosystem.</p> <p>Data is being analysed prior to preparation of reports etc.</p> <p>Awaiting completion of data analysis.</p>
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Activity 1.1 Participatory assessment of beekeeping and honey collection practices and their impact	Completed initial assessment in sample of 10 villages.	Continuing engagement with beekeepers to learn more about their practices.
Activity 1.2 Development of sustainable harvesting plans with each participating community, using survey data and best practice references	HH survey provides a baseline of scale including number of hives.	With data from biodiversity monitoring we will start work with communities on sustainable harvesting plans
Activity 1.3 Development of a biodiversity and social monitoring framework incorporating participatory monitoring, bio-acoustic and camera trap approaches, household surveys and focus groups, radar remote sensing, and long term panels of households.	HH survey designed; approach modified – whole sample will be resurveyed in Y2 and Y3. Control will be non-participants in project communities, not separate communities. Biodiversity monitoring framework designed, and some aspects tested	Biodiversity monitoring field work will take place in phases through the year. HH survey second phase.
Activity 1.4 Implementation of social monitoring framework: Identification of control communities; baseline household survey and focus group discussions; development of a panel for long term social monitoring; annual household surveys for the panel;	Communities identified. HH survey carried out.	HH survey will be carried out again.
Activity 1.5 Implementation of Biodiversity monitoring framework: Identification of control communities and indicator species or taxa; indicator species/taxa and vegetation structure monitoring; remote sensing monitoring of degradation	Implementation delayed.	Field work in phases through the year to implement the revised biodiversity monitoring framework.
Activity 1.6 Data analysis and ongoing community feedback	Data being analysed.	Data analysis will be completed and data summaries provided to communities.
Output 2 600 people trained and supported in sustainable beekeeping	Output Indicators 2.1 Package of improved technologies and practices designed to make miombo beekeeping sustainable developed following community surveys and review of good practices in other miombo beekeeping (<i>Project milestone: package designed and integrated into training programme by Q3 in Year 1</i>)	Based on participatory assessment and desk review of available materials, priority interventions were developed, focusing on a) introduction of top bar technology utilizing dry logs and modified bark hives; b) switch from isolated hives in trees to concentrated apiaries; c) reduction in use of fire in favour of targeted smoking. These interventions were the core focus of training Lead Beekeepers.

	<p>2.2 Beekeepers capable of sustainable beekeeping following completion of training, <i>(Project milestones: 300 [min 100 women] in Year 1; 300 [min 100 women] in Year 2)</i></p> <p>2.3 Beekeepers working with and seeking support from their Lead Beekeeper <i>(Project milestones: 200 in Year 1; 400 in Year 2; 600 in Year 3)</i></p> <p>2.4 Beekeepers committing to the quality and sustainable beekeeping standards set in individual production plans and confirmed in contracts with MHC. <i>(Project milestones: 200 in Year 1; 400 in Year 2; 600 in Year 3)</i></p>	<p>Beyond the Lead Beekeepers (60) it is difficult to assess how many beekeepers at this stage would be capable/willing to follow more sustainable approaches. Roll out of training is planned for Q1 of Y2. It has proven difficult so far to identify women beekeepers. It is hoped that as the new approaches are demonstrated, more women will come forward to show interest in getting involved.</p> <p>Lead Beekeeper model was introduced in communities and enthusiastically adopted. Lead beekeeper candidates were identified, with criteria including being seen as good beekeepers. All indicate a willingness among other beekeepers to work with the LB. However, this is yet to be tested.</p> <p>We are not yet at this stage.</p>	
Activity 2.1 Community mobilization, identification of existing and interested beekeepers in participating communities	Completed identification of existing beekeepers	Extend the scope to identifying additional people, primarily women, to participate.	
Activity 2.2 Design and development of technical improvements in the design of bark hives and their use;	Completed.	Continue to test and develop the improved models and practices	
Activity 2.3 Training beekeepers in sustainable beekeeping including apiary siting and management, colony management, and low impact harvesting techniques	Delayed, though in all villages there has been discussion of key features of the new approach.	Roll-out of training via the Lead Beekeepers with support from staff	
Activity 2.4 Development of individual beekeeper production plans (and financial models) linked to the overarching sustainable production plan	Delayed.	Work with beekeepers and communities on plans.	
Activity 2.5 Facilitating meetings between MHC representatives and beekeepers – leading to formal contracts	No formal meetings held, but MHC introduced to communities and Lead Beekeepers	Formal meetings will be held. MHC will set out terms and conditions and services.	
<p>Output 3. (Insert agreed Output)</p> <p>60 people trained and active as Lead Beekeepers and contracted to Mozambique Honey Company</p>	<p>3.1 60 people (20 women) capable of playing the role of Lead Beekeeper following completion of training. (Project milestones: Year 1 – 30 [10 women]; Year 2 – 30 [10 women])</p>	<p>60 people identified and trained (first phase), but it is too early to judge if the LB are capable of playing the role. It has so far been impossible to identify women who could play the role.</p>	

