

Darwin Initiative Main: Annual Report

To be completed with reference to the "Project Reporting Information Note":

(<https://www.darwininitiative.org.uk/resources/information-notes/>)

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

Submission Deadline: 30th April 2024

Submit to: BCF-Reports@niras.com including your project ref in the subject line

Darwin Initiative Project Information

Project reference	DIR 28-025
Project title	Stock-proof hedges to improve farming livelihoods and conserve Malagasy forests
Country/ies	Madagascar
Lead Partner	North of England Zoological Society (Chester Zoo)
Project partner(s)	Missouri Botanical Garden, Madagascar Research and Conservation Program (MBG)
Darwin Initiative grant value	£203,670
Start/end dates of project	Oct 2021 – Sep 2024
Reporting period (e.g. Apr 2023 – Mar 2024) and number (e.g. Annual Report 1, 2, 3)	April 2023-March 2024
Project Leader name	Dr Claire [REDACTED]
Project website/blog/social media	Twitter: @c_birkinshaw
Report author(s) and date	Dr Claire [REDACTED], Fidy [REDACTED] Dr Chris [REDACTED] 25 April 2024

1. Project summary

The Agnalazaha forest, in SE Madagascar, one of the largest remaining fragments of rare littoral forest, is threatened by cutting trees to make poles by local subsistence farmers who erect fences to protect crops from free-ranging cattle. Cutting these stems degrades the forest, reduces its integrity, and impacts rare native biota. In this project we are supporting farmers by providing training, equipment, and materials (including hedging plants) to plant and manage stock-proof hedges thereby protecting crops, improving livelihoods, and conserving the forest.

2. Project stakeholders/ partners

This project is founded on two major partnerships: between Chester Zoo and MBG; and between MBG and the local community living in the peripheral zone of the Agnalazaha Forest Protected Area.

To date Chester Zoo has supported MBG in the implementation of this project by:

- a) facilitating the administrative process – especially guiding MBG staff in honouring the reporting requirements and by providing financial advances,
- b) guiding the development and implementation of monitoring protocols for the evaluation of local perceptions of the project, of the protected area (and its associated management regimes) and of MBG – specifically Greg Counsell (CZ's Social Scientist) spent 7 days on site (11-17 July 2022) to review the implementation of the social monitoring protocols by local staff (Amadou and Elianne) making substantive recommendations for changes to improve their work and guided a work placement student to analyse the T0 data concerning social perceptions (the report of this study is included in the Evidence Output 5.2)
- c) contributing to capacity building of nursery staff – specifically Liz Young (one of CZ's horticulturalists) who in 2022 spent 7 days on site brain-storming with nursery staff on how to improve the quality of plants being produced.
- d) training in hedge laying – specifically Claire Raisin (CZ's Regional Programme Manager for Madagascar and the Mascarenes) demonstrated hedge laying in 2022 and again over 5 days in August 2023 (Evidence Activity 2.10)

The second major partnership essential to the success of this project is that between MBG and various parts of the local community, including: farmers who seek to protect their crops from free-ranging cattle (in YRs 1, 2 and 3); unmarried mothers who were recruited to work in the nursery (in YRs 1 and 2); and local middle school students who contributed to monitoring (in YRs 1, 2 and 3). MBG has been working at Agnalazaha Forest since 2004 and consequently the development of the necessary relationships with these stakeholder groups posed no problems. The recruitment of specific participants in each of these groups (a total of 81 farmers, 10 unmarried mothers (in YRs1 and 2), and 2 x 10 students (10 working each of YRs 2 and 3) was entirely transparent and no problems were encountered in this process. The local authorities and traditional leaders all appreciated this support for community members.

3. Project progress

3.1 Progress in carrying out project Activities

According to the work plan presented in the original application only three activities were scheduled for YR3: Activities 4.1, 5.2 and 5.3. However to ensure the success of the Project, and in-line with adaptive management, certain other interventions that were planned to have been completed earlier, continued during YR3. These included: Activities 1.2, 1.4, 2.8, 2.9 and 2.10. Work conducted within the scope of each of these Activities is listed below – classified under their corresponding output.

Output 1. A critical mass (~30%) of agricultural plots within the buffer zone of protected areas are protected effectively from incursion of livestock using barbed wire fences

1.2 *Workshop to select and orientate farmer participants.* While this activity was completed in YR1, we found that as the project progressed, additional farmers, who had initially been reticent to join the project, came forward requesting inclusion. Thus in YR2 we were able to accommodate the needs of an additional 18 farmers (bring the total to 60 farmers), and in YR3 a further 21 farmers were engaged, thus the total number of farmers now implicated in this project is 81 – this constitutes ca. 44% of the 181 farmers living adjacent to the forest (Evidence Output 2.1). The barbed wire required for these new enclosures was largely provided with an additional source of funding and by using stocks of barbed wire left over from YR1. The new participants were shown how to install the barbed wire fences safely by the existing participants.

1.4 *Installation of barbed-wire fences by participating farmers around their plots (4-strand fence for total 16 km; support posts every 2m).* Contrary to the original plan the installation of the

barbed wire fences continued through YR2 and into YR3, and we are now pleased to report that, in total, 12.85 km of barbed wire fences have now been installed (see Evidence Output 2.1. and Activity 2.8a, 2.8b and 2.9). It should be noted that the farmers who installed their fences in YR1 of the Project have proactively intervened to ensure the maintenance of their fences (e.g. replacing any of the posts that had rotted at the base), and hence the fences remain in a good condition.

Output 2. Agricultural plots of the 35 participating farmers provided with long term protection with livestock- proof hedges

2.8 *Inserting living stakes along line of barbed wire fence to create basic hedge structure.* As reported in the YR2 report, some of the *Gliricidia* stems inserted during YR1 failed to root and during YR2 and into YR 3 we replaced these stems with stems of *Jatropha*, that root and grow more easily than *Gliricidia* on very sandy soil (Evidence Activity 2.8b). In total ca. 2,331 stems of *Jatropha* were planted.

2.9 *Out-planting seedlings of native trees within lines of living stakes (hedge enrichment).* In YR2 10,000 young plants of 14 native trees and shrubs were transported from the nursery and planted along the line of the barbed wire fences. In YR3, 11,184 young plants were planted in a similar manner. In some cases these young plants were used to replace plants that had died. The survival rate of the out-planted seedlings is 68.84% (Evidence Output 2.2).

2.10 *Workshop and coaching of farmers to lay hedges (provided by expert hedger from UK).*

In August 2023, Claire Raisin returned to Agnalazaha for 3-days to provide a demonstration for 12 local farmers in hedge-laying on a section of *Gliricidia* hedge that was now the ideal height for this demonstration (Evidence Activity 2.10a). The demonstration was very well received and the participants quickly understood the principles. Six months later the parts of the hedges that was laid had regenerated very well indeed and are now ready to be laid again (Evidence 2.10b).

Output 4. A best practice model for protecting forests by developing sustainable crop protection techniques and livelihoods (i.e. use of hedges and enabling access to employment in tree nurseries for young mothers) is developed and shared with other conservation and development organisations operating in Madagascar

4.1. *Communication about project through social media and website.*

Seven posts have been made on twitter (see @c_birkinshaw and @ScienceatCZ) (Evidence Activity 4.1a). CZ produced a video about the project and highlighting the work of the nurserywomen for International Women's Day. The social media posts had a reach of 43,000 on Instagram and 44,000 on Facebook, the full story was read on the website by 242 people and on YouTube the video has been viewed by 83 people.

More formal communication about the project included a 30 minute presentation to the Living Earth Collaborative (Washington University in St Louis) in February 2024. An article concerning exploitation of fence posts, that references this Project as being a solution to the over-exploitation of this resource, was submitted for publication to the peer-reviewed journal Madagascar Conservation and Development (Evidence 4.1b).

Output 5. Effective project implementation based on adaptive management

5.2 *Support for monitoring team to apply monitoring protocols.* This activity was carried out in manner and time planned. To date, two batches of middle school students have assisted with monitoring. In March 2023 (at the end of YR2) we recruited the second batch of students (7 young men and 3 young women – Evidence 5.2.) and we continued to work with them during YR3 of the Project. As previously the new batch of students worked on alternate Saturday mornings to monitor various indicators and, in return, received a payment and school stationery to help support their education.

