Darwin Initiative Main Project Annual Report

Important note: *To be completed with reference to the Reporting Guidance Notes for Project Leaders: it is expected that this report will be no more than 10 pages in length, excluding annexes*

Submission Deadline: 30th April 2017

Darwin Project Information

Project reference	22-007
Project title	Establishing Sustainable Management of the Lake Sofia Catchment, Madagascar
Host country/ies	Madagascar
Contract holder institution	Wildfowl & Wetlands Trust
Partner institution(s)	Durrell Wildlife Conservation Trust (DWCT), Organisation de Soutien pour le Développement Rural à Madagascar (OSDRM), Asity Madagascar, Sofia Regional Department of Rural Development and Agriculture, Sofia Regional Department of Ecology, Environment, Marine and Forests, and Villages of the Lake Sofia catchment, Marotolana commune.
Darwin grant value	£276,527
Start/end dates of project	01/04/2015 – 31/03/2018
Reporting period (e.g., Apr 2016 – Mar 2017) and number (e.g., Annual Report 1, 2, 3)	Apr 2016 – Mar 2017. Annual Report 2
Project Leader name	Rob Shore
Project website/blog/Twitter	http://www.wwt.org.uk/support/our-appeals/mission-madagascar/ http://www.wwt.org.uk/conservation/wwt-projects/saving-the-madgascar-pochard/
Report author(s) and date	Tomos Avent and Andrew Bamford – 28/04/17

1. Project rationale

Most of Madagascar's wetlands have either been lost (+60%) or severely degraded due to conversion, sedimentation, invasive species and over-harvesting. Wetland species have declined dramatically as their habitats disappeared. The human communities, of which 80% are rural and 90% have jobs reliant on natural resources, have suffered as a result from loss of ecosystem services. Finding a sustainable solution to avoid the complete loss of native wetlands while improving conditions for local communities requires an integrated approach.

Lake Sofia, the most intact remnant of the once vast Bealanana Wetlands Complex and home to some of the world's most threatened endemic waterbirds, represents one of the last opportunities to implement this approach. 10,000 people (at least 62% of which are highly impoverished) rely on this wetland for their water, food and marsh plants. Extensive community interviews conducted prior to the project show that the main problems are threats from external

pressures such as mining, agri-business and fishers from other regions, as well as increasing malnutrition and livestock disease. By securing community-based management of the Lake Sofia catchment, developing, training and supporting sustainable farming partnerships, empowering fishing groups, and applying lessons into national wise-use guidelines, this project aims to protect and improve local people and secure a healthy wetland ecosystem that enables them to move beyond a subsistence only economy.

Lake Sofia is situated approximately 115 km east of the town of Antsohihy, in the Sofia region of Northern Madagascar.

2. Project partnerships

The project management structures described in Annual Report 1 continue to be followed. Quarterly Project Management Group meetings are held in Antsohihi for field teams, project coordinators, community group representatives and local government (Annex 4). These review each partner's quarterly report and discuss action plans for the coming quarter. All stakeholders are invited to provide comments and input into future planning. Progress and planning is then written up at the end of each meeting and submitted to the Project Steering Group (PSG), which comprises senior managers from each project partner. See Annex 5 for an example of a Quarterly report from local partner Asity. The PSG met in March to discuss adaptive management needs of the project and sustainability of work into the future.

Field team representatives of all partners are based together on site and share an office. The project has a joint identity and project staff introduce themselves as members of the project team rather than representatives of each individual organisation. Each partner is directly responsible for their own action planning and M&E and these are presented to the PMG at the start of each Quarter to ensure collaborative implementation wherever possible. Due to the integrated nature of the project work, the project team often plan shared interventions. For example, Asity are responsible for education and awareness and always join OSDRMs development activities to highlight the links between livelihoods, healthy wetlands and healthy people. See Annex 5 for an example of project collaboration during education work – in this case WWT and Asity.

The only challenge faced over the last year has arisen from slow reporting between partners. OSDRM has recently undergone a re-structure, which will result in a change to their regional coordinator. The project will write to Darwin once that has been confirmed. The internet in Madagascar has been unreliable at times this year, with damage to major undersea cables. WWT is employing a full-time in-country Malagasy staff member in May 2017. Although they will have limited direct involvement with the Lake Sofia Project, we believe that a permanent presence in country will greatly enhance the reporting communication capacity of all projects.

3. Project progress

3.1 Progress in carrying out project Activities

Activity 1.1. Develop and agree initial 3-year management transfer agreements for Sofia Mandroso, Fikambana Fitantanana Matsabory Sofia, and Sandatra Sofia.

The management transfers for these three lakeside associations were implemented during October and November 2016 (see Annex 6 for final agreement in local language). The participatory community-based process was as follows: two consultants were recruited as mediators; development of a protocol of collaboration with Regional Direction of Environment, Ecology & Forests (DREEF); revision of the old documents of the associations (local laws, rules of procedure and status of association); approval given by the mayor's advisers; development of the management plan (including zoning of the lake and agreeing village boundaries); and finally a ceremony to mark signing of the management contract. This official ceremony to mark the contract between the government and the associations was held on November 17th. In attendance at the ceremony were the elected deputy for Bealanana district, representatives of the Ministry of Environment, Ecology and Forestry from Antananarivo, the Regional Development Director (DDR) representing the regional authorities, the DREEF Sofia, the Regional Director for

Agriculture and Livestock, representatives for the Regional Director for Fisheries (Dir Pêche) and the Chief of the District of Bealanana.

Activity 1.2. Develop agreements to transfer the management of natural resources to local-constituted community associations across the upstream catchment of Lake Sofia.