	<p>3.2 60 people (20 women) sign a contract with MHC to serve as a Lead Beekeeper (Project milestones: Year 1 – 30 [10 women]; Year 2 – 30 [10 women])</p> <p>3.3 Demonstration apiaries of top bar hives set up and operated by Lead Beekeepers (Baseline – none. Project milestone 60 apiaries established in Y2; Lead Beekeepers organizing training in top-bar hive use in Y2 and Y3)</p>	<p>MHC is monitoring the situation, including the progress made by the new LB in facilitating training of other beekeepers.</p> <p>This was planned for Year 2.</p>	
<p>Activity 3.1 Identifying and training 90 beekeepers to take one of the 60 positions of Lead Beekeeper</p>	<p>60 were selected but in each village, other candidates were put forward, so there is a 'back-up' list.</p>	<p>LB performance will be monitored, and if necessary, alternates will be trained.</p>	
<p>Activity 3.2 Facilitating exchange visits for newly trained and selected Lead Beekeepers to learn from the experience of established Lead Beekeepers in MHC's Chimanimani (Sussundenga District) supply chain</p>	<p>Planned for Y2</p>	<p>Visits will be planned for Q3</p>	
<p>Activity 3.3 Procurement of top bar hives and protective clothing</p>	<p>Planned for Y2</p>	<p>Procurement is planned for Q1 of Y2</p>	
<p>Activity 3.4 Establishing demonstration apiaries of top bar beehives run by Lead Beekeepers</p>	<p>Planned for Y2</p>	<p>Planned for Q2 of Y2</p>	
<p>Output 4 20 communities supported in producing a natural resource management plan incorporating guidelines on beekeeping</p>	<p>Indicators</p> <p>4.1 Communities with a natural resource management plan (<i>Project milestones: Year 2 – 10; Year 3 – 10</i>)</p> <p>4.2 Community plans have a specific set of guidelines on beekeeping and honey harvesting (<i>Project milestones: Year 2 – 10; Year 3 – 10</i>)</p>	<p>Work on this output was not scheduled for Year 1 of the project.</p>	

	4.3 Community members actively engaged in the development of the plan (Targets: average of 100 members; 50% women)		
Activity 4.1 Facilitating community meetings and discussions of data collected during the initial inventories and surveys and their implications for the community and its interaction with the miombo woodland		No actions planned	Work with communities, feeding in data as it is available
Activity 4.2 Organising community knowledge-sharing and training sessions on the principles and practices of natural resource management and the relevant national and international legal and regulatory frameworks		No actions planned	Programme of community meetings and training.
Activity 4.3 Facilitating the development of a gender-balanced community natural resource management committee with representation by beekeepers		No actions planned	Move towards committee development when there is clear commitment to the process in the community
Activity 4.4 Facilitating the design and production of natural resource management plans and monitoring systems, including options (such as annual fees for beekeeping) for generating income to pay for conservation activities		No actions planned	Once the Committees are in place, work with them to facilitate the planning
Output 5 Policy briefings and reports produced and used to inform national and regional approaches to sustainable beekeeping in miombo woodland	Output indicators 5.1 Policy briefings, data sheets guidelines and case-studies produced (Milestones: Data sheets produced at the end of each year; Policy briefings produced by the end of Y2; Evidence-backed case-studies and guidelines produced in Y3) 5.2 Meetings held with policy makers and stakeholders in the apiculture industry (Targets: in Y1 hold 2 meetings with National Directorate developing regulations for beekeeping and one presentation with members of Apiculture Council; 5.3 Technical innovations and processes adopted (Milestones: By end		The wealth of data generated in the surveys was still being analysed at the end of the year, so no publishable data sheets were prepared. Two meetings were held, one with the National Directorate, one with the Consultant team leading the development of regulations. Launch of the Apiculture Council was delayed, so no meetings were held. Nothing planned for Year 1