5.3. *Workshops to share information on project progress, to identify issues arising and to modify interventions to maximise efficacy.* Carried out in manner and time planned – the staff managing the Agnalazaha Forest PA meet every two weeks to discuss issues arising – Elianne is included in these meetings to ensure that the work related to this project was well integrated into the overall management of the protected area (Evidence 5.3).

5.4. *Formal reporting*: carried out in manner and time planned

3.2 Progress towards project Outputs

Output 1. A critical mass (~30%) of agricultural plots within the buffer zone of protected areas are protected effectively from incursion of livestock using barbed wire fences.

At the launch of the project no farmers living in the landscape of the Agnalazaha Protected Area protected their crops with barbed-wire fences nor hedges, now, at end of YR 3, 12.85 km of barbed wire fences have been installed reinforced with *Gliricidia* and *Jatropha* stems and red pineapple are protecting 27.66 ha of fields belonging to 81 farmers (Evidence 2.1). The total area of active fields close to the forest is ca. 65 ha (in fact this varies from year to year), so we estimate that 44% of fields in this zone are now protected using barbed wire. Hence this output has been fully achieved.

Output 2. Agricultural plots of the 35 participating farmers provided with long term protection with livestock-proof hedges

Hedges have been installed along all the barbed wire fences, thus a total of 12.85 km. The hedges consist of stems of *Gliricidia* and *Jatropha* (which, when pushed into the ground, can root) and a selection of young plants of native trees and shrubs. Depending on the soil type the hedges have either grown quickly (on laterite soils) or slowly (on sandy soils). To date only 0.1 km of hedges) have been laid. Thus currently this output has only been achieved at 0.7 %.

Output 3. Capacity of farmers and nursery staff is improved and they have the ability to independently create and maintain stock-proof hedges, or cultivate trees in plant nurseries, respectively.

The 81 participating farmers now have the skills to safely install a high-quality barbed wire fence and ten nursery women are knowledgeable and skilled in horticulture. The nursery women finished their work with this project in YR2 and we are pleased to report that, of these, five have continued to produce plants for sale from their own nurseries for their personal gain, and these made total sales of £1,578 (Evidence Output 3).

Output 4. A best practice model for protecting forests by developing sustainable crop protection techniques and livelihoods (i.e. use of hedges and enabling access to employment in tree nurseries for young mothers) is developed and shared with other conservation and development organisations operating in Madagascar

This Output will be achieved towards the end of the Project, to date, our awareness-raising concerning this project has been limited to a few communications on social media. However, a scientific article describing the exploitation of fencing poles at this site and evaluating whether or not this activity is sustainable has been submitted for publication to the journal Madagascar Conservation and Development (see Standard Indicators)

Output 5. Effective project implementation based on adaptive management

The project's M&E officer (Elianne Andriamajaja) has continued to ensure the monitoring, evaluation and learning aspects of this project. The data concerning the abundance of diurnal lemurs and large birds was collected with the assistance of high-performing local students. Data from monitoring was reported each month to the Project Director, the Project Manager and to the site-based team (Evidence Output 5.1). In YR1 a huge amount of data (over 1000 pages) concerning local perceptions of the Agnalazaha Protected Area, the protected area manager (MBG) and the Project, was collected through recorded interviews with local people. In YR3 this data was analysed by Greg Counsell (Social Scientist then based at Chester Zoo) and Isabell Brinkley (a work placement student being hosted by Chester Zoo) and revealed much of importance, including, for example, that despite efforts made over many years to promote local engagement in the management of the site, some people still believe that this protected area is "owned" by MBG. This observation and others in this report will be the subject of a reflective workshop by project staff. The full report can be seen in Evidence Output 5.2.

3.3 Progress towards the project Outcome

The anticipated outcome of this project is that the degradation of Agnalazaha Forest is reversed (with participation and livelihood gains for local men and women) by providing hedges as demonstrably useful, effective, long-term and realistic alternatives for crop protection.

Five of the six indicators of Outcome achievement reference YR3 of the project, these are:

0.1 In YR2 and YR3 number of tree stems extracted from the forest during the year reduced by 30% compared to baseline (T0).

In 2021 the number of stems extracted from the Agnalazaha Forest by local farmers for use as posts was estimated as 79,550 (Evidence Outcome 1). In YR3 the annual consumption had fallen to an estimated 44,333 stems based on mapping fences erected using stems of native trees. This is a reduction of 45%

0.2 By end of YR3 trunk basal area within forest adjacent to farmer's fields has increased by 5% from T0

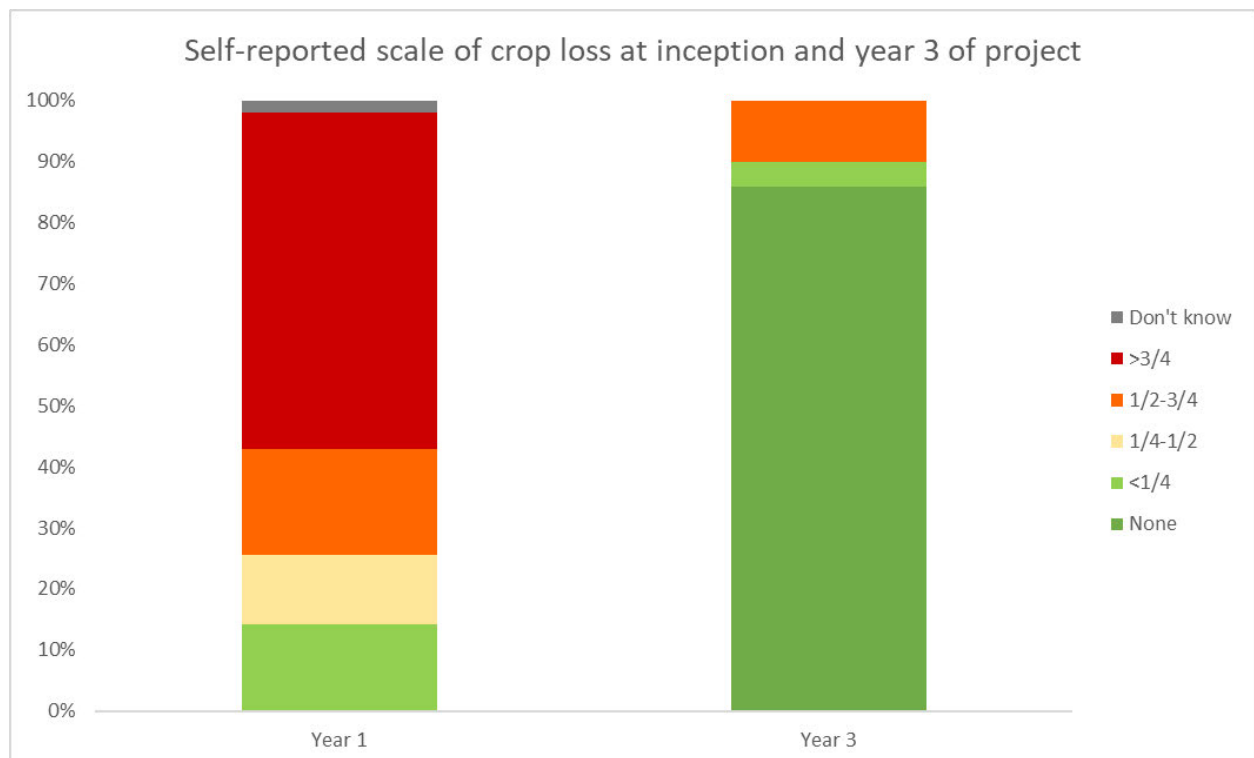
In 2022 the mean basal area of stems in the forest exploited for poles was 7.3 m² per ha, but by 2023 this had risen to 8.1 m², a rise of 10.9% (Evidence Outcome 2)

0.3 By end YR3 surveys species-level lemur and forest bird abundance within parts of forest previously degraded by collection of fencing stakes has increased on average by 10% from T0.

The monitoring of changes in biodiversity in the exploited forest is inconclusive, the abundance of some species has increased, while the abundance of other species has decreased (Evidence Outcome 3.)

0.4 At end of YRs1, 2 and 3 the 35 participating farmers report zero loss of crops to free-ranging cattle from plots included in project and link these gains to tangible livelihood benefits.