The nature of this activity has changed slightly as the members of villages in the upstream catchment are now all able to join the three lake-side community-based associations to gain access to lake resources. Consultations have been carried out for additional management transfer agreements in the upstream fragmented forest area. The communities in Lohanisofia and Andranovaky are hesitant to create new agreements, concerned that it will restrict increasingly profitable vanilla cultivation and ban other agricultural activities. Further work is required to alleviate these concerns and highlight the livelihood benefits of management transfers. Crop theft is very high in the area, so management transfer of the forest would actually empower farmers to work together to protect crops and the upper story forest that the crops depend upon. The agreement could also be linked to reforestation and direct payments for protection of reforested areas. The most basic form of Management Transfer Agreement – Dina – are likely to be the most suitable in this instance.

Activity 1.3. Revise and update the management transfer agreements for Sofia Mandroso, Fikambana Fitantanana Matsabory Sofia, and Sandatra Sofia based on information gathered by the project.

This activity will now not take place during the 3 year window of the funding. The initial management transfer will last 3 years, meaning it will only need reviewing in mid-2019.

Activity 1.4. Constitute membership of executive committees, advisory boards, and general assemblies of local associations

Completed before signing the final agreement. Total membership of the three local associations was 323 men (34%) and 635 women (66%). This represents approximately 15% of the adult population of the project area.

Activity 1.5. Hold annual workplan development and review meetings with general assemblies

Meetings were held by all three associations after signing of the management transfer during which workplans were developed for 2017 (see Annex 7 for an example – Malagasy only). Marotolana association has opened an account at CECAM, a micro-finance organisation, in Bealanana to hold the association funds. Association rules state that not more than 200,000 Ariary can be held in the village. Funds are usually held by the treasurer. The account has three signatories (the association president, treasurer, and secretary), at least two of whom must sign to withdraw funds. Accounts are planned for the remaining two associations.

Activity 1.6. Hold community fora 3 times per year in each community to ensure wider accountability

Community fora were held 3 times during Year 2, in June 2016, September 2016 and February 2017. For the first two fora, meetings were held in each village, but for the February meeting, one meeting was held to which representatives of all villages were invited (110 people attended). This structure was used at the request of the communities, who wanted an annual meeting at which all villages could discuss issues relating to the project.

Activity 1.7. Produce semi-annual and annual progress reports on each local association

The first progress reports for the associations are due in May 2017.

Activity 1.8. Provide technical support to the local community to understand and support delivery of the management transfer agreements

Currently all association activities are supported by project staff. Training on financial and administrative management is planned for Year 3, with the intention of reducing the role of project staff in running the associations.

Activity 1.9. Deliver training on laws and rights for members of the local associations

Two training courses have been given to the 3 associations (sample pictures in Annex 5). The first introduced the objectives of associations and the roles and responsibilities of all the signatories, and the second covered the laws applicable to the associations and their rights. Posters covering these topics have been put on the community information points (Activity 3.5).

Activities 1.10 and 1.11. Establish watershed management group for Lake Sofia Catchment, bringing together local associations across the catchment, local government and other stakeholders. Hold annual watershed management group meeting

Planned for Year 3.

Activity 1.12. Seek to support/reinforce catchment-level work through national/international site/landscape designation compatible with community management objectives (e.g. Protected Harmonious Landscape, Ramsar Site).

The project has worked with the government of Madagascar and WWF to include Lake Sofia as a one of the ten new Ramsar sites that are being designated in 2017. Lake Sofia will be announced on World Biodiversity Day, May 22nd.

Output 2.

Activity 2.1. Vaccinate domestic birds against disease in the villages surrounding Lake Sofia using authorised vaccinators

Following an external review of the vaccination programme in Y1 (Annex 8 for opening page), it was decided that, although there was some apparent success in preventing livestock deaths, the programme is not financially viable. A greater range of vaccinations must be given every 3 months to be completely effective. It has been decided that greater impact could be achieved by focusing on animal husbandry training instead.

Activities 2.2 – 2.5. Train members of local communities in vaccination techniques and produce a vaccination guidance manual. Deliver animal husbandry practices and produce information factsheets on common diseases, focussed on prevention and management techniques

Vaccination guide delivered to member of local community (Annex 9). Additional training stopped along with Activity 2.1 with greater emphasis to be given to husbandry. Staff from the Ministry of Livestock in Antsohihy have carried out husbandry training in December 2016 (see Annex 9 for material given to community members). Total attendance at the training was 238 people (Marotolana 42, Andampy 13, Marofamara 22, Andilantsara 16, Antsiradevahely 22, Antilongo 25, Andranovaky 47, Lohanisofia 28, Ambondrona 23). This represents 14% of the 1700 domestic bird owning households in the project area. This will be expanded in Y3.

Activity 2.6. Construct fishing and fish landing platforms at Lake Sofia to improve lake access and safety, enable easier processing and monitoring of fish catches, and reduce disturbance to marsh habitats.

Construction of the landing platform was completed in January 2017 (Annex 10). It has not yet been used as high water levels in the lake and the onset of the rice growing season have meant that no fishermen have been active yet in 2017. A small launch event is planned.

Activity 2.7. Provide replacement fishing equipment in exchange for any fishing gear not permitted for use on Lake Sofia under existing or any revised regulations.

In total, 53 fishermen have received new nets – this amounts to all the fishermen in the main fishing village of Marofamara. There are approximately 23 fisherfolk in Bengivy and Andampy who are not yet organised into a formal group within the association and have not yet exchanged fishing gear.

Activity 2.8. Design and implement fisheries/fish catch monitoring programme

Fisheries and fish catch monitoring is undertaken twice a month. The method has recently been adapted to allow for total catch from the lake to be estimated, as well as fish sizes throughout the year.

