Darwin Initiative Main & Extra 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)

Submission Deadline: 30th April 2025

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Darwin Initiative Project Information

Scheme (Main or Extra)	Main
Project reference	30-016
Project title	Avoiding degradation through sustainable honey production in the miombo
Country/ies	Mozambique
Lead Organisation	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 2024 – Mar 2025) and number (e.g. Annual Report 1, 2, 3)	April 2024 – March 2025; Annual Report 2
Project Leader name	Milagre Nugunga
Project website/blog/social media	
Report author(s) and date	Lead author: Andrew Kingman; contributing: Dioniso Lichone, Dr Natasha Riebeiro, Prof. Casey Ryan, Milagre Nuvunga

1. Project summary

The project is addressing a growing potential 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 widely believed that honey production is a key cause, as traditional methods involve killing important trees and overuse of fire, leading to severe biodiversity loss. The Regulations to implement the 2024 Forest Law specifically prohibit the debarking or felling of trees to make beehives. 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 regarded as 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 potential 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 community is Chibue, incorporating the villages of Chibue, Pambanissa and Mathoi.

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, Catiquinzaia, and Rios dos Elefantes.

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 mainly in the communities of Muswata and Mucono.

2. Project stakeholders/ partners

Micaia Foundation has continued to work closely and effectively with both the University of Eduardo Mondlane (UEM) and University of Edinburgh (UoE). We have continued to hold online management team meetings to discuss progress in the project and plan key actions, especially those involving the universities. On the ground, the expansion of the UEM team, with additional researcher engagement, has strengthened the collaboration. Micaia's project team and the UEM team have worked very effectively together in preparing for and delivering field work.

At local level in the three districts, Micaia's field team maintain 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.

Maps: Detailed maps were submitted as an Annex to the Y1 Annual Report. We present in Annex 4 updated maps of each of the districts showing the communities in which the project is engaged.

3. Project progress

In 2024-25, the project has faced two major challenges that have had an impact on the timing of activities and the delivery of anticipated intermediary results. The first challenge, affecting much of the country between September 2024 and April 2025, was a political crisis with serious security implications. The second challenge was an illustration of the increasing climate volatility that central Mozambique faces. In this case, drought followed by very late and very heavy rains. This weather pattern affected the project in two different ways.

Mozambique's political crisis.

The second half of 2024, especially the final quarter, and the first quarter of 2025, were extremely difficult in Mozambique. Campaigning for the national elections started in earnest in September 2024, and this was quite disruptive of community meetings. Following the election, there was a growing level of activism fuelled by the leading opposition candidate for President, Venancio Mondlane, who claimed, with many observers agreeing, that he had won the election only for the ruling party to steal it. Irrespective of the truth of the matter, the scale of the demonstrations against what the wider public certainly believed was a faked election result, grew and became increasingly unpredictable and at times violent (though the main violence was an excessive use of force by the police and military). When the Constitutional Council announced, on 24 December 2024, that the ruling party had indeed won the election – and with crushing majorities in all provinces, even the strongholds of the opposition – there was an immediate explosion of rioting and looting in Maputo, Matola, and other cities. Although Chimoio largely escaped the worst of the violence, Micaia was in lockdown. Our security policy sets out necessary steps at different stages of perceived risk, and when the office closed on 19 December 2024, we were in Level 3 which required an effective hibernation (securing assets etc). At various stages through October – December we had been at level 2, which meant no unnecessary travel, and this of course delayed planned events. When the office re-opened on 6 January 2025, the national situation remained very tense and the Micaia leadership took the decision to postpone field work until mid-January in order to assess the situation. Happily, despite continuing tension in Maputo, Chimoio has remained calm and it has been possible to return to normal operations.

For the project, the security situation in general was deemed low risk in communities and so the project team was able to continue with field operations. However, the political and security crisis did lead to the delay of planned events, especially bigger gatherings requiring significant movement of people. For instance, we had planned in March to bring together community leaders from all participating communities to discuss the preliminary findings from the first phase of the biodiversity monitoring, but with some renewed concerns about security, it was decided to postpone this meeting until early May, after the passing of the 100 days of the new government (a day marked by the opposition as a day of 'reckoning').

Climate volatility

Central Mozambique experienced a severe and prolonged drought in 2024, leading to widespread food security crises in communities. Government agencies and NGOs have had to intervene in the worst-affected areas with emergency distributions of food and other essential supplies. Rains did come, and they were very strong and prolonged, continuing into late April 2025. For the project, the weather pattern in 2024-25 had two noticeable short-term impacts, neither of which fundamentally undermine the likelihood of the project achieving its desired outcomes, but which have affected timing and intermediary outputs. Firstly, the late arrival of the rains led to a delay in carrying out the second phase of the biodiversity monitoring work. This had been planned for February 2025 but only took place in April. Secondly, we had anticipated that in Y2 there would already be significant improvement in colonization of beehives, leading to increased volumes of honey production, and thus the opportunity to link beekeepers with the Mozambique Honey Company. Unfortunately, the prolonged drought impacted negatively on production, and the limited sales continued to be mostly at the local level. Beekeepers are more optimistic about 2025 following the long and heavy rains.

3.1 Progress in carrying out project Activities

Output 1: Apicultural practices of 600 beekeepers are improved

1.1 Participatory assessment of beekeeping and honey collection practices and their impact
This activity was carried out largely in Y1, but we have continued to learn through engagement with local beekeepers. We have also gathered and verified more data.

The project is now involving 988 beekeepers (see Annex 5 for data), including the 60 Lead Beekeepers (see below). As anticipated, the vast majority of the beekeepers are male. As the project reach expanded (beyond the target of 600 beekeepers), we still only identified 41 women with any involvement in beekeeping. This is now beginning to change as a result of the innovations introduced by the project (see below).

Table 1: Number of Beekeepers reached by the project per District

District	Total Number of Lead Beekeepers	Men	Women	Total number of beekeepers	Men	Women
Macossa	39	38	1	638	623	15
Manica	12	12	0	162	153	9
Sussudenga	9	8	1	128	111	17
Total	**60**	**58**	**2**	**928**	**887**	**41**

1.2 Researching and developing technical innovations for beehives
This activity was largely completed and was reported on in Y1. However, in Y2, the project team has continued to test and pilot the core innovation of converting existing log and bark hives into a variant of a top bar hive.

Focusing on uncolonized hives, beekeepers select hives which they believe will be relatively easy to convert. The hive is brought down from the tree, opened up, top bars are fitted, and the converted

hive is then mounted on a post in the newly established apiary. In the course of Y2, 370 hives were converted, 207 of which were bark hives and 163 log hives: Manica 80, Sussudenga 53 and Macossa 237. We recognize that this is a very small proportion of the estimated 20,000+ log or bark hives in use in the focal communities. However, the 'conversion' approach has been warmly welcomed by practicing beekeepers. It does require some labour, of course, to open up the hives, especially the thicker log hives, so the conversion will be a gradual process. However, if the establishment of apiaries (another 'innovation' for the focal areas), coupled with the conversion of hives, leads to increased productivity as well as an easier process of beekeeping, the apparent enthusiasm from beekeepers is likely to be sustained beyond the project.