Prior to project implementation (in 2021) a survey of crop loss among participant farmers (N= 44) revealed: 0% = reporting no crop loss; 14% <1/4 crop loss; 11% 1/4 -1/2 crop loss; 17% 1/2 - 3/4 crop loss; 54% nearly total crop loss; and 2% were not able to reply. Among the farmers participating in this project the comparative data for YR3 was: 86%, reporting no crop loss; 4% <1/4 crop loss; 0%, 1/4-1/2 crop loss; 10%, 1/2-3/4 crop loss and 0% >3/4 crop loss. While the fences were not totally effective (because they can be pushed over by determined cows trying to access a particularly desirable food) the improvement in harvests was very significant.



0.5 At end YR3, 90% of all local farmers state they intend to install hedges to protect their crops post-project and without incentives

We have not yet conducted this survey because we decided it would be more effective to integrate this question in the wider survey of perceptions that will be conducted to mark the end of the project in June and July 2024

3.4 Monitoring of assumptions

Assumption 1: The provision of alternative methods of protecting crops from livestock will reduce need for fences made from stems extracted from the forest.

Comments: This assumption is confirmed because while exploitation of stems from the forest to make poles continues, this activity is conducted by those who were not beneficiaries of barbed wire. Thus, while farmers are delighted with the barbed wire if this barrier cannot be provided, and if the hedges are not functional, then they will certainly raid the forest. The question also remains as to whether the laid hedges, by themselves, will offer effective protection to crops from livestock. We cannot answer this question because at the moment all the laid hedges are always accompanied by barbed wire fences. In the final 6 months of the project (and beyond) we will develop protocols to enable at least some farmers to extract the barbed wire to use elsewhere and thereby test whether the hedges alone do indeed constitute a viable barrier.

Assumption 2: Forest and biodiversity not negatively impacted by exceptional events such as wildfires, cyclones, hunting parties. (Mitigation: continuing support for entire program of conservation activities at this site and integration of capacity of adaptation within project design)

Comments: Fortunately co-funding is available to reduce the risks of fire and hunting and we are pleased to report that during the Project the forest suffered no major impacts from wild fires and there were no incidents of hunting (of which we are aware).

Assumption 3: Farmers are receptive to the new techniques shared and that hedges are not damaged/sabotaged by those communities/individuals not involved in this project. (Mitigation: engagement with whole community through comprehensive consultation and communication).

Comments: This assumption is entirely confirmed: the participating farmers are very happy with the barbed wire fences and are also, following the demonstration of hedge laying in October 2023, understand the concept of hedge laying and are positive concerning the potential of well-laid hedges to protect their crops.

Assumption 4: The covid-19 pandemic does not prevent free movement of project participants.

Comments: In YR3 the pandemic had no impact on the project.

Assumption 5: There are sufficient remnant lemur and bird populations in the nearby higher quality forest to rapidly recolonise the areas where a reduction in exploitation of young trees for fencing stakes enables forest regeneration.

Comments: The data available neither supports nor invalidates this assumption.

Assumption 6: Barbed wire not stolen.

Comments: This assumption is confirmed and there were no incidents of barbed wire theft in YR3.

Assumption 7: Barbed wire effectively protects the agricultural plots from incursion by livestock.

Comments: In YR3 this assumption was mostly confirmed but a small minority of farmers reported that determined cattle had pushed over fences to access crops. We are somewhat surprised by this result because, to us, the barbed wire fences seem like a very effective barrier. However, this cloud may have a silver lining in that the efficacy of the barbed wire fence will likely be much improved when combined with a properly laid hedge: thereby strengthening the motivation of locals to install hedges.

Assumption 8: Barbed wire does not cause dismay among livestock owners (i.e. does not injure cattle).

Comments: Assumption partly confirmed - to date we have not received any complaints, but, as reported above, given that there were cases where cattle pushed the fences over, it is difficult to believe that there were no injuries.

Assumption 9: Tree and shrub species that make effective hedges and that survive and grow well under the harsh conditions at this site can be identified and propagated.

Comments: This assumption cannot yet be confirmed. In YR2 of the project, at some locations, we lost a lot of the young trees that were out-planted due to the very harsh conditions. Moreover, at such locations those shrubs and trees that survived grew slowly. However, thanks to monitoring we were able to identify species that perform best under these conditions, and in YR2 propagated more of these species to replace the plants that had died. It is clear that, except in the most favourable conditions, it will take longer than 3 years to grow a hedge that can be laid, and as such farmers are unlikely to invest in this work without the motivation of an accompanying barbed wire fence. We are fortunate that with funding secured by CZ we will be able to continue this work, post DI support, for a further 2 years.

Assumption 10: At least 30% of local farmers are prepared to invest their time and energy in trialling a new method for protecting their crops.

Comments: This assumption is confirmed: in total 81 farmers (an estimated 44% of the total) participated (Evidence Output 2.1).

Assumption 11: Despite Agnalazaha being located in a remote part of SE Madagascar and a 2-day drive from the capital, influential people can still be persuaded to invest their time in visiting the site.

Comments: The main event for sharing this work is planned for YR4 and thus it is premature to confirm assumption.

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

The desired Project impact stated in the original proposal was “The Agnalazaha Forest with its rare fauna and flora is successfully conserved with livelihood gains for the local community”.

The table presented in “Impact” evidence provides a number of conservation indicators for the entire Agnalazaha PA for the period 2020 to 2023. These show that the population of CR lemur species *Eulemur cinereiceps* is improving, that the number of stems cut in the forest is falling, and that the area of forest burnt by wildfires is falling.

Certainly the most significant impact of this project on human well-being was dramatically decreasing the loss of crops to livestock among participating farmers. This gain, if it can be maintained (or even improved as the barbed wire fences are reinforced with laid hedges) in the long term, will have a very significant impact on poverty reduction. It is noteworthy that development organisations operating in Madagascar focus on improving crop yield and the complimentary approach of preventing crop loss is, in our opinion, neglected. Less significant perhaps in terms of number of beneficiaries, but nevertheless an achievement of which we are proud, is that five of the ten young mothers who were originally engaged by the Project to propagate tree seedlings but whose work ended in YR2, have continued to propagate tree seedlings to sell for their own benefit.

We have yet to reach-out to share our approaches with the wider conservation community because, this activity will be completed in YR4. Thus we cannot claim to have had an impact wider than that at the intervention site.

4. Project support to the Conventions, Treaties or Agreements

The information presented below refers to contributions made during the three-year duration of the Project.

SDGs

Goals 1 and 2 (end poverty and hunger) by providing 81 subsistence farming families with more secure barriers that reduce the loss of their crops and reduces their investment in labour for

crop protection, by providing new skills and employment to ten nursery staff, and providing generous day-labouring compensation to 3,285 local people - often at a particularly difficult times (e.g. prior to harvests when previous harvests have been exhausted).

Goal 4 (lifelong learning opportunities) by upskilling 81 farmers in the installation of barbed wire fences and the use of *gliciridia*, *jatropha* and red pineapples to make cow and pig-proof barriers around crops and by training and coaching ten women in horticulture.

Goal 5 (gender equality) by enabling ten females to access employment in a tree nursery that is traditionally a male domain, five of these nurserywomen are now producing seedlings independently for sale (Evidence Outcome 3.4).

Goal 8 (decent work and economic growth) by providing employment for three village animators and ten nursery women, and temporary employment for 3,285 local people. Diversity in economic activities is strongly associated with economic resilience.

Goal 12 (sustainable consumption and production) by reducing environmental degradation of the littoral forest (Evidence Impact) without compromising the economic stability of communities by providing an alternative barrier to the of stems of native trees as fences (Evidence Output 2.1).

Goals 13 (combat climate change), and 15 (life on land) by initiating a process that will reduce deforestation and degradation of rare littoral forest and installing hedgerows thereby protecting and building carbon sinks and conserving threatened habitats of key biodiversity importance (Evidence Impact).

Goal 17 (partnerships for the goals) by creating a unique partnership of organisations and social groups with complementary skills including farmers in SE Madagascar, a protected area manager in Madagascar (Missouri Botanical Garden), horticulturalists and a social scientist from Chester Zoo.

CBD

This proposed project responds to one of the CBD main goals i.e. 'the conservation of biological diversity' by reducing degradation of a threatened vegetation type (littoral forest) that is the habitat for a very diverse and threatened fauna and flora. Given that the project was launched only in October 2021, it is not possible to demonstrate irrefutably that this project contributes to this goal. However, the tendencies shown in the appendix under "Impact" are encouraging.

NBSAP

Ultimately the project will contribute Madagascar's National Biodiversity Strategy and Action Plan by reducing unsustainable harvesting of fencing poles in exceptionally rare littoral forest (thereby enabling its regeneration) and promoting woody vegetation in the landscape in the form of useful and sustainable hedges. In 2021, prior to the project, we estimated that 79,550 poles were collected from the forest for use in fencing while in YR3 this number was reduced to 44,333 (Evidence Outcome 1).