Activity 2.9. Identify locations for pilot rice farming projects and sign agreements with participants (through local associations where already in place)

In June 2016, the first rice harvest of the project period was collected. 42 pilot farmers had participated in this first year. During the 2017 rice growing season, the number of pilot farmers has increased to 100, including the 45 from Year 1. Originally, 175 had signed up for the second year but the late onset of rains has meant that many farmers did not plant rice at all. Of these 100, 73 are using the System of Rice Intensification (SRI; a total of 17.26 ha is cultivated this way), and the remaining 27 are tribally OSDRM's new Zanatany rice system (a permaculture system in which rice is directly seeded). All of the pilot farmers have split their land half and half between their new method and their traditional method. See Annex 11 for membership list of one pilot group.

Activity 2.10, 2.11 & 2.12. Conduct pilot projects in three villages to demonstrate the application of more environmentally sensitive rice cultivation practices. Develop and implement monitoring programme (focussed on yield, water quality and external inputs) for pilot rice farming projects. Report on findings of pilot projects

Pilot projects were conducted in all nine villages during both Years 1 and 2. Farming groups were established in each village. Staff work with farmers each week to make bio-pesticide, and assist with spraying – helping to enforce a no chemical approach. Pilot farmers are using bio-pesticide on both new and traditional farming methods. Pilot farmers also use no herbicides to prepare the fields, instead manually weeding. 175 weeding machines have been distributed for this purpose, to all the farmers who originally signed up for the pilot scheme. The first year's pilot rice farms were monitored at harvest time in June 2016. 42 pilot farmers and 42 non-members were interviewed. Monitoring for the second year will take place in June 2017. Results shared with partners and participants. See Output 2 for results.

Activity 2.13 .Train agricultural extension training team

Three appointed extension staff have benefited from regular training, either during the monthly meetings in Bealanana or at the technical workshops that OSDRM organises to strengthen staff capacities. The training has mainly focused on value chains of rice seed production.

Activity 2.14 .Deliver environmentally sensitive rice cultivation (including soil management techniques) training to all villages in the Lake Sofia catchment

Nine farming groups have been established, one in each village, with total membership of 444. Of these members, 264 have now been directly trained in one of the rice growing systems, and of these, 100 pilot farmers are worked with weekly by OSDRM staff. Training covered five main themes; soil preparation, water management, crop maintenance (including weeding to remove harmful plants and natural pesticides to deter harmful insects), direct seeding in rows, and the transplanting of rice seedlings.

Training has been supplemented with additional equipment. In order for farmers to practice rice techniques the following seeds and tools were distributed: 20kg of Makalioka (MK34), 40kg of aromatic rice (X372) and 170 rice weeders. These seeds and equipment were contributed by OSDRM core funding. MK34 is a long grain, white rice that previously existed in the region and

is appreciated and requested by the local population, however, due to the diversification of cultures this particular variety has nearly disappeared. X372 is an aromatic variety that is new to the zone but is in high demand from rice collectors and exporters.

Activity 2.15 .Develop and agree a roll-out programme of rice farming work with local associations and village leadership

The roll-out programme of rice farming will be designed in a participatory process during one of the community fora or the community leaders' meetings.

Activity 2.16 .Conduct feasibility study for alternative livelihood options (wet-processed Arabica coffee/sustainable vanilla)

A feasibility study was conducted, by a consultant, in July (Annex 12). Poor access to the site limits the market for vanilla, but the climate in the region delays the vanilla harvest allowing a higher price to be negotiated at times when supply is low. High theft of immature pods (up to 60% of the crop) also limits the cash crop potential unless security can be improved. Coffee plants in the area are of poor quality so new plants would have to be introduced to create a marketable crop. These would take 5 years to mature. The remoteness of the area makes rapid transit to a processing facility impossible. The consultant report, which suggested that coffee and vanilla production are not well suited to the area at present. The focus is now on Artemisia and cloves instead. These crops can be processed easily locally and stored until they are bought.

Activity 2.17 & 2.18. Establish local nursery to supply high-quality coffee/vanilla cuttings to local farmers. Identify locations for development of pilot value-added coffee and vanilla projects and sign agreements with participants

Following the feasibility assessment described in Activity 2.16, focus of this activity has moved to Artemisia and cloves. During Year 2, 180 farmers trailed growing Artemisia. They cultivated 3.5 ha in total, producing a total of 1500 kg dried leaf powder. This is purchased for 1000 Ariary per kilogram. The dried powder has not yet been collected and is being stored in a rented house, because the road is not passable, but the farmers have received payment. There are other benefits from Artemisia cultivation. It can be grown among other crops to repel insects. Some farmers rotate with rice, growing Artemisia on their rice fields during the dry season. The organic fertiliser required for Artemisia helps soil quality and rice.

255 clove seedlings have been planted. In total 67 farmers from all 9 fokontany are participating. The plants take 5 years to mature before the first crop is produced. The plants need little attention during that time. They have been planted under existing trees for shade, and some additional shade is created using screens. Small nurseries for jackfruit trees have been established.

Activity 2.19. Provide training and materials to support sustainable coffee/vanilla farming projects

As there are already many vanilla farmers in the project area, some support has been given to them. The consultant gave some training on new ways to farm, to about 20 farmers per fokontany in all 9 fokontany (although most vanilla farmers are in Andranovaky and Marofamara).

Activity 2.20. Produce quarterly updates and annual progress report on all activities

Completed each quarter. Example in Annex 5.