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

This was completed in Y1. However, the role and reach of the Lead Beekeepers has extended in Y2. During the exchange visit (see 1.4 below), the 60 LB received further training in sustainable beekeeping techniques. The training had two phases: first involving 2 Districts Manica and Sussundenga with 31 beekeepers and 2 members of the government and the second the District of Macossa with 29 beekeepers and 1 member of the government. The residential training was held at a community lodge in Chimanimani and lasted 3 full days for each training.

1.4 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

The two training workshops (see Annex 6 for the TOR and programme) for the LBs was incorporated into an exchange of experience with Chimanimani beekeepers from the communities of Mucuawaio and Mutoa (two villages in the Mpunga community), who have extensive experience in beekeeping and who sell their honey to MHC. The Mpunga beekeepers expressed a high degree of satisfaction with their relationship with MHC. The key benefit is the certainty of having the market every year.

The visiting beekeepers shared their experiences in the project, focusing in particular on the conversion of log or bark hives into top bar hives. The photograph below shows one of the project participants demonstrating the technology.

The Mpunga beekeepers explained the various elements of the way in which they work with MHC, including the important role of the Lead Beekeeper in coordinating with MHC, planning the harvest, and supporting beekeepers, especially at the harvest; the frequent meetings with MHC representative to talk about the harvest, the market etc; the distribution by MHC in advance of the harvest of clean and numbered lidded buckets for the beekeepers to use at the harvest; the use of a 'honey house' or other central point as the meeting point with MHC's buyer, where honey is weighed, checked for quality, and paid for.

1.5 Procurement of top bar hives

These will be distributed as part of demonstration apiaries in May-June 2025.

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

All 60 Lead Beekeepers established their apiary in the course of Y2. The apiaries contain a mix of original mounted log or bark hives and an increasing number of converted traditional hives. The project team works with the LB at his apiary to demonstrate practical techniques to and discuss the benefits of the apiary approach with fellow beekeepers. We are seeing some very encouraging take up of the approach, with 30% of all beekeepers, and 50% of the original target of 600 beekeepers already adopting apiary systems.

Community	Total Beekeepers (including Lead Beekeepers)	Number of apiaries (including Lead Beekeepers)	Percentage of all beekeepers with an apiary
Mussangadzi	349	78	22%
Catiquenzaia	284	51	18%
Rio dos Elefantes	44	19	43%
	677	148	
Chibue	42	25	60%
Mathoi	48	18	38%
Pambanissa	47	25	53%
	137	68	
Muswata	115	56	49%
Mucono	59	26	44%
	174	82	
	988	**298**	30%

This increasing take up of the apiary approach is a powerful illustration of the effectiveness of the Lead Beekeeper role developed by Micaia and MHC.

Output 2: Market linkages that enhance livelihoods of beekeeping families are enhanced.

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

This has been delayed because of the postponement of the second phase of biodiversity monitoring and the feedback of data to the community leaders. However, in the course of the natural resource management planning meetings (see below), many issues relating to the question of how to define/establish 'sustainable' harvesting have been raised and discussed. Firstly, there is general enthusiasm in communities for the innovations being introduced by the project, and a recognition that they will help reduce the spread of damaging fires. Secondly, there is recognition that by improving productivity per hive, it should lead to a reduction in the production of new/additional hives. Thirdly, in general, it seems from the preliminary research data, that in most areas, the scale of beekeeping is currently within the recovery rate of the forest.

2.2 Planning meetings with MHC – over price, logistics, quantities, quality standards and contracts

The project team has had several meetings and discussions with the MHC management about the timing of harvests in the project areas, the potential yield of honey, and likely price to be offered. MHC was ready to buy honey in 2024 to test the new supply chains. Unfortunately, as noted above, there was very little honey available.

2.3 Meetings with Lead Beekeepers and MHC – preparation of LB contracts

Lead beekeepers met MHC representatives in Chimoio as part of the LB visit to MHC's production facility. MHC explained the nature of the contract. In essence, the LB's contract incorporates other beekeepers in the LB's immediate area. The LB is offered a small incentive on the general price paid for honey to support the other beekeepers, coordinate the harvest, be in liaison with MHC, and provide support during the buying and quality control process. The contract also incorporates LB commitments to sustainable practices and wider conservation commitments (as per the community natural resource management plan). The LB were happy and enthusiastic at the prospect of having a supply contract. The contracts will be prepared in advance of the 2025 harvest.

2.4 Organizing visits by Lead Beekeepers to MHC factory in Chimoio

A visit was organized to the MHC honey processing plant in Chimoio was arranged for the 60 lead beekeepers (in two phases). The first group was from the districts of Manica and Sussundenga (31 lead beekeepers) and the second from the district of Macossa (29 lead beekeepers). MHC's Business Administrator explained the history and development of MHC and the nature of its market. Then the factory technicians explained the stages of production and stressed the importance of ensuring that quality standards are maintained up to and through harvest. The lead beekeepers expressed satisfaction in the visit. It clearly illustrated the difference of being part of an organised commercial value chain.

2.5 Support for harvest and MHC buying operation

This has not yet been applicable.

Output 3: Community based natural resource management plans incorporating sustainable apiculture are established in project areas.

3.1 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

A total of 70 community meetings were held to discuss the data collected during inventories and surveys in the communities (Manica 20, Sussundenga 14 and Macossa 36). The meetings brought together lead beekeepers, community leaders, and the community in general. In all, 1,079 people participated, including 420 women.

3.2 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

A total of 33 meetings were held, 4 in Manica, 4 in Sussudenga and 25 in Macossa, covering a range of information relating to the type of resources available and the ways in which they are used and accessed; changes over time, including those linked by the community to climate change; the differential affects of these changes on women and men; specific issues relating to beekeeping, including key species used

In these meetings, maps were drawn up to locate community areas, and key natural resource zones.

3.3 Facilitating the development of a gender-balanced community natural resource management committee with representation by beekeepers

Nine (9) natural resource management committees have been set up: Manica (3), Sussundenga (3) and Macossa (3). Each committee has a number of members representing beekeepers and 31% women in total. We had aimed for a representative balance of men and women and in the lead up to the election process, the team did try and illustrate the benefit of having a good mix of women and men, as well as younger and older people (stressing the different ways in which men and women, young and old interact with the natural resources). The resulting election of 31 women across the communities as a whole does represent a moderate success in these very conservative, patriarchal communities. We draw attention to the fact that the overall proportion of women was skewed by the fact that in three communities only 2 women were elected amongst a total of 38 men! The team will continue to work with these communities in particular to encourage the inclusion of more women.

The process was democratic. Potential members were put to the vote by the community considering a list of criteria such as suitability, responsibility, minimum knowledge of natural resource management and experience in implementing beekeeping activities, among others.