UNFCCC

Ultimately this project will contribute in a small way to Madagascar's ambitious Intended Nationally Determined Contribution to the Paris Agreement. This contribution is indicated by the increasing total stem basal area within parts of the forest targeted for fencing poles (Evidence Outcome 2).

5. Project support for multidimensional poverty reduction

This project is located in SE Madagascar where the majority of people gain meagre livelihoods from unreliable and relatively unproductive subsistence farming and where some of the highest levels of poverty in Madagascar are reported. Farming here is unreliable due to the

unpredictable weather in which rainfall is seasonally unreliable and floods an almost annual occurrence. In YR3 the project made a significant contribution to poverty reduction in the following ways:

- Providing improved protection of crops grown in the 27.64 ha of fields of 81 participating farmers
- Providing reliable monthly salaries to 3 village animators
- Providing educational support for a total of 10 high-achieving local students in return for their work in monitoring biodiversity indicators.

6. Gender Equality and Social Inclusion (GESI)

The 81 recipient farmers of the fences/hedges were all male, but those benefitting from the installation of this highly effective barrier will be the entire farming family. Within the protected fields the entire family unit will cultivate crops and be enjoy the results of their labour.

To address the gender imbalance described above, in YR1 and YR2 the Project compensated ten unmarried mothers as nursery staff and then enabled their transition to the production of seedlings for personal benefit. This transition was successful for 5 individuals (Evidence Output 3.1, 3.2, 3.3 and 3.4)

In YR3 the Project engaged 10 middle school students to help with monitoring of these 7 were male and 3 female. This imbalance is because the choice was made transparently based on marks in the second trimester exams: as it happened, young men did better than young women (Evidence Activity 5.2).

Please quantify the proportion of women on the Project Board ¹ .	The Project Board consisted of Claire Raisin (F) and Chris Birkinshaw (M), so it was 50% female.
Please quantify the proportion of project partners that are led by women, or which have a senior leadership team consisting of at least 50% women ² .	CZ is governed by a board of trustees (10M:4F) and led by an SMT of Directors (4M:5F). MBG-Madagascar: Permanent Representative (Christian Camara = M); Coordinator of the Conservation Unit (Jeannie Raharimampionona = F) Local Community: Mayor = M; Chef' Pokontany x 3 = M; Local Kings x 3 = M.

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.	

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

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

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	

It is debatable as to whether the project should be classified as “empowering” or merely “sensitive”. Certainly, the project successfully empowered 10 women as nursery staff, despite the normal practice throughout Madagascar of considering this to be men’s work. However, it is also true that all the 81 farmers who were trained to erect barbed-wire fences and to plant and lay hedges were male, and that 70% of the 20 students (since the start of the project) who were compensated for helping with monitoring, were male. We do not feel that these figures compromise our commitment to GESI because the erection of fences and management of hedges is arduous work that in traditional society falls naturally to young men and the selection of students for the monitoring work was transparently based on their class marks and we did not feel that positive discrimination would have been helpful in this case.

Prior to this study we were concerned that men might resent lucrative employment working in the tree nursery being given exclusively to women. Somewhat to our surprise the social survey (Evidence 5.2) did not detect any such resentment although a few of the men interviewed thought that women would need male help for some of the more physically demanding tasks. This shows perhaps that fears that pursuing GESI may disturb traditional norms may be exaggerated. Whatever is the case, projects that seek GESI outcomes need to do so with consultation, reflection, careful implementation and monitoring.

7. Monitoring and evaluation

The Project log frame, as submitted as part of the Stage 2 application, lists the indicators for outcomes and outputs. These indicators and the associated methods of verification were the basis of our M&E plan. This plan was developed by the whole team, led by Greg Counsell (from Chester Zoo) and Chris Birkinshaw (from MBG) between October and December 2021, with the production of a written draft of the protocols (as presented as evidence in the YR1 report). These protocols have been retained throughout the project. Normally, given a realistic Theory of Change, the Activities should result in the Outputs, which in turn should lead to the Outcomes. However, in the real World, especially in a system at the intersection of human and environmental complexity, ToC models are fragile and vulnerable to failure when unexpected events or expected events of unexpected frequency or intensity come into play. Thus, the best we can do is to demonstrate that trends in outputs are related to trends in outcomes. Thus, for example, the decreased losses of crops due to foraging cattle seems to relate to the installation of barbed wire fences (although it could also be related to a diversity of other factors such as a decrease in abundance of cows, or improved guardianship of these animals).

As reported previously, the protocols for social monitoring were validated by December 2021 and data collection begun in March 2022. The transcription the audio tapes resulted in 1,344 pages of text, that then had to be translated into English for analysis. This process was unexpectedly time-consuming and expensive and it is only in YR3 that the Y1 data was analysed. The very enlightening report that summarises the results of this analysis is included in Evidence 5.2. The same process will be repeated in YR4 of the Project, albeit with a smaller sample size. The comparison of this high-quality data on local (participants versus non-participants) perceptions at the start and end of a conservation project will be unique in Madagascar and of national importance.

8. Lessons learnt

In general the Project is progressing more slowly than anticipated because the growth of the hedging plants had been very slow. This single issue has compromised our work and its results. Indeed, it is likely that the predicted outcome will not be achieved at the end of the project in September 2024. However, the good news is that the predicated outcome will eventually be achieved because, given the enthusiasm of the farmers for the technique of hedge-laying, there is good reason to believe that once the hedging plants attain the required height then they will be laid. We are fortunate to have secured additional funds to ensure the continuation of this work, post the current grant, for another 2 years. The lesson to be learnt is that in developing funding applications not to lull into unrealistic expectations for the sake of compelling work plans: ultimately it is nature or people that decide and not conceptual frameworks - however elegant these may be.

On the positive side, a very encouraging observation was the interest and enthusiasm that local farmers demonstrated when the techniques of hedge laying were demonstrated to them. Often those working in conservation and development in Madagascar speak of rural people as being very conservative and not prone to adopting new techniques. We wonder now whether this is a simplistic and lazy trope, and that, perhaps, sometimes, rural people do not want to adopt innovations because they have a more realistic assessment of their utility and value than those who are promoting them. Certainly the farmers living around Agnalazaha showed no reticence and much enthusiasm in adopting hedge laying.

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

AR2R made comments/suggestions in three areas.

The first has been taken into account and the increased number of farmers participating has been reflected in the indicators.

Secondly the question was raised as to whether it would be possible to quantify the improvement in farm incomes attributable to reduced crop losses through improved stock fencing. Unfortunately this will not be possible as the majority of recipients we are working with are subsistence farmers, therefore the primary benefit they receive through reduced crop losses is improved food security.

The third and final point was regarding the time-consuming nature of the social research and the project was encouraged to consider a sub-optimal approach involving digitisation at the point of transcription or the use of translation software. Digitising the data at point of entry might be possible but we would still need a proportion of the interviews fully translated, transcribed, analysed and coded to develop a comprehensive system for digitising and scoring the remaining surveys. The coding system developed for the T0 data should be applicable to the final data and therefore the final analysis should progress more rapidly. We did investigate the possibility of using translation software and AI to translate the interviews but unfortunately there simply are not enough instances of this dialect available for reliable/usable translations. Finally, as stated elsewhere in this report, for the comparative “project-end” social survey that will be conducted in June and July we will interview and analyse the data from a smaller subset of project participants and non-participants than was the case in the baseline study thus also reducing the cost in terms of time and finance.

10. Risk Management

In November 2023 a Presidential election was held in Madagascar. We feared that this event would be associated with politically-motivated social strife. However, this was not the case, and there were no repercussions for our work at Agnalazaha.

11. Sustainability and legacy

During YR3 the project was well known and appreciated locally (i.e. by conservation organisations working in the same Region) but not known nationally. This is because we have invested little in sharing our work on a wider scale and will not do so until YR4 when

representatives from ten conservation organisations will be invited to see our work in the field. In YR4 too we will present the Project at a meeting of the Malagasy Forest Restoration Practitioners Network. Only when we can clearly demonstrate that well-managed hedges make an effective stock proof barrier, do we want to share this innovation with the wider conservation and development community in Madagascar. Even in YR4 only a minority of the potential hedges will have been laid and it is therefore very significant that Chester Zoo has committed to providing the necessary support to enable a 2-year extension to this work. Beyond this 2-year extension, the legacy of the project is based on the assumption that once local people see that hedges (even without barbed wire fences) make effective barriers, then, provided we can provide the hedging materials, they will be prepared to invest in installing hedges themselves thereby greatly reducing the extraction of fencing poles from the forest.