Output 3

Activity 3.1 .Develop environmental education programme and supporting materials (lesson plans, ID guides, basic sampling equipment, teaching guides) for use in schools

A five day environmental education course focussing on the value and protection of wetlands has been developed (Annex 5 for pictures). The course is delivered by local teachers outside of normal school hours. It has been designed to be complementary to the national curriculum. Additional materials on the environment and wetlands have been developed that can be integrated into existing syllabuses. A first draft, aimed at primary schools, has been completed and passed onto education authorities in Antsohihy for authorisation. Practical work, including tree nurseries and school gardens are included.

Activities 3.2, 3.3 & 3.4. Conduct teacher training events. Run demonstration sessions in schools. Develop magnification/roll-out plan with local and regional education departments

The five day course was delivered by teachers (with support from WWT and Asity staff) at the three main public primary schools in the villages around Lake Sofia (Marotolana, Marofamara and Andampy) in October. Prior to each course, the teachers were given comprehensive training on the material and approaches to delivering interactive lessons and conducting short field trips. The course has now been revised following feedback from authorities, parents, teachers and pupils. The main course was shared with the regional education department and a meeting held in Antsohihi to discuss wider roll-out. Further plans will be developed in Y3. Two nurseries, in Marotolana and Lohanisofia, and 7 school gardens are being maintained.

Activity 3.5. Establish catchment-wide network of community information dissemination points

Information panels have been constructed in five villages: Marofamara, Marotolana, Andampy, Lohanisofia, and Antilongo. These panels are being used to share information about Sofia lake management and also for other important purposes such as fokontany and association news.

Activity 3.6. Develop simple ecological monitoring framework, linking improvements in ecological health to human health/wellbeing

Monitoring is still being carried out entirely by project staff (Annex 13). Community monitoring was planned to be carried out by the associations, so was delayed until the associations became active. Community monitoring will begin in Year 3, focussing on invasive species (water hyacinth), habitat disturbance and hunting pressure.

Activities 3.7, 3.8 & 3.9. Identify network of local community monitoring focal points and sign agreements with participants. Run training events and provide simple monitoring materials to focal points to enable them to act as local coordinators of monitoring effort. Produce semi-annual community monitoring reports

These activities are delayed so that they evolve from the monitoring needs identified by the community associations. They are currently being planned and will all start in Year 3.

Activity 3.10. Identify and agree locations and plans for reforestation work on bare headlands surrounding lake with local associations

Locations for reforestation were agreed as part of the management transfer agreement. Two headlands (one on the east shore of the lake, close to Marotolana, the other on the west shore between Andampy and Marofamara) have been selected.

Activities 3.11 & 3.12. Procure supply of suitable seedlings for reforestation work and establish local holding station/nursery. Conduct reforestation events with villages surrounding Lake Sofia

These activities have been delayed as it is proving difficult to determine what seedlings are suitable. Among people who have worked on reforestation in Madagascar, there is a consensus that exotic species are required to act as pioneers, but there is no agreement what species are suitable. The issue is complicated by the fact that the majority of reforestation projects in Madagascar fail. A working group will visit three of the more promising sounding reforestation projects to help inform reforestation work at Lake Sofia.

Activity 3.13 & 3.14. Assess extent and quality of aquatic/marginal habitat and identify priority locations for restoration work. Undertake restoration of aquatic and marginal vegetation with local community, using cuttings and transplants from other areas of the lake/catchment

The second detailed vegetation mapping was carried out in October 2016 (Annex 14). Priority locations have been identified, focussing on water hyacinth in the south, abandoned rice fields in the papyrus in the north, and the general lack of water-lilies on the lake. Restoration now planned for October 2017.

Activity 3.15. Undertake habitat extent and condition monitoring using combination of remote sensing and groundtruthing techniques

During October, bird and plant surveys were conducted around Lake Sofia (Annexes 13 and 14), repeating the surveys conducted in Year 1. In addition, habitat monitoring using an unmanned aerial vehicle (drone) was carried out in March (Annex 15 for photo).

Activity 3.16. Produce quarterly updates and annual progress report on habitat restoration work

Not yet done.

Output 4

Activity 4.1. Constitute national working group to develop the guidance

Completed in Y1.

Activity 4.2. Run study tours to four wetlands (Lake Alaotra, Lake Kinkony, Torotorofotsy and Lake Sofia)

Study tours Lake Kinkony, Torotorofotsy and Lake Aloatra were held in September and October 2016 (report Annex 16). Attendees included the Ramsar Focal Point, Volatiana Rahanitriniaina and the newly appointed Director of Protected Areas, Rantonirina Rakotoaridera. Other representatives were from the following; Ministry of Fish Resources and Fisheries, Ministry of Agriculture and Livestock (from the Irrigation and Watershed Management Project), Office of the Regional Director of Ecology, Environment and Forests (DREEF), The Peregrine Fund, Durrell, Asity, WWT and other government departments. The tours explored a range of habitats and conservation issues at the sites. Participants met with local community associations to learn about the challenges they experience and discuss their approaches to management.

It was decided that a study tour to Lake Sofia would be difficult due to the remote location. A study tour will take place in Year 3, but with a smaller select group of key attendees.

Activity 4.3. Hold guidance development workshop

Workshops were help in Antananarivo in April and Oct to develop the guidance and were well attended by cross-sectoral stakeholders. There has been enthusiasm for the project and the timing is good to align with the newly developed National Wetland Strategy and designation of new Ramsar sites. The April workshop discussed the scope of the guidance, with the second workshop reviewing progress and ensuring all relevant inputs are included.

Activity 4.4. Write up Lake Sofia case study

Lake Sofia has provided much of the foundation for the guidance, as the project is being implemented alongside guidance development. The official Sofia study tour will be in winter 2017 and will be written up shortly after.