#	Districts	Committee name	Men	Women	Total
1	Manica	Muswata	4	6	10
2	Manica	Macodamo	10	0	10
3	Manica	Mucono	7	3	10
4	Sussundenga	Chibue	6	4	10
5	Sussundenga	Mathoi	5	5	10
6	Sussundenga	Pambanissa	5	5	10
7	Macossa	Mussangadzi	14	1	15
8	Macossa	Catiquenzaia	4	6	10
9	Macossa	Rios dos Elefantes	14	1	15
			69	31	100
			69%	31%	100%

3.4 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

This activity is in the early stages, as planned. Plans are in development. Some of the interesting issues arising are described in the section below.

Output 4: Local, regional and national sustainable beekeeping practices informed by project evidence

4.1 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.

The frameworks and protocols were developed in Y1 and reported in the Y1 Annual Report. Modifications in the framework and approach are described below and in annexed reports.

4.2 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;

The first phase of the household survey was implemented and documented in Y1. We have started analysis and cleaning of the household survey, and, in parallel the design of the final wave of surveys to be implemented in Nov/Dec 2025. This has entailed evaluating the responses to the first wave (baseline) and deciding which questions to keep, modify or remove. We have used the preliminary findings on hive use, prevalence and impact to inform project discussions about interventions and the design of the biodiversity monitoring.

4.3 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

A report of the research activities in Y2 is included as Annex 7 to this report.

Biodiversity monitoring campaigns carried out during the dry and wet seasons: a paired plot sample strategy was adopted, in which a tree collected for bark or trunk hives was identified and paired with a tree of the same species in the vicinity. Each of these trees were the central point of a 60m diameter circular plot. This protocol developed previous to the field work was adjusted after a 5-day pilot study carried out in October 2024. Following up on the latter, we conducted the ecological data collection according to the protocol submitted in the previous report. We established about 10 paired plots in each hive type and per community, for a total of about 20 pairs per community. In each plot we collected vegetation data on adult trees (dbh >= 5cm) and their natural regeneration (dbh<5cm), grass component and fire occurrence. Sanity parameters (damage and mortality) was also collected. The key indicator species was identified: *Sclerocarya birrea*, collected for bark hive, which started to regenerate after a few weeks of bark removal.

We also initiated the process of establishing camera-traps and audio moths for fauna assessment, but after the first trial, part of the equipment was stolen so we did not proceed with this assessment. The second field campaign was planned for February in the wet season, and aimed to collect additional vegetation data, not accessible during the dry season. Due to the late rains, field work had to be postponed into April. Data analysis is ongoing and will be presented at a stakeholder's workshop in Manica Province, during the first week of May. This activity is being conducted together with beekeepers in both communities and is incorporating their views on the impact of the traditional practices. The results will provide inputs to develop the biodiversity monitoring protocols.

4.4 Data analysis and ongoing community feedback

As noted above, data analysis is ongoing, but preliminary data is already feeding into community discussions.

4.5 Drafting and review of papers, briefings, good practice guides

This will largely be a Y3 activity. However, we note that two Bsc theses are under development, one focusing on the impact of honey practices on the forest and the other on characterizing the fire regimes for both communities. We further note that two presentations are being prepared to be presented at the Eduardo Mondlane University conference in September 2025.

In addition, Micaia has produced a draft practice guideline on the conversion of log and bark hives to a top bar format, included as Annex 8 to this report.

4.6 Consultation with relevant authorities; setting up formal presentations and meetings

Micaia is ensuring that lessons learned through the project are being fed into appropriate networks and institutions.

4.7 Organising and facilitating events and presentations

Two planned events were postponed into May 2025. Further events and presentations are planned for later in 2025.

3.2 Progress towards project Outputs

Output 1: Apicultural practices of 600 beekeepers are improved

Significant progress has been made towards achieving this output, and we are confident that it will be fully achieved by the end of the project. At the start of the project, we encountered a set of local contexts in which the scope and scale of traditional beekeeping varied somewhat (much more in Macossa and Mavonde than in the Dombe area). There were, however, some common themes: a) widespread use of log and bark hives; b) deployment of fire to generate rising smoke under tree-mounted hives; c) very limited understanding of 'modern' beekeeping – including, for instance, the advantages of working in apiaries. The result was very low level of colonization, a generally heavily smoked honey, and frequent spread of fires (which often destroyed hives and colonies).

Key changes are taking place across the project's focal areas. First, the package of improved technologies and practices has been fully integrated into training and practice (indicator 1.1), evidenced by the number of apiaries, converted hives, and the production of a manual. Secondly, we have surpassed the targeted reach of the project (600 beekeepers) by integrating 988 beekeepers. These beekeepers are interested, engaged, and increasingly active in transforming their practices in beekeeping in line with Indicator 1.2 (Beekeepers capable of sustainable beekeeping following training). Unfortunately, we have made less progress in meeting the target of involving at least 200 women by the end of Y2. To date, there are just 41 women actively involved. However, we are noting some change. In many of the cases in which apiaries have been established, women are already taking part in the management activities of the apiaries such as opening firebreaks and doing the regular cleaning around the hives. If this represents a lasting change towards beekeeping becoming more of a family activity, then that might be the best outcome we can achieve in households headed by men. It does mean, however, that it is highly unlikely that we will reach the target of having 30 female Lead Beekeepers. The Lead Beekeeper system has been established and is already having positive impacts through the demonstration of apiaries. We are confident that the 60 Lead Beekeepers are capable of playing their role (Indicator 1.3), evidenced not only by their adoption of new technologies, but also by the enthusiasm with which they embraced the connection with MHC. Similarly, given that so many beekeepers are following the lead and setting up apiaries, we have confidence that beekeepers will look to their Lead Beekeeper for support (Indicator 1.4). As for production and quality (Indicators 1.5 and 1.6), it is too early to say, but we have growing confidence that the honey harvested from the apiaries will be of sufficient quality to sell to MHC.

Output 2: Market linkages that enhance livelihoods of beekeeping families are enhanced.

As explained above, the drought precluded a commercial harvest, so the market linkages are yet to be fully established. However, progress was made, and if the 2025 harvest is as good as expected, we are confident that beekeepers will benefit from the new market linkages.

Although we are yet to formalize the contracts between Lead Beekeepers and MHC, all 60 LB have engaged with MHC and understand the contractual obligations (formal but not legally binding), and

we anticipate that all 60 LB will sign a contract (Indicator 2.1). As for the proposed individual production plans (Indicator 2.2), the evolving focus of the project on converting hives, establishing apiaries and improving management of colonies etc., we recognise that the 'plans' will be largely focused on beekeepers setting targets for annually expanding the number of hives in apiaries. This is a work in progress, but we expect to have such targets and plans set by at least 600 beekeepers by the end of the project. In focusing on the use of apiaries, it is much easier to monitor the use by beekeepers of practices that are likely to lead to improved honey quality (e.g., careful use of smoking; timely harvesting; careful comb selection), colony retention, and reduction of fire risk. In this way, we remain confident that we will reach and probably surpass the target set for beekeepers following such practices (70% of target group of 600 beekeepers as per Indicator 2.3) and producing honey of a quality to meet market needs (Indicator 2.4).

Output 3: Community based natural resource management plans incorporating sustainable apiculture are established in project areas.