While our work to establish stock-proof hedges was challenging due to the slow growth of the hedging plants on the poor sandy soil, it is important to note that in some areas, where the soil is lateritic, the hedging plants survived well and grew quickly and have been laid. These areas are typical of much of eastern Madagascar and thus hedges should work well over large parts of the country.

12. Darwin Initiative identity

To date, for the reasons stated above, in YR3 we have given only modest publicity to the Darwin Initiative:

- Project achievements were posted on twitter accounts (5 posts on @c_birkinshaw in YR3, and 2 posts on @ClaireRaisin - Evidence 4.1) acknowledging @UKBCFs
- A special video blog concerning the work of the nurserywomen was made and launched on International Women’s Day by Chester Zoo (8 March @Chester Zoo).
- The Darwin Initiative logo remains affixed to significant capital items (computers x 2, motorbike x 1) and used to signpost the DI nursery.
- The project was given prominence at the annual biodiversity festival at Agnalazaha

Once the hedges become sufficiently mature to be laid then robust communication will be launched to share this innovation.

13. Safeguarding

Has your Safeguarding Policy been updated in the past 12 months?	MBG: Yes CZ: Yes
Have any concerns been reported in the past 12 months	MBG: No CZ: Yes
Does your project have a Safeguarding focal point?	MBG: Yes (Vola ██████████) CZ: Charlotte ████████ (CS), Director of Conservation Education
Has the focal point attended any formal training in the last 12 months?	MBG: Yes (the focal point at MBG was responsible for working (part time over 6 months) with an expert consultant to develop MBG’s first Safeguarding policy and procedures. CZ: CS has undergone the Level 3 Refresher training with Cheshire West and Chester Safeguarding Partnership

<p>What proportion (and number) of project staff have received formal training on Safeguarding?</p>	<p>MBG: Past: 25% [1 for MBG] Planned: 100% [4 for MBG] CZ: Past: 51% (466 Staff members) of all staff have completed mandatory Safeguarding Awareness online training in the last 12 months. The number is relatively low due to our recent seasonal intake of new employees and some longer standing members of staff having lapsed (ie, having completed training more than 12 months ago). Planned: 100% [913]</p>
<p>Has there been any lessons learnt or challenges on Safeguarding in the past 12 months? Please ensure no sensitive data is included within responses.</p> <p>The term “Safeguarding” was unknown by MBG (a US organisation, where such issues are handled as in element within the “Staff Manual”) until the receipt of DEFRA funding obliged the staff to develop a Safeguarding policy. For MBG-Madagascar copy and pasting Safeguarding policies from overseas (e.g. the safeguarding policy of RBG Kew) proved unsatisfactory for various reasons but including the western treatment of 14-18 year old people as children that cannot be employed whereas, in rural Madagascar, often this group live as adults requiring access to employment on the same terms as any other adult.</p> <p>CZ: Our Safeguarding Leads and Safeguarding Officers meet on a quarterly basis to review safeguarding practice across the organisation. Safeguarding Concerns are logged by the Duty Safeguarding Officer on CPOMs as they are reported, with concerns reported on to the Safeguarding board as required. Training compliance, safeguarding practice and concerns/incidents are reviewed every two months as part of regular reporting on safeguarding to trustees. This promotes a culture of continual improvement, but no significant challenges or lessons learned have been identified in the last 12 months.</p>	
<p>Does the project have any developments or activities planned around Safeguarding in the coming 12 months? If so please specify.</p> <p>Yes, MBG’s new Safeguarding policy will be rolled out across the Program in Madagascar. This roll-out will include the training of all staff and also the implementation of the complaints process.</p>	
<p>Please describe any community sensitisation that has taken place over the past 12 months; include topics covered and number of participants.</p> <p>None.</p>	
<p>Have there been any concerns around Health, Safety and Security of your project over the past year? If yes, please outline how this was resolved.</p> <p>None</p>	

14. Project expenditure

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

Project spend (indicative) since last Annual Report	2023/24 Grant (£)	2023/24	Variance %	Comments (please explain
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		Total Darwin Costs (£)		significant variances)
Staff costs (see below)				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Others (see below)				
TOTAL	19314	19311		

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

	Secured to date	Expected by end of project	Sources
Matched funding leveraged by the partners to deliver the project (£)			Living Earth Collaborative + FAPBM
Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project (£)			FAPBM + COKETES (AFD) for general PA management

15. Other comments on progress not covered elsewhere

16. OPTIONAL: Outstanding achievements or progress of your project so far (300-400 words maximum). This section may be used for publicity purposes.

I agree for the Biodiversity Challenge Funds to edit and use the following for various promotional purposes (please leave this line in to indicate your agreement to use any material you provide here).

Hedges for Madagascar

Loss of crops to free-ranging livestock has a huge impact on the livelihoods of subsistence farmers in Madagascar. Often these farmers try to protect their crops using fences of various kinds but determined beasts can knock over these structures and access the desirable forage within. The farmers living around the Agnalazaha Forest Protected Area, in SE Madagascar, used to collect tens of thousands of poles of native trees from a small and important fragment of native forest and insert them vertically and closely spaced in an attempt to protect their crops. However, despite their efforts and the associated degradation of the forest, a survey revealed that no farmers suffered no loss of crops and more than 50% lost most or all of their crops. In a project funded by the Darwin Initiative, staff of Chester Zoo and Missouri Botanical Garden, joined with Agnalazaha’s farmers to conceive and implement a new approach to protecting crops that would provide improved outcomes both for the farmers and for the forest. The method proposed was laid hedges. Although living fences can be seen in Madagascar these are never laid and thus do not constitute effective barriers against livestock. Thus, in this project, we aimed to provide effective barriers by promoting the ancient art of hedge laying. We worked with 81 subsistence farmers who normally would raid the protected area for fencing poles and helped them first to install a living fence (made of stems of *gliricidia* and *jatropha* interspersed with a diversity of young plants of native trees) around their plots. In total 12.85 km of living fences have been installed. Now, two years later some of the living fences have plants whose stems are sufficiently long to allow them to be laid. The

principles of hedge laying are quite simple - half severing the stems with a diagonal cut, and bending these down and weaving the now diagonal stems around poles – however successful hedge laying requires a certain “feeling” that is acquired with practice. Local farmers living around Agnalazaha were provided training by passionate hedge-layers from Chester Zoo, and to our great delight, they quickly understood and appreciated the technique. As more and more sections of living fences around the Agnalazaha Forest attain an adequate size they will be laid by the Malagasy hedge-laying converts thereby creating, for the first time in the country, a landscape of laid hedges: an ancient art bringing benefits today to both to people and biodiversity

File Type (Image / Video / Graphic)	File Name or File Location	Caption including description, country and credit	Social media accounts and websites to be tagged (leave blank if none)	Consent of subjects received (delete as necessary)
Image	Agnalazaha forest	View of Agnalazaha forest showing sandy soil. Madagascar © Claire Raisin	@c_birkinshaw @ClaireRaisin @ScienceatCZ	Yes
Image	Baboka fence, wire and hedge	A traditional fence, new barbed wire and planted seedling that will become a hedge in Baboka village. Madagascar © Claire Raisin		Yes
Image	Cattle	Free-ranging cattle in water. Madagascar © Claire Raisin		Yes
Image	Hedge	Newly lain hedge. Madagascar © Claire Raisin		Yes
Image	Hedge regrowth	Hedge regrowth 6 months after initial laying. Madagascar © Chris Birkinshaw		Yes
Image	PA entrance	Entrance to Agnalazaha Reserve. Madagascar © Claire Raisin		Yes
Image	Traditional fence	Fence constructed using traditional methods and wood extracted from Agnalazaha PA. Madagascar © Claire Raisin		Yes
Image	Village	View from Nosy Ala. Madagascar © Claire Raisin		Yes

Image	Workshop1	First demonstration of hedgelaying at Nosy Ala. Madagascar © Claire Raisin		Yes
Image	Workshop2	First demonstration of hedgelaying at Nosy Ala. Madagascar © Claire Raisin		Yes
Image	Workshop3	MBG staff with newly lain hedge at Nosy Ala. Madagascar © Claire Raisin		Yes
Image	Zebu	Large zebu ranging in Nosy Ala. Madagascar © Claire Raisin		Yes

We also have multiple video clips and segments available if requested.