Activity 4.5. Produce draft guidance and consult with broad range of stakeholders

The first draft of the guidance was completed and was sent to the Ramsar Focal Point and all members of the working group.

Activity 4.6. Workshops to finalise guidance, chaired by national CBD and Ramsar focal points.

A workshop to gather feedback from stakeholders was held in March and chaired by the Ramsar Focal Point (Annex 17). All content was reviewed by break-away groups and feedback given to WWT for inclusion in final guidance.

Activities 4.7, 4.8, & 4.9. Design and publish guidance document in three languages (Malagasy, French and English). Organise national conference for wetland managers and policy makers and use as platform to launch guidance. Project partners involved in managing wetlands elsewhere in Madagascar (particularly DWCT and Asity) test the guidance against those sites and apply recommendations.

All planned for Year 3 and on schedule.

Activity 4.10. Promote guidelines at national and international conferences and conventions

Grace Blackham of WWT gave a presentation on the guidance at the University of Antananarivo in October 2016, during a conference of management of wetlands in Madagascar.

Activity 4.11. Produce quarterly updates and annual progress reports

Completed.

3.2 Progress towards project Outputs

Output 1 - Fully representative community management structures surrounding Lake Sofia re-established and strengthened, with new community management structures established for the wider catchment of the lake

Management transfer agreements have been developed using a full participatory process and for the three lake side Fokotany (villages) (Annex 6). After community consultation, these agreements have been structured slightly differently than originally planned. There are now three associations with complete open membership for all lake users from any of the surrounding villages in the catchment. Three year work plans and annual action plans (Annex 7) are in place and being implemented by association committees. Membership at the end of March 2017 was 958 people with a 2:1 female bias. The executive committee is 40% female. The groups have already started to enforce regulations and feedback from end of year community fora (attended by 110 people representing all villages) has been positive (summary report being written). The main concern has been the sustainable financing of the associations. There is currently an over-reliance on fines to generate revenue. The project is working to develop long-term finance mechanisms through cooperative equipment rental/usage schemes and kiosks for environmentally sustainable inputs.

An upstream management transfer agreement is still planned and consultations have been carried out for additional management transfer agreements in the upstream fragmented forest area. As stated in Activity 1.2, there is some resistance, so great awareness and sensitisation is required. The most basic form of Management Transfer Agreement – Dina – are likely to be the most suitable in this instance.

Output 2 - Approaches to enhance existing local livelihoods and establish additional livelihood options developed, demonstrated at key sites and being implemented across the wider catchment

As outlined in Activities 2.1 – 2.5, an external review of our vaccination programme in Y1 recommended that the project would have a greater impact on domestic bird survival rate by investing more into animal husbandry techniques. The current budget is insufficient to support a

full vaccination programme due to the size of the area, prevalence of multiple diseases, and the necessary frequency of vaccinations required to create a significant impact. Indicator 5 is based on percentage of people participating in vaccination programme so is no longer relevant and will be changed through a change request. We still expect to make progress towards Indicator 6 through the improvements to husbandry techniques. The impact of this has not yet been quantified.

70% of all fisherfolk are now using legal nets compared to a baseline of zero. The remaining 30% are based in Bengivy and Andampy and will receive new nets once they are organised into a group as part of the Management Transfer Agreement in Y3. Feedback at local community fora from fisherfolk, market sellers, and consumers is that perceived fish size has increased. This is supported by initial fisher surveys suggesting an increase in daily income from 7,100 Ariary to 17,900 Ariary, although greater analysis will be carried out once we have a long-term dataset. The perceived success of this initiative has helped to build trust between the project and local community for other elements of the work.

One hundred pilot rice farmers are now signed up and actively participating in the project, exceeding the target numbers for Indicators 8 and 10. These farmers come from all villages in the catchment. During the first year of the pilot rice farming project, participating farmers reported increased yields (the average yields span form 3.5 to 8 tonnes/ha, compared to a baseline of 2 tons/ha). This data is collected by the farmers themselves after basic training in M&E. The project will collect more data from the current rice growing season so that a more substantial analysis can be completed towards the end of the project. There is concern that the current poor rains will affect this year's crops, but we are also collecting control data so should be able to account for annual variations. The percentage of households using any pesticides within our pilot groups has decreased from a baseline of 83% to 12.5%. The total quantity used by the pilot groups has decreased from 10.926 L to 0.26 L and the average quantity used has decreased from 0.26 L to 0.014 L. The new weeding equipment has decreased herbicide use to zero. The rice education campaign, broader training programme, success of the pilot scheme, and access to environmentally sensitive alternatives (bio-insecticides) are also having an impact outside of the pilot group, with the percentage of households using pesticides decreasing from a baseline of 76% to a current figure of 55%.

Alternative crops will now focus on Artemisia and cloves after assessments of vanilla and coffee suggested that these may not be the best options at Lake Sofia (see Activity 2.16). During Year 2, 180 farmers trailed growing Artemisia. They cultivated 3.5 ha in total, producing a total of 1500 kg dried leaf powder, which can be sold at 1,000 Ariary per kilogram. 255 clove seedlings have been planted with 67 farmers from all 9 fokontany are participating. Local markets for these cash crops have already been established by OSDRM through work on other projects in the area.

Output 3 – Conditions (policy, practice and awareness) in place to reduce key threats to wildlife and the environment of Lake Sofia and its catchment, including burning/clearance of marsh, hunting/trapping of threatened wildlife, and draining of wetlands.

