Darwin Initiative Main: Final Report

To be completed with reference to the "Project Reporting Information Note": (https://www.darwininitiative.org.uk/resources/information-notes/ ***Error! Hyperlink reference not valid.***).

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

Submission Deadline: no later than 3 months after agreed end date.

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

Darwin Initiative Project Information

Project reference	Flexi-Grant Reference: DIR27S2\1032 Project Reference No: 28-001
Project title	Building wetland resilience in Madagascar; Community-based conservation of Lake Tseny
Country(ies)	Madagascar
Lead Organisation	Wildfowl & Wetlands Trust (WWT)
Project partner(s)	Madagasikara Voakajy ("Mavoa")
Darwin Initiative grant value	£339,943.00
Start/end dates of project	01 Jul 2021 to 30 Jun 2024, extended to 31 Dec 2024 *(Requested by WWT on 12 Jan 2024, and agreed via email on 2 Feb 2024)*
Project Leader name	Mark Grindley, Senior Project Manager, International
Project website/blog/social media	n/a
Report author(s) and date	Mark Grindley (WWT), Joyeux Vohozanaka, Jelot Hernandez (Madagasikara Voakajy)

1 Project Summary

In the last 50 years, around 60% of Madagascar's wetlands have been heavily degraded or completely destroyed. Those remaining are subject to array of pervasive threats from sedimentation, pollution, burning, invasive species and over-harvesting. Despite similar rates of species endemism as the country's forests, and providing vital ecosystem services to millions of impoverished people, the wetlands of Madagascar receive little attention, with the National Ramsar Committee and relevant government departments under-resourced, and lacking good examples of wetland conservation, management and sustainable use.

This project aimed to generate the foundations for long-term resilient conservation management of just one of those important wetlands, Lake Tseny in Port-Bergé District, Sofia Region. Lake Tseny is the most intact wetland within the Port Berge Key Biodiversity Area (KBA), and home to at least eight globally threatened species of bird, fish and reptile, and 5,000 people, the majority of whom are dependent upon natural systems for drinking water, sanitation, timber, fuel, livelihoods and wellbeing. The project sought to secure resilient ecosystem services and sustainable livelihood opportunities for these communities, ensuring healthy habitats for increasing populations of native biodiversity, and inspiring improved planning for wetlands nationally. The tools and approaches adopted in this project were thus also showcased nationally.

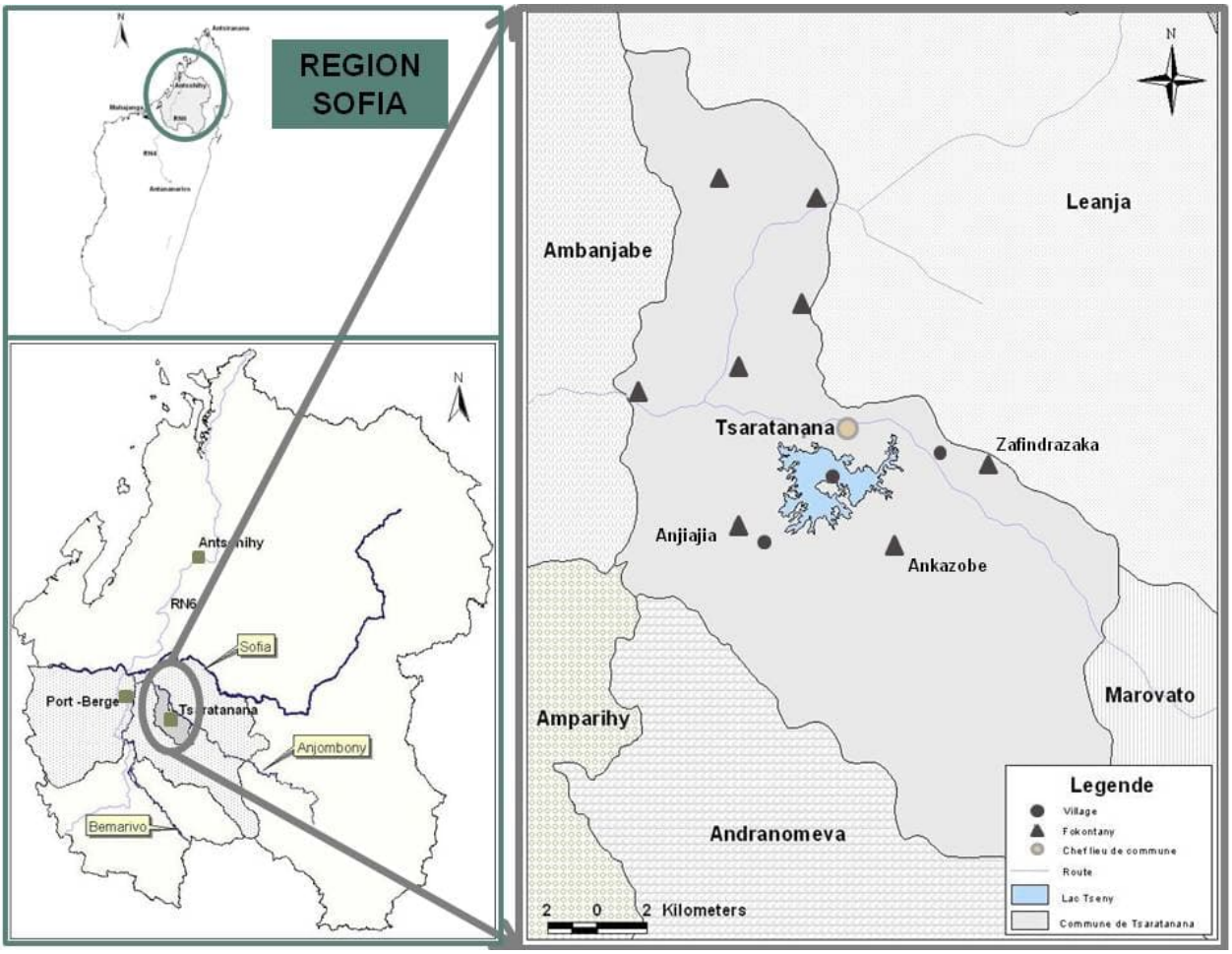


***Figure 1**. Location and site map*

2 Project Partnerships

Madagasikara Voakajy (MV)

MV is a long-term partner of WWT in Madagascar, and has been working at Lake Tseny for several years. They were instrumental in designing the community-support aspects of the original proposal, and led on the local community engagement and support aspects of the project, including setting up local community groups (known as VOIs) and negotiating and putting in place formal management transfer agreements between the VOIs and the government, providing capacity building for the new groups, and implementing the community outreach and awareness activities. They also fed into the national policy components.

MV implemented these activities under a sub-grant agreement with WWT, but as an independent agency were also actively raising funding to continue or expand on specific project components. We held regular meetings at the field level with their team, and annual project monitoring and planning meetings with their senior management. MV was joined a review of the log frame and indicators in September 2024, and helped organise project review consultations at the site and regional level in January and February 2025. We continue to work with them at the site, taking forward priorities that were identified under this grant.

Ministry of Environment and Sustainable Development (MEDD)

The *Ministère de l'Environnement et du Développement Durable* (MEDD) is responsible for overseeing environmental protection, natural resource management, and sustainable development policies. It represents the Madagascar on multilateral environmental agreements, including the Convention on Wetlands (aka Ramsar Convention), and is WWT's main government partner in Madagascar. During the project we signed an MoU with MEDD for the

next ten years that outlines our strategic objectives in support of national priorities outlined in the (draft) National Wetland Strategy, which includes building on the multiple lessons from this project in terms of community wetland management, climate change adaptation and mitigation, wetland restoration and sustainable wetland livelihoods. MEDD were consulted regularly on project progress, and co-host an annual event for Ramsar site managers with WWT that was one of the project's main mechanisms for sharing project lessons.

Regional government and departments (fisheries, forestry and environment, agriculture,)

WWT and MV were already working with the relevant government departments in Sofia region, so we were readily able to consult with them from project design through implementation. During project inception, a formal cooperation was agreed for project monitoring, steering and planning for joint activities, which resulted in an *Accord of Collaboration*. Regular updates were provided to the regional authorities, and they were directly involved in a number of project events, notably the signing of the local community resource management transfer agreements in October 2022, and development and implementation of fisheries regulations. The representatives of government departments in the district are also always involved in technical implementation of the project in the field. Having the relationship with regional government departments was one of the key strengths of the project implementation, and something we have since bult on further with design of follow-up interventions.

Vondron'Olona Ifotony (VOIs)

The Gestion Local Securisée (aka Gelose) Law was introduced in 1996 to support community-based natural resource management of forests, marine areas and wetlands by providing a mechanism for the state to transfer management rights and responsibilities to community associations called Vondron'Olona Ifotony. VOIs thus provide a legal mechanism to recognise customary rights and define management responsibilities, and have been promoted by WWT and several other organisations involved in wetland management for about ten years. The four VOIs that the project formed at Lake Tseny – three for watershed management and one for fisheries management – became important partners in the project and indeed remain so for future support at the site. Their annual work plans integrate project support, and their member meetings are key events for evaluation of project progress and input into activity design.

Other relevant local institutions

We met or communicated with the British Ambassador to Madagascar until 2025, David Ashley, on several occasions during project implementation, providing updates and seeking opportunities to collaborate. He was a keynote speaker at one national event we held to commemorate WWT's 75th anniversary, and helped disseminate project updates via his social media channels.

We communicated regularly with the managers of the 12 Ramsar sites in Madagascar, sharing project reports and updates. Most notably, we hold an annual Ramsar site managers general meeting in partnership with MEDD and this is used to share experiences and develop new project ideas and collaborations, and was an important component of project visibility.

3 Project Achievements

3.1 Outputs

Output 1: Five sustainably financed CBNRM Associations are representing the breadth of local society and providing efficient, and legally recognised, management of natural resources in and around Lake Tseny

Baseline condition

There were no formal community management groups present at the lake prior to the project. However, the main partner, Mavoa, had already been working with local communities on biodiversity surveys and identifying threats to the key biological values at the site for about

three years. During this time they had reached agreement that CBNRM associations were desirable and feasible, and had also identified a number of necessary management actions that were incorporated into this project.

Change recorded to project end

By the end of the project, we had facilitated the establishment of four new community CBNRM associations – *Vondron'Olona Ifotony* (VOI) – under the relevant legal framework.

In terms of representation, the VOIs covered all villages around the lake, and membership was and remains both voluntary and open to all members of the relevant villages. The VOIs are distributed both geographically and thematically; three of the groups are focused on management of the lake catchment, and are organised by village clusters; the fourth group manages the lake, primarily its fishery, and comprises fishers.

These groups have been actively engaged in relevant project activities, especially the delineation of habitat restoration zones, establishment of tree nurseries and replanting of forest, definition and enforcement of fishing restrictions, net exchange programme (to remove illegal fishing gear), and preparation for the initial review of the management transfer agreements (due in 2026). They have been sufficiently successful for them to be considered in several follow-up proposals by WWT and Mavoa (including two noted below).

The sustainable financing aspect of the project envisioned the development of a business plan for the VOIs that would deliver a "sustainable financing model to ensure financial dependence isn't created on project partners". The agreement with the VOIs and Mavoa was to take a two-pronged approach to delivering this objective:

- Mavoa would support the development of village savings and loans associations for each VOI, which is a common method for financial resilience in Madagascar and can generate income for small, shared actions like patrolling. This is now under development through a follow-on grant awarded by the CEPF.
- WWT would work with the Madagascar Biodiversity and Protected Areas Fund to develop a small grants mechanism for community wetland managers like the VOIs at lake Tseny. We are now implementing a project to set up this new grants mechanism with FAPBM, with the pilot phase funded by the Global EbA fund since December 2024.

