Darwin Initiative Main: Final Report

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

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

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

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Darwin Initiative Project Information

Project reference	28-008
Project title	Restoring the Alaotra Ramsar Watershed - The Breadbasket of Madagascar
Country(ies)	Madagascar
Lead Organisation	Durrell Wildlife Conservation Trust
Project partner(s)	Alaotra Rano Soa, DREDD, DRAE, Graine de Vie
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Start/end dates of project	01 October 2021 – 31 June 2024
Project Leader name	Fidy Ralainasolo
Project website/blog/social media	
Report author(s) and date	

1 Project Summary

Lake Alaotra is the largest lake in Madagascar covering 20,000 hectares of open water, surrounded by some 26,000 hectares of marshland (Figure 1) and is an area of high socio-economic importance as Madagascar's greatest producing area for rice and fish (Copsey et al., 2009a, b). It is also a rich habitat for wildlife including the Critically Endangered, single-site endemic Alaotran gentle lemur *Hapalemur alaotrensis*. The marshes are also critical habitat for Durrell's Vontsira *Salanoia durrelli* (Durbin et al., 2010) and an undescribed mouse lemur (*Microcebus sp.*), and despite major population declines and species extinctions is still an important site for threatened endemic waterbirds such as Meller's duck *Anas melleri* (Rakotomalala, 2012). The remaining marshes are dominated by the endemic *Cyperus madagascariensis* and reeds *Phragmites communis* and are surrounded by some 130,000 hectares of rice-fields. Lac Alaotra is Madagascar's most important rice-producing region and inland fishery. The Alaotra wetlands were designated a wetland of international importance under the Ramsar Convention in 2003 and approving permanent protected area status in June 2015 as a community managed protected area (IUCN Category V).

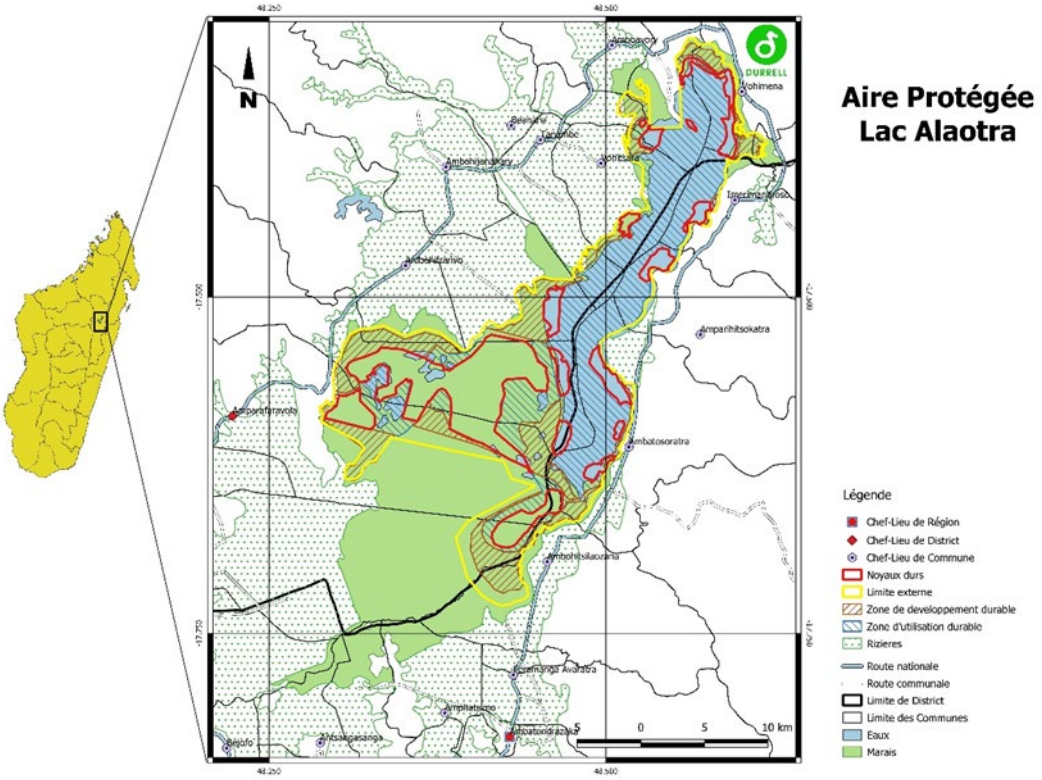

Figure 1: Map of the Lac Alaotra Protected Area

The hills surrounding the lake were forested but have mostly been cleared for farmland, causing severe erosion and lake siltation. Migrating populations who come to Alaotra seeking fertile croplands are putting further pressure on the watershed by burning reed beds for conversion to rice-paddies. Reeds are the gentle lemur's only habitat. Poor management, and traditional monoculture (rice) cultivation have gradually reduced annual productivity, creating a vicious cycle in which more land is burnt each year for agriculture to maintain livelihoods with devastating impacts on biodiversity. The lack of water is creating more pressure on the marshes by people for agriculture because it's the only place where there's still moisture. Here, the marsh restoration zone and the rice plantation zone are mixed, which generates conflict between VOIs protecting the marshes, and farmers. This problem is exacerbated by a failure in law enforcement, especially in the case of marshland clearance. Inconsistent fishery management and overfishing also constitute a considerable threat. Unregulated equipment and failure to respect closed seasons, added to siltation and declining water quality, have led to fishery collapse (75% decrease between 2004-19) and a sharp decrease in income from fishing. A growing population combined with poor natural resource management have severely compromised Lake Alaotra's ability to sustain the wildlife and communities that depend on it.

This project will build capacity for watershed management and good governance within Alaotra Rano Soa (local co-management authority) and established Local Community Associations (COBAs) to improve stewardship of natural resources and empower local authorities to enforce regulations. We will support ARS to develop community-led reforestation and marsh restoration strategies, which will provide alternative employment opportunities for local people and increase forest and marsh habitat.

2 Project Partnerships

To achieve the objectives and facilitation of the activities of the Darwin reforestation project, we collaborated mainly with the following entities: The State, represented by the Regional Directorate of Environment and Sustainable Development Alaotra Mangoro (DREDD) and the Regional Director of Agriculture and Livestock (DRAE); The NGO Graine de Vie; The ARS

(Alaotra Rano Soa) represented by the village communities such as the Federations, the COBA (based Community) and the Fokonolona. And finally, Madagascar Wildlife Conservation (MWC) which is a local association working on the development of ecotourism in the Alaotra region.

The Regional Directorate for the Environment and Sustainable Development (DREDD): party responsible for reforestation projects, and as a representative of the state in terms of the environment, we worked together from the planning, on the implementation of field work, as well as the monitoring evaluation of the reforestation project. For the monitoring and protection of the planted area, the implantation of the "VNA" (Vaomeran'ny Afo) in the Fokontany around the planted area will be the responsibility of the DREDD, as well as their participation in the development of the "Dina" which must be tasked with the laws in force on environmental protection and the enforcement of laws on violations of the rules within the PA and community reforestation. DREDD receive reports on all reforestation and patrol activities, and decide what actions are taken in response to reports of illegal activities.

The DRAE (the Regional Director for Agriculture and Farming): The DRAE of Alaotra supported the project on the implementation of Climate Smart Agriculture (CSA). The DRAE team provided recommendations for the improvement of the CSA action plans and the technical guidance sheets adapted for the Alaotra region. We also work closely with Regional Director of Fisheries for the implementation of a standardised fishing monitoring system (3.6).

The Association Graine de Vie (GdV): is one that has a wide expertise and an important responsibility in reforestation works with DARWIN reforestation as a technical partner and seed supplier. GdV has provided expertise regarding the choice of species used and the determination of ecological preferences of the selected species. GdV has trained local committees as well as Durrell staff on seed processing techniques for the direct planting reforestation method. The partnership with GdV changed in Y3: In 2023, GdV had an internal management issue leading to a major change of their executive staff (director, Head of finance) and change of bank account (it changed from being an international NGO to a national NGO). As part of this, we needed to run due diligence on the new entity and it was difficult for them to provide all the information required and to complete the due diligence process. As this could not be completed before the reforestation season, and as staff and nursery workers had received sufficient training by Y3 and already held the necessary skills, GdV were not part of the Y3 reforestation campaign. The skills gained from GdV training in Y1 and Y2 are now embedded in communities and will be used beyond the lifetime of the project.

The local communities in the Alaotra Rano Soa (ARS) platform are the key partners of this project. The 12 villages concerned are active members of the ARS, among others, the 6 local communities of protective bases of the marshes, an association of fishermen, a federation of water users as well as the 4 associations protecting watersheds. Their main objective is restoring together the Ramsar Alaotra site because they feel concerned by the degradation of this place and their daily life and subsistence depend directly on the existing natural resource in the Ramsar site. They are involved in the day to day implementation of this project (the President is embedded within Durrell's office) and have been involved in writing this report.

Madagascar Wildlife Conservation is responsible for ecotourism, environmental education and behaviour change initiatives in Alaotra, configured around the Alaotran gentle lemur and its habitat.

The British Embassy, Madagascar: Throughout the project, we have both kept in touch with the Development Counsellor from the FCDO, based in the British Embassy in Antananarivo through presentations both about this project and Durrell's other conservation livelihoods work (included other DEFRA-funded projects) and through several meetings. Durrell also facilitated the British Embassy in Antananarivo with the organization of a tree planting event in March 2023 with a number of NGOs, hosted by the British Embassy.

3 Project Achievements

3.1 Outputs

Output 1: 12 community nurseries, together producing 100,000 saplings annually to enable 120Ha reforestation annually within priority zones by project end

Over the course of the project, 13 nurseries were set up, which produced a total of 430,439 saplings, enabling the reforestation of a total of 370ha over the three years of the project. This project achieved Output 1 as laid out in the Logframe.

In Y1 of the project, a restoration plan to be used as a framework for our reforestation projects in the Lac Alaotra watershed, including a map of priority areas for restoration, was drawn up with stakeholders (39 local, regional and state authorities, environmental NGOs and DREDD took part). We identified 83,872 hectares of priority land to be reforested, given the threat of soil erosion on the marsh and the lake, as well as an additional 9,325 hectares of marsh to be restored as a priority (**Indicator 1.1, means of verification in Annex 1**).

By the end of the project, 13 new nurseries had been set up (Y2: Morarano; Vohimena; Analanomby; Vohimenabe; Vohibola; and Vohitraivo; Y3: Marovato; Ambatosoratra; Andeona Atsimo; Andeona Avaratra; Ambohidavakely; Vohibola; and Vohimenabe), which had produced a total of 430,439 saplings (**Indicator 1.2**).

The native species planted include: *Cannarium madagascariensis*, *Albizia lebbeck, Albizia sp, Harungana madagascariensis, Protorhus ditimena, Trema orientalis, Trachylobium verrucosum* and *Intsia bijuga*.

As part of our community engagement and livelihoods approach to pair utility species with native forest restoration, fast-growing species such as *Acacia Mangium, Melia azedarach, Moringa oleifera* and *Eucalyptus*, as well as fruit tree species such as *Eugenia sp, Carica papaya, Artocarpus heterophyllus*, Sakoa and *Mespillus germanica* were also planted.

These nurseries employed 32 nurserymen who earned 200,000 Ar/month for 8 months per annum, which allows them to pay for their children's school fees. A total of 25 nursery technicians (Y2: 14; Y3: 11) were trained in the installation and maintenance of nurseries (**Indicator 1.3**), and 12 nurserymen were trained in the new direct seeding technique. Nursery technicians also carried out maintenance including reseeding; weeding; reclassification; and cutting of the emergent roots. After this project, these nurserymen will be experienced and can in turn make nurseries and sell seedlings.

The reforestation plan developed under this project has formed a long-term road map for the restoration of the Alaotra watershed. In addition to the370ha of forest restored under this project, the restoration map has enabled Durrell and watershed stakeholders to both direct reforestation efforts (such as the annual government campaign) to priority zones, but also leverage further funding for watershed restoration. Beyond this project we will continue to use this plan to seek and secure resources to fulfil the objectives of the restoration plan and continue to monitor planted areas in the long term, both via drone and satellite imagery.

A total of 370 ha has been reforested (70 ha more than the initial target) (**Indicator 1.4**).

Table 1: Area (ha) reforested over the course of the project in each location

	Hectares reforested (ha)			
Location	**Y1**	**Y2**	**Y3**	**Total**
Ambohidavakely	105	-	0*	105*
Morarano	-	9	1	10
Vohitraivo	-	23	6	29

Vohibola	-	44	3	47
Vohimenakel/Analanomby	-	33	8	41
Vohimenabe	-	55	0*	55*
Marovato	-	-	7	7
Andeona Avaratra	-	-	30	30
Andeona Atsimo	-	-	40	40
Ambatosoratra	-	-	15	15
Total	**105**	**164**	**101**	**374 (365)***

*There were some later disputes over land in two sites and therefore some hectares were removed from the monitoring activities and official reforestation area: Ambohidavakely (-4) and Vohimenabe (-5). Therefore the new reforested area being monitored and maintained after project end is 365 hectares.

For three months in Y2, 200 people per day were hired in the Morarano, Analanomby, Vohimena, Vohimenabe and Vohitraivo fokontany for planting, for a total of 1,300 people involved. In Y3, 156 people per day were hired in the Marovato, Ambatosoratra and Vohidrazana fokontany, for a total of 650 people benefiting from the 2024 reforestation campaign.

10 collaboration agreements (DINA) between the community, authority, DREDD and Durrell were put in place for each village to ensure the sustainability of the reforested area against fire and pastoral activity.

Maintenance and monitoring of the planted areas was carried out by local socio-organisations (or VNAs), which were created or revitalised for this project, totalling 100 members.

Maintenance of reforested areas was carried out throughout the project (Y1: 101 Ha; Y2: 177 Ha; Y3: 92 Ha) to increase the survival rate of seedlings, including restocking dead seedlings; relining; hoeing around the plants; aerating the root; installing firebreaks (Y2: 18.3km; Y3: 39.9km); and clearing brush to avoid the invasion of rats and competition with other plants. Irrigation was trialled for the Andeona Nord site (30 Ha) as a feasibility study. Signs were also installed around the reforested areas (490 signs) to prohibit fire and pastoral activities.

Monitoring involves patrolling planted areas to avoid the threat of fire, livestock, and theft of the installed panels. Patrols were carried out by VNAs (Y1: 28 patrols in Ambohidavakely; 28 patrols were also carried out per annum in Y2 and Y3), a fire threat was avoided thanks to the intervention of VNA patrollers and the community - a perpetrator of fire in Vohimenakely was imprisoned thanks to the enforcement of laws by the DREDD.

The monitoring of seedling survival rates in some restoration areas was carried out by the Durrell team, the patrollers and the President of VOI with methods of random sampling of 100m*100m plots, direct counting of the entire area for the others and estimation for the other. The following table shows the survival rate of seedlings:

Table 2: Seedling survival rates

Village	**Localisation**	**Survival rate (%)**	**Observation**
Andreba Y1	E 48,50045° ; S -17,62315°	ND	
Ambohidavakely Y1	E 48,49290° ; S -17,6383°	60	Estimate
Ambodimanga Y1	E 48,51469° ; S -17,35425°	42.93	Direct counting carried out by the patrollers.