Awareness initiatives are ongoing throughout the project and integrated into all activities. The rules and regulations for lake management and use are clearly laid out in the management transfer agreements, have been promoted during training, and are displayed on the newly erected community information panels in each of the villages. Patrolling and enforcement has started, with initial 'soft' approaches focusing on awareness rather than punishment for minor offenses, but some fines have been enforced for major infringements. Indicator 12 will only be quantitatively assessed at the end of the project.

The environmental education courses in three primary schools have be led by the school teachers themselves after training was provided by project partners (Annex 5). The teachers now have all of the required material and will be supported by project staff to repeat the courses to ensure they are fully confident to continue this into the future. Additional material has been submitted to the local education authorities.

Ecological restoration of aquatic, marginal and forest habitat is behind schedule. Areas have been identified and approved by the newly formed community-based associations (Annex 6). We are confident that Indicator 14 will still be met by the end of the project. An additional study tour has been planned to learn from successes and failures of other reforestation projects. The vegetation report (Annex 14) showed that there had been no significant deterioration of aquatic habitat at the Lake. The report also identified the key areas of papyrus for restoration in the coming year.

As mentioned in the Y1 Annual Report, it was not possible to establish a baseline for marsh-breeding birds at Lake Sofia. Anecdotally, the density of pond herons at both the control site and Lake Sofia has greatly decreased, leading the project to believe that there may be large annual variations in this main marsh breeding species. Therefore, the indicator will be changed in a coming change request.

Progress is being made towards achieving Indicator 16. The new community management transfer agreement (Annex 6) regulates against burning of marsh, illegal fishing gear, and hunting. The first fines were issued for an illegal burn during the last quarter of the project. The fish net exchange programme has transitioned 70% of fisherfolk onto legal nets (see output 2). A community-based monitoring programme will collect data on human use of the wetland in Y3.

Output 4 - National-level sustainable wetland management guidance (informed by the model developed at Lake Sofia) adopted by the Government of Madagascar and being used at wetlands across the country.

Study tours were held to inform best-practice sustainable wetland management in Madagascar and highlight key conservation and management issues and opportunities (Annex 16). Draft guidance was produced in January 2017 and translated into French. The document was sent to a range of stakeholders in February for comments. In depth comments have been received from; Luciano Andriamaro (Conservation International), Volatiana Rahanitriniaina (Ramsar Focal Point, Ministry of Environment, Ecology and Forests), Hanta Rasoamananjara (General Directorate of Partnership and Sustainable Development, Ministry of Fisheries Resources and Fisheries), Hanitra Rakotojaona (Durrell Wildlife Conservation Trust), Roger Edmond (Department of Biology and Plant Ecology, University of Antananarivo), Avotiana Randrianarisoa (Environmental and Social Safeguarding Programme, Watersheds & Irrigated Perimeters, Ministry of Agriculture). The final draft National Wetland Guidance was agreed at a workshop in Antananrivo on the 15th March (Annex 17). This Output is ahead of schedule and all indicators remain relevant.

3.3 Progress towards the project Outcome

Outcome:	Over 10,000 wetland-dependent people have secure access to natural resources and are part of a community-based management regime which improves food security/wellbeing/livelihoods and ecological conditions.		The project is still on track to deliver the intended outcome.	
	Baseline	Change by 2017	Source of evidence	Comments (if necessary)

Indicator 1	Zero - Three historic community associations are still performing limited functions but legal basis has expired.	Three associations are established and legally recognised with full three year work plans and action plans. Each association has open membership to all people living in the catchment.	Annex 6 - Sample Management Transfer Agreement for one association. Annex 7 - Association work plan.	
Indicator 2	Overall average score of 2.4 out of 4, comprising; ability of individuals to affect change (2.97), safety/security (2.59), general satisfaction (1.80), short-term satisfaction (2.55), contribution to society (2.10)	This will only be quantifiable in the last year of the project but indications from community fora and levels of participation in the management transfer process suggest that this work is on track and indicators are still valid.		
Indicator 3	No baseline established. Will be calculated in comparison to reference villages at the end of project to mitigate influence of other factors (e.g. climatic conditions)	Sustainable rice farming groups have shown good increases in yields (see Output 2) and 405 households now benefiting from training and/or alternative cash crops. This indicator will still be valid and should be achieved.	Key results listed in Output 2. Taken directly from OSDRM Quarterly reports.	
Indicator 4	Habitat extent and condition report and photographs completed in Y1 for baseline. Population densities for marsh birds calculated in Oct 2015 Appropriate data have been collected on birds and benthic invertebrates to establish a baseline.	Updated reports completed on bird population and lake habitat quality and extent (supplemented by updated drone photos). Data collection on benthic invertebrates is also ongoing. Data has not yet been analysed.	Habitat extent and condition report (Annex 14). Bird report (Annex 13) Drone Photos (see Annex 15)	
Indicator 5	No national-level guidance on wise-use of wetlands exists. Current overall Wetland Strategy still in development	Guidance developed through National Working Group after initial workshops and multi-stakeholder study tours to three	Frist draft, meeting minutes, study tour report	

		key wetland sites. Government and civil society representatives have endorsed the final draft. Versions available in French and English.	(Annexes 16 and 17).	

3.4 Monitoring of assumptions

Outcome Assumption 1: National political environment remains stable and local and national government points of contact have remained the same.
Outcome Assumption 2: No major external influences have affected the project in Y2.
Outcome Assumption 3: The three management bodies established at Lake Sofia have been endorsed and supported by government.
Output Assumption 1: Poor rains are likely to affect the next year's rice harvest, but this cannot be evaluated until next year. The regional populations of pond herons, the main indicator species for breeding marsh birds, has plummeted. There may be annual variations in breeding sites so we will continue to monitor numbers in Year three. We are looking for other species (e.g. the Madagascan rail) to act as a more appropriate ecological indicator.
Output Assumption 2: The project still believes that the pilot projects and ongoing awareness and empowerment programmes will be sufficient to cascade uptake of our work.
Output Assumption 3: We have not encountered a fundamental ecological reason for the relative lack of productivity in Lake Sofia (of benthic invertebrates and fish).
Output Assumption 4: The project has retained interest from match funders and WWT members. All project partners have committed to the Lake Sofia programme beyond the lifetime of this current three year project.