The process of natural resource management planning is well under way at the end of Y2, with 9 plans in draft stage. The number of plans will be lower than in the original indicator simply because we recognized that the natural resource management committee needed to be at the level of the Regulado, the traditional authority, which is defined as the 'community'. We are working in 9 communities at this level, so there will 9 resource management plans, not 20 (Indicator 3.1). These plans will note any key specific issues relating to one or other sub-community within the Regulado, but in general they will set zones, guidelines etc across the community as a whole. By the end of the project, all communities will have a plan.

In all cases, the project team used discussion of beekeeping issues (including preliminary data from the biodiversity monitoring work) to facilitate the start of the process of management planning. The communities recognize that if natural resources are managed well, there will be a guarantee of good honey production, as well as consumption of wild fruit and collection of medicines to treat illnesses. There was also a lot of discussion about the process of making hives in the communities. People recognized that the removal of tree bark for the manufacture of beehives should not be done because it can kill the tree if all bark is removed, though in some cases, bark can regrow if the tree is left alone. These discussions and the growing awareness of the issues relating to beekeeping justify the inclusion in the emerging natural resource management plans of specific sections on beekeeping (Indicator 3.2).

Throughout these early phases of natural resource management committee formation and planning, there was a good level of community participation (Indicator 3.3). The data collected (number of meetings, number of participants) illustrates this at a basic level. However, some of the discussions recorded provide a more valuable qualitative indicator of engagement. In all the communities, degraded areas were identified and participants highlighted the need to undertake reforestation, noting that the same areas in the past had a good forest and were cut down for agricultural production, but this has led to erosion. Remaining forest areas with resource potential were identified, and the communities want them to be kept for sustainable use (use of firewood, medicines, wild fruits and beekeeping). Key species were highlighted as being suited to reforestation.

Output 4: Local, regional and national sustainable beekeeping practices informed by project evidence

At local level, the data being collected through the established socio-economic and ecological monitoring system (Indicator 4.1) is being used in community discussions and planning. We do not yet have data on extent of change but the data collected are accurate enough to detect significant change in occupancy of indicator species and loss of richness (Indicator 4.2). Preliminary data does suggest that species recovery rate is not being surpassed.

The experience and learnings of the project and the emerging results, especially the innovations in practice, are now beginning to reach a national audience (Indicators 4.3, 4.4, and 4.5). This is seen in several ways. First, there will be two BSc theses produced based on the project research as well as presentations and papers at national academic and policy conferences. The lead researchers at UEM aim to publish two papers in appropriate peer-reviewed publications. Eco-Micaia is producing (April 2025) a Policy Brief on Apiculture to present at a national conference in June 2025, and this will include specific policy recommendations arising out of the experience of the project. Micaia Foundation has produced a draft manual on converting 'traditional' hives to a top bar format. When finished, this will be shared with and presented to ACNAM, the National Apiculture Council of Mozambique, and will be included in a project to be led by ACNAM of producing standard training and support manuals for all aspects of apiculture in Mozambique (Indicator 4.6).

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. Considerable progress has been made in Y2 in ensuring that a large proportion of the target group of beekeepers are utilizing improved technologies and practices that make it likely that they will be able to harvest more honey and ensure that it is delivered to a commercial buyer in excellent condition than before the project. Given the establishment of the Lead Beekeeper system, the connections already made with the Mozambique Honey Company, it remains reasonable to set a target of an average income per beekeeping family of 20%+ by the end of the project (Outcome indicator O.1 Beekeeping families report increased income from honey sales). Sadly, due to the drought in 2024, in most areas there will only be one harvest prior to the end of the project.

The encouraging progress in spreading the use of apiaries, beehive conversion, and improved management practices all suggest the appropriateness and achievability of 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).

Regarding the third key Outcome Indicator O.3 Increase in the quantity (Kg per hive) of honey produced, the baseline established a mean level of production per beekeeper of 80litres, though with a wide spread of volumes, and an average price of 100MZN per litre. We had anticipated having intermediary data from the 2024 harvest but this did not happen so we will only be able to assess this indicator later in 2025 after the harvest.

During the initial mobilization and community profiling phase, we confirmed that none of the villages or 9 communities have a natural resource management plan. As planned, Y2 of the project saw the launch of work 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.

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). – because of the modified approach to the biodiversity monitoring, the indicators are being modified under review by UEM. Fauna species were not assessed due to stealing of the cameras, though prior to removal of the cameras, significant mammal movement was captured (elephant, kudu, etc). Vegetation assessment indicates that the most used species (*Sclerocarya birrea*; locally know as Mfula) is still ecologically dominant in the study areas, but there are signs of decreasing in abundance of the sizes used to produce the hives (dbh 20 cm), which may compromise the sustainability of the activity.

Overall, we are confident that the outcome will be achieved by the end of the project. We have almost 60% more beekeepers engaged than planned. There is a good level of engagement and enthusiastic adoption of new technologies and practices that should lead to increased production, and market linkages have been established. Natural resource management planning is taking place, and the research is demonstrating that current levels of beekeeping, especially if following improved practices and systems of production being introduced, are manageable within the regenerative capacity of the project.

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. As in Y1, we can only reference anecdotal evidence from MHC monitoring of the range of honey products available in shops, the increasing number of supermarkets opening in urban areas, and the growing national production of commercial honey; all suggests that the demand for honey is growing. As for the concern about regenerative capacity of the miombo, we remain cautious. From studies of Zambia and elsewhere, we know that excessive beekeeping can lead to serious species loss. In the project focal areas, however, initial data suggest that the scale is not yet at a level at which the regenerative capacity has been 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 implementation of the Biodiversity Monitoring process confirmed that all three assumptions set out in the logframe were all reasonable.

Output Indicators:

In general, we are able to state that all output assumptions were reasonable and remain so. Regarding the Assumption *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. However, the project has struggled to reach the proportion of women targeted for participation. There is early evidence of increasing levels of engagement by women in the case of beekeepers who have apiaries, so we continue to believe that the assumption is applicable.

3.5 Impact: achievement of positive impact on biodiversity and multidimensional 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 and analysing primary data, but the early results indicate that assumptions about the use of key species, the use and impact of fire in beekeeping, etc. were sound. The interesting finding that bark on the key specie *Sclerocarya birrea* regenerates over time, coupled with data showing the abundance of key species, indicates that 'traditional' beekeeping in the focal miombo areas can continue to expand without leading to damaging degradation of the forest. This positive outcome is being made more likely by the technical innovations being introduced. These are highly replicable, and Micaia's national reach, through its link with MHC, and through its engagement with ACNAM and various Government departments, makes it more likely that these innovations can be more widely adopted.

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 degree of take-up of technology and practice advances all suggest that participating beekeepers will gain.

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. Note that in 2024, in response to draft Regulations to implement the new Forest Law, Micaia Foundation facilitated a consultation process with NTFP businesses, including honey companies, research institutions, NGOs and others to consider the implications for community engagement and commercial development in NTFP value chains, including honey. This led to Micaia's submission of a substantial paper commenting on the draft regulations, and to the revision of several draft regulations relating to NTFP commercialization.