Vohitsara Y1	E 48,53044° ; S -17,39176°	ND	
Analanomby Y2	E 48,59724° ; S -17,36754°	74.67	Follow-up with a random sample of 100m*100m plot.
Angoja Y2	E 48,48399° ; S -17,65031°	40	Estimate
Analanomby Y3	E 48,59533° ; S -17,37603°	40.79	Several individuals are under water because the water level in the restoration area reaches up to 2.10m at the time of monitoring.
Ambohidavakely Y2	E 48,4906° ; S -17,6416°	70	Estimate
Vohitsara Y2	E 48,52088° ; S -17,39745°	Très faible	The survival rate is very low because of drought and delayed rainfall.
Andreba gare Y2	E 48,52088° ; S -17,39745°	ND	
Vohimenakely Y2	E 48,59379° ; S -17,34777°	13.17	Direct metering. Half of the planted area is reached by land clearing before counting.
Vohimenabe Y3	E 48,58320° ; S -17,33645°	Très faible	10 days after restoration, the planted area is cleared.
Andrebakely nord Y3	E 48,61466° ; S -17,39561°	97.5	Direct metering of the catering area.
Andreba Gare Y3	E 48,4962° ; S -17,6233°	ND	We will monitor survival rates after the water recedes in the area.
Average % survival rate per project year			
Y1	51.46%		
Y2	49.46%		
Y3	69.15%		Survival rate later increased through replanting of Y1 and Y2 plots where saplings lost to rats.

1.6. Maintenance of the reforested areas

101 Ha and 177 Ha of the reforested area Y1 and Y2 were cleaned and hoed in 2023, so 101 Ha of Y1, 177 Ha of Y2 and 92 Ha of Y3 were also maintained in 2024 by hoeing, relining and clearing brush to avoid the invasion of rats and competition with other plants, but also the aeration of the root and the replacement of dead individuals, to increase the survival rate of seedlings to cover the entire area. Amendment and irrigation were made for the Andeona Nord site (30 Ha) as a feasibility study.

Output 2: 5km of channels in priority areas are cleared annually of invasive water hyacinth and 75Ha of reed-phragmites are planted by project end, to restore habitat, improve water quality, and increase access to the lake for fishing and ecotourism.

More than 5km of priority channels were cleared annually of invasive water hyacinth, and marsh restoration exceeded 75Ha by project end, - this output has been achieved as laid out in the logframe.

In Y1 of the project, the restoration plan, a framework for restoration projects in the Lake Alaotra watershed, including a map of priority areas for restoration, was drawn up with stakeholders (39 local, regional and state authorities, environmental NGOs and DREDD took part). We identified

83,872 hectares of priority land to be reforested, given the threat of soil erosion on the marsh and the lake, as well as an additional 9,325 hectares of marsh to be restored as a priority (**Indicator 2.1**).

Marsh restoration exceeded the 75ha planned by the end of the project (**Indicator 2.2**). For Y1, we planted 11.7 ha of *Cyperus madagascariensis* and phragmites, a little less than 25 ha per year due to the delay in starting the project. However, for Y2, the planted area of *Cyperus madagascariensis* and Phragmites reached 43.7 ha thanks to the initiative of local communities and the school in one of the villages, which made up the shortfall of Y1. During Y3, 21 ha was planted, 25 ha less because the withdrawal of water in the priority restoration area was rapid. 5 ha which was planted in the hard core of the PA in the northeastern part of the lake was cleared by unknown people after 10 days of planting.

Table 3: Area of Marsh planted

	Year 1	**Year 2**	**Year 3**	**Total**
Area of planted marsh (ha)	11.7	43.7	21.0	76.4
Number of participants	142	1021	544	1707

More than 5km of channels occupied by invasive water hyacinths were cleared per year of the project (**Indicator 2.3**). This was achieved in collaboration with fishermen, patrollers, local communities and the local guide association. The cleaned canals were public canals, patrol canals, and tourist circuit. The community of Anororo recruited 2 people to ensure the opening of the public canal; and the fishermen's association for Andreba station and Andilana south participated. The table below shows us the lengths of the cleaned canal with the number of participants per year.

Table 4: Cleaned channel length

	Year 1	**Year 2**	**Year 3**	**Total**
Length of cleaned channel (km)	5.2	5.5	5.8	16.5
Number of participants	270	231	174	671

We aimed to clear 10ha of the lake occupied by exotic plants per year. The following table shows the surface area of the lake cleaned and the number of participants per year:

Table 5: Surface area of lake cleaned and number of participants

	Year 2	**Year 3**	**Total**
Surface area of lake cleaned (ha)	18	11	29
Number of participants	1119	572	1691

The Andilana South patrollers monitor the restored lake. They inform us of water hyacinths carried by the water current during rainy periods. To maintain the opening of the lake, recleaning of some parts of the lake was carried out on 20/09/2023 with 81 participants and 27/03/2024 with 47 participants for Lake Beanamafaitra, for Lake Bezafo on 29/12/2022 with 27 participants and on 28/03/2024 with 20 participants and for Lake Amparihilava on 29-30/11/2023 with 90 participants.

A small amount of the removed aquatic plants were transformed into compost fertiliser, a total of 5,000kg (Y2: 3,000kg; and Y3: 2000kg). The problems of carrying out this activity persist because of the small canoes available for this task with limited storage used by the participants.

Output 3: Local associations (COBAs) within Alaotra Rano Soa (ARS) are effectively managing 40% of the marsh area with c.300 people representing all 33 associations receiving training by end of project.

By the end of the project, ARS are effectively managing 66.8% of the marsh area, with 336 people having received training on key competencies and applying the law. We consider this output partially achieved as laid out in the logframe.

Capacity and training needs assessments were carried out for all 33 community associations in Y1 (**Indicator 3.1**) (detailed results and modules reported in annual reports in Y1 and Y2 and in Annex 2).The training plan (developed following the competency assessments) was implemented in Y2 and Y3 of the project, and 336 people, across 33 VOI (including 67 women), were trained according to the plan, including VOI board members, CFLs, ordinary members and Fokontany representatives (**Indicator 3.2**). The training assessment and reports are attached to this report as Annex 2 (post-evaluation questionnaires (compared to pre-evaluation questionnaires) were carried out on 92 people from 23 VOI (sample of the 336 people trained) who took part in the courses, in the four geographical areas of Alaotra. They showed a clear improvement in the 9 key competencies being trained, and in the LAR 02 module, which was focused on applying the law (graphs in the figure below).

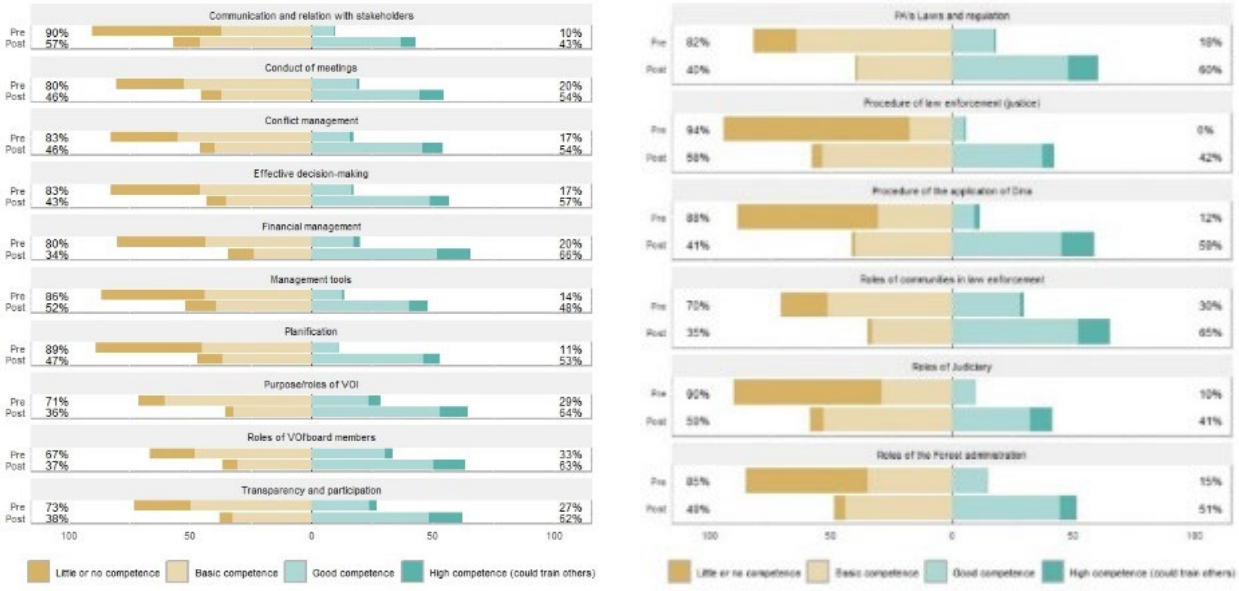

Figure 2: Results of the pre-post training assessment for the training on 9 key competences (left) and on LAR 02 (right).

Further training was given in Y3 to patrollers from CFL and VOIs monitoring the Lac Alaotra PA, to improve the quality of patrol data and to better apply the laws (98 people), and a second training on the use of the SMART mobile application (106 people).

The infrastructural and equipment needs for Alaotra Rano Soa (ARS) and COBAs were assessed in Y1 and Y2, and the evaluation showed that ARS needs more technical staff, as well as improvements in infrastructure and equipment, to achieve its objectives (**Indicator 3.3**). Office furniture and computer equipment was provided to the four ARS zones at the end of Y2 as a result of the evaluation. Two new ARS offices were built and equipped in Y1. We had some problems with the donated land for the two remaining offices, (conflict between community members) discussion with DREDD and the local authorities during the ARS General Assembly. (More information is available in section 13) Three offices are operational (the last is expected to

be complete at the time of submission) (**Indicator 3.4**); for members' meetings; and have become a place for training and information for community associations. These will be used as future location for training and information for conservation and livelihoods activities by ARS, Durrell and other organisations as required.

A standardised fishery monitoring system has been established in collaboration with ARS (represented by members of the fishermen's federations around Lake Alaotra), the Regional Directorate of Fisheries and the Blue Economy (DRPEB), the Prefecture of Ambatondrazaka, Durrell, and Commune (**Indicator 3.5**). This began with a census of fishers in Y1 and 2, which led to 3,224 registered fishers in 97 associations. A fisheries surveillance system to safeguard the legal framework of fishing has been established:

- The implementation of control points is ensured by DRPEB;
- The closure of fishing is carried out each year by mixed teams, including fishermen's federations.
- Updating the numbers of fishermen is carried out annually followed by the distribution of fishermen's maps.

The implementation of this system increases the number of legal fishermen and pushes post-harvest women to also enter the legal framework by creating associations, proof of participation in community governance. Annex 6 shows signatories to this code by fishers associations.

Compared to the 2020 baseline (25-30%), the area of marsh being directly and effectively managed by ARS and COBAs by project end is now 66.8% (**Indicator 3.6**). ARS hold monthly meetings in each zone with members of the office and representatives of COBAs, to report on progress of activities by each sector (marsh, rice fields, lake and watershed); for ARS to give information on their projects (e.g., any ongoing lobbying or advocacy); and to plan the upcoming activities by members. There are 10 to 15 participants per zone, i.e. 40 to 65 participants per month, and in total, ARS held 144 meetings over the project duration to coordinate the conservation activities of the Alaotra Ramsar site.

At the end of the project, ARS is present in 66.87% of the Ramsar site thanks to this project, in terms of conservation and coordination. For the watersheds, 15/33 large water sources in the watershed are reforested with the local communities, i.e. 45.45%. For the marshes, the VOIs in 23/33 villages, i.e. 69%, can restore the marshes. 100/117 or 85.47% of existing associations around Lake Alaotra have the fishermen's card (**Annex 3**).

Each year, ARS evaluates the effectiveness of the conservation activities in the Alaotra PA on an annual basis in their General Assembly, held in each zone. During the General Assembly, the progress against each community's workplan is reviewed, and office members are renewed. In the third year of the project, ARS held a large general assembly that brought together the four zones to make the triennial report of activities; to update the strategic axes of the platform and to renew the ARS office members (Annex 3).

In Y2, an R-METT (Ramsar Management Effectiveness Tracking Tool) was also carried out for Alaotra by local authorities, the Regional Directorate for Environment and Sustainable Development, the Regional Directorate for Fisheries and the Blue Economy, the Regional Directorate for Agriculture and Livestock, federations and NGOs working in the Alaotra Ramsar Site. There has only ever been one RMETT carried out of the Alaotra RAMSAR PA (in 2018), whereas guidelines state that the assessment should be done every 3 years. The aim is to be able to standardize the evaluation of the management of Ramsar sites and to have the necessary documents for protection. The following is a summary of the evaluation score (full score included in Means of Verification Annex 7):

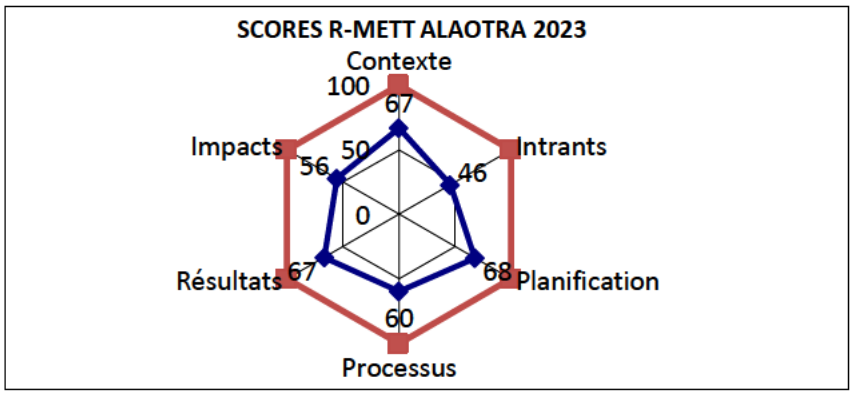

Figure 3: RMETT Evaluation 2023

3.5 Change in the community's compliance with the PA regulatory framework compared with the 2020 reference situation.

Village patrols:

Patrol activity in the Lake Alaotra Protected Area has improved using SMART software and SMART Mobile app installed in the smartphone used by the 23 patrol groups in the 25 patrol villages around the AP. 105 patrollers have received training on the use of this SMART Mobile application. During their patrol, they used this smartphone, four times a month, to collect existing information in the PA, especially the observation of land pressures, terrestrial wildlife and the patrol efforts of each patroller.