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

Project summary	SMART Indicators	Progress and Achievements April 2022 - March 2023	Actions required/planned for next period
<p>Impact</p> <p>The Agnalazaha Forest with its rare fauna and flora is successfully conserved with livelihood gains for the local community</p>		<p>Compared to the previous two years, in YR3 of this project: the density of the CR lemur (<i>Eulemur cinericeps</i>) increased, and both the area of the protected area that burnt and the number of stems cut from the forest reduced (Evidence Impact).</p> <p>In total the compensation received by the local community was £1,963 (Evidence Impact)</p>	
<p>Outcome</p> <p>Degradation of Agnalazaha Forest is reversed (with participation and livelihood gains for local men and women) by providing hedges as demonstrably useful, effective, long- term and realistic alternatives for crop protection</p>	<p>0.1 In YR2 and YR3 number of tree stems extracted from the forest during the year reduced by 30% compared to baseline (T0)</p> <p>0.2 By end of YR3 trunk basal area within forest adjacent to farmer's fields has increased by 5% from T0</p> <p>0.3 By end YR3 surveys species-level lemur and forest bird abundance within parts of forest previously degraded by collection of fencing stakes has increased on average by 10% from T0.</p>	<p>0.1. In 2021 (T0), prior to the project, the 79,550 stems were cut from the Agnalazaha PA forest to make fences. In YR3 of the project this measure reduced to 44,333 because 44% of local farmers (n=81) had installed barbed wire fences (Evidence Outcome 1).</p> <p>0.2 In YR3 the average basal area of tree stems in the forest adjacent to the farmer's fields increased from 7.3 at T0 to 8.1 at T3, an increase of 10.9%</p> <p>0.3 The data here is difficult to interpret, some species increased in abundance and some decreased. There was no overall tendency. Evidence Outcome 3.</p>	

	<p>0.4 At end of YRs1, 2 and 3 the 35 participating farmers report zero loss of crops to free-ranging cattle from plots included in project and link these gains to tangible livelihood benefits.</p> <p>0.5 At end YR3, 90% of all local farmers (ca. 120 in total) state they intend to install hedges to protect their crops post-project and without incentives</p> <p>0.6 At end of YR1 90% of project participants understand and can articulate the basic elements of sustainable use of natural resources i.e. the concepts of “need”; “stock” and “growth of stock” and the relationships between these three elements</p>	<p>0.4 In YR3 86% of the 81 participating farmers reported no loss of crops.</p> <p>0.5 This data is currently unavailable but will be collected in July 2024</p> <p>0.6 Not monitored in YR3.</p>	
Output 1. A critical mass (~30%) of agricultural plots within the buffer zone of protected areas are protected effectively from incursion of livestock using barbed wire fences	1.1 By end of YR 1 30% of agricultural plot area (~35 farming families) in buffer zone of protected area protected from incursion by livestock using barbed wire fences.	1.1. 27.64 ha (= 44% total plot area) belonging to 81 farming families protected from incursion of livestock with barbed wire fences (Evidence Output 1.1)	
Activity 1.1 Radio broadcast and village workshops to launch of project to local community including solicitation of advice leading to adaptation		Six radio broadcasts about the project provided in YR3	Ongoing communication (by radio broadcasts) to inform stakeholders of progress of project
Activity 1.2 Workshop to select and orientate farmer participants		During YR3 we were able to accommodate the requests for barbed wire fences from an additional 21 farmers. They were guided in the installation by the other farmers.	Our stocks of barbed wire are now exhausted and no more farmers will be engaged in the installation of barbed wire fences.

Activity 1.3 Workshop to train farmers in installation of barbed-wire fences with national expert	Completed YR1: farmers can now safely and professionally install barbed wire fences themselves	Nothing
Activity 1.4 Installation of barbed-wire fences by participating farmers around their plots (4-strand fence for total 16 km; support posts every 2m)	Completed: 12.85 km of 4-strand barbed wire fence have been installed.	Reflection on how to maintain fences (from rust and from rotting of posts)
Activity 1.5 Pre-intervention surveys to establish baseline knowledge and attitudes	Completed: surveys completed, audios transcribed into Antesaka text translated into English, data analysed and report published (Evidence 5.2)	Repeat survey in July 2024 to provide comparison with T0.
Output 2. Agricultural plots of the 35 participating farmers provided with long term protection with livestock- proof hedges	<p>2.1. After 30 months plots of all 35 participating farmers that were protected with barbed-wire fences are also surrounded by newly-laid hedgerows that are rich in useful plants including native trees and shrubs.</p> <p>2.2 After 30 months the young plants used to enrich the hedges planted 12 months previously show at least 80% survival and average growth exceeding 20 cm.</p>	<p>2.1. Cuttings of gliricidia and jatropha and 21,184 young plants of native trees and shrubs have been planted along 12.85 km of barbed wire fences belonging to 81 farmers (Evidence Output 2.1)</p> <p>2.2. To date average survival of out-planted native trees was 68.84% (Evidence Output 2.2)</p>
Activity 2.1 Selection of women (unmarried mothers) nursery staff and two seed collectors	Completed in YR1	Continue to coach nurserywomen to produce seedlings of fruit and spice trees for their own personal gain thereby ensuring that their experience and training is not wasted. We will also try to facilitate market access for their products.
Activity 2.2. Installation of tree nursery	Completed in YR1	Maintenance of this valuable infrastructure and use for on-going production of seedlings of native trees for forest restoration work.

Activity 2.3 Installation of crèche associated for young children of nursery staff	Completed in YR1	Maintenance of this valuable infrastructure
Activity 2.4 Workshop to train nurserywomen in best practice for the propagation of shrubs and trees (provided by horticulturalist from Chester Zoo)	Completed in YR2 (Evidence Activity 2.4)	
Activity 2.5 Biweekly presentations on child care for nurserywomen from national experts	Completed in YR2 (Evidence Activity 2.5)	
Activity 2.6 Propagation of 16,000 seedlings of plants to be used to enrich hedges	Completed in YR2	Support nursery women to produce plants of fruit and spice trees for their own benefit.
Activity 2.7 Purchase and transport of living stakes (= 1 m long stems of plants that root is pushed into the soil)	Completed: 12.85 km of barbed wire fencing planted with stems of <i>gliricidia</i> and <i>jatropha</i> (Evidence Output 2.1)	Replace any <i>gliricidia</i> stems that die
Activity 2.8 Inserting living stakes along line of barbed wire fence to create basic hedge structure	Completed: 12.78 km of barbed wire fencing planted with stems of <i>gliricidia</i> and <i>jatropha</i>	Encourage farmers to replace any <i>gliricidia</i> stems that die
Activity 2.9 Out-planting seedlings of native trees within lines of living stakes (hedge enrichment)	Completed: 21,184 plants of native trees and shrubs planted along 12.85 km of fence lines	Replace any plants that die with plants produced for forest restoration using other sources of funding
<p>Output 3. Capacity of farmers and nursery staff is improved and they have the ability to independently create and maintain stock-proof hedges, or cultivate trees in plant nurseries, respectively.</p>	<p>3.1. At end of YR3 at least 80% of the 35 participating farmers can demonstrate the necessary knowledge and skills to install and maintain hedges.</p> <p>3.2. At end of YR3 at least 80% of the women employed in the tree nurseries can demonstrate the necessary knowledge and skills to propagate and cultivate useful plant species</p> <p>3.3 During YR3 the ten nursery</p>	<p>3.1 15 of the 81 participating farmers (= 19 %) were trained in laying hedges and can now complete this task (the remainder will be trained in August 2024)</p> <p>3.2/3.3 Five of the ten nursery women are now producing and successfully selling fruit and spice trees for their own gain. The total income generated in YR3 was £1,578.54</p> <p>3.4 This survey to track changing local perceptions will be conducted in July 2024. However, the T0 survey did not demonstrate any significant prejudice concerning women working as nursery staff.</p>

	women generate income (average £20 per month) from the production and sale of fruit and spice trees 3.4. At end YR3 50% more local adults perceive women as capable of being effective nursery staff compared to T0	
Activity 3.1 Workshop to train participating farmers in maintenance of their hedges (provided by expert hedger from the UK)		Partly completed: one workshop was held in October 2024 for 15 farmers and the final workshop, for the remainder, will be held in August 2024. Implement this activity
Activity 3.2. Farmers coached to maintain hedges and evaluated.		Not completed: training will be provided in the maintenance of laid hedges during the visit of the CZ team (including expert hedger) to Madagascar in August 2024 Implement this activity
Output 4. Best practice model for protecting forests by developing sustainable crop protection techniques and livelihoods (i.e. use of hedges and enabling access to employment in tree nurseries for young mothers) is developed and shared with other conservation and development organisations operating in Madagascar	4.1 In YR3 representatives from 15 conservation and development organisations have visited Agnalazaha and reviewed the project	4.1. Not completed: visit planned for August 2024, when the CZ team will be in on site
Activity 4.1. Communication about project through social media		In progress: 7 tweets about the project in YR3 (Evidence Activity 4.1). Posts shared for International Women's Day and featuring the nursery team reached 87,000 on Instagram and facebook (combined) and additional views on YouTube and CZ website. Continue this activity
Activity 4.2. Organisation of study trip to Agnalazaha for representatives for an array of conservation/development NGOs.		Not completed Implement activity