5. Project support for multidimensional poverty reduction

The project targets economically poor communities in four miombo areas of central Mozambique. Household data gathered to date demonstrates that a very high proportion of the target of 600 families have household income below the $1.90 per day indicator of monetary poverty. Non-monetary indicators will be reviewed following the second household survey.

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. In the Household Survey, of the 163 beekeepers interviewed, 146 said that they started beekeeping because they need money. It follows, therefore, that if the project succeeds in creating the conditions for sustained increases in earned income from honey sales, it will have direct impact on poverty in the focal communities.

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 (GESI)

GESI Scale	Description	Put X where you think your project is on the scale
Not yet sensitive	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.	
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	X
Transformative	The project has all the characteristics of an 'empowering' approach whilst also addressing unequal power relationships and seeking institutional and societal change	

Micaia is committed to working within a Gender Equality and Social Inclusion (GESI) framework in project design and implementation. In Y1, we felt that the project was at least GESI Sensitive. We did not feel comfortable suggesting that the project was GESI empowering. At the end of Y2, however, we tentatively propose this level. We do so while acknowledging that it has continued to be very challenging to make progress on enabling women to become beekeepers. There are two principal reasons why we feel justified in (however tentatively) suggesting that the project is GESI Empowering.

Firstly, the project team is confronting head-on and challenging old assumptions about beekeeping being only for men. The technologies being promoted are accessible for all. However, unlike imported KTB hives that can simply be given to people, log or bark hives have to be made or converted, and this is quite arduous work normally undertaken by men (though by no means either an exclusively male activity or an activity that is beyond the physical capability of many women). So the 'asset ownership' dimension of empowerment might well be missed in this case, but what we are seeing is a significant shift from beekeeping being male only to being a family activity, in which women can play important roles. How that translates into increased involvement in decision-making over use of money earned from beekeeping remains to be seen. In other cases in which Micaia has enabled women to be more involved in value chains, including honey in Chimanimani and baobab in the north of Manica, research has shown that women have become more involved and more respected in the home and family and have had more power of voice.

Secondly, almost a third of people elected by communities to the natural resource committees are women, and in many communities, the proportion was exactly or almost 50%. Women were actively involved in community discussions on resource access and use, and we can assume that they will continue to have their perspectives heard as plans are prepared and implemented.

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, whose role is monitor change i.e. making progress from activities/outputs towards achieving outcomes. 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, households and communities, and biodiversity. 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 because of the relatively short time frame. However, the data produced so far provides a basis for future tracking, and while there seems to be no major impact of the traditional practices to date, a forest management plan is being designed to achieve sustainability.

8. Lessons learnt

Mozambique has received extensive funding for beekeeping development over the years, with significant proportions of that funding going into the production and distribution of 'improved' beehives, especially the Kenya Top Bar hive. Part of the rationale for these projects is usually tied up with reducing forest degradation and deforestation that arises out of production of 'traditional' hives. Micaia Foundation has been involved in the distribution of KTB hives, and we continue to believe that they are an efficient technology for artisanal beekeeping in certain contexts. However, we have also explored the experience of the successful commercial beekeeping industry in Zambia, where much of the honey comes from 'traditional' hives. We have noted the experience and guidance of specialist agencies such as Bees For Development, that urge caution in automatically denigrating 'traditional' technologies. This project, therefore, sought to explore some key assumptions and concerns about the threat to miombo woodland from beekeeping expansion. We are learning some very important lessons that can have far-reaching consequences in Mozambique. Firstly, it is clear that traditional beekeeping practices *do* increase risks of fires, and also *do* impact on the abundance of key species. Secondly, however, the data collected so far, even in the key beekeeping community of Catique-Nzaia, shows that the regenerative capacity of the forest has not yet been reached. We can then add a third key lesson: by adapting the technology and improving practices, we can increase productivity per hive, while reducing the growth rate in production of new log or bark hives. In other words, we can expand beekeeping livelihoods while maintaining the scale of key species use well within the regenerative capacity of the forest.

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

The main action taken in response to the feedback received on our Y1 Annual Report was to revise the project logframe largely as suggested by the reviewer. We agreed that the proposed revision presented a more logical (and easier to follow) flow.

The review provided some very helpful guidance and insights in relation to the GESI framework and analysis. In particular, we were urged to consider carefully the gender implications of activities and outputs and not just monitor and disaggregate participation. We have tried to do this. For instance, we are taking a more nuanced and practicable approach to discussing how women and men can be involved in the beekeeping livelihood, shifting toward it being an important part of the household livelihoods 'basket', and this is having some positive impacts. We quite deliberately sought to create space and time in the community natural resource planning discussions for women and men to explore and share their different perspectives on natural resource access and use. This reflects the often very different levels of importance given by women and men to different types of access to and use of resources (women's central role in collecting wild food, medicine, and water being oft-cited examples).

The review also raised a fair and interesting point about the need to consider other actors in the honey value chain beyond the beekeepers and the potential main off-taker, the Mozambique Honey Company. In particular, this was highlighting the role played by traders or intermediaries – aggregators. We did consider this point, and there are various comments to make. First, we agree that traders and aggregators can often play critical roles; that while some may be picking off isolated producers and paying very low prices, even so they are often the only buyer, reaching isolated communities with small trucks etc and paying in cash or goods. Such traders can in fact be part of a quite complex system of movement of goods and services in deep rural areas. However, that is changing somewhat with greater mobility, the growth of small urban centres, and better communications. Micaia has never sought to exclude traders and intermediaries in value chain work. We work with local companies, including transporters, in a number of value chain projects.

Secondly, in the medium-term, we see the Lead Beekeepers as potential 'intermediaries', being paid for services that can get as far as aggregation. In Chimanimani, MHC is already working with a sub-set of 30 senior Lead Beekeepers to expand the services they offer.

Thirdly, we need to recognise the different contexts in each of the three districts with regard to established value chains. In Macossa and, to a lesser extent, Mavonde, there are established supply chains leading to urban markets, and the project will not directly affect these established chains in the short-term. For one thing, MHC will only buy honey that meets its market standards, and that is likely to be restricted to apiary-sourced honey where appropriate smoking and other practices can be deployed. Given the large number of log and bark hives, especially in Macossa, there will be ample supply for the established routes. This does not mean that we would not want to see change in the existing systems. Firstly, the Government, with full support from ACNAM, is trying to establish a national honey traceability system to build data on production and to protect consumers. Such a system would require traders to register and thus make it easier to track products to source. In turn, this would make it easier to intervene in the value chain and promote better practices. A second point about the established traders is that they often pay quite well. It is possible that they may pay more than MHC can offer. This is because they operate a very simple value chain, paying no taxes, using cheap packaging and simple direct marketing and distribution. However much the Government may wish to formalize the system, it will take time.

10. Risk Management

No major new risks have arisen in the second year of the project that were not previously accounted for. We have noted elsewhere in this report the impact of the political crisis in Mozambique, and of the latest experience of climate volatility. We continue to monitor the political and security context closely, as per the requirements of Micaia's Security Policy. We have also noted above the theft of two of the camera traps. The project team responded by working with the communities and facilitating improved accountability in the form of elected 'equipment monitors' from the community.