Table 10: Summary of patrol efforts, number of sightings of ground pressure and wildlife

Patrol Measurement	**Year 1**	**Year 2**	**Year 3**
Number of patrols	541	1156	1194
Number of patrollers	84	109	106
Distance travelled (km)	24,635.25	55,453.66	45,628.53
Observation of terrestrial pressure	949	1758	1765
Terrestrial wildlife observation	1692	6985	8498
Sighting of *Hapalemur alaotrensis*	18	61	34
Observation of Aythya innotata	0	1	24
Number of special reports and/or complaints from the local community transmitted to DREDD, Authorities, Durrell...	28	47	54

3.6 Compile annual records of illegal activity from local associations and Government

Since July 2021, Community patrollers (CFL) have used information technology facilitating data collecting, storage, analysis and reporting. In total, from 1st July 2021 until 31st June 2024, there were 3141 patrols with the participation of 129 persons (including 5 Durrell employees and 2 agents of DREDD). It gave an effort of 10,433 man-days who have walked a total distance of 14434 km (below).

Table 11 : Community patrol efforts

Year	**Number of patrols (days)**	**Number of participants (Person)**	**Person-days**	**Distance (km)**
2021	360	80	1,126	1,334.36

2022	1,056	114	3,411	4,502.08
2023	1,155	106	3,904	5,483.06
2024	570	102	1992	3114.75
Total	**3141**	**129***	**10,433**	**14,434.25**

* Repeat

They reported 4772 cases of offences divided into 10 categories. For fishing, there are those that are authorized, but there are cases of offenses such as fishing in prohibited areas. Of these offences, 15 are fined in 2022 and 18 in 2023. For 2022, there were 42 people summoned and in 2023, five cases of arrests resulted in court cases (Table 12). For 2021, our team was not able to record the number of fines, and for 2024, there were no cases of fines yet, but two cases of court hearings, following the 2023 cases.

Table 12: Number of violations reported by the patrollers

Type of threats	**2021 (Jul. to Dec.)**	**2022**	**2023**	**2024 (Jan – Jun)**	**Total**
Poaching or trapping of animal	26	29	47	4	106
Camp	63	127	161	36	387
Entry into the PA	37	36	7	1	81
Clearing marshes	216	295	338	96	945
Fires or burned areas	204	164	146	9	523
Infrastructure Modifications	16	17	14	2	49
Freshwater fishing	101	414	385	247	1147
Plantation	170	335	402	39	946
Collection of non-timber forest products	10	18	12	-	40
Habitat transformation	25	22	22	-	69
Total	**868**	**1457**	**1534**	**434**	**4293**
Cases of fines	**-**	**15**	**18**	**0**	**0**
Number of people arrested	**-**	**42**	**5**	**0**	**0**

During the project phase, there was a decrease in the number of fire alerts but an increase in the number of land clearing alerts (Table 8). However, the marsh area lost was more abundant in 2021 if compared with other years of the project (Table 9). However, in 2023, marsh clearing has regained ground.

Table 13: Surface of cleared marshes (source GFW)

**2024 data not yet available*

Years	**Lost marsh area (hectares)**

2020	67.26
2021	81.46
2022	57.08
2023	77.63

Table 14 : Evolution des alertes de feux et de défrichement reçus

Site	***2021***	***2022***	***2023***
Number of MODIS C6 fire alerts MODIS C6 (NASA/FIRMS/LANCE)	23	17	9
Number of deforestation alerts (GFW/GLAD)	60	151	491

Output 4: approximately 2500 people across 12 villages (7 new) are supported to derive greater benefits from their agricultural and natural products whilst utilising natural resources more sustainably.

4.1 Identify, create and structure FFS groups in each association.

Throughout the project, 149 FFS groups have been created, which are composed of 1561 beneficiaries of which 45.29% are women. The process of creating an FFS group was done after mass sensitization for each village. Targeting committees are identified during the meeting that will validate the lists of beneficiaries. These committees are made up of the fokontany chief or the head of the sector, the president of the VOI, Tangalamena, local forestry committees, etc.

To ensure better monitoring and local supervision of the adoption of the techniques promoted, and the sustainability of the interventions, 12 farmer leaders (PL) were identified in year 1 of the project and who are still operational until the end of the project (Annexe Output 4-1/4-4: Food security)

4.2 Train and support FFS groups in techniques.

During the 3 years of the implementation of this project the 1561 FFS members, including 336 women, which represents 92.91% of the project's objectives (indicator 4.2) have been trained on agroecological techniques resilient to climate change. The topics covered during the training are mainly:

- Soil fertility management, crop association and rotation with legumes:
- Organic fertilization (such as composting, vermicomposting) and biological pest control.
- Improvement of cultural practices such as row sowing, use of improved and resistant seed varieties, crop maintenance.

Each trained beneficiary received technical sheets to refresh their knowledge during the practical and theoretical training in the classroom. The 12 farmer leaders received special training on the practice of agroecology, as well as on the roles and responsibilities of farmer leaders.

Each group has a demonstration site for the practice of the training after the classroom training and 12 permanent field schools (one per village) have been set up to show the beneficiaries the practice of agroecology. An exchange visit has been organized every year; for the first and second year, the 12 farmer leaders and 67 other beneficiaries visited the demonstration site of the GSDM (Professional of Agroecology in Madagascar), in Ambotresana and the Agricultural College of Alaotra; for the third year, the 12 leader farmers visited the GSDM site in Andranomanelatra, Antsirabe and Ivory. (Annexe Output 4-1/4-4: Food security)

4.3 Implementation of agricultural techniques

Agricultural surveys were carried out to identify the crops favorable to each village before the creation of the FFS groups. The results of these surveys allow the following crops to be deduced: beans, onions and cucumbers (for out-of-season crops); rainfed rice, rice irrigated in RMME (rice fields with poor water management) and RBME (rice fields with good water management), groundnut-maize combination and bean-maize combination (for long-season crops). The speculations identified reflect the needs of the communities in terms of food security (rice, maize, legumes: groundnuts, beans) and income (rice, beans, onions, groundnuts, cucumbers).

To put into practice the improved cultivation techniques, each beneficiary household received seeds and organic fertilizer individually in accordance with the areas to be cultivated (30 ares for those cultivated during the main seasons and 10 are for those who cultivated during the off-season). For agricultural equipment, such as “Angady”, bucket and watering can is individual, but for sprayers and weeders, management was done by groups.

During the three growing seasons, 426.77 ha were cultivated with improved and climate-resilient techniques (indicator 4.3).

As an alternative to the use of chemical fertilizers around Lake Alaotra, which have a negative impact on the health of the biodiversity of the soil and the lake, Durrell promoted the vermicomposting technique. This technique consists of integrating a specialized worm called Eugenia foetida into the composting process. The objective is to improve the nutritional value of the organic fertilizer produced. 24 breeding basins were set up in year 2 and 11 breeding basins were set up in year 3 of the project. These 35 ponds are managed by 41 producers and have produced 31.2 tons of vermicompost to date. (Annexe Output 4-1/4-4: Food security)

4.4 Annual Agricultural survey

Assessments of the agricultural season were carried out at the end of each crop season for the 12 villages, with the help of representatives of DRAE (Regional Directorate of Agriculture and Livestock) Alaotra. The evaluation was carried out using individual cards to preserve the influence of the ideas of the other members. The form to be completed by each member contains self-assessments in relation to the training they have received and in relation to the needs for training, evaluation of technicians, evaluation of the quality of inputs and materials distributed, and performance evaluation.

Performance surveys have also been undertaken in collaboration with the Alaotra DRAE to evaluate the performance of our intervention. (Annexe Output 4-1/4-4: Food security)

4.5 Establish VSLA groups in target villages and train members in VSLA process

During the three years of project implementation, 131.5% of the objective was achieved, i.e. 63 of the 48 savings and credit groups initially envisaged were created in the 12 intervention village of the project (Indicator 4.5). They were provided with equipment and trained in the 8 VSLA modules.. These groups are made up of 943 members, 790 of whom are women (87%). This high rate indicates the active participation of women in improving household living conditions around the protected area. It should be noted that, thanks to savings, these 63 groups have saved 37,486,100 Ar with a net profit of 25,078,400 Ar (66.9%) with a total amount of 62,564,500 Ar in credit during this last cycle. At present, they no longer need to borrow from microfinance institutions or banks to meet their needs and have been able to create income-generating activities. Since they started using the VSLA system, they have been able to borrow small loans to invest in income-generating activities (buying fertiliser and seeds, paying farm labourers, practising short-cycle livestock farming such as ducks and geese).

As a result, the number of children attending school has increased, as they have been able to pay their school fees and buy school equipment for their children. In addition, as a result of these financial movements or cycles, positive effects are reflected in the daily life of each member of the groups: purchase of kitchen utensils, purchase of furniture. And finally, thanks to the income-

generating activities, the pressure on the protected area is reduced. In the event of illness, accident or death, the group mobilises a special fund to help the victim. The aim is to improve the well-being of members' households.

4.6 Establish and run training for basket weaving

17 basket-making groups were set up in eight villages during the project, including Ambatofotsy, Ambahiboho, Ambohidavakely, Marovato, Analanomby, Vohimenakely, Vohimenabe and Vohitraivo. These groups comprise 252 women basket-makers. They have received basic training in basket-making and in drawing up business plans. And for practical purposes, they have been provided with basket-making equipment that has enabled them to professionalise their activity. The collective use of the equipment has improved the quality and quantity of the finished products, and enabled them to expand their market by taking part in regional and national fairs. Over the three years of the project, these 252 basketmakers sold 175,578 items on the market and to order. On average, they made a net profit of 894,000 Ariary per woman, for a total turnover of 225,309,500 Ariary. It should be noted that in the past, they were only able to make half of these items, due to a lack of resources (colouring powder and Raphia).

The current problem is the market. The collectors set the price for the producers. What's more, Chinese plastic products are competing with these traditional, emblematic "zetra" products.

4.8 Take members of the FFS and women’s basket weaving associations groups to rural fairs around Alaotra

Our beneficiaries participated in two fairs during the execution of the project, these are the Alaotra Mangoro Regional Fair and the National Fair "Fier Mada". The latter takes place every August of the year in the capital Antananarivo, where each producer exhibits and sells their production, whether raw or processed. Since 2022, 05 of our beneficiaries (02 FFS, 02 Women basket weavers and 01 representative of Women Fishermen's Organizations) have participated in this fair, 02 in 2022 and 03 in 2023. They brought samples of their respective products such as rice, peanuts, beans, smoked fish and basketry products (mats, hats, backpacks, handbags, document holders, wallets, etc.). As for the regional fair, 06 beneficiaries participated in Ambatondrazaka. These beneficiaries are the representatives of the basketry groups, FFS and CFL. They also brought agricultural products (rice, peanuts) and basketry (mats, handbags, canteens, etc.)

4.9 Develop market value chains for locally produced products

Four producer organizations have also created seeds and/or equipment but also helped for outlets. These 4 producers are peanut producers, chili pepper producers and fish farmers

Among these 04 POs, 2 are pepper producing POs in Vohibola composed of 19 members and Vohimenabe composed of 18 members, a Peanut producer in Analanomby composed of 28 members, a fish farming PO composed of 36 members.

The Groundnut Producers aim to improve the quality of groundnut production in the eastern zone of the lake based on the production of peasant seeds. They were supported by the project in terms of cultivation technique, seeding, and agricultural equipment (plastic drum, sprayer, seed seeder).

The chilli-producing POs have been in agricultural aggregation with MC Ingredients (MCI, a Malagasy agribusiness exporter) since year 2 of the project, the part of which is to supply the POs with chilli seeds and cultivation techniques. They are also the collectors of the products with a price set at the signing of the contract (20000 Ar per kilo in 2023 and 22,000 Ar for the year 2024). On the other hand, the role of the project is to structure the POs, to rely on the technique of composting, and biological phytocontrol. On the other hand, the project also financed POs in agricultural equipment to facilitate/improve the practices of agricultural techniques.

Output 5: Understanding of carbon sequestration capacity of Lake Alaotra's watershed, including lake and marsh, is improved to inform development of external investment opportunities for sustainable habitat restoration

The majority of this output was not achieved , with the exception of **5.2.**

The carbon estimation of the lake was conducted in partnership with the University of Antananarivo and the University of College London in which one masters student was recruited from each university. The area (Lake Alaotra protected area) has been stratified in two, differentiating the lake and the marshes, and compartmentalized taking the surface of the ground as a reference: belowground and aboveground pool.

Fieldwork was carried out at the site during which soil and vegetation samples were collected for analysis in the laboratory. Allometric equations have been developed for *Cyperus madagascariensis*, *Phragmites communis* and *Cyperus latifolius*, the characteristic species of the Alaotra marshes, for the estimation of biomass based on parameters previously chosen for each species. The quantification of soil organic carbon was done on the top 50 centimeters of soil subdivided into three depth intervals, opting for the LOI process adjusted by the Walkley & Black method for determining carbon content. Soil root biomass was quantified by producing average proportionality coefficients to above-ground biomass for each of the three species.

Preliminary results have shown that the distribution of above-ground plant biomass is conditioned in part by the variation in water depth. However, this factor does not show a significant effect on the horizontal distribution of soil organic carbon at the scale of the area. Vertically, soil organic carbon shows a positive gradient with soil depth, with a significant increase of 30 cm from the soil. In all, the lake stores 63.14 ± 22.32 MgC/Ha with a single soil compartment, compared to 58.63 ± 13.25 MgC/Ha for the marshes with 48.71 ± 11.83 MgC/Ha in the soil compartment, 3.48 ± 2.56 MgC/Ha for root biomass and 6.44 ± 5.39 MgC/Ha for above-ground biomass (**Indicator 5.2**). The report is attached as **Annex 9.**

A partial high resolution map was produced in Y2, using a replicable model that could be used to replicate an entire map of the watershed (5.1). However, the VTOL drone (necessary for this activity) crashed and therefore this map could not be produced. A high resolution map using satellite was developed (Annex 8). (Whilst the estimate of the carbon capacity was assessed (5.2), due to the legislative environment in Madagascar, which currently does not allow for sale of carbon on the international carbon market. International sales were paused in 2021 while the carbon market was nationalised, but no progress has been made at central government level, therefore **5.3 -5.4** were not possible within the project timeframe.

3.2 Outcome

Outcome 1

12 giant nurseries have been installed (6 in Y2 and 7 in Y3), which produce 420,000 seedlings to date. Based on the indicator of 100,000 seedlings per year, which is equivalent to 300,000 seedlings in 3 years of the project, we can reveal a surplus of 120,000 seedlings than the expected result (Table 4). According to the indicator, 250 hectares will be reforested at the end of the project. Currently, an area of 370 ha has been reforested, which exceeds 120 ha of the expected result, with a refilling of the reforested areas of Y1, Y2 and Y3 which reveals a survival rate of 88.76% and an average growth rate of 33.6 cm for native species and 59.73 cm for exotic species.

Outcome 2

The restoration activity ensures the connection between the different fragments of marsh. This situation facilitates the movement of animal species through the marsh, including our conservation targets. The marsh restoration activity will also reduce the time spent by the women winnowers during the collection of raw materials.