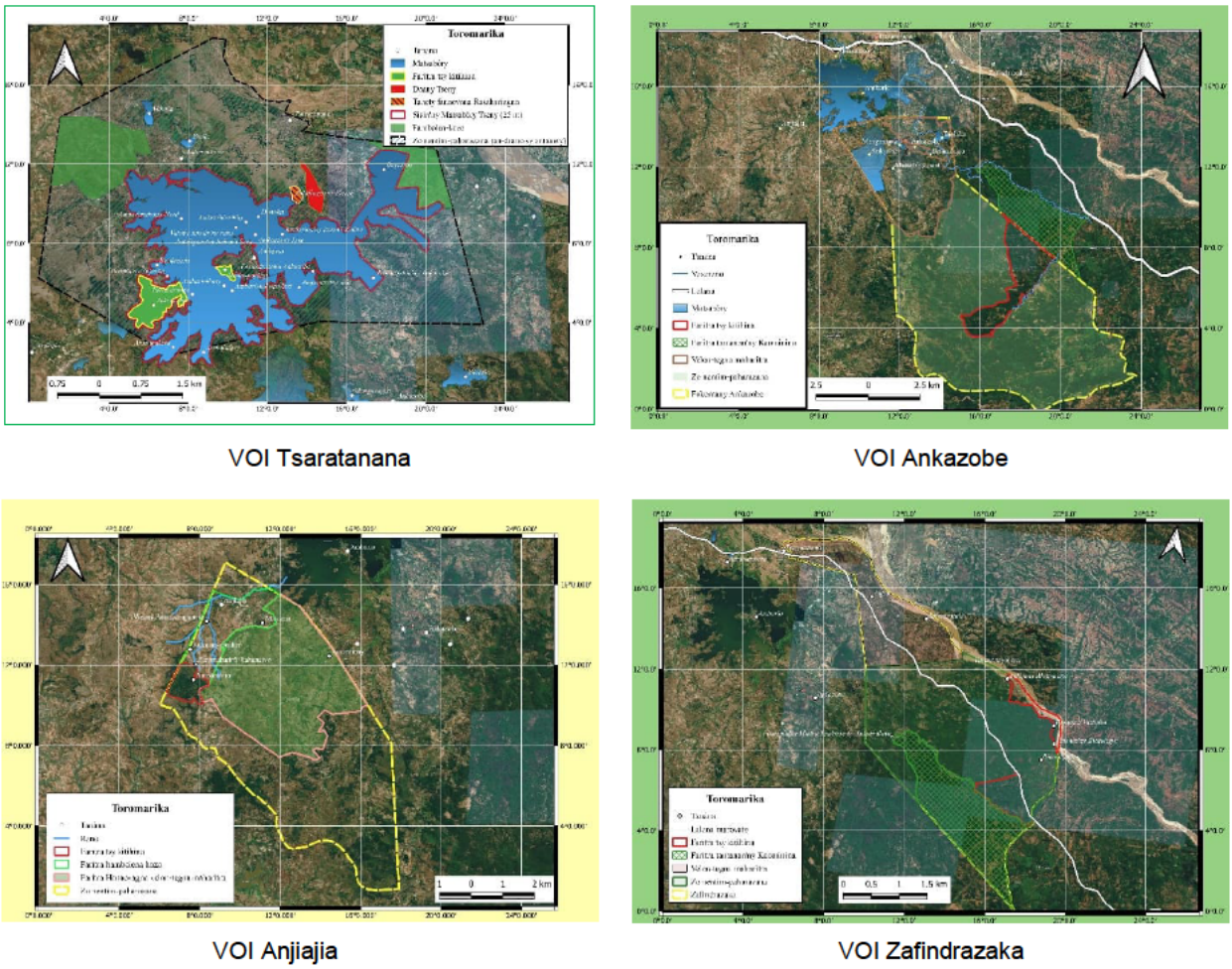
Sources of evidence

- Management transfer agreements for all four VOIs, signed by the relevant government officers (see **Figure 2**; the documents are in Malagasy language, available on request).
- Digital zonation polygons of all VOI areas (used in the map in **VOI Anjiajia**
VOI Zafindrazaka
- **Figure 3**, and available on request).
- Documentation of CEPF Grant 113814 for the project Reducing vulnerability to climate change in Lake Tseny, Deliverable 2.3 of which is: "establishment of four village savings and loan associations (VSLA), enabling community members' mutual support to adopt climate-smart agriculture techniques and improve existing income-generating activities."[1]
- Project document for the WWT project "Empowering Community EbA in Madagascar's Globally Important", funded by the Global EbA Fund (available on request)[2], which will give community wetland managers in Madagascar access to sustainable financing mechanism to address identified climate change threats at their sites.

[1] https://www.cepf.net/grants/grantee-projects/reducing-vulnerability-climate-change-lake-tseny.

[2] The project is active but has not yet been added to the fund website https://globalebafund.org/.

***Figure 2**. Covers of the Management transfer agreements for four VOIs*



VOI Tsaratanana VOI Ankazobe

VOI Anjiajia VOI Zafindrazaka

***Figure 3**. Maps of the VOIs management transfer areas and internal zonations*

Output 2: Fishing regulations are in place and being followed by local and migrant fishers, which, alongside fish habitat restoration areas, is increasing the productivity of the fishery. Fishing communities have new knowledge on value chains and the potential to increase profitability

Baseline condition

Prior to the project there was almost no enforcement of fishing restrictions imposed by the regional department of fisheries, which focused mostly on seasonal closures but ignored gear restrictions. There was also no zonation of the lake, for example to control disturbance in fish nurseries during the breeding season.

Change recorded to project end

Through several months of discussion with the 11 communities around the lake, it was agreed that due to the relatively small number of fishers, there should be one single body representing this user group. Thus we supported the establishment of one single community fishery group (VOI Tsaratanana), which brings together seven different fisher cooperatives. The VOI had 81 founding members, which by the end of the project had grown to 122, 82 (67%) of whom are female. The main activities undertaken by fishers under the project were: i) zonation and local regulations; ii) a net exchange programme, iii) research and monitoring, and iv) value chain and market development.

The **fishing restrictions** (seasonal, spatial and equipment) were elaborated with support from the district department of fisheries, and described in the management transfer agreement for the VOI.

The **net exchange** was carried out in 2024. Among the 353 fishermen within seven cooperatives, 63 forfeited older nets that were deemed illegal under the standard set by order No. 2419/2018 of the Ministry of Fisheries and Blue Economy; ie they had a mesh size below 20mm and were over 200m long. These were replaced with legal nets. Participating fishermen also received monitoring sheets to record data on the use of legal versus illegal mesh nets, recording types of fish caught, frequency of net use and place of capture.

The **participatory value chain analysis** was carried out in the second half of 2024, looking at the structure of the fish product value chain, and opportunities and constraints for the Tseny fishers and processors. A mixed-methods approach was adopted, including field surveys, analysis of existing data, product flow mapping and participatory stakeholder workshops. The study found that fishermen mainly use simple, traditional techniques; processors smoke or dry the fish, but have limited technical means, while fishmongers play a key role in transporting products to local and regional markets, but face infrastructure problems. Consumers, mainly local, show a high demand for fish products, although distribution channels are limited. The study made five recommendations:

- Modernization of equipment for fishing and product processing
- Strengthening infrastructure such as the product storage system
- Training of actors
- Promotion of the fish farming program
- Structuring of actors

Regarding **research and monitoring**, there were three objectives:

- Assess the population size of pinstripe damba *Paretroplus menarambo*
- Ensure the effectiveness of legal mesh-size nets in terms of the standard and productivity
- Assess the fish reproduction period in Tseny Lake

Forty-five (45) days of capture were carried out between 2023 and 2024. The results suggest that legal mesh-size nets compared well with the nets that fishermen used before in terms of overall catch size, and the number of fry caught is significantly lower than medium and large fish. Moreover, legal mesh-size nets are also cost-effective as they reduce the effort required to catch fish, but products are comparable to the old nets. This research also showed that the reproduction of fish species varies according to the climatic season, but that most lay their eggs in October. Fish reproduce in almost all localities, depending on their biological conditions.

***Table 1**. Summary details for the new VOIs membership*

Zone		VOI Anjiajia	VOI Ankazobe	VOI Zafindrazaka	VOI Tsaratanana*	TOTALS
Sub-villages		2	0	2	2	6
Households		120	198	150	500	968
Household size range		3 to 8	3 to 6	3 to 12	3 to 12	n/a
Ave Household		4.34	5.05	3.29	3.60	3.94
Population		**521**	**1000**	**494**	**1800**	**3815**
Of which,	*Male (over 18)*	*85*	*180*	*100*	*350*	*715*
	Female (Over 18)	*95*	*320*	*113*	*450*	*978*
	Under 18	*341*	*500*	*281*	*1000*	*2122*

Source: Management transfer documents for all VOIs, October 2022; figures are attributed to village leaders.

* Focussed primarily on the lake, and comprising mostly fisher-families.

***Table 2**. Summary details for the management zones of the new Lake Tseny VOIs [all figures are in hectares]*

	VOI Anjiajia	VOI Ankazobe	VOI Zafindrazaka	VOI Tsaratanana*	TOTALS
Number of members	62	160	102	87	**411**
Focal habitat	Watershed to the SW of the lake	Watershed to the S of the lake	Watershed to the E of the lake	Lake, lake margins, some forest	
Fully Protected	106	789	292	58.6¥	**1,245.6**
Traditional Rights	2,179	7,213	2,474	5	**11,871**
Tree Planting	377	5	5	260	**647**
Cattle grazing, agriculture, housing	1,562	2242	1070	2981	**7,855**
TOTALS	**4,224**	**10,249**	**3,841**	**3,300**	**21,618.6**

Source: Management transfer documents for all VOIs, October 2022; mapping supported by Mavoa.

* Matsabory area is divided into two categories: Fully protected area (49 ha), and Sustainable livelihood use area.

¥ Comprising 53.8 and 4.8 ha.

Sources of evidence

- Management transfer agreement for Tsaratanana VOI, signed by the relevant government officers (in Malagasy), which grants the group rights for the administration of renewable natural resources in the various zones defined in the agreement.
- Participatory value chain analysis report (Mavoa 2024), offered a 'plan of action' with multiple activities to improve performance for fish processing and trade. The survey also indicated a general concern among fishers with reducing catches.
- Report on the participatory fishing survey and experiment during July, October and December 2023, which assessed the effectiveness of alternative nets to those currently in use, the biology and status of fish lifecycle and reproduction, and the local of fish reproduction areas (spawning sites, nurseries etc) in the lake.
- Report on the fish value chain assessment (2024), which identified potential for improved profitability by addressing constraints in storage and transportation, access to high-value markets, and poor coordination between actors in the chain.
- 74% of households surveyed in the final evaluation stated that the sale of fishing products has significantly increased their income. Approximately 112 households (37%) are satisfied with the amount of income generated by the sale of fish.

Output 3: Quality and extent of aquatic and lakeside habitat increased

Baseline condition

There was no qualitative assessment of quality or extent of these habitats available at the start of the project, nor of the habitat requirements for key species. There was likewise no plan for habitat restoration nor the technical ability or resources to undertake restoration, including an absence of tree nurseries.

Change recorded to project end

It was not possible to begin defining the extent and targets of this activity until the management transfer agreements were signed into effect, in October 2022. Those documents defined the restoration priorities and zonations agreed between the communities and local government.

Areas of aquatic habitat then fell under the jurisdiction of the newly formed Tsaratanana VOI, solely responsible for the lake. The lake edge phragmites reeds and a small area of flooded forest were deemed by the members to be at limited risk of further degradation – from fire and firewood harvesting respectively – with the new management measures in place, namely use and access restrictions, and monitoring. No direct 'restoration' activities were undertaken in these areas. Remaining aquatic habitat comprised lake edge lilies and macrophytes, neither of which were deemed to be at risk.

However, between all four VOIs there was a also combined total of 647 ha of the lake watershed that was zoned for reforestation (**Table 2**), mostly identified to protect surface watercourses and therefore reduce sediment runoff into the lake, protecting the aquatic ecosystem, as well as providing construction materials and firewood to remove pressure from the flooded forest.

Following this priority setting, a consultation was held to elaborate a plan to achieve the target restoration, which in brief involved establishing a seedling nursery, demarcating restoration areas for each VOI, and sourcing seeds. Nearly all of the species were endemic to the site, although a small number of non-natives were selected for the livelihood benefits, thereby reducing pressure on remaining native forest.

The community nursery for natives, fruit trees and fast-growing species was set up in 2023, with seedling production begun in December 2023. The seedlings were planted in the subsequent growing season, from February to April 2024, when a total of about 7,530 seedings of six species were planted over 10 hectares.

The lake Tseny catchment restoration plan itself was approved by the regional authorities in July 2024, and is now being followed under subsequent projects secured by Mavoa and WWT.

Although causality is difficult to prove, analysis of satellite imagery to determine major landcover classes in 2004, 2014 and 2024 (**Table 3**) indicates ongoing degradation in the wider lake catchment, and allows several valuable insights for management of the site:

- The area of cultivated land increased over both periods (2004-2014 and 2014-2024), but the increase was ten times greater in the more recent period. Ground observations indicate this increase is almost exclusively in wet rice production.
- Forest loss was a big problem in both periods, and as a percentage was higher (at 45%) from 2014 to 2024 than from 2004 to 2014 (37%). The underlying figures indicate that the loss was offset by recruitment into this category from both categories of degraded forest, which could well indicate the cumulative, combined impact of shifting cultivation, which cycles between near clear-cutting of relatively healthy forest followed by several years of succession to sparse and then dense degraded forest.
- The above assessment is supported by the figures for bare land, which reduced by 19% from 2004 to 2014, but which then increased by 35% from 2014 to 2024 (an increase of 25% overall); bare land is where shifting cultivation land is counted, either while being cultivated or immediately after, before regeneration moves it to 'sparse degraded forest'.
- It is also supported by the distribution of landcover change, as indicated in **Figure 4**. Landcover change in the Lake Tseny catchment, 2004-2024, which indicates that almost the whole catchment was subject to some form of change in landcover between 2004 and 2024, but that it was concentrated away from the immediate vicinity of the lake (ie, mostly in the forested upper catchment).