Output 5. Effective project implementation based on adaptive management	5.1 At any time project managers have access to objective information of project progress based on indicators listed above	Monthly meetings of the Projected Area management team held, information shared and issues arising discussed (Evidence Output 5.1)	
5.1. Workshop to define monitoring protocols and to train monitoring team in their application		First version completed in YR1 but, protocols for social monitoring revised in YR2. There have been no changes since this time.	Define modified sample size for social monitoring (too much data was generated during the first social survey that was time-consuming and expensive to transcribe, translate and analyse)
5.2 Support for monitoring team to apply monitoring protocols		Monitoring completed as planned but on-going (Evidence Activity 5.2)	Continue to support team to apply monitoring protocols
5.3. Workshops to share information on project progress, to identify issues arising and to modify interventions to maximise efficacy		Workshop of whole project team (MBG, CZ, project staff) was held on site from October.	A final workshop of the whole project team will be held in August 2024.
5.4. Formal reporting		Completed	Continue reporting following partner requirements.

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

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Impact: The Agnalazaha Forest with its rare fauna and flora is successfully conserved with livelihood gains for the local community			
Outcome: Degradation of Agnalazaha Forest is reversed (with participation and livelihood gains for local men and women) by providing hedges as demonstrably useful, effective, long-term and realistic alternatives for crop protection	0.1 In YR2 and YR3 number of tree stems extracted from the forest during the year reduced by 30% compared to baseline (T0) (= ca. 1,000,000 stems based on current estimates). 0.2 By end of YR3 trunk basal area within forest adjacent to farmer’s fields has increased by 5% from T0 0.3 By end of YR3 surveys, species-level lemur and forest bird abundance within parts of forest previously degraded by collection of fencing stakes has increased on average by 10% from T0. 0.4 At end of YRs1, 2 and 3 the 35 participating farmers report zero loss of crops to free-ranging cattle from plots included in project and link these gains to tangible livelihood benefits. (compared to average of 12% loss at T0) 0.5 At end YR3, 90% of all local farmers (ca. 120 in total) state they intend to install hedges to protect their crops post-project and without incentives 0.6 At end of YR1 90% of project participants understand and can articulate the basic elements of sustainable use of natural resources i.e. the concepts of “need”, “stock” and “growth of stock” and the relationships between these three elements	0.1 Report showing counts of newly cut-stems used to fence agricultural plots within vicinity of protected area (within 2 km) at T0 and, using same methodology, at YR2 and YR3. 0.2 Report showing measurements of trunk basal area per unit area in replicated plots at T0 and again at the end of YR3/Comparisons of forest quality in YR3 compared to T0 using the Global Forest watch tools 0.3 Annual report showing results of monthly standardised counts of lemur and bird species along replicated transects within target zones. 0.4 Report showing results of questionnaires among participating farmers. 0.5 Report showing results of questionnaires using Likert scale and open-ended questions among all farmers operating in peripheral zone of protected area 0.6 Report showing results of oral test of understanding among project participants	The provision of alternative methods of protecting crops from livestock will reduce need for fences made from stems extracted from the forest Forest and biodiversity not negatively impacted by exceptional events such as wildfires, cyclones, hunting parties. (Mitigation: continuing support for entire program of conservation activities at this site and integration of capacity of adaptation within project design) Farmers are receptive to the new techniques shared and that hedges are not damaged/sabotaged by those communities/individuals not involved in this project. (Mitigation: engagement with whole community through comprehensive consultation and communication). The covid-19 pandemic does not prevent free movement of project participants (Mitigation: support strong-site based team that can, in the worse-case scenario, be trained virtually by international participants and then play the role of trainers themselves or in some cases, rescheduling activities) There are sufficient remnant lemur and bird populations in the nearby higher quality forest to rapidly recolonise the areas where a reduction in exploitation of young trees for fencing stakes enables forest regeneration. (Mitigation: MBG’s program of activities at this site continues to support action to control hunting)

<p>Outputs:</p> <p>1. A critical mass (~30%) of agricultural plots within the buffer zone of protected areas are protected effectively from incursion of livestock using barbed wire fences</p>	<p>1.1 By end of YR 1 30% of agricultural plot area (~35 farming families) in buffer zone of protected area protected from incursion by livestock using barbed wire fences.</p>	<p>1.1a Maps showing the boundaries of all agricultural plots located in buffer zone (using a GPS Unit) with classification as either traditional fences or barbed wire</p> <p>1.1b Report showing results of interviews using Lickert scale and open-ended questions with samples of farmers with plots protected with barbed wire versus plots protected with traditional fences concerning the efficacy of barrier (35 farmers interviewed in each group)</p>	<p>Barbed wire not stolen (Mitigation: engagement with whole community through comprehensive consultation and communication – especially engaging the local traditional leaders to publicly express their support for the project).</p> <p>Barbed wire effectively protects the agricultural plots from incursion by livestock (Mitigation: training and coaching in best practice for the installation and maintenance of fences)</p> <p>Barbed wire does not cause dismay among livestock owners (i.e. does not injure cattle) (Mitigation: engagement with whole community through comprehensive consultation and communication, openness to receiving feedback and objections).</p>
<p>2. Agricultural plots of the 35 participating farmers provided with long term protection with livestock- proof hedges</p>	<p>2.1 After 30 months plots of all 35 participating farmers that were protected with barbed-wire fences are also surrounded by newly-laid hedgerows that are rich in useful plants including native trees and shrubs.</p> <p>2.2 After 30 months the young plants used to enrich the hedges planted 12 months previously show at least 80% survival and average growth exceeding 20 cm.</p>	<p>2.1 Map showing the boundaries to all plots where hedges have been installed using GPS Unit.</p> <p>2.2 Inventory of condition (i.e. dead or alive) and growth of young trees and bushes used to enrich and reinforce the hedges.</p>	<p>Tree and shrub species that make effective hedges and that survive and grow well under the harsh conditions at this site can be identified and propagated. (Mitigation: from MBG's botanical knowledge at the site create a target list of likely species i.e. that are fast-growing, ideally spiny and regenerate robustly when cut)</p>
<p>3. Capacity of farmers and nursery staff is improved and they have the ability to independently create and maintain stock-proof hedges, or cultivate trees in plant nurseries, respectively.</p>	<p>3.1 At end of YR3 at least 80% of the 35 participating farmers can demonstrate the necessary knowledge and skills to install and maintain hedges.</p> <p>3.2 At end of YR3 at least 80% of the women employed in the tree nurseries can demonstrate the necessary knowledge and skills to propagate and cultivate useful plant species</p> <p>3.3 During YR3 the ten nursery women generate income (average £20 per month)</p>	<p>3.1 Report summarising the results of a test of participating farmer's hedge making skills (provided by UK master hedger).</p> <p>3.2 Report showing results of questionnaires among participating nursery staff</p>	<p>At least 30% of local farmers are prepared to invest their time and energy in trialling a new method for protecting their crops. (Mitigation: a budget line has been included to provide participants with food during work associated with the project – so they will not experience extra hardship from participation)</p>