The cleaning of lakes and canals invaded by alien species facilitates the free movement of fishermen as well as the transport of commercial products within the marsh to the village level. The opening of traffic channels also assists patrol teams and researchers in monitoring and research activities on conservation target species. On the other hand, the alien species removed from these canals will be used for the manufacture of organic fertilizers that are very useful during the implementation of improved agricultural activities (AC/ICA).

Outcome 3

Since its revitalization in 2017, ARS has active members and the Secretary General who coordinate activities. The assessment of infrastructure and equipment needs for the ARS and the COBAs helped members identify their needs for management and governance. The needs can be summed up as: infrastructure, personnel and equipment needs. The offices are built and equipped with the tools necessary for the operation of the ARS. Many equipment needs are not realized, but this project is helping us to develop the capacity to manage the Alaotra Ramsar site.

Since its inception in 2007, ARS has not been able to build its own local office, so Durrell is hosting SG ARS in its local Alaotra office. Since Y2 of the project, the liaison offices are functional and the visibility of the ARS as an ARS manager is starting to be known at the regional level, because at the beginning many people do not know the ARS office separately from Durrell Alaotra. An ARS head office is underway and this will be critical in the long term strength of the organisation and community management of the watershed.

Fisheries activities are one of the major activities in the conservation of the Ramsar site. Currently, the fishermen around Lake Alaotra are about 20,000 (20,000 ha of lake surface) and we have developed a standardised fisheries monitoring system in collaboration with the fishing federations. The first census, in Y2 found 89 legal associations (2816 members). At the end of this project there were 100 legal associations (3197 members; 2801 men and 396 women). They all have fishermen's cards issued by the DRPEB.

This project helped the federations in Y2 and Y3 to engage with 16,000 illegal fishermen. Distribution of fishing tools in Y2 helped anglers follow the legal framework and commit to eliminating unregulated tools in Lake Alaotra. Fishermen's federations during the closure of the fishing season reinforced the government’s fisheries surveillance system. In Y3, only 300kg of fish were seized during the fishing closure thanks to the implementation of a strategy led by the federations and the DRPEB.

The monthly meetings of the ARS board members are very important for the proper management of the platform. The sharing of information and reports from the federations and the ARS management changed the governance between the zones. ARS was able to update the conservation status of the Ramsar site every month. At the end of the project, each ARS zone held 66 meetings between the members of the ARS to make management decisions based on monthly reports from the field.

As an impact of patrol activities, the number of zetra fires has decreased and the number of wildlife sightings, especially waterbird sightings, has increased. The villagers are proud to have found the Madagascar duck, *Aythya innotata*. Compared to other sites where Durrell works in Madagascar, there is more law enforcement at Alaotra, but it is still not enough. However, efforts are still needed to reduce pressures such as the clearing of marshes and the use of non-compliant equipment during fishing. The latter still require the awareness of the villagers and the application of the laws.

Outcome 4

Compared to the initial logical framework, the objective has been achieved since 40% of the beneficiaries trained are women. As a result of the training in compost, phytobiological control and vermicompost, 95% of the beneficiaries have already stopped using chemical fertilizers and chemical pesticides. The sites set up to produce vermicompost (33) are currently producing tons

of vermicompost per month and the beneficiaries of the project are building other breeding basins to optimize their production.

In terms of area covered by climate smart agriculture, the objective in the logical framework of the project has been exceeded (110%) but in terms of the number of beneficiaries, the result is 88%. This is due to the number of beneficiaries in the main agriculture season exceeding those in the off-season when the plots of cultivation are smaller due to much more work.

For the acquisition of seeds, equipment and fertilizers, all the beneficiaries of the project (1283 beneficiaries and 4 producer organisations) have all received these aids so that they can practice their knowledge during the training.

We have noted significant interest in VSLA groups and we have seen a spread of requests for creation and training on the VSLA. The project created 63 VSLA groups (target 48) with 943 members (790 women) 87%, a rate considered high for a rural community. We are witnessing the active participation of women in the improvement of daily household incomes.

This approach plays a key role in providing access to financial services for women who do not have a bank account. They are able to take small loans to invest in income-generating activities (farming, animal husbandry, basketry) or respond instantly to emergencies. Members no longer need to travel miles to borrow money because the resources are directly in the village. After years of committing to savings and weekly loans, members become self-sufficient and can engage formal financial institutions for the creation of bank accounts. Their savings become more secure, and these women can access larger loans for larger businesses. In this way, the VSLA contributes to the reduction of poverty in the district under its jurisdiction.

Outcome 5

In Y3 of the project, whilst we were able to improve the understanding of the carbon sequestration capacity via a study, the legislative framework around carbon in Madagascar means that currently, this information cannot be used to inform development of investment opportunities in Lake Alaotra and sustainable restoration of its habitat.

A protocol of collaboration was established between the University of Antananarivo and Durrell (attached to this report), and together with a student from the Institute of Zoology (UK) a masters student successfully defended her thesis on the topic of carbon quantification at Lake Alaotra (thesis attached to this report). Analyses of the remaining samples are still ongoing, but preliminary results (covering the protected areas, excluding paddy fields) indicate that the sequestration potential of the lake is about **732 099 tons** of carbon. A draft report is attached to this report (Annex 9) (**5.2)** .

3.3 Monitoring of assumptions

Assumption 1: No significant reduction in the current level of political stability

Comments: The current political situation in Madagascar is stable despite the existence of active opponents. They are mostly active in the media and on social networks. Many journalists and whistleblowers are still in prison. The presidential elections to be held in November 2023 were disrupted when a group of candidates questioned the transparency of the candidacy of the outgoing President, who had acquired French nationality. In the end, the election went ahead, and the incumbent was re-elected. The opposition was defeated, and national life continued as normal.

Assumption 2: Engagement with regional authorities continues to be productive.

Comments: The former Head of Region has been dismissed and replaced. However, the Region's team remains collaborative, whether at meetings and workshops or during field visits. This hypothesis remains relevant when we reflect on Y2 and Y3, as the representative of the Region and the Prefect support Durrell's interventions in the catchment area through reforestation. The regional and district teams remain collaborative and have supported

reforestation and the protection of reforested areas. The Mayor of Ambatondrazaka has agreed to the construction of the Alaotra Rano Soa office. In consultation with the town's councillors, he donated a plot of communal land in Ambohimasina. However, there have been further issues with this land (covered elsewhere in this report).

Assumption 3: Continued willingness of the community to get involved and participate in project initiatives

Comments: For reforestation, the commitment and participation of the community in reforestation activities enabled the project target to be exceeded. Around and upwards of 200 people a day were involved in reforestation for 3 months in each project year, even though this activity was carried out during the lean season. 1950 beneficiaries from the Vohitraivo, Vohimenabe, Vohimenakely, Analanomby, Morarano and Ambohidavakely Fokontany took part in the planting activities. The local authorities were always present on all reforestation days, despite their heavy workload in their community.

This assumption is also reflected in the dynamism of the ARS team. The commitment and participation of the community in the project's activities have made it possible to achieve results over the three years, despite covid 19 and the problem of the land on which the two ARS offices were to be built. The obstacles were overcome because the local authorities and technical services provided significant support. The ARS General Assembly and the monthly meeting of members of the ARS offices are dynamic proof of this. For example, the request for land to build the ARS office in Ambatondrazaka was supported by a letter signed by the Governor, the Prefecture and the DREDD.

Assumption 4: The project can engage with the Governments RFR project, and it is continued over the forthcoming years so that land tenure via reforestation can happen for rural communities and people.

Comments: The project complements the government's RFR land project. No land problems were noted during the second year of reforestation activities. The local authorities have supported the resolution of problems on the reforestation site. However, as the project progressed, individual reforestation plots were preferred, due to the lack of state-owned land.

Assumption 5: The survival of seeds in nurseries is not compromised by external events beyond our control, such as disease or extreme weather conditions

Comments: For this second year, the implementation team proceeded with a more conventional approach using nurseries. In year 2, 6 nurseries for 6 villages were set up in Morarano; Vohimena; Analanomby; Vohimenabe; Vohibola; Vohitraivo which produced 176,000 plants in total. Despite the delay due to rain, the activity was a success. During Y3, 4 new nurseries for 4 villages were installed in Marovato, Ambatosoratra, Andeona Atsimo, and Andeona Avaratra, as well as 3 other nurseries were installed in Vohibola, Vohimenabe and Ambohidavakely to ensure the reseeding which produced 250,367 plants in total.

Assumption 6: Environmental conditions do not change drastically to negatively impact growing seasons and crop productivity e.g. increased cyclone activity, lack of rains/prolonged drought.

Comments: During the second cropping season, there was a delay in the arrival of the rains, but once they arrived, they were sufficient. However, we had to delay reforestation activities. For Y3 agricultural season, the rain was sufficient and there were no cyclones or major floods.

Assumption 7: Community members default on the commitments to the VSLA during the process.

Comments: The feasibility study concluded that VSLAs can be implemented in Alaotra. In addition, a project funded by JOA, already in place from 2018 to 2022, has been a success on the part of the VSLAs. Village agents have been set up to ensure the sustainability of this activity.

Assumption 8: The theft of project savings occurs during implementation.

Comments: The feasibility study concluded that the VSLA can be implemented even if it does not rule out minor risks of theft. In any case, there were no problems with theft in the second and third years.

Assumption 9: The university partner for carbon estimation remains committed to the project, or an alternative partnership is identified.

Comments: The search for an implementation partner for carbon estimation began in year 2 and in year 3, a student from the University of Antananarivo carried out this study.

3.4 Impact

Currently, the project has covered 370 ha of priority reforestation sites. The survival rate of the seedlings is promising (88.7%)**(Annex4)**. It is now estimated that erosion will decrease within 5 years and the pressures and threats to the habitat of wildlife species such as Bandro, birds and aquatic animal and plant species in Lake Alaotra will be reduced.

Although still very early to see progress towards overall restoration goals, we are starting to hear anecdotally how the replanting is helping communities with water supply – they have reported an increase in the quantity of water coming from the Ambazaha and Analalava springs. Community members have observed decreased surface runoff, and development of grassland in the catchment area, slowing it down.

Thanks to the implementation of the VNA patrollers, we have seen that the fire point has decreased, two fire threats have been avoided. This reforestation project is important from an ecological point of view but also, it has created temporary jobs for the local population because we employed 2100 people for project activities (pre-treatment of seeds, potting, installation of nurseries, reforestation, monitoring and protection of the reforested area). Evidence of reforested areas can be found in **Annex 5.**

Lake Alaotra and its watershed are a Ramsar site. This project promotes and enables the restoration and wise use of wetlands, and its effectiveness will be evaluated using an R-METT assessment. The sustainable management of natural resources in tandem with the economic development of rural communities will be facilitated by training members of local associations in the principles of good governance (outcome 3) and empowering them to sustainably manage fisheries, agricultural practices and associated incomes with the support of functional and adequately resourced local management structures. The CBD, ABS and Ramsar focal points (including CMS) report to the Ministry of Environment of Madagascar.

Durrell sits on the National Ramsar Committee. The results of the project will necessarily involve linking Outcome 1 (development of a reforestation and restoration plan) and the conduct of an R-METT assessment at the end of the project. Mapping of marshes and reforestation, both for priority areas and to monitor marsh burning (A0.3), will be essential to feed into the R-METT and to inform the management of the RHA's protected areas. Durrell is also the Scientific Coordinator for the AEWA Convention. The UNFCCC focal point is a separate part of the Ministry of Environment, with whom we will liaise. The ITPGRFA is part of the DRAEP. At the national level, Durrell is a member of the agroecological association GSDM, which has a direct partnership with the national Ministry of Agriculture. This project will also improve relations with the Ministry of Agriculture.

4 Contribution to Darwin Initiative Programme Objectives

4.1 Project support to the Conventions, Treaties or Agreements

Through our reforestation and restoration work, this project has contributed to Madagascar's National Reforestation Program, which aims to reforest at least 40,000 hectares per year, by planting 370ha of forest and 76ha of marsh throughout the project. The project has also built the capacity of Protected Area professionals, and involved local communities in conservation work

(for example, over the project, 1500 people were involved in direct planting, 25 people from local communities were trained as nurserymen, 1561 Farmer Field School members were trained in Climate Smart Agriculture techniques) which is contributing to Madagascar's National Development Plan target 5 – to enhance natural capital and build resilience to disaster risks.

The project has contributed to the Madagascar National Biodiversity Strategy and Action Plan's strategic objectives; 2 (recognise and integrate biodiversity values and benefits from sustainable use); 5,14 (protect and restore habitats and ecosystems); 11 (manage PAs more effectively); and 12 (improve the conservation status of threatened species). Improved enforcement in Output 3 (98 members of local associations received law enforcement training in Y3), and protection of reforested areas in Output 1 (signs were installed and 3,141 patrol days took place throughout the project), has contributed to more efficient management and governance of the forestry sector (Malagasy Forestry Policy). More efficient conservation adaptive management contributes to Madagascar's National Policy against Climate Change, Axis 5 (promoting research, technological advances, and adaptive management) and towards the UNFCCC. Through research activities under Output 5, this project has also taken steps to improve understanding of the carbon storage capacity of Lac Alaotra marsh ecosystem and the surrounding forest, which will inform the next stages of Durrell's Rewilding Carbon initiative and generate knowledge which is valuable to global understanding of wetland carbon storage.

Lac Alaotra and surrounding watershed is a Ramsar site and Durrell serves on the National Ramsar Committee. This project promotes and enables the restoration and wise use of wetlands, and its effectiveness will be assessed using an R-METT assessment. The mapping of marshland and reforestation both for priority areas (completed in Y2 with key stakeholders) and to monitor marsh burning (0.3) will be key in feeding into the R-METT and to inform ARS's protected area management. The sustainable management of natural resources in tandem with economic development for rural communities has been improved throughout the project through training 336 local association members in good governance (Output 3).

4.2 Project support for multidimensional poverty reduction

The local population is the direct beneficiary of this project through the remuneration for carrying out activities during the installation of nurseries (local labour and permanent nurserymen), planting (about 200 people per day during the reforestation campaign) and monitoring and protection of the reforestation (100 patrollers). In the future, the results of the project may improve the living conditions of this people by restoring ecosystem services and the income generated by fruit trees. In addition, the restoration of the Bandro settlement and the landscape around the lake attracts visitors who can be sources of income for the local population.

During the workshops of the elaboration of the convention, ideas were revealed for the regulated and rational exploitation of exotic woods when they will be exploitable, such as cutting branches for firewood to avoid the purchase of energy wood and charcoal for cooking.

The project provided short-term employment to 151 community members through reforestation initiatives. Strengthening the capacity of ARS and COBAs to manage the watershed more effectively and enforce regulations that protect biodiversity. In addition, the establishment of robust management practices, regular meetings with communities and training of community-based organizations, as well as the physical infrastructure for governance, also increase the social and political capital of the association's members and their ability to be represented in the long-term governance of the watershed. 128 people received patrol allowances totalling 9450 man-days at a rate of 10,000 Ariary per day per person, i.e. approximately 94,500,000 Ariary for these three years.