***Table 3**. Landcover in six broad classes, 2004, 2014 and 2024 [all figures in hectares]*

Landcover Category	2004	2014	Change *2004 to 2014*		2024	Change *2014 to 2024*		Overall Change *2004 to 2024*	
Water	1,082	866	-216	-20%	859	-07	-1%	-223	-21%
Cultivation	1,421	1,517	+96	7%	2,459	+941	38%	+1,037	73%
Forest	6,950	4,386	-2,564	-37%	3,030	-1,356	-45%	-3,920	-56%
Bare Land	7,899	6,415	-1,483	-19%	9,873	+3,457	35%	+1,974	25%
Sparse Degraded Forest	3,472	6,240	+2,768	80%	3,428	-2,812	-82%	-44	-1%
Dense Degraded Forest	4,144	5,543	+1,398	34%	5,319	-223	-4%	+1,175	28%
Totals	**24,967**	**24,967**	**0.0**	**n/a**	**24,967**	**0.0**	**n/a**	**0.0**	**n/a**

Source: WWT analysis (2024) based on Landsat data

Due to the lack of direct evidence of changes in aquatic vegetation, we undertook a perception survey among 296 community members as part of the project close activities, about one-third of whom were members of one of the VOIs. The survey indicated that:

- More than half of respondents (approximately 53%) reported positive impacts from activities carried out since the establishment of the VOIs.
- Around 70% note they have seen an increase in all three major aquatic vegetation types on the lake; phragmites (reed), lilly and common water hyacinth.
- Threats to these habitats are also perceived to have been reduced, due to the presence and actions of the VOIs.

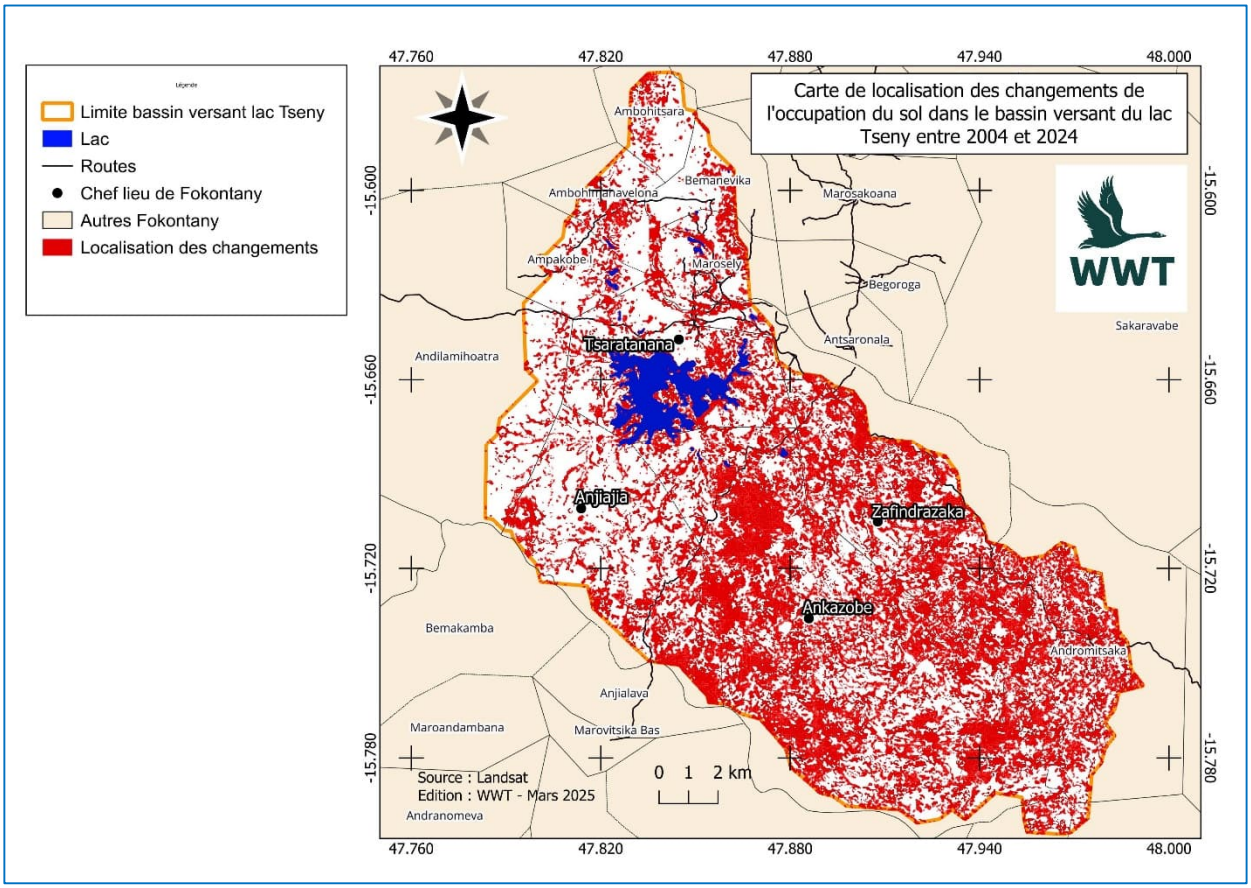


***Figure 4**. Landcover change in the Lake Tseny catchment, 2004-2024*

Lastly, we have also observed that the Madagascar fish eagle *Haliaeetus vociferoides*[3] has returned to the lake. This critically endangered wetland specialist is found only along Madagascar's western seaboard, but was not detected during our 2022 biodiversity survey at the lake. If long-term residency and breeding result, it would be a significant indicator of success for the conservation investment at the site.

Sources of evidence

- Satellite imagery interpretation, prepared with Landsat data with a spatial resolution of 30m using Google Earth Engine (**Table 3**).
- Report WWT_2022_03 Main Habitats and Botany of Lake Tseny, indicating general extent, species diversity and health of main lake habitats.
- Report WWT_2023_04 Lake Tseny Biological Survey, which provided more detail on the botanical diversity of the lake.
- Report WWT_2023_08 Lake Tseny Catchment area Restoration Plan, which describes the status of lakeside and watershed habitats, their preferred status and details of how this will be achieved through replanting, protection and other management measures.
- Report WWT_2024_01 Sofia and Tseny Sedimentation Assessment, which indicates seasonality and extent of sediment inflows into the lake, and describes the erosion risk across the lake catchment based on slope angle, aspect

[3] BirdLife International. 2018. *Haliaeetus vociferoides* (amended version of 2016 assessment). The IUCN Red List of Threatened Species 2018: e.T22695121A125395004. https://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T22695121A125395004.en. Accessed April 2025.

Output 4: Increased understanding of the importance of natural systems and biodiversity for livelihoods and wellbeing amongst different socio-economic groups using and living around the lake

Baseline condition

There was very little published information on this subject in the public domain prior to the project, most notably a preliminary fish survey[4], an assessment by the Alliance for Zero Extinction in 2018[5], a short article in 2021[6] and some unpublished data held by Mavoa that was used in the preparation of this project.

Change recorded to project end

The amount of information on the importance of natural systems and biodiversity values and threats at the site has been greatly increased through a number of participatory surveys that were also used to define project activities or support planning and monitoring by community managers. The most significant are noted here.

The original, ground-based habitat survey in 2022 gave an approximation of the extent of main habitat types, indicating the distribution and approximate extent of marsh and flooded forest ('swamp'). The report also indicated a plant diversity in and around the lake of 49 species, with 21 species in the marsh and 23 in the swamp. No endemic plant species were among them, but one was globally endangered (*Borassus madagasccariensis*) and two vulnerable (*Stereospermum arcuatum* and *Ochna macrantha*).

The climate vulnerability assessment considered risks to particularly sensitive species and habitats, and to livelihoods. The first two were assessed by the project team and external experts, covering seven habitats and five species (two birds, two fish and one turtle), while the livelihoods assessment was undertaken through a participatory consultation at the site in 2023 that involved 103 participants from five villages. The village survey results were disaggregated by gender and indicated a broad range of livelihoods activities that participants felt would be impacted by climate change, adaptations they had already tried or implemented, and future actions they were considering. This will be an important contribution into the revision of the VOI transfer agreements in 2025/6, and future site management planning.

The project close ("endline") assessment among 296 community members undertaken in December 2024 provided additional insight into the importance of natural systems and biodiversity for livelihoods and wellbeing at Lake Tseny, particularly as they relate to the objectives of the project:

- 74% of those surveyed admitted to knowing what and where the core zones are.
- 78% stated that the benefits of having a clean lake on their health and livelihoods are very significant.
- Positive improvements in water quality were noted by 55% of respondents.
- 63% of respondents working in the fishing sector have received training on fisheries regulations and endangered species. They claim knowledge of certain new rules, such

[4] Andriafidison D, Jenkins RKB, Loiselle PV, McCaskie T, Rakotoarivelo AA, Rahalambomanana J, Ravelomanana T, Raminosoa N & Saunders A (2011) Preliminary fish survey of Lac Tseny in northwestern Madagascar. Madagascar *Conservation & Development*, 6(2), 83–87. https://doi.org/10.4314/mcd.v6i2.7

[5] Key Biodiversity Areas Partnership (2025) *Key Biodiversity Areas factsheet: Bongolava Classified Forest (Marosely) NPA*. Extracted from the World Database of Key Biodiversity Areas, March 2025. https://www.keybiodiversityareas.org/site/factsheet/22447

[6] Andrinatsimanarilafy RR, Hernandez JF and *Andriafidison* D (2021) Lake Tseny: the last refuge of the Pinstripe damba (*Paretroplus menarambo*). African Conservation Telegraph, 16 (3) October 2021 https://conbio.org/images/content_2014scholarships/Article_1_ACT_Oct21.pdf?utm_source=chatgpt.com

as the requirement to release the critically endangered pinstripe damba if caught accidentally, and the dates of the annual fishing closure.

Sources of evidence

- Report WWT_2022_03 Main Habitats and Botany of Lake Tseny describes the results of the first rapid assessment and consultation, which delivered an initial map of distribution of main habitat types in and near to the lake.
- Report WWT_2023_05 Climate Vulnerability Assessment (CCVA) for Lake Tseny gives comprehensive description of the methods and outcomes for the species, habitat and livelihoods consultations undertaken in 2023.
- Lake Tseny baseline and endline report 2025, undertaken around the time of the end of project review meetings with stakeholders at the site and regional level (Nov and Dec 2024), assesses impact against a number of project indicators, including several that were also assessed with quantitative measures.

Output 5: Current and future wider threats are understood for the local Tseny catchment, with a conservation strategy developed to mitigate threats into the future, Tseny recognised as a Ramsar Site, and national conservation managers and government staff valuing and able to use tools to plan long-term resilient community-based wetland conservation projects

Baseline condition

There was little in-depth knowledge of the threats facing the biological and livelihoods values of Lake Tseny prior to this project, nor much information on what those values were. The site had never been considered for inclusion on the Ramsar list of globally important wetlands and it's eligibility was unknown beyond that it supported the pinstripe damba fish *Paretroplus menarambo* (CR) and the Madagascar big-headed turtle *Erymnochelys madagascariensis*. No Ramsar management effectiveness assessments nor climate vulnerability assessments had been conducted at any of the country's 21 Ramsar sites.

Change recorded to project end

The VOI management transfer agreements include details of the main threats and management activities proposed by each of the community groups, and thus represent their understanding of the main threats to which they feel ready and able to respond. For the forest areas, these included fire prevention, forest management and control of illegal activities (logging, charcoal making, burning/clearance, illegal hunting), forest replanting and care of seedlings, replanting of marsh habitat and environmental awareness. For the lake, the list also includes control of illegal fishing (respect for seasonal closures, no-take zones and permitted fishing techniques), and removal of illegal nets.

We also assessed threats to livelihoods and biodiversity through the conduct of a participatory climate change vulnerability assessment, following a revised version of a methodology developed by the IUCN in Southeast Asia (Wyatt et al 2021). The assessment found that key species at the site are not particularly vulnerable to climate change, but that its impact on local livelihoods and indirect pressure on the environment would both have negative impacts on both people and nature. Of particular concern were the impact on the largely rain-fed agriculture that provides most of the household nutrition and calories in the area, and the drop in lake level during the dry season, which reduced waterbird numbers as well as fish and reeds (used in basketry). The potential impact of in-migration as a response to climate change in other regions was impossible quantify, but a real concern that participants had already started to experience.