	<i>Y2, Mozambican training manuals for beekeeping include good practice guidelines developed in the project)</i>	
Activity 5.1 Review of data and issues arising from field research, practical work with beekeepers, and community engagement.	In progress	Data analysis will be completed in Q1, Year 2.
Activity 5.2 Drafting and review of papers, briefings, good practice guides	No actions planned	Papers and briefings will be prepared. A manual for working with traditional beekeepers will be prepared.
Activity 5.3 Consultation with relevant authorities; setting up formal presentations and meetings	Meetings held with officials in the Government dealing with beekeeping and forestry	There will be a big focus on interaction with Forestry department officials because of new regulations being drafted for implementing the new Forest Law.
Activity 5.4 Organising and facilitating events and presentations	No actions planned	Opportunities will be sought for presenting work in progress

Annex 2: Project's full current logframe as presented in the application form (unless changes have been agreed)

Project Summary	SMART Indicators	Means of Verification	Important Assumptions
<p>Impact: (Max 30 words)</p> <p>Beekeeping livelihoods expand in Mozambique’s miombo forests, in ways that lead to long-term reductions in rates of forest degradation and biodiversity loss</p>			
<p>Outcome: (Max 30 words)</p> <p>Beekeeping makes an increasing financial contribution to 600+ families and is managed within the regenerative capacity of the miombo</p>	<p>0.1 Beekeeping families report increased income from honey sales (<i>baseline for income to be established in Y1; project target 600 families report increase of 20%+</i>)</p> <p>0.2 Beekeepers have the knowledge and practice sustainable beekeeping methods introduced in the project (<i>baseline: none; project targets: 600 beekeepers with knowledge of sustainable approaches; 70%+ putting knowledge into practice.</i>)</p> <p>0.3 Increase in the quantity (Kg per hive) of honey produced (<i>baseline to be established in Y1; project target tbc</i>)</p> <p>0.4 Participating communities create natural resource management plans incorporating beekeeping guidelines and limits (<i>baseline: no communities have a plan; project target: 100% of participating communities</i>)</p>	<p>0.1 Data from long-term household panels in participant and control households</p> <p>0.1 Honey buying records from MHC</p> <p>0.2 Project monitoring reports and annual surveys</p> <p>0.3 Lead Beekeeper records. MHC records</p> <p>0.4 Plans shared with the project team</p>	<p>We assume that the demand for quality honey will continue to increase nationally and internationally and that without intervention, the regenerative capacity of the miombo will be surpassed. We assume that most people currently involved in harvesting honey for sale in the informal market will be willing to switch to a more formal relationship with a commercial honey company, assuming that the price is equal to or better than that offered in the informal market.</p> <p>We assume that community leaders, larger-scale beekeepers, and local government officers will help create support for natural resource management plans that are likely to require changes in behaviour and practice by local people.</p> <p>We assume that the data produced in the project will be of a sufficient quality both to demonstrate change in the rate of degradation and biodiversity in the four focal areas and to provide a base of evidence for papers and policy briefings that can</p>

	<p>0.5 Participating communities actively monitor beekeepers and honey harvesting (<i>baseline: none; project target: 70% of participating communities</i>)</p> <p>0.6.1 Habitat indicators of biodiversity (large trees and the woodland degradation rate) are higher in the project area compared to matched control communities. (<i>baseline: project areas are the same as controls; target: all communities show significantly improved metrics cf controls</i>).</p> <p>0.6.2 Indicator species and taxa, known to be sensitive to the impacts of current honey production, are more abundant / diverse in project areas than control communities. (<i>baseline: no difference; target: all communities show significantly improved metrics cf controls</i>).</p>	<p>0.5 Project monitoring reports; records of community groups</p> <p>0.6.1 “Difference-in-difference” analysis of radar remote sensing data and woodland structure surveys.</p> <p>0.6.2 “Difference-in-difference” analysis of indicator species / taxa surveys, camera trap and eco-acoustic data.</p>	<p>be shared with other stakeholders in Mozambique and beyond.</p> <p>We assume (from past work) that large trees and the degradation rate are proxies of biodiversity change. We also assume that both can be measured accurately enough to detect change, which we have tested in past projects.</p> <p>We assume that the selected species/taxa are impacted by current honey production and can increase in diversity / occupancy once honey production is improved. Furthermore, we assume that we can identify suitable species that are relevant to both the academic researchers and the local communities.</p> <p>We also assume that we can estimate diversity and occupancy of the key taxa / species to the required accuracy with the resources available. The combination of community-led surveys, camera traps and eco-acoustics give considerable flexibility in approach.</p>
<p>Outputs:</p> <p>1. Data from four miombo areas on the nature, scale and impact – on</p>	<p>1.1 Amount and quality of QA and QCd household survey data for both the study villages and matched controls. <i>Target: initial survey</i></p>	<p>1.1 HH survey data (anonymised) on open access portal along</p>	<p>We assume that our methods developed in other parts of Mozambique and Zambia will work in</p>