4.3 Gender Equality and Social Inclusion (GESI)

Please quantify the proportion of women on the Project Board[1].	35%
Please quantify the proportion of project partners that are led by women, or which have a senior leadership team consisting of at least 50% women[2].	25%

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	
Transformative	The project has all the characteristics of an 'empowering' approach whilst also addressing unequal power relationships and seeking institutional and societal change	

Key figures on gender participation in this project:

Reforestation:

- Potting & sowing: 100% women
- Planting, transporting seedlings, firebreaks and hoeing: 49.6% women; 54.4% men

Livelihoods activities:

- 790 women beneficiaries of the project out of 943 members of the VSLA and basketry
- 08 out of 60 are women members of the ARS board
- 37 out of 312 are women's associations within the ARS, i.e. 648 women out of 7404 members.
- 02 out of 33 are women presidents of the VOIs
- 03 out of 90 are CFL women
- 83.77% (VSLA and basketry)
- 14% (members of the ARS bureau)
- 6% are women presidents of the VOIs

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

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

- 3% are community patrollers are women

4.4 Transfer of knowledge

We intend to publish the results of the blue carbon assessment undertaken in Y3 in a Scientific journal (awaiting the results from the student at UCL).

4.5 Capacity building

This project primarily focused on the training of community members both within COBAs and ARS, and those within communities on skills such as nursery management, patrolling (particularly use of SMART software etc). Details can be found in Section 3.

5 Monitoring and evaluation

Carrying out censuses and measuring seedlings in PPS (Permanent Monitoring Plot) monitoring plots reveals a survival rate and an average growth rate of reforestation. It is a plot of 60m X 60m for each surface area of 1 Ha, of which for 370 Ha of reforested area, 370 samples have been installed which are subject to census and measurement: the parameters to be taken are the number of surviving individuals for each species of plant used (to reveal the survival rate) and the average growth of each species (to reveal the average growth rate).

This field evaluation was done with the DREDD team using survey sheets and then processed by Access and Excel revealing the average survival rate and the average growth rate. Based on the analysis, the average survival rate is 88.7% and the average growth rate for Aboriginal species is 33.7 cm and 59.73 for exotic species.

At the beginning of the project's implementation, before intervening in the villages, Durrell carried out a baseline survey (carried out in Jan-Feb 2022). From this survey, a report called the "Baseline Report" was produced for the Darwin Alaotra Project. This report provided information and references to better understand the target villages of intervention and to assess the progress made in the implementation of certain activities. At the end of the project, a household survey (carried out in February 2024) will make it possible to compare the impact and the changes that occurred during the implementation of the project. This final evaluation report will therefore provide comparative information between the different impact indicators in the 9 intervention villages and assess the progress in the implementation of certain activities and also have the current status of the 3 villages where the baseline survey has not been implemented.

The final report will be available in June 2024.De addition, a monitoring and evaluation plan has been developed based on the project's logical framework. Then, tracking tools were developed with the associated forms. Training was provided to 05 field agents (the reforestation manager, the secretary general of Alaotra Rano Soa, the socio-organizer and the two agricultural technicians) for three days from April 7 to 9, 2022 in Ambatondrazaka, on the Project's monitoring and evaluation system and on how to fill in the forms and use them on a tablet. The objective of the training was to enable the staff to use these forms and collect monthly activity data and retrieve from the technicians the tracking forms already entered on the tablet, process the data and know the progress of the activities in relation to the associated indicators. Specifically, a new reforestation monitoring form has been developed, as this is a new activity implemented in Alaotra as part of this project. These sheets are also used to fill in the quarterly progress table of the Darwin Alaotra Project. In addition, field visits are carried out by the coordination team to see these achievements first-hand and compare them with the reported data.

Improving collaboration with partners for information sharing between partners/stakeholders is an ongoing process and is at the heart of the project so that it can improve practices more broadly among other stakeholders in Alaotra and Madagascar. We are in regular contact with the Regional Directorate of Sustainable Development (DREDD), the DRPAB (Regional Directorate of Fisheries and Blue Economy, Regional Directorate of Agriculture and Livestock (DRAE) and

the various NGOs (GSDM, Graine de vie, etc.) to exchange information on the progress of the project and the problems encountered, and the monitoring/reporting mechanisms put in place for this purpose seem to be working well, as evidenced by the attached supporting documents to this report, the minutes of meetings of several of the partners' meetings (Annex, etc.) and our cooperation agreement with the DRAE (Annex, etc.).

6 Lessons learnt

Reforestation:

- The no-till technique is not suitable in the Alaotra region, it is rather suitable in regions with high rainfall during the year such as the eastern part of Madagascar
- The use of cuttings directly in the reforestation site is advantageous and effective due to its robustness
- Refilling is a highly recommended technique because our success rates reach up to 88% after relining because we replaced dead individuals and unadapted species, while the survival rate was 54% in Y2. The difference is 34%.
- For reforestation projects in the future, it is recommended to front load reforestation as much as possible in the first year to be able to do maintenance and relining for the remaining years of the project.
- Make adaptive choice annually based on better adapted and faster growing species, based on survival and growth rate data for each species.
- Faced with losses caused by droughts, the practice of replanting one year after planting increased the survival rate from 60% to 88%.
- Use of cuttings when planting instead of direct sowing, reducing losses caused by rats. Direct seeding techniques are more suited to rainy climates and good soil conditions, which is not the case in Alaotra.
- Recruitment of interns to lead reforestation with communities and maintain reforested plants during the months of January and July, particularly for large-scale reforestation.

MEL

The change of 3 intervention villages at the level of the Darwin Alaotra Project led to difficulty in processing and analyzing the impact of the project between the beginning and the end of the project. Indeed, we have replaced the 3 villages of the baseline with the 3 new intervention villages during the endline, which means that the impact for the 12 total villages is not comparable.

Monthly coordination meetings with fishing, marsh, watershed, AUE (Association des Usagers de l'Eau) federations; involvement of the presidents of the federations for reporting at the level of each VOI, which makes it possible to obtain more information on the activities despite the management challenges.

Financial Inclusion

- The awareness raising and the existence of the 24 community agents have contributed to the increase in the number of VSLA groups in the 12 villages. Indeed, if the objective is to set up 48 VSLA groups, 63 groups are currently functional. The fact that it is functional until today testifies to the appreciation of the practitioners of this system of financial empowerment.
- Participation in VSLA groups has prevented members from doing "vary maitso", that is to say they are no longer obliged to sell their rice production before the harvest.
- The success of a group leads to the spontaneous creation of new groups as in Marovato. In addition, new members are added to the groups during the next cycles.

- Members of VSLA groups who have already been in an association (example: association of women winnowers, etc.) are more united and have fewer internal problems
- Being in a VSLA group improves solidarity, discipline and mutual understanding between members
- The money obtained by members of women's winnowing groups helps them buy shares in their VSLA groups during the lean period, reinforcing the complementarity between the two activities

Agriculture and Livelihoods

- The IRAT 200 maize seed variety does not give a satisfactory yield for plots located at high altitudes.
- The donation of basketry materials (pot, raffia, bowl, bucket, solar lamp, dye, etc.) by the project boosted the activities of group members.
- The involvement of members in the activities of the CEP (Farmer Field Schools) rather than entrusting all responsibilities to the Lead Farmer (PL) is necessary. According to the Agricultural Technician (TA), the tasks since the installation of the crops on the CEPs are too numerous to be carried out by the PL alone.
- The promotion of individual CEPs (Champ Ecole Paysan or Farmer Field Schools) compared to collective CEPs is important, because the motivation of the beneficiaries is not the same and this delays those who want to progress.
- Financially, purchasing the inputs needed for production well before the growing season is important to avoid sowing delays.
- Conservation crops for projects lasting less than three years do not show impact within the project lifetime - because the effects of these techniques are only observable in the long term.
- Allocate more time to practical training compared to theoretical training to have more positive effects on the groups.
- Do not provide seeds to grow to groups whose beneficiaries have not composted. This creates a moral debt between members and promotes mutual aid.
- Finish planting before October to minimize losses from flooding or drought.
- Identify undisturbed areas before planting to better understand the results of activities and avoid demotivating communities, as disturbed areas are still used as rice fields during dry periods.

7 Actions taken in response to Annual Report reviews

Comments on Annual Reports have been answered in the following half year reports.

8 Sustainability and Legacy

This project represents part of a larger programme of complementary conservation and rural development activities in Alaotra, to which Durrell is committed. Durrell's work in Alaotra began in 1990, leading to the designation of Lac Alaotra as a Protected Area in 2015 with Durrell as designated co-manager alongside ARS. Whilst Durrell anticipates working in Alaotra for a prolonged period, all our interventions are designed to find sustainable, locally applicable natural resource management solutions, the responsibility for which will ultimately fall to local management structures, particularly training to COBAs under this project to fulfil the mandate of effective marsh management.

This project also works within National plans regarding ecological restoration. Durrell are a key partner in the national reforestation plan ('RFR'), a mandate of the President and the reforestation plan for the watershed sits within this. This plan, developed with Darwin support and mandated by the watershed committee and local government authorities will be the guide by which all

reforestation in the watershed will be undertaken by both Durrell and other NGOs. A number of high profile events have raised the profile of the project activities both with the public and authorities: generation of the reforestation plan involved 39 stakeholders (VOIs, local authorities and NGOs) and the reforestation activities themselves (which were launched with support of the DRAE), provided employment for over 1500 people over the planting seasons.

In 2023, patrollers noticed the presence of the Madagascar pochard in Alaotra for the first time in 30 years. A small group of Madagascar pochard, thought to be the world's rarest duck, were spotted and have continued to be monitored by patrollers and community members since. This is an incredible landmark event for the species, which was endemic to Lake Alaotra.

Capacity building is also important during the training resulting from the project, it is a practical learning of the beneficiary population, and a population independent of the project in the future.

During this project, Durrell secured a new grant across three sites in Madagascar (including Alaotra) from Jersey Overseas Aid, 'VALIHA', for a period of 5 years (value £2m) which has a component focusing on good governance (continuing support to fokotanies, additional training in advocacy for community members), continuing the long term strategy for a model of robust community management, the Lead Farmer model (installing trained members of the community in climate smart agriculture, and providers of seeds, organic inputs etc where needed. The Lead Farmer model is designed to embed climate smart agricultural skills within communities and have 'ambassadors' within our focal areas for climate smart approaches in the long term. This project will also continue to support removal of aquatic invasive species for use in biocompost, community reforestation and nurseries for mixed use species, generating opportunities for revenue generation from conservation. This project will also build long term structures for accessing markets and produce processing which will benefit this project's beneficiaries. Within this grant, there are plans to establish co-operatives within Alaotra.

Durrell has completed the implementation the Darwin Capacity Building grant: *Realising the Durban Vision: Strengthening Madagascar's Protected Area management capacity,* to build the Protected Area management capacity of professionals across Madagascar (60 to receive direct training over project period) along with long term mentoring, contributing to the overall development of the sector. This has been followed by Phase 2 of this project (which commenced April 2024).

9 Darwin Initiative identity

During all our activities, we always made our partner, DARWIN Initiative and the British government speak in the form of speeches and supported by signage in the form of a logo. This being the case during the launch of the DARWIN project, the reforestation of the wetland celebration. During the installation of the two large visibility panels of the reforestation area, In the attendance sheets of all meetings, During the meeting of the elaboration of the convention on reforestation and its protection. This funding is recognized by the conservation of endangered species but making other programs corresponding to the conservation of the species in question, such as the conservation of its habitat through reforestation and the assistance to the riparian population through income-generating activities to reduce anthropogenic pressures on the species and its habitat. To inform us about our existence, an official launch of the Darwin project was made at the regional level in the form of a workshop by the presence of all the state and local authorities. As well as through the courtesy visit at the local level and during the official launch at the level of the local population directly benefiting from the project.

10 Risk Management

The programme risk assessment has been reviewed and no significant changes were made. Some additional protocols were introduced for staff travelling within major cities during the

Presidential election at the end of 2023. The Madagascar Senior Management Team and Global Safety & Risk Manager meet monthly to discuss arising risks and mitigations.

For food security, the lack of rain during the 2022 – 2023 growing season for the eastern part of Alaotra causes a very significant drop in production, which encourages our beneficiaries to practice agroecological techniques well in the face of climate change.
FFS groups that do not have well-defined objectives tend to disassociate from the second year of existence, so we have included this in the final evaluations of the crop campaigns to encourage them to think about what they should do, continuation of the support of the technicians
We do not take into account the scale of the problem with the propagation of “Arato lay”, an unregulated tool which causes a loss of fishing quality in the lake. Thus a team of fishermen is formed immediately by the local community after the distribution of the fishermen's cards. They are aware of the risks caused by degradation and are making efforts to eliminate this unregulated tool with the help of DRPEB. This work must continue to achieve good results.
The construction of ARS offices, the allocation of land is one of the problems encountered. At first, we thought that the donation of land was obvious, compared to the two offices built previously, but the construction of the remaining two offices is a bit complicated due to its location in the city, so the ARS team had to find solution from congestion members during the last AGM to resolve this problem on the ground.

No significant adaptations have been made on the basis of risk.

11 Safeguarding

Has your Safeguarding Policy been updated in the past 12 months?	No
Have any concerns been investigated in the past 12 months	No
Does your project have a Safeguarding focal point?	Yes [redacted] *Lantotiana – Head of People and Values* [redacted]
Has the focal point attended any formal training in the last 12 months?	Yes - October 18th, 2023, Protection of Children - June 21st, 2023, Community Feedback Mechanism (learning exchange session)
What proportion (and number) of project staff have received formal training on Safeguarding?	Past: 100% [104] Planned: 100% [108, with 4 new starters]
Has there been any lessons learnt or challenges on Safeguarding in the past 12 months? Please ensure no sensitive data is included within responses. **How to appreciate a fact if it’s a safeguarding or not concern. Most of staff have difficulty to appreciate.** **The next refresh session for all staff will be focused on this learning (cases studies)**	
Please describe any community sensitisation that has taken place over the lifetime of the project; include topics covered and number of participants. Topics:	

1. Why is safeguarding important and necessary
2. Safeguarding meaning
3. How can share feedback or to report complaint

Number of participants :

Aboalimena region:

Local Community Leader per region and authority leader, 3 women and 23 men
VSLA group 12 women
Local community VOI and KMMFA around 12 men

Ankaivo region:

VSLA group and VOI: 23 women
KMMFA and VOI: 48 men
In total: 121

Sofia region (Bealanana – outside project area):

Public session of around 400 people in 4 villages Amberovery, Marofamara, Andraredona, Analakely

Have there been any concerns around Health, Safety and Security of your staff over the lifetime of the project? If yes, please outline how this was resolved.

Durrell staff were attacked by bandits during road trips to the Durrell field site in Ambondrobe, money and materials stolen, without injury.