A relatively rapid biodiversity survey in the 2022/23 dry season was undertaken with a small number of knowledgeable community members and external species experts, and assessed mammals, birds, reptiles, amphibians and flora of the lake, lake margins and some of the catchment. The survey confirmed that the sites is of national and local importance for

biodiversity – as indicated by its location within Key Biodiversity Area MDG-54 (CEPF 2022) – but also provided evidence that it qualifies as a wetland of international importance under six of the nine criteria specified by the Ramsar Convention.

Both the CCVA and

Sources of evidence

- Management transfer agreements for all four VOIs, signed by the relevant government officers (see **Figure 2**; the documents are in Malagasy language, available on request).
- Report WWT_2023_05 Climate Vulnerability Assessment (CCVA) for Lake Tseny gives comprehensive description of the methods and outcomes for the species, habitat and livelihoods consultations undertaken in 2023.Management transfer agreements
- Report WWT_2023_04 Lake Tseny Biological Survey, which provided more detail on the plant and animal diversity of the lake and its catchment, and evaluated those against all nine Ramsar criteria.
- Proceedings of two annual Ramsar Site Managers AGMs in 2023 (Report WWT_2023_01) and 2024 (not documented)
- Report on CCVA training provided to Ramsar site managers and other national stakeholders in 2023 (Report WWT_2023_01)

3.2 Outcomes

Outcome: **Sustainable, representative, and legally recognised community-based management of Lake Tseny catchment results in improved ecosystem services for 5000 local people and enhanced habitat for threatened biodiversity, with techniques showcased nationally.**

The project only partially achieved it's intended Outcome, primarily in the areas of mobilising and empowering community members, and setting up priority management procedures and actions (such as fishing regulations, net exchange, patrols, nursery establishing and reforestation, environmental outreach). The wider impacts on habitats and biodiversity are less clearcut, with anecdotal evidence that the lake and lake-edge habitat has improved, and the return of the Madagascar fish eagle reported. But forest loss and degradation in the catchment is a persistent problem, and there is a lack of strong evidence for recovery of the pinstripe damba population despite several surveys and regular discussions with the fishers. It was however a modest project given the size of the site and scale of the problems, and it seems likely that a sustained effort on the part of the VOIs and their supporters, including Mavoa and WWT, will be necessary to achieve the wider vision of a sustainable and thriving site.

Indicator 0.1: *5000 people empowered to sustainably manage Lake Tseny through a legally endorsed 'Gelose' management transfer agreement by end of Y1*

By the end of the project, four Gelose agreements ('secured local management agreements', aka management transfer agreements) had been prepared by four newly-formed local community groups (known as VOIs) and authorised by the relevant government bodies. Combined membership of the group was 411 at signing, representing 3815 people from 968 households. The agreements are initially valid for three years, after which it would be subject to review and extension for a further 10 years. The project partners have already taken measures to ensure that support is available for this process. We also recently launched a new project to provide sustainable financing for the VOIs.

Evidence:

- Signed management transfer agreements for Anjiajia, Ankazobe, Zafindrazaka and Tsaratanana VOIs

- Documents for CEPF-funded project “Reducing Vulnerability to Climate Change in Lake Tseny” available here (https://www.cepf.net/grants/grantee-projects/reducing-vulnerability-climate-change-lake-tseny)
- Documents for WWT project “Empowering Community EbA in Madagascar’s Globally Important Wetlands”, supported by the Global EbA fund (documents not yet available on donor website but available from WWT on request).

Indicator 0.2: Like for like monthly income of fishers increases by 20% between Y1 and Y3.

We were unable to collect a reliable baseline for fishing-related income at the start of the project, so sought other means to illuminate any impact on fisheries-related income from the various relevant interventions.

Firstly, according to the end-of-project perception survey carried out among the fisher’s households around lake Tseny, 74% of 302 households reported that their monthly income from fishing is increased since the implementation of VOI management, with fishers now reporting an average monthly income between 50,000 and 250,000 MGA.

Secondly, the majority of households interviewed stated that the sale of fishing products has significantly increased their income. Approximately 112 out of 302 households (37%) now state they are satisfied with the amount of income generated by the sale of caught fish.

However, despite cautious optimism on improvements to fishers’ household economies, 71% of the respondents stated that there has been a decline in fish stocks in Lake Tseny over the last five years, which is something WWT and Mavoa are acutely aware of as we implement the next round of support to this site.

Evidence:

- The above results are taken from the Tseny endline report WWT_2025_02.

Indicator 0.3 Extent (# of ha) of aquatic vegetation and fringe Phragmites habitat increases by 10% by end of project. Reforestation plots increase forest extent by 5%.

Aquatic / fringe vegetation: Efforts to monitor this vegetation type were unsuccessful; they are too disperse and our original plan to map distribution using remote sensing failed due to the low resolution of the pixels relative to the areas involved. The drone imagery was also inconclusive as it could also not distinguish sparse or semi-submerged vegetation. In response we undertook a survey of lake users, with 70% of people surveyed noting increases in the level of cover of phragmites marsh, water lilies and macrophytes.

Forest extent: Between the four VOIs, there is a combined total of 647 ha of land already zoned for habitat reforestation and restoration including the aquatic and forest habitats. Since the start of the project, local planted about 7,530 seedlings on over 10ha in the catchment, or slightly over 1.5% of the area. This replanting is on heavily degraded sites.

However, our project endline monitoring survey showed most of the 296 people surveyed reported some degree of reduction in forest extent, with 69% noting a ‘large reduction’. These observations are almost certainly the results of severe accidental burning early on in the project.

Evidence:

- Final project stakeholder perception survey (2025).

Indicator 0.4 Experimental catch per unit effort of threatened fish species increases by 10% by end of project.

This indicator refers to three Madagascar endemic species, pinstripe damba *Paretroplus menarambo* (CR), *Paretroplus lamenabe* (DD), *P.* sp. affin. *kieneri* (NE) and *Glossogobius giuris* (NE).

The baseline catch per unit effort[7] (CPUE) was determined in 2011 (Mamilaza 2012), where fishing effort (0530h to 0800h and 1500h to 1700h = 5.5 hours per day) at six sites, with three visits per site (except one, which was visited only once). Catch was 19 *P. menarambo,* 3 *P. lamenabe* and 48 *P.* sp affin. *Kieneri*.

The re-survey in 2024 used the same traditional herring net at each of 10 sites over 20 days, with two hours of fishing per day. This test was also used to test traditional versus the new nets, and resulted in the capture of eight species with a total weight of 57 kg. However, despite lasting many times longer than the original survey, the re-survey caught only one individual of the target species (**Table 4**).

***Table 4**. Catch per unit effort in 2011 and 2024*

	2011			2024		
Species	**Catch**	**Effort**	**CPUE**	**Catch**	**Effort**	**CPUE**
Paretroplus menarambo	19	5.5 * 16 = 88 hours	0.216	1	2 * 10 * 20 = 400	0.003
P. lamenabe	3		0.034	0		0
P. sp. affin. *kieneri*	48		0.545	0		0
Glossogobius giuris	0		0.000	0		0

Evidence:

- The CPUE baseline figures are from Mamilaza EL, Mananjara WS & Ralambomanana J (2012) The Pinstripe Damba and Bihara Turtle: Endemic Freshwater Species Conservation in Madagascar, Project Final Report, Conservation Leadership Programme
- Re-survey CPUE figures are from Mavoa (2023) Experimental fishing, Mission Report from the project "Strengthening the resilience of wetlands in Madagascar; Community conservation of Lake Tseny"

Indicator 0.5 Long-term regional conservation strategy agreed by local communities and Tsaratanana District Government, starting to address threats throughout the local catchment by end of project.

The management transfer agreements (ie, VOI-government contracts) cover approximately 90% of the watershed of the lake, and are already being enthusiastically implemented by the local groups with the support of the project partners and local authorities. Since the scope of the mandate requested by and granted to the VOIs was much larger than originally anticipated, it was agreed with the local stakeholders that there was no need to develop an additional plan for the catchment.

The long-term plan will take the form of revised management transfer agreements, as per the Gelose Law (1996), which are being prepared through 2025 with follow-up funding to Mavoa from the Critical Ecosystems Partnership Fund and to WWT from the UK-funded Global Centre on Biodiversity for Climate (GCBC). The extended catchment plans will however be based on

[7] Catch per Unit Effort = Total Catch (Number or Weight of Fish) / Fishing Effort (e.g., Hours, Trips).

multiple outputs from this Darwin project, including the CCVA, biodiversity survey, fisheries regulations and surveys, lake patrolling and reforestation activities.

Evidence:

- Signed management transfer agreements for Anjiajia, Ankazobe, Zafindrazaka and Tsaratanana VOIs (see also **Figure 3**).
- Mavoa CEPF project document[8].

Indicator 0.6 At least 40 National Ramsar Committee members, Ramsar Site managers, and Managers of Protected Areas containing important wetland habitat, understand how to use R-METT and VA tools, and VAs taking place in at least 2 other important wetlands.

We completed R-METT assessments of all 21 Ramsar sites in Madagascar during the project period, with funding from a different project. The results and a refresher on the methodology were then shared with the managers at the 2023 annual Ramsar Site Managers AGM. This is an annual event that WWT hosted with the MEDD that we initiated under this project to help disseminate the results, as a response to the fact that a functional national Ramsar Committee has yet to be formally convened. We also used that initial AGM to conduct a training in the CCVA methodology, thereby reaching nearly all of the Ramsar site managers in Madagascar. To date, a CCVA assessment has also been conducted in Lake Sofia by WWT and Durrell Wildlife Conservation Trust, but we have built the tool into a new small grant scheme for community wetland managers that will thus reach many more sites.

3.3 Monitoring of assumptions

Both the Outcome- and Output-level assumptions were monitoring regularly throughout the project, and reported annually. The assumptions and a brief summary of how they performed throughout the project are provided in **Table 5**. There were no major changes in the assumptions, although as noted the national Ramsar committee was still not formally convened due to changes in leadership in the MEDD, and the savings and equipment loan schemes were not possible to deliver due to being too ambitious. The expected pathway to change seems to have held, but some poor conservation outcomes indicate continued effort is required to ensure the communities in Lake Tseny truly fulfil their potential.

***Table 5**. Outcome- and Output-level Assumptions*

Assumptions (by level)	Comments
Outcome-level	
The political situation within Madagascar remains stable and no restrictions are imposed on NGOs.	This assumption held; there were disruptions in 2024 around the national election, but it had very little impact in the field. *Evidence: n/a*
Public health restrictions do not prevent project activities from taking place.	No restrictions were imposed since Covid restrictions were lifted after about the first six months of the project. *Evidence: n/a*
Project partnership with local government remains strong and all stakeholders remain supportive of management transfer to local communities.	We have established a strong local government liaison and communication, and they remained well engaged in the project throughout.

[8] https://www.cepf.net/grants/grantee-projects/reducing-vulnerability-climate-change-lake-tseny.

Assumptions (by level)	Comments
	Evidence: Minutes of coordination meetings.
Local community associations respect commitments to democratic processes and encourage participation of under-represented groups.	This assumption held, with the VOI committees being elected fairly by their members and regular meetings being undertaken, many with participation of the project team. *Evidence: Minutes of VOI meetings.*
Local fishing communities maintain strong relationships with migrant fishers to agree equitable use and management models.	There were no major conflicts between local and migrant fishers during the project, and fisheries patrols begun in 2024 reported very few conflicts with those breaching restrictions. *Evidence: Minutes of VOI meetings.*
Output-level	
All sectors of society engage with management transfer process and support wider project initiatives, including community-based savings groups and equipment rental schemes, which have been designed to fill existing needs.	The management transfers were completed with no major grievances encountered and strong support from government agencies. The savings and rental schemes were not feasible within the project period and have been postponed to 2025/26. *Evidence: Management transfer application documents.*
Local government honour legal community rights to manage natural resources and do not interfere with democratic processes.	Local government fully supported the management transfer agreements, as well as fisheries management and reforestation interventions. They also supported law enforcement against illegal fishing and land clearing. *Evidence: Minutes of VOI meetings.*
Local and migrant fishers are willing to engage in a long-term process to improve fisheries.	Some local and migrant fishers supported improving fisheries management, but not all are as yet fully engaged. The project partners are continuing to work on this. *Evidence: Minutes of VOI meetings.*
Local community association patrolling and enforcement can be done safely and efficiently at the lake.	'SMART' patrols began in Feb 2024 by a team of 16 members from all VOIs. Up to the end of 2024 they recorded 60 infractions, mostly for fishing during the closed period. *Evidence: SMART patrol summary report (available on request).*
There are no unforeseen barriers to standard restoration methods that work elsewhere locally.	No unforeseen barriers have emerged to date. A restoration risk analysis is included in the restoration plan for the catchment. Plantings from 2024 so far have high survivability. *Evidence: Minutes of VOI meetings.*
Community members from all villages and sectors of society engage with the project.	Mavoa reports strong engagement across the local communities. *Evidence: Mavoa verbal communication, event attendance sheets*
Schools continue to support comprehensive programmes of environmental education provided by project staff.	The schools have been very supportive of the project awareness interventions thus far. *Evidence: Mavoa verbal communication.*
Good climate projection models are made available to the project.	We have opted to use climate data from the World Bank Climate Knowledge Portal, which is free to use. *Evidence: CCVA report (WWT_2023_05).*
A full programme of research on wider threats can be undertaken safely and effectively within the project period.	The initial social-economic, fisheries and mapping surveys are now complete. Wider threats from sedimentation have been assessed using remote sensing data. *Evidence: Project scientific reports (see Section 3.4).*
National Ramsar Committee members remain engaged with the capacity building activities identified in the draft National Wetland Strategy.	The National Ramsar Committee still remains to be re-formed but the managers of the 21 Ramsar sites have been engaged on capacity building for CCVAs and R-METT through the project. *Evidence: Project meeting/training reports (see Section 3.4).*

3.4 Impact

Impact: Lake Tseny catchment provides resilient ecosystem services and sustainable livelihood opportunities for communities, secure healthy habitat for increasing populations of native biodiversity, and inspires resilience planning for wetlands throughout Madagascar.