<p>people, forest trees and biodiversity - of beekeeping and honey harvesting.</p>	<p><i>completeness >90%; panel surveys >95%).</i></p> <p>1.2 Amount and quality of tree inventory data curated according to international quality standards (SEOSAW 2021). <i>Target: number of large trees can be estimated in each community with a precision of 20% of the mean.</i></p> <p>1.3 Amount and quality of biodiversity data collected, analysed and made public. <i>Target: occupancy and richness data are accurate enough to detect a >20% change in occupancy of indicator species, and a loss of richness >25%.</i></p> <p>1.4 Availability of useful measurements of degradation from radar remote sensing for relevant years and locations (control and study communities). <i>Target: control communities are statistically well matched so that we can detect meaningful changes in degradation i.e 20% difference in rates.</i></p> <p>1.5 No. of data sets used in high quality peer-reviewed publications and no. of presentations at appropriate meetings / conferences. <i>Target: we expect one publication on the biodiversity data in a journal such as Conservation Biology and</i></p>	<p>with public summary report including quality metrics</p> <p>1.2 Tree data stored on international portal (SEOSAW database) and available to researchers</p> <p>1.3. Biodiversity data (both community based and camera traps / bio acoustic) analysed and made public</p> <p>1.4 Report and data on degradation publicly available online</p> <p>1.5 Presence of data in peer review literature and conference proceedings</p>	<p>the study locations and will require similar effort.</p> <p>We assume we will be able to train community technicians in hh survey, biodiversity monitoring and tree inventory work, and there will be enthusiasm to undertake this work for appropriate pay and the work will be supported by the community.</p> <p>We assume that we will be able to find key species which are good indicators of the diversity of the ecosystem and which are sensitive to the impacts of unsustainable honey production.</p> <p>We assume our method for monitoring degradation based on radar remote sensing (McNicol et al 2018; Ahrends et al 2021) will work at this site, and that the required radar data will continue to be available free of charge from the Japanese Space Agency (as it is at the moment).</p> <p>We assume we will be able to hire a capable researcher in Mozambique to conduct the day-to-day work.</p>
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	<p><i>one publication of the social impacts in e.g. Ecological Economics.</i></p> <p>1.6 No. of events where the results of the data collection are shared with and discussed with the community. <i>Target – one meeting per quarter.</i></p>	<p>1.6 Records of community meetings and evidence of community input in reports and analysis.</p>	
<p>2. 600 people trained and supported in sustainable beekeeping</p>	<p>2.1 Package of improved technologies and practices designed to make miombo beekeeping sustainable developed following community surveys and review of good practices in other miombo beekeeping (<i>Project milestone: package designed and integrated into training programme by Q3 in Year 1</i>)</p> <p>2.2 Beekeepers capable of sustainable beekeeping following completion of training, (<i>Project milestones: 300 [min 100 women] in Year 1; 300 [min 100 women] in Year 2</i>)</p> <p>2.3 Beekeepers working with and seeking support from their Lead Beekeeper (<i>Project milestones: 200 in Year 1; 400 in Year 2; 600 in Year 3</i>)</p>	<p>2.1 Designs and manuals available; research reports</p> <p>2.2 Attendance records for training workshops; training workshop reports; monitoring reports</p> <p>2.3 Lead Beekeeper records; monitoring visit reports</p>	<p>We know that the target areas are significant local honey production zones, so we assume that people involved in honey harvesting and beekeeping will be keen to learn how to increase their yields and incomes. We assume that this incentive will be sufficient to engage people in learning about the long-term impact of degradation and deforestation on their lives and livelihoods, and to convince them to adopt new techniques and practices that can allow for regeneration and maintenance of biodiversity</p>