Durrell has implemented a prevention and security measure such as: buddy system which allows the team to know at any time what is happening during the day and the two pairs do daily reporting, in the event of silence, action should be taken be taken, staff no longer travel alone, at least two, and with escort, convoy from the gendarmes for the passage to the red zone.

The site manager regularly inquires with the authorities in the event of rumors of bandit attacks, or possible intervention by the gendarmes in a site so that Durrell cancels and postpone the trip and activity as a precaution.

Activities are suspended in all areas with a high level of insecurity during the electoral campaign

12 Finance and administration

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12.1 Project expenditure

[redacted]

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				[redacted] has been accrued for - final audit underway
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Others (see below)				
TOTAL	£15,032	£14,370.48		

Staff employed (Name and position)	Cost (£)
Fidy Ralainasolo	[redacted]
Rado Rasamison	
Hortensia Raheliarivelo	
Mickael Soloharinivo	
Sedra Rakotoarinelina	
TOTAL	**£3,154.77**

Capital items – description	Capital items – cost (£)
TOTAL	0

Other items – description	Other items – cost (£)
Community patrol costs (marsh monitoring)	£2,867.29
TOTAL	£2,867.29

12.2 Additional funds or in-kind contributions secured

Matched funding leveraged by the partners to deliver the project	Total (£)
Jersey Overseas Aid "VALIHA" grant, support to Alaotra staff, UK staff time	£12,353
TOTAL	**12,353**

Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project	Total (£)
Darwin Innovation grant - support to AGL drone surveys, staff time of drone team. Grant 04/23-06/24	19,054
TOTAL	**19,054**

12.3 Value for Money

- Thanks to satellite mapping, drone software and the knowledge of stakeholder communities and our team, the project adopted a comprehensive approach to prioritise the restoration of marsh and forest areas of high ecological significance, ensuring that investments were directed towards critical habitats and species such as the Alaotran Gentle Lemur, but also towards restoring the watershed upstream of both key agricultural land and the lake itself. This strategic focus allowed for targeted interventions with funds available.

- Over the project period, 3,141 patrols took place over which an average of 92 patrols per month were completed, exceeding the intended target . These patrols observed 4,293 illegal infractions which were passed on to law enforcement and serve as essential information gathering tools around the level and types of pressure on the lake – the level of patrols could never be met by government agencies due to capacity constraints. As well as essential illegal activity monitoring, these patrols are also essential eyes in the field for ecological monitoring – the patrols logged **17, 175 terrestrial wildlife** observations¸ gathering essential species data year-round, providing valuable species data across the lake which would require resources far beyond the scope of the team and project if there were to be specific wildlife surveys. The patrols also provided very important data on the Alaotra gentle lemur (113), and the Madagascar pochard (25 observations) which returned to the lake from its reintroduction site in Lake Sofia during the course of this project.

- Moreover, the project employed innovative and cost-effective conservation methods for M&E. By utilizing technologies such as SMART patrol software, drones, remote sensing and geospatial analysis, the project team efficiently monitored status of restored areas, threats and changes to the landscape, we were able to adaptively manage and respond to changes.
- This project fostered collaborations and partnerships with local communities (Alaotra Rano Soa, COBAS, local government (DREDD), and other NGOs, and research institutions. These partnerships not only enabled knowledge sharing and capacity building but the support to ARS offices under this project have contributed to its long term impact and sustainability of the project's investment. Thanks to this project, two ARS offices across the watershed will be built/refurbished , as an important hub for governance of the Alaotra watershed.

13 Other comments on progress not covered elsewhere

There has been problem regarding the construction of ARS office. It was planned to build 2 ARS offices during Y2. The construction of one office (in Ambatondrazaka), encountered a problem just before the construction: the person who wanted to donate the land withdrew, even though the contract with the builder had already been signed before end of March 2023. ARS having a permanent space is critical for the long term sustainability of the management of the watershed (ARS are currently housed within Durrell's office).

Finally, the commune of Ambatondrazaka made a proposal for a plot of land for the office construction, but this would require the deliberation and approval of the commune councillors. After a long wait, the commune councillors approved the donation of land in Ambohimasina, this in March 2024. This letter of donation was also validated by the Prefet of Ambatondrazaka. However, at the time of writing, the DREDD has made available a small plot of land as the DREDD Coordinator has confirmed that it is part of his responsibility to find an office for the ARS. To facilitate these coordination activities, he repeatedly proposed the basement of the DREDD Garage, fitted out for the ARS office, but we hesitated to accept it, in the hope of finding other land. We have a legal letter of agreement/donation from the DAF (Administrative and Financial Director) of MEDD. We notified the BCF team on this in July 2024 and are awaiting advice on how we should proceed with regards to funds already included in a financial report of Y3 (as funds will only be deployed after project end).

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 (please leave this line in to indicate your agreement to use any material you provide here).

File Type (Image / Video / Graphic)	File Name or File Location	Caption, country and credit	Online accounts to be tagged (leave blank if none)	Consent of subjects received (delete as necessary)
				Yes / No
				Yes / No
				Yes / No
				Yes / No
				Yes / No

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

Project summary	Progress and achievements
Impact Community-led management and restoration of the Alaotra Ramsar watershed are providing sustainable long-term benefits and services to people and wildlife and helping mitigate impacts of climate change.	
Outcome Enhanced local stewardship is reducing negative impacts on Lake Alaotra's natural environment and improving well-being of c.15,000 people across 12 villages.	
Outcome indicator 0.1 250Ha reforested by end of project.	Total 370 ha reforested to date (105 ha reforested in Y1; 164 ha reforested in Y2; 101 ha reforested in Y3) **Status: Target exceeded.**
Outcome indicator 0.2 Priority gentle lemur habitat increased to 6,000 Ha (from 4,100Ha 2019 baseline).	Total 63.35 ha of marshes replanted (19.35 ha in Y1; 44 ha in Y2) and 15 km of channels cleared (5.2 km Y1; 5.48 km Y2) An additional 18 ha cleared of aquatic invasive species in satellite lakes.
Outcome indicator 0.3 No decrease in gentle lemur population during project (2019 baseline: 2,000-2,500 individuals).	**0.3:** New, more efficient investigative methodology piloted in March 2023 We developed a more efficient methodology piloted in March 2023 using drones equipped with thermal sensors that allows covering larger area compared to traditional techniques which have relied on the use of pirogues cruising water channels to census animals. Surveys were conducted along 30 (trial) transects established across the known lemur habitat; the flight videos were then entered into AI for animal detection. The methodology has proven to be promising with the total habitat covered and the number of detected animals. Nonetheless, we met challenges. First, the algorithm for detecting the animal is still under development and needs some tweaking to eliminate false detection and double counting. Second, the survey was constrained by the weather, the drone could not operate during rainy days (or in the presence of bird flocks) and the sensor was sensitive to light reflection during sunny days. Additionally, the VTOL drone that was meant to provide high resolution maps of the marsh and estimations of remnant habitat for the lemur crashed (later diagnosed with manufacturer defect), refraining from having an estimate of the population density. Relative densities across transects can vary from 0 ind/km2 to as many as 263ind/km2

Project summary	Progress and achievements
	(Andreba Gare) depending on the location (yet these values are not yet representative due to false detection) Status: updated population density for the whole marsh not available yet , drone footage available as Annex 10.
Outcome indicator 0.4 Marsh burning does not exceed 500Ha/year in each year of the project (2014-2019 average 500Ha/year).	**0.4:** A new methodology (based on drone flights) will allow a more accurate calculation of the burning of marshes. Satellite light points (from fires): 201 light points (Y3) compared to 238 (Y1). The VTOL drone crashed (Y1) due to a manufacturing defect and the survey could not have been conducted. We relied on satellite data to assess the evolution of fire points across years.
Outcome indicator 0.5 Subjective well-being indicators improved by end of project. (Global Person Generated Index; % households who are satisfied with life; % who feel their actions are worthwhile; % who felt anxious yesterday; % who felt happy yesterday).	**0.5:** On average, the score of the Global Person Generated Index decreased from 78.18 to 55 between the two survey periods in Y1 and Y3. Households assess their standard of living with a score above average (55), 100 being the highest score. But compared to the baseline (71.18), the score has dropped significantly. The data shows the following: 28% of households reported they were satisfied with their lives compared to 25% in Y1; 55% of those who think their actions are useful compared with 56% in Y1; 54% of people felt anxious yesterday compared with 56% in Y1; 54% of people felt happy yesterday compared to 46% in Y1.
Outcome indicator 0.6 Measures of food insecurity in intervention villages improved by end of project (Assessed via Household Food Insecurity Access; Months of Adequate Household Food Provisioning and the Food Consumption Score Nutritional Quality Analysis scales).	**0.6:** Measures of food insecurity in intervention villages have not improved. In Y1 households reported that they had 10 months of adequate household food provisioning. By Y3 this decreased to 9.72 out of 12 months. The food consumption score still remains within the acceptable level reported at 42.23 in Y3 compared to 55.78 in Y1 even if the score has significantly decreased. (Score classification: score of 0 -21 considered low, 21.5 -35 borderline and 36+ acceptable).
Outcome indicator 0.7 The proportion of households who believe they have the power to influence decision making in their communities has increased by end of project cf. start	**0.7:** Data from both household surveys showed a significant decrease in the proportion of households that believe they have the power to influence decision-making in their communities as 52% in Y3 compared to a baseline of 86% in Y1.
Outcome indicator 0.8 Improved economic independence and resilience; % of households using VSLAs to manage their savings and value of savings has increased by end of project cf. start.	**0.8:** Results from the household survey showed an increase of 54% of households using VSLAs to manage their savings by end Y3 demonstrating improved economic independence.

Project summary	Progress and achievements
Output 1 **12 community nurseries, together producing c.100,000 saplings annually to enable 120Ha reforestation annually within priority zones by project end.**	
Output indicator 1.1 Restoration plan for 722,500Ha Alaotra Ramsar watershed including priority sites and plant species composition developed by end of FY1	A restoration plan was drawn up in Y2, a framework document for our reforestation projects in the Lac Alaotra watershed including a map of priority areas for reforestation was established with stakeholders, which resulted in an area of 83 872 Ha of priority area for reforestation. The native species chosen are *Cannarium madagascariensis, Albizia lebbeck, Entada chrysostachys, Harungana madagascariensis, Protorhus ditimena, Trema orientalis, Trachylobium verrucosum* and *Intsia bijuga*. The species recommended by the community are *Acacia Mangium, Melia azedarach, Moringa oleifera and Eucalyptus citriodora*, as well as fruit tree species such as *Eugenia sp, Carica papaya, Artocarpus heterophyllus, Sakoa* and *Mespillus germanica*. A methodology on reforestation, the choice of priority areas, the choice of species used, and protection strategies are included. Five dossiers on reforestation collaboration and protection have been signed by local and state authorities, DREDD and Durrell. Annex 1. **Status: Achieved**
Output indicator 1.2 Number of nurseries capable of producing c.10,000 saplings per year established through project: 10 by end FY2; 12 by end FY3	In Y2, six nurseries were set up and in Y3, seven nurseries have been set up, for a total of 13 nurseries. These nurseries will allow the production of a total of 240,000 plants annually. Annex 0, Annex 5 **Status: Achieved**
Output indicator 1.3 Number of nursery technicians trained across all nurseries: 24	In Y2, 14 nurserymen from six villages were trained in the preparation, installation, maintenance and maintenance of the nursery, and in Y3, 11 were trained. The training was provided by technicians from Durrell and its partners, namely the DREDD and the NGO Graine de Vie. In the end, 25 nursery technicians were trained. Annex 0, Annex 5 **Status: Achieved**
Output indicator 1.4 Area reforested each year 50Ha in FY1; 100 Ha in FY2; 120Ha in FY3	Annex 0, Annex 5 105 ha reforested in Y1; 164 ha reforested in Y2; 101 ha reforested in Y3 Status: Achieved (370 hectares by end project)
	An area of 101 ha was reforested in year 1 at Ambohidavakelohitraivoy, 177 ha was reforested in year 2 at Vohibola, Vohimenabe, Vohimenakely, Vohitraivo and Morarano, and 92 ha was reforested in year 3 at Ambatosoratra, Andeona Avaratra, Andeona Atsimo and Maraovato. In total, 370 hectares have been reforested, 120 hectares more than planned.

Project summary	Progress and achievements
	- 490 signposts have been erected to warn of human pressures around the planted area. - 10 agreements have been made between Durrell, DREDD and the community for the protection and enforcement of laws in the reforested area. - 12 VNAs were set up with 100 members who carried out 56 patrols in the reforested area. - 53.121 km of firebreaks have been created around the reforested areas.
Output 2 **5km of channels in priority areas are cleared annually of invasive water hyacinth and 75Ha of reed-phragmites are planted by project end, to restore habitat, improve water quality, and increase access to the lake for fishing and ecotourism.**	
Output indicator 2.1 Priority areas for hyacinth clearance and phragmites replanting identified by end FY1	A community consultation workshop was held to define the priority areas for the restoration of marshes in the Lac Alaotra PA and reforestation in the Ramsar site watershed, with 39 participants made up of local authorities (Mayor, President of the Fokontany), DREDD, President of the VOI and the Notable or Tangalamena. A map showing these priority areas was drawn up. Annex 1.1
Output indicator 2.2 Area of phragmites planted: 75Ha by project end	In total, 76.355 ha were planted with phragmites and *Cyperus madagascarensis*. The entire activity was carried out in the presence of the DREDD team, the local authority and the village communities. Patrols from the Protected Area monitor the restored area. The patrollers have worked once a week and have occasionally passed through the area. Y1: 11.66 ha of marshes were restored with participants ranging from [37 to 63], including men from [24 to 45] and women from [1 to 18]. Y2: 43.695 ha of Phragmites and *Cyperus madagascarensis* were planted with participants between [61; 443] of which men between [26; 201] and women between [25; 242]. Y3: 21 ha of Phragmites and *Cyperus madagascarensis* were planted with participants between [26; 224] of which men between [26; 92] and women between [0; 132].
Output indicator 2.3 Length of channels cleared annually of invasive water hyacinth: 5km/year	A total of 16.5km of canals have been cleaned up to the end of the project, including: Y1: 5.2 km of public canals, patrol canal and tourist circuit cleaned by participants [6; 23]. Y2: 5.5km of public canals, patrol canal and tourist circuit are cleaned by participants between [7; 24].