11. Scalability and durability

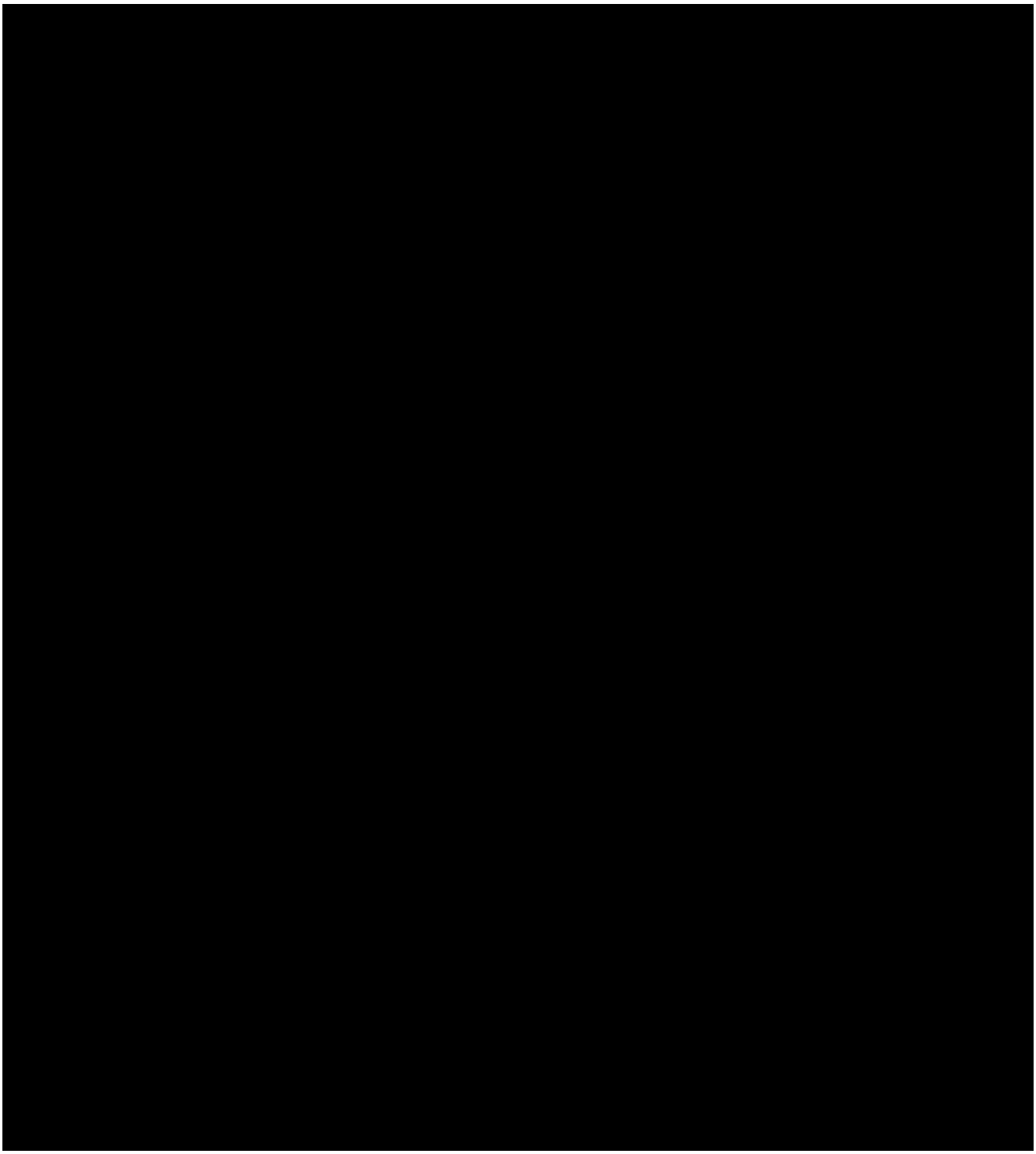
As noted above (Q8; Q3.2 – re Output 4), there are various ways in which we believe that the lessons learned through this project, and the outputs produced, will be influential in Mozambique, helping scale the impact and sustain the project's achievements. Micaia is already engaging partners in Manica Province, including in the Macossa-Tambara eco-system where there is extensive traditional beekeeping, to explore how to replicate and expand the approaches adopted in this project. The current opportunity, afforded by the Government of Mozambique's interest in promoting the apiculture industry, to share outputs and learning from the project is very timely and will ensure that national stakeholders are reached.

12. Darwin Initiative identity

Despite presenting the project at various levels of government, and in workshops locally, we acknowledge that this has been a weakness in the project implementation to date. Towards the end of Y1 we had an excellent, and very well-covered visit from the British High Commissioner, but in Y2 there has been very little exposure. In May 2024, the project team was central in celebrating World Bee Day, and there were various references to the project in events and presentations. However, we have not been very active on social media with regard to the project. Recognizing this, we have been working with Micaia's Communications Officer on a plan for the final year of the project. We will create a *s*et of communication and visibility materials that will document, celebrate, and symbolically carry forward the project's impact. The central idea is to share real stories from the people involved — beneficiaries, staff, and partners — in a way that is accessible, emotional, and engaging. This will be done through two main formats: a printed (and digital) magazine and a series of short video interviews. The magazine will serve as a special closing publication. It may include 5

to 7 stories of impact and success, each told through short texts and powerful visuals that highlight the people and places behind the project. Each story will be accompanied by a QR code linking to a corresponding video, where the person shares their experience in their own voice. In addition to these stories, the magazine may also include an introductory message, a brief overview of key results, selected quotes, and a visual gallery capturing the project's journey. The videos will be short but emotionally impactful — simple interviews (1 to 3 minutes) with the people featured in the magazine. These will be filmed in real-life contexts, with good audio and visual quality, and subtitled. The videos can later be shared across social media platforms and shown as presentations of our work in further occasions. More than just reporting results, we could look at this material to create a living memory of the project - the magazine that can be printed in desired numbers, etc.

13. Safeguarding



14. Project expenditure

Table 1: Project expenditure during the reporting period (1 April 2024 – 31 March 2025)

Project spend (indicative) since last Annual Report	2024/25 Grant (£)	2024/25 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)	[redacted]			
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Others (see below)				
TOTAL	**161,911**	**154,584**	**95.5%**	

Table 2: Project mobilised or matched funding during the reporting period (1 April 2024 – 31 March 2025)

	Secured to date	Expected by end of project	Sources
Matched funding leveraged by the partners to deliver the project (£)	[redacted]	[redacted]	Uni. Of Edinburgh Micaia UK
Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project (£)	[redacted]	[redacted]	Climate Knowledge Development Network – work with communities on learning about climate change impact in the miombo

Annex 1: Report of progress and achievements against logframe for Financial Year 2024-2025