Although of course this Impact has not been realised in the three years of the project, the team feels that some progress has been made, although there is plenty of evidence that other challenges remain. The following headline evidence is derived from the end of project survey from December 2024, which interviewed 112 community members from across the project site (Report WWT_2025_01), unless otherwise stated.

Resilient ecosystems services

- The extent of aquatic vegetation has improved, with 66% of respondents believing the area of phragmites reeds has increased, and 72% believing the area of lilies had increase.
- Water hyacinth was also believed to have increased by about 64% of respondents, but as an invasive species the implications for management are different. It does however provide micro-habitat and food, so at modest levels is not particularly a problem.
- 53% of respondents report positive impacts from the activities carried out since the VOIs were established.

Sustainable livelihood opportunities

- 42% of respondents said that conservation activities have a positive and progressive impact on forest cover.
- 74% of households surveyed in the final evaluation stated that the sale of fishing products has significantly increased their income.
- However, there is dissatisfaction due to the overall decrease in fish in the lake, which is confirmed by monitoring undertaken by Mavoa.

Securing healthy habitat

- There are now four community groups with legal rights and responsibilities for the sustainable management of the lake and the majority of its catchment.
- A participatory field survey in 2023 indicates Lake Tseny and its catchment qualify as a Ramsar site under six of nine criteria.
- Nearly 80% of respondents human health was the primary benefit of a healthy lake.
- Forest cover has undergone a significant decrease according to the perception of the majority of respondents (69%).
- The loss of forest is confirmed by our analysis of remote sensing data from 2004, 2014 and 2024 (see results for Output 3 under section 3, Project Achievements).
- 74% of people surveyed said they were are of the no-take zones established on the lake, indicating that lake management measures are widely known.

Increasing populations of biodiversity

- The critically-endangered Madagascar fish eagle has recently been recorded at the site. If this is a permanent return it suggests an improvement in the lake ecosystem.
- Monitoring of threatened fish species however seems to suggest an overall decline in their abundance.

Resilience planning for wetlands throughout Madagascar

- The MEDD is keen to adopt R-METT as a standard monitoring tool in Madagascar following our first systematic use of the tool in all 21 Ramsar sites (Ramsar focal point, pers comm).
- We have no evidence that the CCVA example and training we shared with other Ramsar and wetland site managers has led to improved resilience planning, but these

issues are increasingly viewed as important as judged by how often they are raised at the annual Ramsar Site Managers AGM that WWT co-hosts with MEDD.

4 Contribution to Darwin Initiative Programme Objectives

4.1 Project support to the Conventions, Treaties or Agreements

The evidence for the following is outlined under the Project Achievements, Outputs above.

Aichi Targets. The main project contribution has been towards Aichi Target 5 (addressing loss of natural habitats), with respect to protection of the lake and aquatic vegetation. Target 12 (protection of threatened species) has been somewhat progressed with the establishment of community management over a wetland that is demonstrably a site of global biodiversity conservation value. We may also assume a contribution to target 14 (restoration of ecosystems services), although the level of this contribution cannot currently be evidenced.

Ramsar Convention. We have made a contribution to Strategic Goal 1 (addressing the drivers of wetland loss and degradation) at Lake Tseny, Strategic Goal 2 (effectively conserving and managing the Ramsar site network) by confirming Lake Tseny qualifies as a wetland of global importance, by initiating the Ramsar Site Managers AGM and by sharing project outputs with other site managers and the national focal point, and Strategic Goal 3 (wisely using all wetlands).

Global Goals for Sustainable Development. The project is not able to provide hard evidence regarding its impact against the SDGs related to poverty, hunger, human health or sanitation (numbers 1, 2, 3 and 6). However, we feel we have helped address gender inequality at the site (goal 5), mainly by empowering female participation in site management, and our work to improve fisheries management and protection should contribute to goal 12 (responsible production). Our climate change vulnerability work clearly contributes to goal 13 (climate action), although the resulting measures are only likely to be implemented under the two subsequent projects. Our and establishment of user rights and responsibilities for wetland and catchment habitats supports goal 15 (‘life on land’).

4.2 Project support for multidimensional poverty reduction

The sustainable, representative, and legally recognised community-based management of Lake Tseny and its catchment results in improved ecosystem services for around 3,800 4000 local people and their children. This also reduces their vulnerability to climate change and reduces the risk of unsustainable use both of the fishery, of land and of forest resources.

In addition, the application of the law by the VOIs reduces conflict between local and migrant fishers who take the same benefits from the lake. A reduction of conflict is an important factor in poverty reduction and increased quality of life.

The proper application of opening and closing dates for fishing contributes to improving the productivity of the lake, which thus improves the long-term income of the community through the local trade of fish products. The collectivisation of responsibility for implementing these rules has greatly improved through the establishment of the VOIs.

4.3 Gender Equality and Social Inclusion (GESI)

Please quantify the proportion of women on the Project Board[9].	**29%**

[9] 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.

	The two project NGO partners (WWT and Mavoa) are represented on the Project Steering Group by two senior managers, one female and one male. The two executive officers from each on the PSG is male. The main government representative providing project oversight is female. Overall 2/7
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[10].	**50%** The senior leadership of the VOIs is approximately half women. **100%** Both project partners (Mavoa and MEDD Ramsar Focal Point) are led by women.

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.	X
Empowering	The project has all the characteristics of a 'sensitive' approach whilst also increasing equal access to assets, resources and capabilities for women and marginalised groups	X (in some aspects)
Transformative	The project has all the characteristics of an 'empowering' approach whilst also addressing unequal power relationships and seeking institutional and societal change	

GESI issues were considered in the project design, and in the project Environmental and Social Management System (2023); staff undertook mandatory and additional optional WWT training on safeguarding, sexual harassment,

During the project implementation, in 2022, WWT also updated its project safeguarding policy and procedures to align with the IUCN ESMS standard, which enacts 12 principles and standards including "Gender Equality and Women Empowerment", "Protecting the Needs of Vulnerable Groups" and "Free, Prior and Informed Consent". Lastly, the team undertook a GELSI assessment at the programme level in early 2025, supported by UK Aid, and plotted a

[10] 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.

strategy to further improve measures on gender equality and social inclusion for the next phase of our support for Lake Tseny.

Overall, these measures have improved female involvement in activity design and implementation, particularly fisheries management, market chain development, the operation of the VOIs and reforestation, and thus improved equity between sexes at the site.

4.4 Transfer of knowledge

Along the implementation, the project has sought to transfer conservation knowledge, experiences and best practices learnt from the project to practitioners and regional policy makers in order to guide their decision-making. The transfer of knowledge and experiences was taken in different forms like workshop or meeting for monitoring, environmental education, and dissemination of project written outputs and the establishment of an annual AGM for Ramsar Site Managers. Written outputs are listed in Annex 3 Standard Indicators (Publications).

4.5 Capacity building

About the project beneficiaries and partners capacity improvement, mostly it provided by training. For example, along the project, the members of each community group are often received training on natural resources management and association management from the regional government and the project staff.

The project beneficiaries have also received capacity improvement from knowledge sharing, as in 2022 some members of the VOI from Tseny did an exchange visit in lake Sofia during which they received skills sharing in natural resources and association management from the VOI of lake Sofia. Along the project, the representants of community group have been often invited to participate in any regional event or forum like in 2023, all the president of the VOI in Tseny has participated in regional assembly of all leaders of VOI in Sofia region in Antsohihy which organised by the regional department of Environment and Sustainable development to share best practices and experiences between them.

5 Monitoring and evaluation

According to the original project logframe, there were no major changes to the project design noted during its lifetime.

Project monitoring systems were agreed and put in place during the project inception period and relied on regular, structured meetings to report on and review progress against the detailed indicators identified in the project log frame:

- Monthly Project Management Group (PMG) meetings: these primarily focused on coordination, logistics and budgeting, and monitoring the project at the level of activities.
- Project Steering Group (PSG) meetings: these were held to coincide with Darwin reporting and brought together senior managers from the partners to review progress at the Output level against the Output indicators.

We also undertook participatory monitoring with project beneficiaries, mostly via their regular meetings but also during two annual workshops. It was very useful to provide feedback to partners and stakeholders. The main partners or organisations leaders of the project (WWT and Mavoa) shared all the results of M&E and the progress along the project thought workshop which organised at each end of year of the project. The organisations leaders of the project invited all the partners and stakeholders to participate in regional or local workshop during which they shared results of M&E, discussed about the resolution of the main problems during the lifetime of the project and establish the future plan.

The project implementation team found the M&E system and annual reviews very useful for tracking progress, addressing challenges, communicating results and engaging stakeholders, and is something we are continuing with subsequent projects.

6 Lessons learnt

From the beginning of the project to this point, the project executive team has learned some lessons from carrying out the activities.

What worked well?

- Throughout the project, we mainly worked with VOI members to implement all activities. We noted that it is enough to engage entire of local people and make them feel advantageous from the project.
- The experiences along the project showed that involving representatives of regional government services partners in the implementation of all activities is very important to have local people's trust for the project and to have their approval.
- One of things worked well was that communicating new intervention or action to local community well in advance of implementing is essential to gain their agreement.

What didn't work well?

- Along the project, we carried out many activities for the awareness-raising for local people in order to change their behaviour to the exploitation of natural resources. However, the impact of this was limited as the project did not also have the scope to focus on supporting local people to develop their livelihoods sources beyond the fisheries and market chain work, leaving them few alternatives to reduce over-exploitation. This is something we will address over future work at the lake.

Recommendations

- The awareness-raising activities need to be reinforced as there is a real need for reliable information on some specific topics such as climate change, improved agriculture and improved processing of fishing and agricultural products.
- The adoption of the mass awareness methods like organising a biodiversity festival in Lake Tseny and getting schools more involved in all activities of the project have already proved successful and we aim to continue them.
- It is also necessary to consider the whole of the people in the implementation of all activities to facilitate their understanding of the objectives and importance of the project on their livelihood. Our new GESI strategy addresses this.
- Further supporting local communities to develop their livelihoods sources would be an alternative to reduce over-exploitation and dependence on natural resources in future.

Key lessons

Apart from those noted above, another big lesson was our agreement with Mavoa not to promote a Ramsar site nomination until there is good local support. Protected areas in other areas in Madagascar (and indeed internationally) have been seen as depriving communities of access and rights. While that does not generally apply to the Ramsar Convention, which encourages sustainable use, there is a danger that proceeding too quickly with the nomination could alienate local people. It also makes sense to have strong evidence that they are able to manage the site, and are able to collaborate and engage fairly with the local authorities, before proceeding. Under Malagasy law, Ramsar recognition does not afford any specific legal protection, and it therefore also makes sense to build a strong local constituency of agencies to support the local management, with the knowledge that Ramsar recognition could then 'reward' these efforts and potentially provide access to external financing. We will however revisit the Ramsar nomination issue in 2025 as the VOI management transfer agreements are reviewed.

7 Actions taken in response to Annual Report reviews

All feedback from Darwin on previous annual reports was shared with Mavoa, and to the best of our knowledge we jointly addressed all feedback as required.

8 Sustainability and Legacy

The project partners feel that the wetland conservation efforts at Lake Tseny have good visibility both regionally and nationally, and the site is represented at the annual Ramsar site managers' AGM despite not having been designated yet.