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

This project supports sustainable development programmes for local communities. At the end of Y2, 405 households have benefited from livelihood initiatives through training on higher yielding environmentally sustainable practices, community-based farming associations, farming equipment, and alternative cash crops. Initial results have been positive (see Activities 2.9 – 2.19 and Output 2 for breakdown of numbers). All farmer associations and farmer training groups are linked to community-based savings groups, which empower members to securely save and grow their money and access finance during difficult periods. At the end of June there were 12 CBSGs comprising 237 members (57% of women) with assets of MGA 4,673,200 (approximately £1,100). Fishers have reported significantly improved daily income (see Output 2).

Natural resources of Lake Sofia are now managed by three community-based associations. This enables local people to take a long-term approach to conservation management, set and administer rules and regulations and monitor progress. These community-based associations have voluntarily elected to create no-take fishing zones and reforestation areas. These areas are outlined in the management transfer agreement (Annex 6). Enforcement of rules and regulations started in early 2017 and is linked to awareness and training programmes. Farmers involved in pilot rice programmes have reported a decrease in pesticide use, as have recipients of sustainable rice farming training.

4. Contribution to the Global Goals for Sustainable Development (SDGs)

The sustainable rice farming, alternative crops, community-based savings groups and fisheries livelihood activities outlined in Section 3.5 make direct contributions SDG1 (to end poverty in all its forms everywhere) and SDG 2 (to end hunger, achieve food security and improved nutrition and promote sustainable agriculture). The three new association-based management transfer

agreements were developed through community-led participatory approaches. The rules and regulations have been created to ensure natural resource security for the future. The project has provided additional training and awareness to support best-practice management. Community regulations are already being enforced. This government endorsed community-based management of the lake and surrounding areas contributes to SDG 6 (to ensure availability and sustainable management of water and sanitation for all) and to SDG 15 and 16, to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests and halt biodiversity loss, and promote inclusive societies for sustainable development.

5. Project support to the Conventions, Treaties or Agreements

The Ramsar Focal point has been the official lead for the development of National Wetland Guidance. All communications to partners has been routed through her. Ramsar is recognised as a lead partner in implementing CBD wetland-related activities.

The establishment and government endorsement of community-based management of Lake Sofia and provisional Ramsar designation has contributed to **Goal 1.2** of the **Inland Waters Biodiversity** thematic programme. The finalisation of the draft National Wetland Guidance contributes to **Goal 2.1** of the same thematic programme, filling institutional knowledge gaps and facilitating cross-sectoral working through the development and adoption of national sustainable wetland management guidance. Community participation and engagement, in additional to the schools education programmes and newly created community information points have helped to engender a greater understanding and appreciation of wetland biodiversity in local communities as the custodians of their wetland environment through effective (**Goals 2.4 and 3.1 of Inland Waters Biodiversity** and **CBD Aichi Target 1**).

Fisheries management at Lake Sofia and sustainable harvesting of marsh vegetation has been built into the Management Transfer Agreements (Annex 6) and 70% of fisherfolk now have legal nets, contributing to **CBD Aichi Target 6**.405 households have received training and/or support to transition to more environmentally sustainable agricultural practices (see Activities 2.9 – 2.19 and Output 2 for breakdown of numbers - **Aichi Target 7**), with pesticides decreased from 83% to 12.5% within pilot groups (**Aichi Target 8**).

6. Project support to poverty alleviation

Direct livelihood-based poverty alleviation support at Lake Sofia is outlined in Output 2 and section 3.5. Additional indirect contributions have been made through the community consultations conducted during study tours for the development of National Wetland Guidance (Annex 16) and the involvement of local development partners. This ensured that environmentally sensitive development practices, more profitable land-uses, and sustainable management of natural resources were highly prominent in the draft guidance document. During this process, capacity is also being built within environmental departments of local and national government so that they are more informed to consider poverty alleviation in day-to-day activities. Baseline data was collected at the start of the project and increase in capacity will be assessed in Y3.

7. Project support to gender equality issues

Focused effort has been made to invite all sectors of local society to engage with the project through meetings, training, livelihood support management transfer consultations and awareness raising. We are pleased with the strong inclusion of women in memberships of the community-based management transfer associations, with the current total membership of the three local associations being 635 women (66%) and 323 men. The freely elected management committee comprises 40% women, which is a low percentage compared to overall membership, but high compared to other management structures (e.g. commune committee and majors office). 25% of all farmers receiving training were women, proportional to gender ratios of farmers in the local area. 12 Community-based Savings and loans Groups (CBSGs)

have now been established with a total of 237 members of whom 57% are women. Thirteen of the 21 participants National Wetland Guidance draft review workshop in April 2017 were women.

8. Monitoring and evaluation

Monitoring and evaluation of this project is built into partner workplans. Data collection and management is ongoing and the original M&E plan presented in the Y1 Annual report is still largely valid. Many of the indicators have been developed to measure changes by the end of the project, and more comprehensive analysis is scheduled at that point. This Y2 report has mainly relied upon trends in raw data rather than statistical analysis, but the project is confident that the data being collected will allow us to evaluate our output and outcome indicators. Some of the community monitoring has been delayed as it was decided that this is best set as a standard function once the management transfer had been agreed. At that point the community are agreeing on their monitoring priorities and setting appropriate levels of remuneration to monitors.