	from the production and sale of fruit and spice trees 3.4. At end YR3 50% more local adults perceive women as capable of being effective nursery staff compared to T0	3.3 Accounts of income generated from the sale of fruits and spice trees produced by nursery women 3.4 Report of market day interviews using Lickert scale and open-ended questions with local adults.	
4. A best practice model for protecting forests by developing sustainable crop protection techniques and livelihoods (i.e. use of hedges and enabling access to employment in tree nurseries for young mothers) is developed and shared with other conservation and development organisations operating in Madagascar	4.1 In YR3 representatives from 15 conservation and development organisations have visited Agnalazaha and reviewed the project	4.1 List of people and their employer visiting Agnalazaha to review the project with each providing a written evaluation of the work and the extent to which elements are applicable at the locations where they work	Despite Agnalazaha being located in a remote part of SE Madagascar and a 2-day drive from the capital, influential people can still be persuaded to invest their time in visiting the site. (Mitigation: investment in good national-level communication during the whole project to make the conservation community aware of the work and to pique their interest)
5. Effective project implementation based on adaptive management	5.1 At any time project managers have access to objective information of project progress based on indicators listed above	5.1 3-monthly reports of project progress with minutes of meeting of Project team to discuss and address any issues arising	
<p>Activities (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1)</p> <p>1.1 Radio broadcast and village workshops to launch of project to local community including solicitation of advice leading to adaptation</p> <p>1.2 Workshop to select and orientate farmer participants</p> <p>1.3 Workshop to train farmers in installation of barbed-wire fences with national expert</p> <p>1.4 Installation of barbed-wire fences by participating farmers around their plots (4-strand fence for total 16 km; support posts every 2m)</p> <p>1.5 Pre-intervention surveys to establish baseline knowledge and attitudes.</p> <p>2.1 Selection of women (unmarried mothers) nursery staff and two seed collectors</p> <p>2.2 Installation of tree nursery</p> <p>2.3 Installation of crèche associated for young children of nursery staff</p> <p>2.4 Workshop to train nurserywomen in best practice for the propagation of shrubs and trees (provided by horticulturalist from Chester Zoo)</p> <p>2.5 Biweekly presentations on child care for nurserywomen from national experts</p> <p>2.6 Propagation of 16,000 seedlings of plants to be used to enrich hedges</p> <p>2.7 Purchase and transport of living stakes (= 1 m long stems of plants that root if pushed into the soil)</p> <p>2.8 Inserting living stakes along line of barbed wire fence to create basic hedge structure</p> <p>2.9 Out-planting seedlings of native trees within lines of living stakes (hedge enrichment)</p> <p>2.10 Workshop and coaching of farmers to lay hedges (provided by expert hedger from UK)</p> <p>3.1 Workshop to train participating farmers in maintenance of their hedges (provided by expert hedger from the UK)</p>			

- 3.2. Farmers coached to maintain hedges and evaluated.
- 4.1. Communication about project through social media and website
- 4.2. Organisation of study trip to Agnalazaha for representatives for an array of conservation/development NGOs
- 5.1. Workshop to define monitoring protocols and to train monitoring team in their application
- 5.2 Support for monitoring team to apply monitoring protocols
- 5.3. Workshops to share information on project progress, to identify issues arising and to modify interventions to maximise efficacy
- 5.4. Formal reporting

Annex 3: Standard Indicators

Table 1 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-A04	At end of YR3 at least 80% of the women employed in the tree nurseries can demonstrate the necessary knowledge and skills to propagate and cultivate useful plant species	Number of people applying new capabilities (skills and knowledge) 6 (or more) months after training in propagation of trees	People	Women (young, and unmarried)	0	10	0	10	10
DI-A06	After 30 months plots of all 35 participating farmers that were protected with barbed-wire fences are also surrounded by newly-laid hedgerows that are rich in useful plants including native trees and shrubs.	Number of people with improved protection of crops from barbed wire/hedges for improved well-being	People	Men and their households	0	60	21	81	35
DI-B09	After 30 months plots of all 35 participating farmers that were protected with barbed-wire fences are also surrounded by newly-laid hedgerows that are rich in useful plants including native trees and shrubs.	Number of households not needing to remove stems of native trees from forest to make fences to protect their crops	Households	none	0	60	21	81	35
DI-B10	Not included in these terms in original project	Number of farmers and nurserywomen reporting an adoption of livelihood improvement practices as a result of project activities.	people	Men/women	0	60/10	21/0	81/10	35/10
DI-C02	Not included in original project	Number of assessments of stock of fencing posts submitted for publication	Number	Fencing posts, study with plots	0	1	0	1	1
DI-C04	Not included in original project	New assessments of community use of tree stems for making fences submitted for published	Number	Fencing posts, study with plots	0	1	0	1	1

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-C12	Not included in original project	Number of tweets	Number	tweets	4	11	7	22	30
DI-C17	Not included in original project	Number of unique papers submitted to peer reviewed journals	Number	None	0	1	0	1	2
DI-D01	Not included in original project	Hectares of habitat (= area of Agnalazaha Forest) under sustainable management practices.	Hectares	Protected area	0	2745	0	2745	0
DI-D02	0.4 At end of YRs1, 2 and 3 the 35 participating farmers report zero loss of crops to free-ranging cattle from plots included in project and link these gains to tangible livelihood benefits. (compared to average of 12% loss at T0)	Number of people whose disaster/climate resilience has been improved due to protection of crops from grazing.	Households	Number of households benefitting from protective fences/hedges	0	60	21	81	35
DI-D09	Not included in original project	Number of hectares where deforestation has been avoided due to provision of alternatives to poles through project support	Hectares	Area of PA where tree stems are exploited	0	256	0	256	256
DI-D10	0.4 At end of YRs1, 2 and 3 the 35 participating farmers report zero loss of crops to free-ranging cattle from plots included in project and link these gains to tangible livelihood benefits. (compared to average of 12% loss at T0)	Area of improved sustainable agriculture practices benefitting people to be more resilient to weather shocks and climate trends.	Hectares	Area of plots protected from grazers	0	12.15	15.49	27.66	12.15
DI-D11	1.1 By end of YR 1 30% of agricultural plot area (~35 farming families) in buffer zone of protected area protected from incursion by livestock using barbed wire fences	Number of people benefitting from improved sustainable agriculture practices and are more resilient to weather shocks and climate trends.	Households	Number of households benefitting from protective fences/hedges	0	60	21	81	35

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-D16	1.1 By end of YR 1 30% of agricultural plot area (~35 farming families) in buffer zone of protected area protected from incursion by livestock using barbed wire fences	Number of households reporting improved livelihoods.	Households	Number of households benefitting from protective fences/hedges to reduce crop loss	0	60	21	81	35
DI-D18	0.1 In YR2 and YR3 number of tree stems extracted from the forest during the year reduced by 30% compared to baseline (T0)	Drivers of biodiversity loss (cutting of stems for fencing poles) reduced or removed.	Number of stems cut for fencing from within PA	Annual number of stems cut	79,550 = baseline	0	44,333 (= reduction of 44%)	44%	30%
DI-E01	0.1 In YR2 and YR3 number of tree stems extracted from the forest during the year reduced by 30% compared to baseline (T0)	Ecosystem Degradation Avoided (ha) by stopping removal of native tree stems for fencing (DEFRA / ICF KPI 8)	Area from which exploitation of stems for fencing reduced	hectares	0	256	0	256	256
DI-E03	0.3 By end YR3 surveys species-level lemur and forest bird abundance within parts of forest previously degraded by collection of fencing stakes has increased on average by 10% from T0.	Status of <i>Eulemur cinericeps</i> (CR)	Indivs/ha	Indivs./ha	1.28 = baseline	1.12 (= - 12.5%)	1.4 (= +9%)	9%	1.4 (= 10%)

Table 2 Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
The importance of Agnalazaha Forest Madagascar as a source of fencing poles for local farmers and the impact of this resource use on the forest.	Journal: Madagascar Conservation and Development	Amadou Ranirison; Fidy Ratovoson and Chris Birkinshaw (submitted)	Male	Malagasy	Madagascar Conservation and Development, Antananarivo	https://journalmcd.com/index.php/mcd/about

Annex 4: Onwards – supplementary material (optional but encouraged as evidence of project achievement)

Checklist for submission

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the correct template (checking fund, type of report (i.e. Annual or Final), and year) and deleted the blue guidance text before submission?	
Is the report less than 10MB? If so, please email to BCF-Reports@niras.com putting the project number in the Subject line.	
Is your report more than 10MB? If so, please discuss with BCF-Reports@niras.com about the best way to deliver the report, putting the project number in the Subject line.	
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	
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	
Have you completed the Project Expenditure table fully?	
Do not include claim forms or other communications with this report.	