	2.4 Beekeepers committing to the quality and sustainable beekeeping standards set in individual production plans and confirmed in contracts with MHC. <i>(Project milestones: 200 in Year 1; 400 in Year 2; 600 in Year 3)</i>	2.4 Lead Beekeeper records; MHC records; Beekeeper production plans	
3. 60 people trained and active as Lead Beekeepers and contracted to Mozambique Honey Company	<p>3.1 60 people (20 women) capable of playing the role of Lead Beekeeper following completion of training. <i>(Project milestones: Year 1 – 30 [10 women]; Year 2 – 30 [10 women])</i></p> <p>3.2 60 people (20 women) sign a contract with MHC to serve as a Lead Beekeeper <i>(Project milestones: Year 1 – 30 [10 women]; Year 2 – 30 [10 women])</i></p> <p>3.3 Demonstration apiaries of top bar hives set up and operated by Lead Beekeepers <i>(Baseline – none. Project milestone 60 apiaries established in Y2; Lead Beekeepers organizing training in top-bar hive use in Y2 and Y3)</i></p>	<p>3.1 Attendance records for training workshops; training workshop reports</p> <p>3.2 MHC contracts</p> <p>3.3 Site visit reports</p>	We assume that the Lead Beekeeper model, working well in other areas where top bar hives predominate, can transfer to a context in which traditional beekeeping is the norm. We assume that women will be interested in getting more involved, especially if changes in technology and/or approach make it more feasible to do so. We also assume that beekeepers will accept to sell comb honey and not process themselves (MHC prefers to buy in comb for quality control reasons).
4. 20 communities supported in producing a natural resource management plan incorporating guidelines on beekeeping	<p>4.1 Communities with a natural resource management plan <i>(Project milestones: Year 2 – 10; Year 3 – 10)</i></p> <p>4.2 Community plans have a specific set of guidelines on beekeeping and</p>	<p>4.1 Plans shared with the project team</p> <p>4.2 As above</p>	We assume that there will be a willingness in the targeted communities (chosen because of the high number of people involved in beekeeping in the area) to engage in learning about change in the miombo and its implications, and to discuss

	<p>honey harvesting (<i>Project milestones: Year 2 – 10; Year 3 – 10</i>)</p> <p>4.3 Community members actively engaged in the development of the plan (<i>Targets: average of 100 members; 50% women</i>)</p>	<p>4.3 Project reports</p>	<p>ways in which to better manage the resource. We assume that local government will be supportive.</p>
<p>5. Policy briefings and reports produced and used to inform national and regional approaches to sustainable beekeeping in miombo woodland</p>	<p>5.1 Policy briefings, data sheets guidelines and case-studies produced (<i>Milestones: Data sheets produced at the end of each year; Policy briefings produced by the end of Y2; Evidence-backed case-studies and guidelines produced in Y3</i>)</p> <p>5.2 Meetings held with policy makers and stakeholders in the apiculture industry (<i>Targets: in Y1 hold 2 meetings with National Directorate developing regulations for beekeeping and one presentation with members of Apiculture Council;</i></p> <p>5.3 Technical innovations and processes adopted (<i>Milestones: By end Y2, Mozambican training manuals for beekeeping include good practice guidelines developed in the project</i>)</p>	<p>5.1 Documents produced. Internal reports and data analysis.</p> <p>5.2 Meeting reports. Communications with authorities. Internal project reports. Press coverage.</p> <p>5.3 Beekeeping manuals and training course documents.</p>	<p>We assume that the data gathered in the project, and the innovations developed and tested, will be sufficiently interesting and new to warrant publication. We assume that there will be interest among other stakeholders.</p> <p>We assume that there will be interest in government and among other stakeholders to engage with the project.</p>

Activities (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1. Each activity should start on a new line and be no more than approximately 25 words.)