The main legacy of the project is the newly-formed VOIs, which will have their management rights and responsibilities for the lake and it's catchment renewed for a further 20 years in 2025, following the process proscribed by the relevant law. Both Mavoa and WWT remain committed to the site, and have ongoing activities under new project funded by CEPF and the UK government's Global Centre on Biodiversity for Climate (GCBC) to support priorities identified during this project. The staff and other resources (eg, equipment) that were purchased under this project have been allocated to this ongoing work at the site.

The only national policy impact we are aware of is that the Ministry of Environment and Sustainable Development, which oversees Madagascar's Ramsar obligations, has adopted the R-METT as its preferred tool for monitoring and management planning in Ramsar sites.

9 Darwin Initiative identity

Darwin support and logo were signified prominently on all project materials including banners for events (World Wetland Day, Ramsar Site Managers AGM, project workshops etc), equipment provided to project beneficiaries and written outputs. We also undertook several visibility actions in UK for WWT members and supporters and our wider conservation audience. In all cases we use the standard acknowledgement text provided by the Darwin Initiative.

The project was recognised both at the site, regional and national levels as part of a longer-term programme of support for community management and restoration of the lake, primarily laying the foundations for that programme by establishing priority management activities and capacity, undertaking research to understand priority issues like changes in fish abundance or habitat extent and quality, and building communication and support from the authorities.

The Darwin Initiative is well known within the conservation community in Madagascar, and both of the project partners previous received Dawin Initiative funding.

WWT Madagascar does not operate any social media accounts.

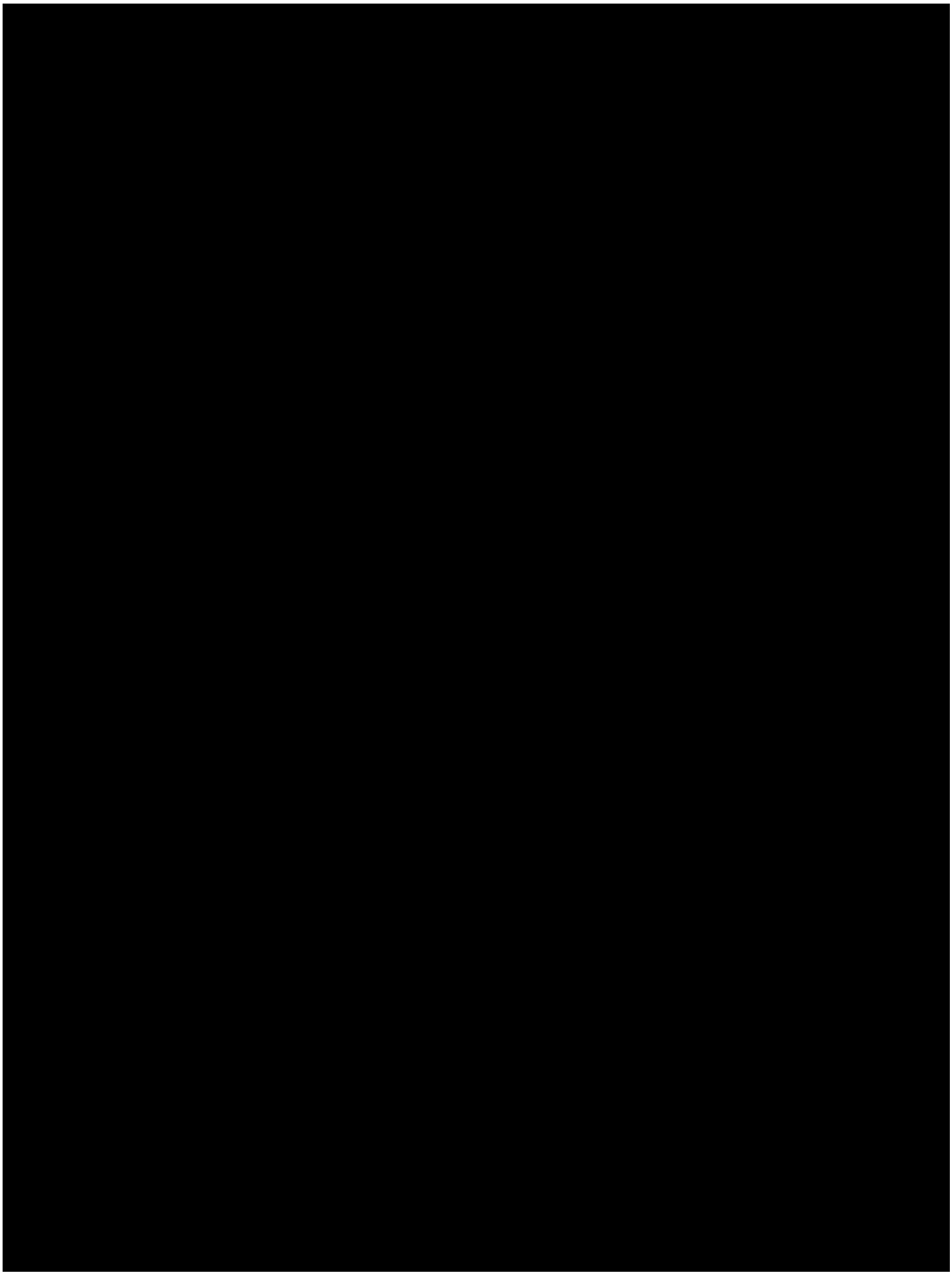
10 Risk Management

We prepared a risk assessment at the start of the project. Not all risks are foreseeable, however, and we have had to adapt the project as new risks emerged along the implementation of the project.

The only project-related risk to emerge in the final 12 months of the project was illegal fishing in early 2024. This led to conflict between the responsible fishermen and the VOI control committee that enforces the rules as empowered by their management transfer agreement. The fishermen declined to pay the fines as specified in the rules (*dina*). In response to this fairly early test of the new management regime at the lake, the project team had to intervene with representants of government partners at district level to find a solution. The responsible person from the district called a meeting between all concerned to resolve the issue, which finally led to a compromise without requiring any additional law enforcement action.

No significant adaptations to the project design were required as a result of any changes to risks experienced by the project.

11 Safeguarding



[redacted]

12 Finance and administration

12.1 Project expenditure

Project spend (indicative) since last Annual Report	2024/25 Grant (£)	2024/25 Total actual Darwin Initiative 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)				
Audit costs				
TOTAL	£29,282.00	[redacted]	20%	

Staff employed (Name and position)	Cost (£)
WWT Staff	[redacted]
Harison Andriambelo - Project Leader WWT	
Joyeaux Vohozanaka - Field Technician WWT	
Laurence Rasoamihaingo - Research Officer WWT	
Mark Grindley - Senior Project Manager WWT	
Oriela Rasolomanana - Finance & Admin Officer WWT	
Sub-total	

Partner Staff (Mavoa)	[redacted]
Project Manager ([redacted])	
Local Agent ([redacted])	
Project Supervisor ([redacted])	
Project Advisor ([redacted])	
Project Advisor ([redacted])	
Project Assistant ([redacted])	
Administration & Finance Officer ([redacted])	
Sub-total	
TOTAL	**£15,887.80**

Capital items – Description	Capital items – Cost (£)
None	[redacted]
TOTAL	

Other items – Description	Other items – Cost (£)
Printing	[redacted]
Translation and comms support	
Nets for net exchange	
Consumables (Partner)	
TOTAL	

12.2 Additional funds or in-kind contributions secured

Matched funding leveraged by the partners to deliver the project	Total (£)
BIOPAMA Project (WWT, 2020-2023)	[redacted]
WWT in-kind contribution	
GCBC Project (WWT, 2024-2026)	
TOTAL	

Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project	Total (£)
CEPF grant to Mavoa (2025-2028)	[redacted]
Global Centre on Biodiversity for Climate to WWT (2024 to 2026)	

Global Ecosystems-based Adaptation [EbA] Fund to WWT (2025 to 2027)	[redacted]
TOTAL	

12.3 Value for Money

Our Madagascar programme developed a Value for Money framework in 2025 using the DEFRA guidance, and applied it retrospectively to this project. We are therefore able to say that yes, the project represents good value for money.

***Table 6**. Value for Money framework for the project*

Category	Performance Standard	Justification
Economy	Excellent	Local consultants hired for biodiversity survey, drone mapping. Technical capacity from UK was provided via training and mentoring for our Madagascar team. VOIs delivered activities as much as possible.
Efficiency	Good	Annual workplans were regularly delivered, sometimes exceeded. All project activities were completed on what was already a modest budget.
Effectiveness	Adequate to Good	Indicators and evidence show a reasonably consistent picture of substantial and sustainable improvements, but some objectives were not met.
Cost-effectiveness	As above	As above
Equity	Good	Outcome equity: Corresponds to "good" effectiveness. The changes that resulted have or are believed likely to positively impact the intended target groups.

13 Other comments on progress not covered elsewhere

Important difficulties were encountered over the lifetime of the project relating to land conflicts in the target commune. This is a common problem in Madagascar's countryside, due to a lack of clear governance of the use and the security of communal land. This issue presented a challenge to some project activities, particularly reforestation and restoration activities, because zoned areas for community reforestation are not secured in law. This in turn is because the management transfer rights do not equate to ownership and are thus weakly enforceable. Unfortunately, the legal status of resources under VOI management was not within the scope of the project or competence and authority of the partners, nor stakeholders. This issue therefore needs to be considered as part of a broader initiative to clarify resource use rights around important natural resources in Madagascar.

14 OPTIONAL: Outstanding achievements of your project (300-400 words maximum). This section may be used for publicity purposes.

I agree for the Biodiversity Challenge Funds Secretariat to publish the content of this section.

The project team has identified three major project achievements:

- Establishment of the management structure with participation of all communities and covering both the lake and almost all of its watershed;
- Establishment of fishing regulations with support from the department of fisheries, supported by the initial net exchange scheme and community patrols;
- Our biodiversity work indicates that Lake Tseny and its catchment definitely qualifies as a Ramsar site under several criteria, and also provides a baseline for monitoring.

Supporting images or graphics:

High-resolutions versions of the images in Annex 6 are available on request.

Annex 1 Report of progress and achievements against logframe for the life of the project

Project summary	Progress and achievements
Impact Lake Tseny catchment provides resilient ecosystem services and sustainable livelihood opportunities for communities, secure healthy habitat for increasing populations of native biodiversity, and inspires resilience planning for wetlands throughout Madagascar.	Description and evidence reported in Section 3.4 “Impact”, viz: • Improved resilience of target ecosystems • Increase opportunities for sustainable livelihoods • Improved site management • But evidence of decrease in forest cover in the catchment, and decrease in abundance of threatened fish species
Outcome Sustainable, representative, and legally recognised community-based management of Lake Tseny catchment results in improved ecosystem services for 5000 local people and enhanced habitat for threatened biodiversity, with techniques showcased nationally.	Description and evidence reported in Section 3.2 “Outcomes”
Outcome Indicator 0.1 5000 people empowered to sustainably manage Lake Tseny through a legally endorsed ‘Gelose’ management transfer agreement by end of Y1	Four Gelose agreements prepared by four newly-formed local community groups (VOIs) with combined membership of 411 at signing, but representing 3815 people from 968 households.
Outcome Indicator 0.2 Like for like monthly income of fishers increases by 20% between Y1 and Y3.	We were unable to collect reliable monthly income figures. However, 74% of 302 surveyed households reported an increase in income and 37% reported satisfaction with their level of income.
Outcome Indicator 0.3 Extent (# of ha) of aquatic vegetation and fringe Phragmites habitat increases by 10% by end of project. Reforestation plots increase forest extent by 5%.	70% of endline survey respondents reported an increase in aquatic vegetation, most reporting a large increase. (We were unable to reliably calculate actual extent despite efforts with remote sensing imagery and aerial photography by drone.)
Outcome Indicator 0.4 Experimental catch per unit effort of threatened fish species increases by 10% by end of project.	CPUE data was not collected reliably, but the best data shows a significant drop between 2011 and 2024.
Outcome Indicator 0.5 Long-term regional conservation strategy agreed by local communities and Tsaratanana District Government, starting to address threats throughout the local catchment by end of project	The management transfer agreements under which the four new VOIs are now managing the lake and its watershed cover approximately 90% of the catchment. (In 2025 they will be reviewed and extended for a further twenty years.)