Project summary	Progress and Achievements April 2024 - March 2025	Actions required/planned for next period
Impact Beekeeping livelihoods expand in Mozambique's miombo forests, in ways that lead to long-term reductions in rates of forest degradation and biodiversity loss		
Outcome Beekeeping makes an increasing financial contribution to 600+ families and is managed within the regenerative capacity of the miombo		
Outcome indicator 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%+*)	Not yet measurable as there was no harvest.	Support for harvest in Sept-Oct
Outcome indicator 0.2 600+ Beekeepers committing to the quality and sustainable beekeeping set in individual production plans and confirmed in contracts with MHC (*baseline: none; project targets: 600 beekeepers with knowledge of sustainable approaches; 70%+ putting knowledge into practice.*)	Widespread and growing adoption of new technologies and practices; establishment and functioning of Lead Beekeeper system; contacts made with MHC.	Contracts signed by Lead Beekeepers with MHC Production targets set.
Outcome indicator 0.3 Participating communities create and actively monitor natural resource management plans incorporating beekeeping guidelines and limits (*baseline: no communities have a plan; project target: 70% of participating communities*	All 9 communities have started the planning process and formed Natural Resource Management Committees	Continue with the participatory planning; formalize the plans; ensure community-wide engagement
Outcome indicator 0.4 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*).	Biodiversity assessment carried out in 2 communities (Mussgandze and Catiqu-Nzaia) which showed high intensity of honey activitiy. Preliminary data analysis shows that the forests in both communities are well conserved and there is no risk of forest	Wet season assessment, set up camera traps and audiomoths in safe places. Finish data analysis

	degradation, at the current level of honey production. Sclerocary birrea (Mfula) shows signs of decreasing abundance for the sizes required for hive production. Fauna assessment not conducted because the cameras were stolen,	Develop the sustainable forest management plan Develop monitoring indicators and protocols Publish one paper and 2 BSc thesis.
Outcome indicator 0.5 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*).		
Output 1 Apicultural practices of 600 beekeepers are improved		
Output Indicator 1.1 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 (*Project milestone: package designed and integrated into training programme by Q3 in Year 1*)	Designed, continuing to evolve through testing, and in increasing use by beekeepers	Continuing roll out of setting up apiaries and converting hives
Output Indicator 1.2 Beekeepers capable of sustainable beekeeping following completion of training, *(Project milestones: 300 [min 100 women] in Year 1; 300 [min 100 women] in Year 2)*	348 apiaries established (none at the start); widespread adoption of new practices; evidence of increasing engagement by women	Continuing training and support
Output Indicator 1.3 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]*)	60 Lead Beekeepers in place and increasingly engaged in demonstrating new technologies and practices	Continuing to support the LB – a key time will be the harvest later in 2025
Output indicator 1.4 Beekeepers working with and seeking support from their Lead Beekeeper *(Project milestones: 200 in Year 1; 400 in Year 2; 600 in Year 3)*	Beekeepers establishing apiaries and converting hives based on demonstration and training from Lead Beekeepers	Continuing to support the LB
Output indicator 1.5 Beekeepers committing to the quality and sustainable beekeeping standards set in individual production plans and confirmed in contracts with MHC. (*Project milestones: 200 in Year 1; 400 in Year 2; 600 in Year 3*)	Widespread adoption of new technologies and practices indicates beekeeper understanding and commitment	Support for the preparation of the new season harvest

Output indicator 1.6 Percentage of honey rejected by MHC. (*Project milestones:; <20% in Year 2; < 10% in Year 3)*	Not yet measurable	
Output 2. Market linkages that enhance livelihoods of beekeeping families are enhanced.		
Output indicator 2.1 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]*)	60 LB in contact with MHC (58 men; 2 women).	Sign contracts
Output indicator 2.2 Individual productions plans for beekeepers *(baseline: none; project targets: 600 beekeepers plans;)*	All participating beekeepers engaged in planning apiaries which will be the basis of production plans	Continuing support with aim of formalizing plans and targets
Output indicator 2.3 Production standards and honey quality maintained at a level to secure a commercial market (*baseline: no formal commercial market; project targets: 600 beekeepers with quality sufficient to sell to MHC or other commercial buyer)*	No harvest yet to test quality but growing awareness of and commitment to new practices	Continuing support in the lead up to harvest, with key focus on comb removal and handling.
Output indicator 2.4 600+ Beekeepers committing to the quality and sustainable beekeeping set in individual production plans and confirmed in contracts with MHC (*baseline: none; project targets: 600 beekeepers with knowledge of sustainable approaches; 70%+ putting knowledge into practice*.)	In process as described above	As above
Output 3. Community based natural resource management plans incorporating sustainable apiculture are established in project areas.		
Output indicator 3.1 Communities with a natural resource management plan (*Project milestones: Year 2 – 10; Year 3 – 10*)	9 communities have the basis of a draft plan	Completing and formalizing the plans
Output indicator 3.2 Community plans have a specific set of guidelines on beekeeping and honey harvesting (*Project milestones: Year 2 – 10; Year 3 – 10*).	In all communities, beekeeping has been a core discussion in the planning	Ensuring that the plans set specific guidelines on beekeeping
Output indicator 3.3 Community members actively engaged in the development of the plan *(Targets: average of 100 members; 50% women)*	1,079 people involved in the community meetings (40% women). 30% of the elected representatives on Natural Resources Management Committees are women.	Continuing to facilitate engagement.
Output 4.		

Output indicator 4.1 Socio-economic and ecological monitoring system established in project areas *(Baseline: none; Year 1 – established; Year 2-3 – maintained)*	Completed in Year 1	Household survey planned for Oct-Nov 2025
Output indicator 4.2 Data being produced, collected, analysed and utilized. *Target: initial survey completeness >90%; panel surveys >95%; number of large trees can be estimated in each community with a precision of 20% of the mean; occupancy and richness data are accurate enough to detect a >20% change in occupancy of indicator species, and a loss of richness >25%.*	Cleaning and analysis of data under way.	Additional data will be generated from biodiversity survey and second phase household survey
Output indicator 4.3 Number of peer-reviewed publications, policy briefings, case-studies, guidelines produced. (*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.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)*	No publications to date but 2 Bsc theses underway; one practice guideline in draft; input to Policy Brief to be submitted in June to Ministry.	Two papers planned for submission to peer-reviewed publications in 2025-6
Output indicator 4.4 Number of events where the results of the data collection are shared. *Target – two meetings per year from Y2*	Planned events postponed.	One regional, one national event scheduled. Plus, local meetings in project area.
Output indicator 4.5 Number of knowledge-sharing events held with policy makers and stakeholders in the apiculture industry. *Target – two per year from Y2*	Micaia presented work in progress at meeting of ACNAM. Also demonstrated converted hives on World Bee Day.	Workshop to be co-hosted with ACNAM to share technical information and lessons

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
Impact: Beekeeping livelihoods expand in Mozambique's miombo forests, in ways that lead to long-term reductions in rates of forest degradation and biodiversity loss			
Outcome: (Max 30 words) Beekeeping makes an increasing financial contribution to 600+ families and is managed within the regenerative capacity of the miombo	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%+*) 0.2 600+ Beekeepers committing to the quality and sustainable beekeeping set in individual production plans and confirmed in contracts with MHC (*baseline: none; project targets: 600 beekeepers with knowledge of sustainable approaches; 70%+ putting knowledge into practice*.) 0.3 Participating communities create and actively monitor natural resource management plans incorporating beekeeping guidelines and limits (*baseline: no communities have a plan; project target: 70% of participating communities* 0.4 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*).	0.1 Data from long-term household panels in participant and control households 0.1 Honey buying records from MHC 0.2 Project monitoring reports and annual surveys; Lead Beekeeper records. MHC records 0.3 Plans shared with the project team; Project monitoring reports; records of community groups 0.4 "Difference-in-difference" analysis of radar remote sensing data and woodland structure surveys.	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. 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. 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. 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.