Project summary	Progress and achievements
	Y3In total, 16.442km of canals were cleaned by Bandro Park patrollers, fishermen and local guide associations by the end of the project, including: : 5,761km of public canals, patrol canal and tourist circuit are cleaned by participants between [4 ; 28]. 2 canal maintenance committees have been adopted at Anororo and Andreba gare. For Anororo, the rural commune has recruited the canal to provide surveillance and the fishermen's association for Andreba Gare. In total, 29 ha of the lake in the Protected Area were cleaned in collaboration with fishermen. All are located to the east of Andilana sud in the Lac Alaotra PA. Fishermen can now fish in these lakes. Y2: 18 ha of water hyacinths were eliminated in Lake Bezafo and Amparihilava Y3: 11 ha of the lake cleared of invasive plants in collaboration with 81 participants between; all are fishermen.
Output 3 **Local associations (COBAs) within Alaotra Rano Soa (ARS) are effectively managing 40% of the marsh area with c.300 people representing all 33 associations receiving training by end of project.**	
Output indicator 3.1 Capacity building needs of ARS and COBAs identified by end Y1.	Completed Y1. Used to prioritize Y2 training.
Output indicator 3.2 Number of people receiving capacity development training: c.330 across 33 COBAs by project end	A total of 301 board members of the 33 VOIs and Alaotra Rano Soa were trained in the 9 key competencies from May 2022 to March 2023. Another 87 VOI members received enforcement training that took place in January and February 2023. It was delivered by representatives of the MEDD Ministry and the DREDD Alaotra Mangoro.105 patrollers, including 4 presidents of marshland federations, 19 VOI presidents and 82 CFLs who have received training in the use of SMART MOBILE. For each training, pre- and post-training evaluations were conducted. Evaluation attached as Annex 2.2
	The ARS's list of infrastructure and equipment needs is available from Y1 of the project and many of the ARS's needs in terms of equipment and infrastructure are provided for by this project over the three years.

Project summary	Progress and achievements
Output indicator 3.3 Infrastructural and equipment needs of ARS and COBAs defined by end FY1.	An assessment of four ARS offices was carried out in Y1 and a summary table of the training and equipment needs of the ARS and COBA was shared. Several of the needs identified have already been funded through this project
Output indicator 3.4 Number of new ARS offices built and equipped: 4 by end FY2	Four offices have been built and equipped with computer equipment and office furniture. At the end of the first year of the project, two ARS offices are available and functional to host the meetings of the ARS office members of the ARS offices.. The door and window locking reinforcement oflocks on these two offices are carried outwere reinforced in Y2. At the end of Y3, the other two are also available and ready tofor use. The objectives for these activities are methave been achieved.
Output indicator 3.5 A standardised system for monitoring fishing compliance, developed by ARS in association with Fishing Associations in place by end Q2FY2, and being implemented through FY2 - FY4.	At the beginning of the project, the document on the standardisation of fishing control was updated with the federations, the DRPEB and the local authorities. In the second year, implementation of this document began. At the start of the project, there were 89 existing associations with 2,801 members; in the third year, the number of legal associations increased to 100 with 3,197 members, all of whom have fishing cards. 200 fishermen are equipped with fishing tools. During these three years, fishing surveillance has been a success, because at the start of the project, 1.9 tonnes of illegal poisons were seized. In the third year, only 300kg of poisons were seized, thanks to the awareness-raising efforts of the federations during the fishing closures.
Output indicator 3.6 Area of marsh being directly and effectively managed by ARS and COBAs by project end: 40% (2020 baseline: 25%-30%)	In general, 4 patrols per month are carried out by the patrollers (CFLs and Pdt of VOI) in 25 villages around the AP Lake Alaotra. 23 groups of patrollers among them use smartphones during the patrol. Y1: 541 patrols were conducted by 84 patrollers. In a distance of 24635.2519km travelled by the patrollers, they detected 949 land pressures and 1692 direct observations of wildlife. The patrollers forwarded 28 special reports and/or complaints to DREDD, Durrell and the Authorities. Y2: 1 156 patrols were conducted by 109 patrollers. In a distance of 55 453,6601km travelled by the patrollers, they detected 1758 ground pressures and 6985 direct observations of wildlife. The patrollers forwarded 47 special reports and/or complaints to DREDD, Durrell and the Authorities. Y3: 1 194 patrols were conducted by 106 patrollers. In a distance of 45 628.5253km made by the patrollers, they detected 1 765 land pressures and 8 498 direct observations of fauna (24 observations of Aythya Innotata). The patrollers forwarded 54 special reports and/or complaints to DREDD, Durrell and the Authorities. A total of 129 special reports and/or written complaints by patrol officers and village communities were collected and forwarded to DREDD, Durrell and the Authorities for years Y1, Y2 and Y3. The proper management of fisheries in Lake Alaotra depends on community monitoring carried out by the fisheries federations under the coordination of DRPEB.

Project summary	Progress and achievements
	The results of RMETT and the ARS GA evolved during these three years. 60.36% in 2022 and 79.09% in 2023 The COBA, represented by the marsh federations, work with the ARS to manage the marshes. During the monthly coordination meeting. Currently, the 33 COBAs including 3051 members manage the 23 453ha area of the PA. They have 93 CFLs who lead patrols once a week. They also participate in the annual work planning of the ARS and the annual assessment of the Ramsar Site. Working closely with the DREDD, they make grievances and report on violations in the Lake Alaotra PA
Output indicator 3.7 Change in community compliance with the PA regulations framework compared to 2020 baseline.	
Output 4 **Approximately 2500 people across 12 villages (7 new) are supported to derive greater benefits from their agricultural and natural products whilst utilising natural resources more sustainably.**	
Output indicator 4.1 Agricultural productivity, level of chemical inputs and income generation for participating farmers assessed by end FY1.	This was completed in FY1 and a baseline was provided.
Output indicator 4.2 Number of farmers trained via Farmer Field Schools: 720 in FY1; 480 in FY2; 480 in FY3 (>30% female participation)	1,188 beneficiaries including 487 women and 701 men are trained through farmer field schools. During the 3 years of the project, 3 exchange visits were carried out: in the first year with the 07 farmer leaders and in the second year with 12 farmer leaders and 67 beneficiaries to visit the GSDM demonstration site in Ambotresana and the agricultural college of Alaotra. 33 earthworm breeding basins have been installed in the 12 beneficiary villages and 28 kg of earthworms have been distributed, 12 permanent field schools have also been installed 121 groups were formed during the project formed by 1 283 beneficiaries, including 540 women and 743 men. 4 producers' organizations have benefited from the materials and seeds from the project for their production (Annex 0)
Output indicator 4.3 Area of land on which climate resilient crops and highly nutritional crop varieties are being grown: 360Ha by project end.	In Y1: 127.97Ha, In Y2: 173.3Ha and in Y3: 97.7Ha which give the sum of 398.97 Ha. The total farm inputs and equipment provided are summarized in the narrative report. Crop season assessments were carried out for the first 2 years of the project for the 12 villages, with the help of representatives of DRAE Alaotra. The evaluation was carried out using the individual cards to preserve the influence of the ideas of the other members. The form to be completed by each member

Project summary	Progress and achievements
	contains self-assessments in relation to the training they have received and in relation to the needs for training, evaluation of technicians, evaluation of the quality of inputs and materials distributed, and performance evaluation.
Output indicator 4.4 Number of basket weavers trained to make basketry products and to use reeds sustainably: 160	08 villages identified 17 groups created with 252 women basket weavers as members 17 groups trained in business plan 252 women trained in basic basket-making and colouring techniques 17 groups provided with basketry equipment: pots, buckets, colouring powder, rofia, small solar lamp, ...
Output indicator 4.5 Number of VSLA groups established and participation numbers: 48 VSLA's across 12 villages with c.1,000 members (>60% Female participation)	Awareness of the VSLA system was raised in Y1 and Y2 in the project's twelve villages. In Y1: 8 groups created composed of 143 members, 73 of whom are women. In Y2: 25 groups composed of 340 members, 298 of whom are women. In Y3: 30 groups composed of 460 members, 419 of whom are women. A total of 63 groups were created during the implementation of the project with 943 members, 790 of whom are women, or 83.77% of the members, spread over the 12 villages. The 943 members of the 63 groups received training in the 08 VSLA modules. The 63 groups are provided with VSLA equipment: a large 200-page notebook (for accounting and minutes), a metal box with three locks, a ruler, a blue pen, a red pen, a calculator, two plastic bowls and two bougettes. 42 Financial Education groups with 588 members, 508 of whom are women. 588 members of VSLA groups provided with equipment during financial education training: notebooks and pens. 12 Village agents identified in the 12 Project villages 24 Village Agents trained in VSLA and Financial Education 12 functional village agents 12 VAs equipped 03 exchange visits made. In Y1: Andreba Gara, in Y2: Vohimenakely and in Y3: Vatomandry (Antsinanana Region)

Project summary	Progress and achievements
	149 groups were set up during the project and trained 1,561 beneficiaries, 45.29% of whom were women 4 producers' organisations have benefited from materials and seeds from the project for their production Participated in monthly meetings to provide support and collect data from the 63 VSLA groups. 03 exchange visits made. In Y1: in Andreba Gara, in Y2: in Vohimenakely and in Y3: in Vatomandry (Antsinanana Region) Monitoring and data collection from the 63 VSLA groups. 42 groups trained in Financial Education with 588 members, 508 of whom are women. In Y2, 3 groups of producer organizations have been created: 1 group of groundnut producers with 30 members whose products will be sold to local peanut oil producers and 2 groups of chili producers who already have an aggregation contract with MCI with 17 members each, for a total of 34 chili producers. 8Ha of land dedicated to the cultivation of high-quality groundnuts.
Output indicator 4.6 Number of COBAs paticipating in annual rural fairs: 8 COBAs including 4 womens associations.	02 participants in Fier Mada 2022 02 participants in the Fier Mada of 2023 06 participants in the Alaotra Mangoro Regional Fair in 2023 137 products recorded at these Fairs Y2: Participation in Fier Mada Y3: Participation in Fier Mada and Regional Fair
Output indicator 4.7 Change in crop production, quantity of basketry products, and income for farmers and basket weavers from FY1 to FY3 without adverse impact on natural resources.	
Output 5 **Understanding of carbon sequestration capacity of Lake Alaotra's watershed, including lake and marsh, is improved to inform development of external investment opportunities for sustainable habitat restoration**	
Output indicator 5.1	Partially completed – full map not possible due to breakdown of VTOL drone.

Project summary	Progress and achievements
High resolution remote-sensing derived habitat map of the marsh and surrounding forest produced and ground truthed by Q3 Y2	
Output indicator 5.2 Estimate of carbon carrying capacity of the marsh and surround forest ecosystem by end of Q4 FY2.	Completed Y3. Annex 9
Output indicator 5.3 Value of habitat restoration to external investors and feasibility of investment through habitat restoration demonstrated by end Q2 FY3.	Not completed - not feasible due to legislative constraints within Madagascar.
Output indicator 5.4 If results indicate feasibility is good, number of external companies a proposal for investment in habitat restoration in return for carbon credits is submitted to: 1 by end project	Not completed - not feasible due to legislative constraints within Madagascar.

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

Project Summary	Measurable Indicators	Means of Verification	Important Assumptions
Impact: Community-led management and restoration of the Alaotra Ramsar watershed are providing sustainable long-term benefits and services to people and wildlife, and helping mitigate impacts of climate change.			
Outcome: Enhanced local stewardship is reducing negative impacts on Lake Alaotra's natural environment and improving well-being of c.15,000 people across 12 villages.	0.1 250Ha reforested by end of project. 0.2 Priority gentle lemur habitat increased to 6,000 Ha (from 4,100Ha 2019 baseline). 0.3 No decrease in gentle lemur population during project (2019 baseline: 2,000-2,500 individuals). 0.4 Marsh burning does not exceed 500Ha/year in each year of the project (2014-2019 average 500Ha/year). 0.5 Subjective well-being indicators improved by end of project. (Global Person Generated Index; % households who are satisfied with life; % who feel their actions are worthwhile; % who felt anxious yesterday; % who felt happy yesterday). 0.6 Measures of food insecurity in intervention villages improved by end of project (Assessed via Household Food Insecurity Access; Months of Adequate Household Food Provisioning and the Food	0.1 Replanting and monitoring reports; drone footage. 0.2 Drone mapping and GIS maps. 0.3 Annual gentle lemur survey reports (transects and drone). 0.4 Analysis of annual land sat images, on the ground GPS, daily MODIS alert fire from Maryland University. 0.5 Household surveys in FY1 and FY3. 0.6 Household surveys in FY1 and FY3. 0.7 Household surveys in FY1 and FY3. 0.8 Household surveys in FY1 and FY3. **(Note: FY = Financial Year)**	No significant reduction in current level of political stability.

Project Summary	Measurable Indicators	Means of Verification	Important Assumptions
	Consumption Score Nutritional Quality Analysis scales). 0.7 The proportion of households who believe they have the power to influence decision making in their communities has increased by end of project cf. start 0.8 Improved economic independence and resilience; % of households using VSLAs to manage their savings and value of savings has increased by end of project cf. start.		
Outputs: **1**. 12 community nurseries, together producing c.100,000 saplings annually to enable 120Ha reforestation annually within priority zones by project end.	1.1 Restoration plan for 722,500Ha Alaotra Ramsar watershed including priority sites and plant species composition developed by end of FY1 1.2 Number of nurseries capable of producing c.10,000 saplings per year established through project: 10 by end FY2; 12 by end FY3 1.3 Number of nursery technicians trained across all nurseries: 24	1.1 Reforestation plan; GIS maps produced for each priority; research report, final list of target species for reforestation produced. 1.2 Photos, nursery records and reports, training records and reports. 1.3 Planting and monitoring reports. 1.4 Reports, photos. .	Engagement with regional authorities continues to be productive. Continued community willingness to engage with and participate in project initiatives. The project is able to engage with the Governments RFR project and it is continued over the forthcoming years so that land tenure via reforestation can happen for rural communities and people.

Project Summary	Measurable Indicators	Means of Verification	Important Assumptions
	1.4 Area reforested each year 50Ha in FY1; 100 Ha in FY2; 120Ha in FY3		Seed survival in nurseries is not compromised by external events beyond our control e.g. disease, extreme weather.
2. 5km of channels in priority areas are cleared annually of invasive water hyacinth and 75Ha of reed-phragmites are planted by project end, to restore habitat, improve water quality, and increase access to the lake for fishing and ecotourism.	2.1 Priority areas for hyacinth clearance and phragmites replanting identified by end FY1 2.2 Area of phragmites planted: 75Ha by project end 2.3 Length of channels cleared annually of invasive water hyacinth: 5km/year	2.1 GIS map of sites based on landsat, drone, lemur surveys and community consultation. 2.2 Planting records; photographs; aerial photography. 2.3 Clearance effort records; photographs; aerial photography	No significant reduction in current level of political stability/ Continued community willingness to participate in project initiatives.
3. Local associations (COBAs) within Alaotra Rano Soa (ARS) are effectively managing 40% of the marsh area with c.300 people representing all 33 associations receiving training by end of project.	3.1 Capacity building needs of ARS and COBAs identified by end FY1. 3.2 Number of people receiving capacity development training: c.330 across 33 COBAs by project end 3.3 Infrastructural and equipment needs of ARS and COBAs defined by end FY1. 3.4 Number of new ARS offices built and equipped: 4 by end FY2 3.5 A standardised system for monitoring fishing compliance, developed by ARS in association with Fishing Associations in place by end Q2FY2, and being implemented through FY2 - FY4. 3.6 Area of marsh being directly and effectively managed by ARS and	3.1 Training and Capacity Needs Analysis report 3.2 Attendance records (aggregated by gender); training reports. 3.3 Infrastructural and equipment needs report. 3.4 Photographs; short report and equipment inventory. 3.5 Document outlining system and guidelines adopted. 3.6 Annual RMETT evaluations of PA management effectiveness conducted 3.7 Records of illegal activity in the PA gathered from local associations and Government agencies records.	No significant reduction in current level of political stability. Continued community willingness to participate in project initiatives.