Outcome Indicator 0.6 At least 40 National Ramsar Committee members, Ramsar Site managers, and Managers of Protected Areas containing important wetland habitat, understand how to use R-METT and VA tools, and VAs taking place at least 2 other important wetlands.	Manages of 21 Ramsar sites undertook R-METT assessments and received training in CCVAs. A new annual meeting for the site managers was initiated under the project and is now an annual event co-hosted by WWT and MEDD.
Output 1: Five sustainably financed community institutions (VOIs) are representing the breadth of local society and providing efficient, and legally recognised, management of natural resources in and around Lake Tseny. 1.1 800 households, with proportional representation of all sectors of society (e.g. gender, socio-economic group, professional group, belief system) have been engaged in management transfer consultations and management group elections in Y1, with women representing at least 50% of membership.	
Output indicator 1.1 800 households, with proportional representation of all sectors of society (e.g. gender, socio-economic group, professional group, belief system) have been engaged in management transfer consultations and management group elections in Y1, with women representing at least 50% of membership.	On formation, 411 households were represented in the original VOIs but by 2023 it had increased to 602 members. Most of the new members were female, taking the m/f ratio from 5.6:1 to 1.7:1 over that period. This is clearly not the 50% target but represents a significant improvement.
Output indicator 1.2 Community-based natural resource management plans agreed for three lake-side associations for coordinated and zoned management of Lake Tseny, and signed off by local and district government by end of Y1	As per Outcome Indicator 0.1.
Output indicator 1.3 Community-based natural resource management plans agreed for two forest associations to coordinate and zone management of the surrounding forest fragment. Signed off by local and district government by end of Y2	As per Outcome Indicator 0.1.
Output indicator 1.4 Community-based savings groups in place, generating sufficient revenue to cover operations for all community associations by end of Y3	Establishment of the savings groups was not possible during the project, but is planned under the next phase.
Output indicator 1.5 Final project assessment of community assessment of natural resources is rates 'good' or better by 75% of all sectors of society	Final project assessment of community attitudes towards natural resources; 70% note they have seen an increase in all three major aquatic vegetation types on the lake, and threats to these habitats are perceived to have been reduced.
Output 2: Fishing regulations are in place and being followed by local and migrant fishers, which, alongside fish habitat restoration areas, is increasing the productivity of the fishery. Fishing communities have new knowledge on value chains and the potential to increase profitability.	
Output indicator 2.1. Net exchange programme ensuring <5% of users of the fishery are not abiding by legal mesh-size regulations in Y2	46 of 173 fishermen surveyed in 2922 accepted to exchange their nets voluntarily (26%); others may have subsequently followed suit without project support.
Output indicator 2.2. Community-association patrol reports showing that at least 90% of fishing activity abides by local regulations, including respect of no take zones in Y2	Seven mesh-size infractions were noted out of 64 in total (ie, 11%) from all 25 patrols undertaken between Feb 2024 and March 2025. 74% of 112 people surveyed in 2023 admitted to knowing what and where the cores zones were.

Output indicator 2.3 Zones allocated for nursery habitat have conservation strategies, and 8 ha restored by end of project.	All zones within the VOI areas had management strategies defined within the management transfer agreements, but fish nurseries (within a new a 58.6 ha 'core zone') were not subject to active restoration, only restrictions on usage. From 80-90% of 112 respondents said the area of both phragmites reeds and lilies had seen a modest or large increase over the project.
Output indicator 2.4 80% of both male and female fishers report perceived increase in productivity and desire to continue following local regulations by end of Y3.	71% of 112 people surveyed in 2023 said they thought that fish stocks had *declined* in the past five year (see above under Indicator 0.2).
Output indicator 2.5 Fish catch per unit effort increases by 15% by the end of Y3	CPUE massively declined for three endangered species (see p.15). There is no overall CPUE data for all economic species, but perception of overall decline is widespread (see Output Indicator 2.4).
Output indicator 2.6 Value Chain Analysis published for the fishery in local language by end of Y2.	Value chain analysis published in French in 2025.
Output indicator 2.7 A feasibility study is published for restocking native species through cage farming at Lake Tseny by and of project by end of project.	An initial consultation suggested free-range farming would be better than cage farming, and is being investigated. Unfortunately the final feasibility study will not be completed until later in 2025.
Output indicator 2.8 60% of both male and female fishers receive technical support for the valuation and market research of the Lake Tseny fishery by the end of Y3.	There are 353 fishers in the cooperatives around lake Tseny (some of whom are also members of the VOIs). They were reportedly all involved in the value chain assessment, which was undertaken by a consultant to the project.
Output 3. Quality and extent of aquatic and lakeside habitat increased.	
Output indicator 3.1 Open water aquatic vegetation increases by 10% by end of Y3.	It proved impossible to estimate the area of aquatic vegetation due to it's low density and the relatively small area it occupies on the lake margins. However, nearly 90% of 112 respondents said the area of lilies and hyacinth had increased a lot or a little over the project period.
Output indicator 3.2 80% survival rate of planted peripheral habitat (inc. *Phragmites* spp, *Tamarindus indica*, *Pourpartia sylvatica*) at end of project	None of the wetland species named in the original indicator was planted. However, the survival rate of the 7,530 saplings from five tree species that were planted in the lake periphery and watershed was only slightly under 50% due to multiple pressures, including cattle grazing and drought.
Output indicator 3.3 Percentage of key habitat for threatened species rated 'good' by expert working group increases by 25% by end of project.	The key habitat for pinstripe damba is the swamp forest, which has shown no significant change in extent over the duration of the project. The key habitat for

	several important forest birds (Ramsar trigger species) has however decreased during the project. The reforestation should partly address this.
Output indicator 3.4 Zero habitat loss in Y3 of project.	Lake habitat (reeds, lilies, hyacinth and swamp) suffered no loss during the project, with over 60% of 112 project-end survey respondents stating they had perceived a modest or large increase in extent of all four. Watershed forest has declined in extent and quality, but was not originally a target habitat and its inclusion in the management transfer agreements was an explicit recognition of this threat.
Output 4. Increased understanding of the importance of natural systems and biodiversity for livelihoods and wellbeing amongst different socio-economic groups using and living around the lake.	
4.1 12 information panels are in place in all villages to inform rules and regulation on the management of natural resources	Panels were installed in all villages to relay the key regulations put in place as a result of the management transfer agreements. Boundary markers have also been painted in each of the managed areas (core protection zones).
4.2 70% of fishers and market sellers are able to identify, and are aware of rules and regulations around, threatened species by Y2	63% of 112 end-of-project survey respondents working in the fishing sector said they had received training on fisheries regulations and endangered species.
4.3 Understanding of the importance of nursery habitats and no-take zones increases by 80% amongst lake users by Y2	74% of 112 end-of-project survey respondents admitted to knowing the importance of nursery habitats and the locations and restrictions on no-take zones by the end of the project.
4.4 60% of wider community members associate a healthy lake to health and wellbeing by end of project	78% of 112 end-of-project survey respondents stated health was one of the benefits of a clean and healthy lake, followed by “means of subsistence” (56%).
4.5 300 school children have received a dedicated curriculum-linked programme of environmental education and at least 75% believe that their actions can affect the future of the environment, and in-turn, their own futures.	An environmental competition was run in 2023 with 450 children from nine primary schools to create a slogan or write a short text that described why the pinstripe damba was so special. Environmental education for primary school children around the lake focused on restoration activities (nursery establishment and care, seedling production and planting etc) for about 150 participants.
Output 5. Current and future wider threats are understood for the local Tseny catchment, with a conservation strategy developed to mitigate threats into the future, and national conservation managers and government staff valuing and able to use tools to plan long-term resilient community-based wetland conservation projects.	
5.1 Ramsar Management Effectiveness Tracking Tool (R-METT) used to identify perceived threats in Y1, with relevant applied research projects interrogating options for threat mitigation by Y3.	Applied research undertaken included a Climate Change Vulnerability Assessment (2022), fisheries survey (2022), fish value-chain assessment (2023), and erosion vulnerability analysis (2024).

5.2 Climate Change Vulnerability Assessment (CCVA) and Mitigation Plan completed for species, habitat and livelihoods at Lake Tseny in Y2.	Completed in 2023.
5.3 In Y3, an Open Standards conservation strategy has been agreed for the Lake Tseny catchment, generating conceptual models and results chains that link threat mitigation with measurable improvements in biodiversity targets and ecosystem services.	This indicator was deemed to have been met through the inclusion of nearly the entire watershed of the lake into the four management transfer agreements. (We do however plan to follow the Open Standards approach to planning when reviewing the agreements prior to their renewal and extension in 2025.)
5.4 National training courses, designed in-line with Madagascar's National Wetland Strategy, attended by 80% of Ramsar Site Managers and the National Ramsar Committee, showcasing tools and approaches of the Lake Tseny project by project end.	Managers of all Madagascar's Ramsar site management agencies (Madagascar National Parks, WCS, WWF, Durrell Wildlife Conservation Trust, Mavoa, Asity Madagascar, Blue Ventures etc) attended two national AGMs and associated training on the application of CCVA and R-METT tools.

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: Lake Tseny catchment provides resilient ecosystem services and sustainable livelihood opportunities for communities, secure healthy habitat for increasing populations of native biodiversity, and inspires resilience planning for wetlands throughout Madagascar.			
Outcome: Sustainable, representative, and legally recognised community-based management of Lake Tseny catchment results in improved ecosystem services for 5000 local people and enhanced habitat for threatened biodiversity, with techniques showcased nationally.	0.1 5000 people empowered to sustainably manage Lake Tseny through a legally endorsed 'Gelose' management transfer agreement by end of Y1 0.2 Like for like monthly income of fishers increases by 20% between Y1 and Y3. 0.3 Extent (# of ha) of aquatic vegetation and fringe Phragmites habitat increases by 10% by end of project. Reforestation plots increase forest extent by 5%. 0.4 Experimental catch per unit effort of threatened fish species increases by 10% by end of project. 0.5 Long-term regional conservation strategy agreed by local communities and Tsaratanana District Government, starting to address threats throughout the local catchment by end of project 0.6 At least 40 National Ramsar Committee members, Ramsar Site managers, and Managers of Protected Areas containing important wetland habitat, understand how to use R-METT and VA tools, and VAs taking place at least 2 other important wetlands.	0.1 Community association 'Gelose' agreement signed by government 0.2. Fisher diaries, surveys and market assessments. 0.3 Drone mapping and ground-truthed habitat assessments 0.4 Project staff adopting consistent catch and return methods targeting threatened species. 0.5. Strategies resulting from an Open Standards conservation plan are signed by local communities, with activities featuring in District Plans. Funding proposal developed by project partners. 0.6. Capacity Assessment survey. VA reports.	The political situation within Madagascar remains stable and no restrictions are imposed on NGOs. Public health restrictions do not prevent project activities from taking place. Project partnership with local government remains strong and all stakeholders remain supportive of management transfer to local communities. Local community associations respect commitments to democratic processes and encourage participation of under-represented groups. Local fishing communities maintain strong relationships with migrant fishers to agree equitable use and management models.
Outputs: **1**. Five sustainably financed community institutions (VOIs) are representing the breadth of local society and providing	1.1 800 households, with proportional representation of all sectors of society (e.g. gender, socio-economic group, professional group, belief system) have	1.1 Social surveys in Y1, Y2, and Y3. Election and membership records. Reports from community consultations	All sectors of society engage with management transfer process and support wider project initiatives, including community-based savings

Project Summary	SMART Indicators	Means of Verification	Important Assumptions
efficient, and legally recognised, management of natural resources in and around Lake Tseny.	been engaged in management transfer consultations and management group elections in Y1, with women representing at least 50% of membership. 1.2 Community-based natural resource management plans agreed for three lake-side associations for coordinated and zoned management of Lake Tseny, and signed off by local and district government by end of Y1 1.3 Community-based natural resource management plans agreed for two forest associations to coordinate and zone management of the surrounding forest fragment. Signed off by local and district government by end of Y2 1.4 Community-based savings groups in place, generating sufficient revenue to cover operations for all community associations by end of Y3 1.5 Final project assessment of community assessment of natural resources is rates 'good' or better by 75% of all sectors of society	1.2. Signed plans. 1.3 Signed plans. 1.4 Community association financial records. 1.5 Social survey at end of project.	groups and equipment rental schemes, which have been designed to fill existing needs. Local government honour legal community rights to manage natural resources and do not interfere with democratic processes.
2. Fishing regulations are in place and being followed by local and migrant fishers, which, alongside fish habitat restoration areas, is increasing the productivity of the fishery. Fishing communities have new knowledge on value chains and the potential to increase profitability.	2.1. Net exchange programme ensuring <5% of users of the fishery are not abiding by legal mesh-size regulations in Y2 2.2. Community-association patrol reports showing that at least 90% of fishing activity abides by local regulations, including respect of no take zones in Y2 2.3 Zones are allocated for nursery habitat have conservation strategies, and 8 ha restored by end of project.	2.1. Community patrols and checks at boat launch sites. 2.2 Patrolling reports. 2.3. Nursery habitat restoration report	Local and migrant fishers are willing to engage in a long-term process to improve fisheries. Local community association patrolling and enforcement can be done safely and efficiently at the lake.