Output 1

- 1.1 Participatory assessment of beekeeping and honey collection practices and their impact
- 1.2 Development of sustainable harvesting plans with each participating community, using survey data and best practice references
- 1.3 Development of a biodiversity and social monitoring framework incorporating participatory monitoring, bio-acoustic and camera trap approaches, household surveys and focus groups, radar remote sensing, and long term panels of households.
- 1.4 Implementation of social monitoring framework: Identification of control communities; baseline household survey and focus group discussions; development of a panel for long term social monitoring; annual household surveys for the panel;
- 1.5 Implementation of Biodiversity monitoring framework: Identification of control communities and indicator species or taxa; indicator species/taxa and vegetation structure monitoring; remote sensing monitoring of degradation
- 1.6 Data analysis and ongoing community feedback

Output 2

- 2.1 Community mobilization, identification of existing and interested beekeepers in participating communities
- 2.2 Design and development of technical improvements in the design of bark hives and their use;
- 2.3 Training beekeepers in sustainable beekeeping including apiary siting and management, colony management, and low impact harvesting techniques
- 2.4 Development of individual beekeeper production plans (and financial models) linked to the overarching sustainable production plan
- 2.5 Facilitating meetings between MHC representatives and beekeepers – leading to formal contracts

Output 3

- 3.1 Identifying and training 90 beekeepers to take one of the 60 positions of Lead Beekeeper
- 3.2 Facilitating exchange visits for newly trained and selected Lead Beekeepers to learn from the experience of established Lead Beekeepers in MHC's Chimanmani (Sussundenga District) supply chain
- 3.3 Procurement of top bar hives and protective clothing
- 3.4 Establishing demonstration apiaries of top bar beehives run by Lead Beekeepers

Output 4

- 4.1 Facilitating community meetings and discussions of data collected during the initial inventories and surveys and their implications for the community and its interaction with the miombo woodland

- 4.2 Organising community knowledge-sharing and training sessions on the principles and practices of natural resource management and the relevant national and international legal and regulatory frameworks
- 4.3 Facilitating the development of a gender-balanced community natural resource management committee with representation by beekeepers
- 4.4 Facilitating the design and production of natural resource management plans and monitoring systems, including options (such as annual fees for beekeeping) for generating income to pay for conservation activities

Output 5

- 5.1 Review of data and issues arising from field research, practical work with beekeepers, and community engagement.
- 5.2 Drafting and review of papers, briefings, good practice guides
- 5.3 Consultation with relevant authorities; setting up formal presentations and meetings
- 5.4 Organising and facilitating events and presentations

Annex 3 Project Standard Indicators

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-A01	60 people (20 women) capable of playing the role of Lead Beekeeper following completion of training.	Number of people completing structured and relevant training as Lead Beekeepers	People	Gender	60 59 men 1 woman			60	60 40 men 20 women
D1-AO4	Beekeepers capable of sustainable beekeeping following completion of training	Number of beekeepers reporting that they are applying new capabilities (skills and knowledge) 6 (or more) months after training.	People	Gender	60 59 men 1 woman				600 400 men 200 women
D1-B03	Communities with a natural resource management plan	Number of new/improved community management plans available and endorsed	Number	None	0				20
D1-B09	Beekeepers capable of sustainable beekeeping following completion of training	Number of beekeepers reporting a decrease in unsustainable practices as a result of project activities.	People	Gender	0				600 400 men 200 women
D1-B10	Beekeepers committing to the quality and sustainable beekeeping standards set in individual production plans and confirmed in contracts with MHC.	Number of individuals / households reporting an adoption of livelihood improvement practices as a result of project activities.	People	Gender	0				600 400 men 200 women
D1-C01	Policy briefings, data sheets guidelines and case-studies produced	Number of miombo beekeeping best practice guides and knowledge products published and endorsed	Number	None	0				4

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
D1-C17	No. of data sets used in high quality peer-reviewed publications and no. of presentations at appropriate meetings / conferences	Number of unique papers submitted to peer reviewed journals	Number	None	0				2
DI-D18	Habitat indicators of biodiversity (large trees and the woodland degradation rate) are higher in the project area compared to matched control communities	Drivers of biodiversity loss assessed to have been reduced or removed	Number	None					4

Annex 4: Maps of project sites

Annex submitted as a separate PDF document.

Annex 5: Village Survey and Household Survey Tools

Annex submitted as two separate Excel documents.

Checklist for submission

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the correct template (checking fund, type of report (i.e. Annual or Final), and year) and deleted the blue guidance text before submission?	Yes
Is the report less than 10MB? If so, please email to BCF-Reports@niras.com putting the project number in the Subject line.	Yes
Is your report more than 10MB? If so, please discuss with BCF-Reports@niras.com about the best way to deliver the report, putting the project number in the Subject line.	
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Yes
Do you have hard copies of material you need to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number. However, we would expect that most material will now be electronic.	N/A
If you are submitting photos for publicity purposes, do these meet the outlined requirements (see section 16)?	
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	
Do not include claim forms or other communications with this report.	