	0.5 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*).	0.5 "Difference-in-difference" analysis of indicator species / taxa surveys, camera trap and eco-acoustic data.	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. The combination of community-led surveys, camera traps and eco-acoustics give considerable flexibility in approach.
Outputs: 1. Apicultural practices of 600 beekeepers are improved	1.1 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 (*Project milestone: package designed and integrated into training programme by Q3 in Year 1*) 1.2 Beekeepers capable of sustainable beekeeping following completion of training, *(Project milestones: 300 [min 100 women] in Year 1; 300 [min 100 women] in Year 2)* 1.3 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]*) 1.4 Beekeepers working with and seeking support from their Lead	1.1 Designs and manuals available; research reports 1.2 Attendance records for training workshops; training workshop reports; monitoring reports 1.3 Lead Beekeeper records; monitoring visit reports	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. We assume that MHC will commit to being the main offtaker for the honey.

	Beekeeper *(Project milestones: 200 in Year 1; 400 in Year 2; 600 in Year 3)* 1.5 Beekeepers committing to the quality and sustainable beekeeping standards set in individual production plans and confirmed in contracts with MHC. (*Project milestones: 200 in Year 1; 400 in Year 2; 600 in Year 3*) 1.6 Percentage of honey rejected by MHC. (*Project milestones:; <20% in Year 2; < 10% in Year 3)*	1.4 Lead Beekeeper records; MHC records; Beekeeper production plans 1.5 Lead Beekeeper records; project monitoring reports; MHC records; contracts. 1.6 MHC records	
2. Market linkages that enhance livelihoods of beekeeping families are enhanced.	2.1 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]*) 2.2 Individual productions plans for beekeepers *(baseline: none; project targets: 600 beekeepers plans;)* 2.3 600+ Beekeepers committing to the quality and sustainable beekeeping set in individual production plans and confirmed in contracts with MHC (*baseline: none; project targets: 600 beekeepers with knowledge of sustainable approaches; 70%+ putting knowledge into practice*.)	2.1 Contracts 2.2 Plans and monitoring records 2.3 Project monitoring reports and annual surveys; Lead Beekeeper records. MHC records	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).

	2.4 Production standards and honey quality maintained at a level to secure a commercial market (*baseline: no formal commercial market; project targets: 600 beekeepers with quality sufficient to sell to MHC or other commercial buyer)*	2.4 MHC Buying records; rejection rate	
3. Community based natural resource management plans incorporating sustainable apiculture are established in project areas.	3.1 Communities with a natural resource management plan (*Project milestones: Year 2 – 10; Year 3 – 10*) 3.2 Community plans have a specific set of guidelines on beekeeping and honey harvesting (*Project milestones: Year 2 – 10; Year 3 – 10*). 3.3 Community members actively engaged in the development of the plan *(Targets: average of 100 members; 50% women)*	3.1 Plans shared with the project team 3.2 As above 3.3 Project reports	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.
5. Local, regional and national sustainable beekeeping practices informed by project evidence	4.1 Socio-economic and ecological monitoring system established in project areas *(Baseline: none; Year 1 – established; Year 2-3 – maintained)* 4.2 Data being produced, collected, analysed and utilized. *Target: initial survey completeness >90%; panel surveys >95%; number of large trees can be estimated in each community with a precision of 20% of the mean; occupancy and richness data are accurate enough to detect a >20% change in occupancy of indicator species, and a loss of richness >25%.*	4.1 BDM Protocol; survey tools; project reports 4.2 HH survey data (anonymised) on open access portal; Tree data stored on international portal (SEOSAW database); Biodiversity data (both community based and camera traps / bio acoustic) available. Report and data on degradation publicly available online	We assume that our methods developed in other parts of Mozambique and Zambia will work in the study locations and will require similar effort. 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. We assume that we will be able to find key species which are good indicators of the diversity of the ecosystem and

	4.3 Number of peer-reviewed publications, policy briefings, case-studies, guidelines produced. (*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.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)* 4.4 Number of events where the results of the data collection are shared. *Target – two meetings per year from Y2* 4.5 Number of knowledge-sharing events held with policy makers and stakeholders in the apiculture industry. *Target – two per year from Y2* 4.6 Number of Technical innovations and processes adopted *(Milestones: By end Y2,Mozambican training manuals for beekeeping include good practice guidelines developed in the project)*	4.3 Presence of data in peer review literature and conference proceedings; other papers, policy briefings; data sheets 4.4 Records of community meetings and evidence of community input in reports and analysis. 4.5 Meeting reports 4.6 Beekeeping manuals and training course documents.	which are sensitive to the impacts of unsustainable honey production. 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). We assume we will be able to hire a capable researcher in Mozambique to conduct the day-to-day work. Weassume 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. We assume that there will be interest in government and among other stakeholders to engage with the project

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

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

1.8 Researching and developing technical innovations for beehives

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

1.10 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

1.11 Procurement of top bar hives and protective clothing

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

Output 2

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

2.2 Planning meetings with MHC – over price, logistics, quantities, quality standards and contracts

2.3 Meetings with Lead Beekeepers and MHC – preparation of LB contracts

2.5 Organizing visits by Lead Beekeepers to MHC factory in Chimoio

2.6 Support for harvest and MHC buying operation

Output 3

3.1 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

3.2 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

3.3 Facilitating the development of a gender-balanced community natural resource management committee with representation by beekeepers

3.4 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 4

4.1 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.

4.2 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;

4.3 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

4.4 Data analysis and ongoing community feedback

4.5 Drafting and review of papers, briefings, good practice guides

4.6 Consultation with relevant authorities; setting up formal presentations and meetings

4.7 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 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	298			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	9			9
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	298			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	298			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	2			4
D1-C17	No. of data sets used in high quality peer-reviewed publications and no. of	Number of unique papers submitted to peer reviewed journals	Number	None	0	0			2

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
	presentations at appropriate meetings / conferences								
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

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, scheme, type of report (i.e. Annual or Final), and year) and **deleted the blue guidance text** before submission?	X
Is the report less than 10MB? If so, please email to BCF-Reports@niras.com putting the project number in the Subject line.	X
Is your report more than 10MB? If so, please consider the best way to submit. One zipped file, or a download option, is recommended. We can work with most online options and will be in touch if we have a problem accessing material. If unsure, 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.	X
Have you provided an updated risk register? If you have an existing risk register you should provide an updated version alongside your report. If your project was funded prior to this being a requirement, you are encouraged to develop a risk register.	
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	X
Have you completed the Project Expenditure table fully?	X
Do not include claim forms or other communications with this report.	