Project Summary	Measurable Indicators	Means of Verification	Important Assumptions
	COBAs by project end: 40% (2020 baseline: 25%-30%) 3.7 Change in community compliance with the PA regulations framework compared to 2020 baseline.		
4. Approximately 2500 people across 12 villages (7 new) are supported to derive greater benefits from their agricultural and natural products whilst utilising natural resources more sustainably.	4.1 Agricultural productivity, level of chemical inputs and income generation for participating farmers assessed by end FY1. 4.2 Number of farmers trained via Farmer Field Schools: 720 in FY1; 480 in FY2; 480 in FY3 (>30% female participation) 4.3 Area of land on which climate resilient crops and highly nutritional crop varieties are being grown: 360Ha by project end 4.4 Number of basket weavers trained to make basketry products and to use reeds sustainably: 160 4.5 Number of VSLA groups established and participation numbers: 48 VSLA's across 12 villages with c.1,000 members (>60% Female participation) 4.6 Number of COBAs paticipating in annual rural fairs: 8 COBAs including 4 womens associations 4.7 Change in crop production, quantity of basketry products, and	4.1 Agricultural surveys. 4.2 FFS attendance records (aggregated by gender); training reports. 4.3 Annual agricultural surveys; household surveys. 4.4 Attendance records (aggregated by gender); training reports. 4.5 Attendance records (aggregated by gender); training reports. 4.6 Attendance records (aggregated by gender); photos. 4.7 Annual agricultural surveys; household survey results; analysis of annual land sat images, on the ground GPS, daily MODIS alert fire from Maryland University to assess marsh burning/deforestation; patrol reports to assess anthropogenic pressures.	Environmental conditions do not change drastically to negatively impact growing seasons and crop productivity e.g. increased cyclone activity, lack of rains/prolonged drought. Community members default on the commitments to the VSLA during the process. Theft of project savings occurs during implementation.

Project Summary	Measurable Indicators	Means of Verification	Important Assumptions
	income for farmers and basket weavers from FY1 to FY3 without adverse impact on natural resources.		
5. Understanding of carbon sequestration capacity of Lake Alaotra's watershed, including lake and marsh, is improved to inform development of external investment opportunities for sustainable habitat restoration	5.1 High resolution remote-sensing derived habitat map of the marsh and surrounding forest produced and ground truthed by Q3 Y2 5.2 Estimate of carbon carrying capacity of the marsh and surround forest ecosystem by end of Q4 FY2. 5.3 Value of habitat restoration to external investors and feasibility of investment through habitat restoration demonstrated by end Q2 FY3. 5.4 If results indicate feasibility is good, number of external companies a proposal for investment in habitat restoration in return for carbon credits is submitted to: 1 by end project	5.1 GIS maps and aerial photography; report 5.2 Report 5.3 Report 5.4 Proposal	Academic partner for carbon content estimation remains committed to the project, or alternative partnership identified. Carbon storage potential of Lake Alaotra is feasible for carbon credit investment.

Project Summary	Measurable Indicators	Means of Verification	Important Assumptions
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) **Outcome monitoring activities** 0.1 Undertake household surveys in FY1 and FY3 0.2 Undertake annual population surveys of key species Alaotra gentle lemur 0.3 Undertake annual assessment of marsh quality and area reforested **Output 1** 1.1 Produce map of Alaotra watershed and with key stakeholders identify priority areas for marsh restoration and terrestrial reforestation 1.2 Establish nurseries in 15 villages in FY2 and 2 further villages in FY3 1.3 Train local communities in nursery maintenance and care 1.4 Undertake weekly nursery maintenance 1.5 Undertake annual tree planting (February) 1.6 Monitor planted areas **Output 2** 2.1 Plant 25Ha phragmites reed each year (November) 2.2 Undertake water hyacinth clearance annually (November) **Output 3** 3.1 Undertake a capacity and training needs assessment across all COBAs (Q1 FY2) 3.2 Deliver training to COBA members based on results of assessment (FY2) 3.3 Undertake an evaluation on effectiveness of training to COBAs (FY3) 3.4 Undertake assessment of infrastructural and equipment needs for ARS and COBAs in FY1 3.5 Construct and equip 4 local association offices for ARS and COBAs 3.6 Develop a standardised system for monitoring fishing in conjunction with fishing federations 3.7 Carry out regular monthly meetings with ARS 3.8 Undertake annual monitoring of fishing in the lake 3.9 Undertake annual assessments of management effectiveness of Alaotra PA 3.10 Compile annual records of illegal activity from local associations and Government **Output 4** 4.1 Identify, create and structure FFS groups in each association. September– November (annually) 4.2 Train and support FFS groups in techniques. November – end project 4.3 Implementation of agricultural techniques. December 2021– end project			

Project Summary	Measurable Indicators	Means of Verification	Important Assumptions
4.4 Annual agricultural surveys 4.5 Establish VSLA groups in target villages and train members in VSLA process 4.6 Monthly meetings with VSLA groups to track progress through the full cycle 4.7 Establish and run training for basket weaving 4.8 Take members of the FFS and women's basket weaving associations groups to rural fairs around Alaotra 4.9 Develop market value chains for locally produced products **Output 5** 5.1 Produce a high-resolution map of Alaotra watershed 5.2 Confirm academic partner to support blue carbon study 5.3 Identify Malagasy Masters student to undertake study 5.4 Support Masters student field work 5.5 Produce report based on fieldwork to assess carbon sequestration potential 5.6 If feasible, produce a proposal for supporting habitat restoration via carbon credits 5.7 Identify and submit proposal to external company			

Annex 3 Standard Indicators

Table 1 Project Standard Indicators

DI Indicator number	Name of indicator (using original wording)	Name of indicator (wording adjusted to align with DI Standard Indicators)	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total achieved	Total planned
DI-D12	0.1 250Ha reforested by end of project.	Area of degraded forest that are under active restoration	Area (hectares)	Forest	105	160		265	250
DI-D04	0.3 No decrease in gentle lemur population during project (2019 baseline: 2,000-2,500 individuals).	Stabilised species population (relative abundance) within the project duration.	% Increase	Gentle lemur	0	0		0	0
DI-D16	0.5 Subjective well-being indicators improved by end of project. (Global Person Generated Index; % households who are satisfied with life; % who feel their actions are worthwhile; % who felt anxious yesterday; % who felt happy yesterday).	Number of households reporting improved livelihoods	Households	Well-being	0	0		0	% Improvement by end of project
DI-D02	0.6 Measures of food insecurity in intervention villages improved by end of project (Assessed via Household Food Insecurity Access; Months of Adequate Household Food Provisioning and the Food Consumption Score Nutritional Quality Analysis scales). 0.8 Improved economic independence and resilience; % of households using VSLAs to manage their savings and and value of savings has increased by end of project cf. start.	Number of households whose climate resilience, food security or financial security has been improved.	Households	Food security; Financial security	0	0		0	% increase in households
DIB05	0.7 The proportion of households who believe they have the power to influence decision making in their communities has increased by end of project cf. start	Number of heads of household with perceived increased influence in local governance	Households	Gender; age group	0	0			% increase of households

DI Indicator number	Name of indicator (using original wording)	Name of indicator (wording adjusted to align with DI Standard Indicators)	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total achieved	Total planned
DI-B01	1.1 Restoration plan for 722,500Ha Alaotra Ramsar watershed including priority sites and plant species composition developed by end of FY1	Number of new/improved habitat management plans available and endorsed	Number	Ramsar site; Restoration	0	1		1	1
DIA01	1.3 Number of nursery technicians trained across all nurseries: 24	Number of people from local stakeholders completing structured and relevant training as seed nursery technicians	Number Number	People Local communities Gender Typology (reforestation - seed nursery technician) Hours	0 0	14 6		14	24 6
DI-D12	2.2 Area of cyperus madagascarensis and phragmites planted: 75Ha by project end	Area of degraded or converted ecosystems that are under active restoration	Area (ha)	Marsh habitat/wetland ecosystem Species planted	19.35 ha	44 ha		63.35 ha	75 ha
DI-D12	2.3 Length of channels cleared of invasive aquatic species	Area of degraded or converted ecosystems that are under active restoration	Area (ha) KM of channels cleared	Marsh habitat/wetland ecosystem; Species cleared	0 5.2 km (channels)	18.007 ha (lake) 5.5 km (channels)		18.007ha lake area + 10.7kmchannels cleared	NA 15km

DI Indicator number	Name of indicator (using original wording)	Name of indicator (wording adjusted to align with DI Standard Indicators)	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total achieved	Total planned
DI-A01	3.2 Number of people receiving capacity development training: c.330 across 33 COBAs by project end	Number of people from key local stakeholders completing structured and relevant training (COBA capacity development)	People	People Females; Age group;Stakeholder group (Community – COBA); Typology (law enforcement and association management)	0	305		305	330
DI-A03	3.2 Number of people receiving capacity development training: c.330 across 33 COBAs by project end 4.2 Number of farmers trained via Farmer Field Schools: 720 in FY1; 480 in FY2; 480 in FY3 (>30% female participation) 4.4 Number of basket weavers trained to make basketry products and to use reeds sustainably: 160 4.5 Number of VSLA groups established and participation numbers: 48 VSLA's across 12 villages with c.1,000 members (>60% Female participation)	Number of local organisations with improved capability and capacity as a result of project.	Number of organisations benefitting from DI-AO1	Organisation type: COBA -local association Farmer field school Basket weaving VSLAs	10 0 0 0 10	125 33 50 17 25		135 33 50 17 35	158 33 77 NA 48
DI-D11	4.7 Change in crop production, quantity of basketry products, and income for farmers and basket	Number of people benefitting from improved sustainable agriculture practices and are	Farmers/income	People Gender	0	0		0	% farmers with increased income

DI Indicator number	Name of indicator (using original wording)	Name of indicator (wording adjusted to align with DI Standard Indicators)	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total achieved	Total planned
	weavers from FY1 to FY3 without adverse impact on natural resources.	more resilient to weather shocks and climate trends.							
DI-A11	4.7 Change in crop production, quantity of basketry products, and income for farmers and basket weavers from FY1 to FY3 without adverse impact on natural resources.	Number of sustainable livelihood enterprises that are profitable (at least a year after establishment).	Basket weaver groups/income	People Gender	0	0		0	% basket weaving groups with increased income/making profit
DI-A03	4.2 Number of farmers trained via Farmer Field Schools: 720 in FY1; 480 in FY2; 480 in FY3 (>30% female participation)	Number of people from key local stakeholders completing structured and relevant training (agricultural – farmer field schools)		People Gender Villages Organisation type (Community - Farmer field schools); Typology (agricultural techniques)	411 259M: 152W 0	523 313M: 210W 12		934 12	
DI-A03	4.4 Number of basket weavers trained to make basketry products and to use reeds sustainably: 160	Number of people from key local stakeholders completing structured and relevant training (Basket weaving)		People Women Villages Organisation type (community -basket weavers/association); Typology	0 0	252 252		252 252	160

DI Indicator number	Name of indicator (using original wording)	Name of indicator (wording adjusted to align with DI Standard Indicators)	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total achieved	Total planned
				(basketry techniques)					
DI-A03	4.5 Number of VSLA groups established and participation numbers: 48 VSLA's across 12 villages with c.1,000 members (>60% Female participation)	Number of people from key local stakeholders completing structured and relevant training (VSLA)	People	People Women Villages Organisation type (community -VSLAs); Typology (financial savings and loans)	80 40 8	0 0 0		80 40 8	1000 600 12
DI-B07	3. Local associations (COBAs) within Alaotra Rano Soa (ARS) are effectively managing 40% of the marsh area with c.300 people representing all 33 associations receiving training by end of project. 4.2 Number of farmers trained via Farmer Field Schools: 720 in FY1; 480 in FY2; 480 in FY3 (>30% female participation) 4.4 Number of basket weavers trained to make basketry products and to use reeds sustainably: 160 4.5 Number of VSLA groups established and participation numbers: 48 VSLA's across 12	Number of people participating in community-based management groups **Risk of double count: Some people may participate in more than one community-based group*	People	People Gender Scheme type: COBA -local association Farmer field school Basket weaving VSLAs	491 0 259M; 152F 0 40M;	1535 330 319M; 210F 252 		2026 330 578M; 362F 252 142M; 298W	2500 300 160 1000

DI Indicator number	Name of indicator (using original wording)	Name of indicator (wording adjusted to align with DI Standard Indicators)	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total achieved	Total planned
	villages with c.1,000 members (>60% Female participation)			Producer groups	40W 0	102M; 258W 64		64	
DI-D01	3.6 Area of marsh being directly and effectively managed by ARS and COBAs by project end: 40% (2020 baseline: 25%-30%)	Hectares of habitat under sustainable management practice	Area	Protected area Marsh habitat/wetland ecosystem Extent of habitat disaggregated by pre-project and post project sustainably managed are	0	0	0		40%
DI-D10	4.3 Area of land on which climate resilient crops and highly nutritional crop varieties are being grown: 360Ha by project end	Area of improved sustainable agriculture practices benefitting people to be more resilient to weather shocks and climate trends	Area (ha)	Typology (climate resilient crops being grown)	127.97 Ha	173.3 ha		301.27	360

Table 2 Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)

Annex 5 Supplementary material (optional but encouraged as evidence of project achievement)

Means of Verification:

Annex 0: Selected photos from the project

Annex 1: Watershed Restoration Plan and priorities map

Annex 2: Training Reports

Annex 3: Alaotra Rano Soa General Assembly minutes: original and translated

Annex 4: DREDD Inspection Report of reforested areas

Annex 5: Areas Reforested and maps

Annex 6: Evidence of formation and agreements of fishing associations

Annex 7: RMETT Evaluation

Annex 8: Map of entire watershed

Annex 9: Carbon assessment of Lake Alaotra: Report from Malagasy student

Annex 10: Drone footage from Alaotra Gentle Lemur survey with thermal detection

Checklist for submission

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the **correct template** (checking fund, type of report (i.e. Annual or Final), and year) and **deleted the blue guidance text** before submission?	X
Is the report less than 10MB? If so, please email to BCF-Reports@niras.com putting the project number in the Subject line.	
Is your report more than 10MB? If so, please discuss with BCF-Reports@niras.com about the best way to deliver the report, putting the project number in the Subject line. All supporting material should be submitted in a way that can be accessed and downloaded as one complete package.	
If you are submitting photos for publicity purposes, **do these meet the outlined requirements (see section 14)?**	
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	X
Have you involved your partners in preparation of the report and named the main contributors	X
Have you completed the Project Expenditure table fully?	
Do not include claim forms or other communications with this report.	