Project Summary	SMART Indicators	Means of Verification	Important Assumptions
	2.4 80% of both male and female fishers report perceived increase in productivity and desire to continue following local regulations by end of Y3. 2.5 Fish catch per unit effort increases by 15% by the end of Y3 2.6 Value Chain Analysis published for the fishery in local language by end of Y2. 2.7 A feasibility study is published for restocking native species through cage farming at Lake Tseny by and of project by end of project. 2.8 60% of both male and female fishers receive technical support for the valuation and market research of the Lake Tseny fishery by the end of Y3.	2.4 Social survey of fishers (data disaggregated by gender and other factors). 2.5 Ecosystem service assessment, including catch counts/weights, interviews and analysis of local fish available at village markets 2.6 Value Chain Analysis report 2.7 Feasibility Report 2.8 Training report. Partnership agreement with operators	
3. Quality and extent of aquatic and lakeside habitat increased	3.1 Open water aquatic vegetation increases by 10% by end of Y3. 3.2 80% survival rate of planted peripheral habitat (inc. *Phragmites spp, Tamarindus indica, Pourpartia sylvatica*) at end of project 3.3 Percentage of key habitat for threatened species rated 'good' by expert working group increases by 25% by end of project. 3.4 Zero habitat loss in Y3 of project.	3.1 Drone maps and restoration reports 3.2 Vegetation assessment 3.3 Expert working group baseline and endline assessments. Habitat monitoring by project teams. 3.4 Vegetation assessment.	There are no unforeseen barriers to standard restoration methods that work elsewhere locally.
4. Increased understanding of the importance of natural systems and biodiversity for livelihoods and wellbeing amongst different socio-economic groups using and living around the lake	4.1 12 information panels are in place in all villages to inform rules and regulation on the management of natural resources 4.2 70% of fishers and market sellers are able to identify, and are aware of rules and regulations around, threatened species by Y2	4.1 Photos and information posters. 4.2 Targeted surveys and ID assessments (data disaggregated by gender and other factors).	Community members from all villages and sectors of society engage with the project. Schools continue to support comprehensive programmes of environmental education provided by project staff.

Project Summary	SMART Indicators	Means of Verification	Important Assumptions
	4.3 Understanding of the importance of nursery habitats and no-take zones increases by 80% amongst lake users by Y2 4.4 60% of wider community members associate a healthy lake to health and wellbeing by end of project 4.5 300 school children have received a dedicated curriculum-linked programme of environmental education and at least 75% believe that their actions can affect the future of the environment, and in-turn, their own futures.	4.3 Baseline and endline social surveys (data disaggregated by gender and other factors). 4.4 Baseline and endline social surveys (data disaggregated by gender and other factors). 4.5 Environmental education appraisal report. Assessments to verify if children can name activities that they believe they can do to help maintain a healthy environment for themselves and for plants and animals.	
5. Current and future wider threats are understood for the local Tseny catchment, with a conservation strategy developed to mitigate threats into the future, and national conservation managers and government staff valuing and able to use tools to plan long-term resilient community-based wetland conservation projects.	5.1 Ramsar Management Effectiveness Tracking Tool (R-METT) used to identify perceived threats in Y1, with relevant applied research projects interrogating options for threat mitigation by Y3. 5.2 Climate Change Vulnerability Assessment (CCVA) and Mitigation Plan completed for species, habitat and livelihoods at Lake Tseny in Y2. 5.3 In Y3, an Open Standards conservation strategy has been agreed for the Lake Tseny catchment, generating conceptual models and results chains that link threat mitigation with measurable improvements in biodiversity targets and ecosystem services. 5.4 National training courses, designed in-line with Madagascar's National Wetland Strategy, attended by 80% of Ramsar Site Managers and the National Ramsar Committee, showcasing tools and approaches of the Lake Tseny project.	5.1 R-METT report. Research plans. Research reports 5.2 VA report and mitigation plan 5.3 Catchment conservation plan agreed by communities and regional government 5.4 Attendance records, Training report	Good climate projection models are made available to the project. A full programme of research on wider threats can be undertaken safely and effectively within the project period. National Ramsar Committee members remain engaged with the capacity building activities identified in the draft National Wetland Strategy.
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)			

Project Summary	SMART Indicators	Means of Verification	Important Assumptions
1.1 Conduct community consultations for formalised community-based natural resource management transfer agreements 1.2 Management Plans developed and agreed by local government 1.3 Constitute membership of VOIs and support elections for leadership groups 1.4 Conduct capacity assessments (resource management, administrative, legal, financial) of groups and develop VOI training plan 1.5 Facilitate a study tour to Lake Sofia to learn from similar successful ongoing schemes 1.6 Develop VOI Business Plan to ensure sustainable financing of the associations, including equipment rental and community-based savings groups 1.7 Deliver VOI training programme and provide ongoing support 1.8 Hold community fora 2 times per year in each community to ensure wider accountability 1.9 Hold annual catchment management group meeting 1.10 Capacity assessment and legacy planning 2.1 Collect and analyse socio-economic data, including legal and illegal use of the fishery 2.2 Conduct fisheries assessment to map key nursery habitats, potential high-value no-take zones and priority restoration actions to inform Activity 1.2 and Output 3 2.3 Training from fisheries specialist and visit by representatives of other successful community fishery projects to share advice on best-practice and common mistakes 2.4 Value chain analysis and fishery business plan agreed alongside local fishers 2.5 Conduct feasibility study for restocking native species through cage farming 2.6 Update and implement education and awareness programme, including dissemination of information on strict common standards for fishing control 2.7 Operate voluntary net exchange programme 2.8 Community fishery trust fund established and recommendations from the Business Plan implemented with associated training provided 2.9 Design and implement fish catch monitoring programme 2.10 Community fishery monitoring and patrols to strengthen compliance with regulatory mesh and fishing season and no-take zones 2.11 Annual review of fisher perceptions, scheme, management approval ratings, recommendations for the coming year (independent consultant) 3.1 Consolidate all historical imagery and mapping of the lake and wider catchment to assess change over time 3.2 Conduct detailed annual habitat/vegetation assessments to generate baseline and monitor change over time 3.3 Conduct assessment of the habitat requirements of, and baselines for, Threatened species at the site 3.4 Develop, and agree with stakeholders, a habitat restoration plan, aligned to CBNRM Association Management plans, and applied research 3.5 Identify and formalise a local community monitoring team and train on monitoring protocols 3.6 Undertake aquatic plant restoration alongside VOIs and local fisher groups 3.7 Establish community nursery for lakeside habitat restoration (including in local schools - see Activity 4.4) 3.8 Undertake lakeside habitat restoration alongside VOIs, including trials for harvestable crops in reforested patches 4.1 Conduct a schools competition to develop a single unified project logo and slogan promoting ‘healthy nature for healthy people’ 4.2 Develop a curriculum-linked environmental education programme for local schools, including field elements at the lake 4.3 Conduct teacher training events, with selected teachers nominated as teacher coaches to increase wider adoption of the materials 4.4 Develop and maintain school environmental ambassador schemes, including school plant nurseries and engaging local school children in restoration			

Project Summary	SMART Indicators	Means of Verification	Important Assumptions
4.5 Establish Community Information Points for project and VOI updates, environmental awareness campaigns, publication of safeguarding policy etc 4.6 Develop and deliver awareness campaigns on importance of wetland ecosystem services, mitigation of threats, and identification and value of Threatened species 4.7 Mainstream project messaging into all activities 5.1 Ramsar Management Effectiveness Tracking Tool workshop to gather baseline data on current stakeholder knowledge of ecological character, threats, and existing management capacity within the catchment 5.2 Climate Change Vulnerability Assessment (CCVA) to consolidate baseline information on current status of key species, habitats and livelihoods and associated potential impacts of climate change based on regional modelling 5.3 Multi-Stakeholder Open Standards Conservation Planning process for the catchment to develop a Conceptual Model, providing a greater understanding of current threats and contributing factors 5.4 Research programme developed and agreed with local government to interrogate the extent, severity and drivers of identified threats in catchment 5.5 Climate change resilient threat mitigation strategies developed for the Lake Tseny catchment and approved by regional government 5.6 Funding proposal developed for conservation action in the wider catchment 5.7 Lake Tseny designated as a Ramsar Site through the Government of Madagascar 5.8 National Ramsar Committee and all Ramsar Site Managers in Madagascar trained in Climate Change Vulnerability Assessment (CCVA) 5.9 Wetland training programme for all managers of important wetlands to fill knowledge gaps identified in the National Wetland Strategy			

Annex 3 Standard Indicators

Project Standard Indicators

DI Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total achieved	Total planned
DI-B03	Number of new or improved community management plans available and endorsed.	Number of Plans	Madagascar; Type = New	0	4	0	4	3
DI-B05	Number of people with increased participation in governance.	Number of People	Madagascar; Gender = women / men; IPLC = Other, Governance structure = New	0	368 (56 / 312)	0	368 (56 / 312)	n/a
DI-C02	Number of new conservation or species stock assessments published.	Number	Madagascar; Taxa = Flora, Fauna	0	1	1	2	1
DI-C03	New assessments of habitat conservation action needs published.	Number, Area	Madagascar; Biome = Shrublands & shrubby woodlands, Lakes	0	2	0	2	2
DI-C04	New assessments of community use of biodiversity resources published.	Number	Madagascar	2	1	1	4	2
DI-D01	Area of land or sea under ecological management: a) Area under Sustainable Management Practices; b) Area improved through restoration.	Number of Hectares	Madagascar; Biome = Shrublands & shrubby woodlands, Lakes; Watershed / Freshwater management	0 0	13,116.6 647	0 0	0 0	

Publications

Title (full title, see below)*	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 Effect of Tilapia on Aquatic Ecosystems	WWT_2022_01	J Greenslade (2022)	M	GBR	WWT	WWT
Preliminary Habitat and Botanical Survey, Lake Tseny	WWT_2022_03	S Ramaroman-ana (2022)	M	MDG	WWT	WWT

Title (full title, see below)*	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)
Lake Tseny Socio-Economic Baseline Survey	WWT_2022_04	R Rabefaly & J Hernandez (2022)	M	MDG	WWT	WWT, Mavoa
Lake Tseny Fisher and Collector Baseline Survey	WWT_2022_05	R Rabefaly & J Hernandez (2022)	M	MDG	WWT	WWT, Mavoa
Minutes of the Ramsar Site Managers AGM, Feb 2023	WWT_2023_01	H Andriambelo & M Grindley (2023)	M	MDG	WWT	WWT
Workshop Report, CCVA Training, Feb 2023	WWT_2023_02	H Andriambelo & M Grindley (2023)	M	MDG	WWT	WWT
Lake Tseny Biodiversity Survey	WWT_2023_04	M Faliarivola (2023)	F	MDG	WWT	WWT
Climate Change Vulnerability Assessment, Lake Tseny	WWT_2023_05	S Mandaharisoa, M Faliarivola & H Andriambelo (2023)	F	MDG	WWT	WWT
International Mangrove Day Celebration Report	WWT_2023_07	J Vohozanaka (2023)	M	MDG	WWT	WWT
Restoration Plan for the Watershed of Lake Tseny	WWT_2023_08	J Vohozanaka & H Andriambelo (2023)	M	MDG	WWT	WWT
Initial GIS Analysis of Drivers of Degradation in Lake Sofia and Lake Tseny	WWT_2024_01	S Los (2024)	M	MDG	WWT	WWT
R-METT Evaluation Report of Ramsar Sites in Madagascar	WWT_2024_05	H Ambriambelo & S Mandaharisoa (2024)	M	MDG	WWT	WWT
Awareness and Monitoring Mission Report: Mixed Forestry Patrols at Lake Tseny	WWT_2024_06	J Vohozanaka (2024)	M	MDG	WWT	WWT
Peche Experimentale avec les Communautes des Pecheurs Locaux au Lac Tseny	Mavoa Report	J Hernandez et al (2024)	M	MDG	Mavoa	WWT, Mavoa

Title (full title, see below)*	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)
Etude des Chaines de Valeurs des Produits Halieutiques au Lac Tseny	Mavoa Report	V Luciano (2024)	M	MDG	Mavoa	WWT, Mavoa
Feasibility Study on Cage Farming of Endemic Fish Species in Lake Tseny	Mavoa Report	J Hernandez & de l'Or (2025)	M	MDG	Mavoa / WWT	WWT, Mavoa
Impact Evaluation (Endline Survey) for the WWT Darwin Project at Lake Tseny	WWT/Mavoa Report	S Mandaharisoa and J Vohozanaka (2025)	F	MDG	Mavoa / WWT	WWT, Mavoa

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