The M&E indicators remain largely relevant, although certain indicators in Output 3 will be changed in an official change request. The main problem we have faced has been to identify and appropriate method to monitor breeding marsh birds. We have also noticed larger than anticipated annual population variances in the region (Lake Sofia and the control site).

9. Lessons learnt

As with many community-based conservation projects, building trust has been a key to allow us to implement activities. We were surprised by the level of caution shown by local communities, but we believe that the delays that this caused will benefit the project in the long-term. Some short-term success through CBSGs and increased fish catch revenues have helped secure our credibility and build trust in technical advice. Evidence to support this claim was shown when communities independently decided to increase the size of no-take fishing zones after witnessing the increase in average fish size and daily income after the project's net exchange programme. Project staff are also struggling with the same initial hesitance from community members living around the upstream forest areas. This has again caused some delays, but we are still confident that the activities will be completed.

The vaccination programme is more complex than anticipated due to the range of diseases and importance of such regular (quarterly) vaccinations. After a review of the process, it was determined that a greater impact could be made through other means (see Activities 2.1 – 2.5).

The newly created community-based associations will require a more sophisticated finance mechanism if to be sustainable into the future. A review has been completed and identified several recommendations (see Output 1).

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

The Y1 review questioned the lack of French and local language annexes. The project had endeavoured to translate the main annexes so that they would be available in the English for ease of review. The project generally produces reports in French, with management transfer agreements and local education material in the local Malagasy dialect. We have therefore added annexes in English, French and Malagasy on this occasion. We have also increased the number of Annexes to help support this report.

11. Other comments on progress not covered elsewhere

The project office was not built in Y1 because we were not able to secure appropriate land from the community authorities at the start of the project. This resulted in a project underspend. Now that trust and relationships have been developed, we have been offered a more appropriate plot in Maratolana. We intend to submit a change request for these unspent funds to be used on this activity in Y3.

12. Sustainability and legacy

During the annual Project Steering and Advisory Group all partners reiterated their long-term commitments to this project. The investments made through management transfer, CBSGs, trainer training programmes and capacity building empower local communities to manage resources and continue sustainable agricultural practices with little external support. Project partners will continue to monitor this and provide top-up assistance wherever needed.

We have now developed a strategy for a long-term sustainable finance mechanism for the community-associations. This strategy will be implemented in Y3 of the project, and includes cooperative equipment rental schemes, cooperative grain drying and storage areas, kiosks to sell environmentally sustainable inputs, and communication systems to link to local markets to assess current prices etc. All of these systems will be run through the community-based management associations to support core running costs.

Project partners plan to reintroduce the Critically Endangered Madagascar pochard to the Lake in 2018, which reaffirms our long-term plan or this site.

13. Darwin identity

The Darwin logo features on project outputs, consultancies, media, and invitations to meetings and government workshops (Example in Annexes 13, 14 and 16). Darwin is also credited during project presentations and on the WWT project website (http://www.wwt.org.uk/conservation/wwt-projects/saving-the-madgascar-pochard/).

The UK government's contribution to this work was promoted at two National Wetland Guidance workshops in Y2, attended by a range of Malagasy government institutions.

14. Project expenditure

Please expand and complete Table 1.

Table 1: Project expenditure during the reporting period (1 April 2016 – 31 March 2017)

Project spend (indicative) since last annual report	2016/17 Grant (£)	2016/17 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)			0	
Consultancy costs			+2.2	
Overhead Costs			-1.3	
Travel and subsistence			-1.4	
Operating Costs			+1.4	
Capital items (see below)	0	0	0	
Others (see below)			-0.4	
TOTAL			**0**	

Highlight any agreed changes to the budget and **fully** explain any variation in expenditure where this is +/- 10% of the budget. Have these changes been discussed with and approved by Darwin?

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2016-2017

Project summary	Measurable Indicators	Progress and Achievements April 2015 - March 2016	Actions required/planned for next period
Impact The Bealanana Wetlands Complex is managed sustainably for people and wildlife, acting as a national model for wetland and catchment management that helps Madagascar deliver international development commitments (MDGs/SDGs).		Management transfer agreements for Lake Sofia were signed on November 2016, when formal community management of the lake has begun. Livelihood development activities are on track and expanding due to high-levels of enthusiasm from the communities, with rice yields increased among pilot farmers and the first income from alternative crops received by farmers. An Environmental Education course has been delivered. National Wetland Management Guidance has been completed in draft.	[redacted]
Outcome Over 10,000 wetland-dependent people have secure access to natural resources and are part of a community-based management regime which improves food security/wellbeing/livelihoods and ecological conditions.	1. Six community associations are active across the entire catchment and are working together to address catchment-scale issues by year 3. 2. By year 3, average community satisfaction and social cohesion perception scores improve by 20% against 2014 baseline (gender and poverty disaggregated data is available, however to give an indication of change, overall scores would move from a current average of 2.16 to 2.60 out of 4). 3. Average duration of the 'lean season' (a widely recognised measure in development work, broadly defined as the difficult period between harvests when resources become scarce and food is more expensive) is reduced by	1. At the end of year 2, there are 3 active associations. Membership of these associations is open to anyone in the project area. Consultations underway with three upstream communities around the fragmented forest. 2. The participatory nature of the project, and the levels of support and enthusiasm expressed during meetings and community fora suggest that strong progress is being made in this area, however empirical information will only be gathered in year 3 of the project. 3. Participation in agricultural activities continues to be high with higher yields being reported. Data gathering for this indicator will take place during the second half of year 3.	Consult with three upstream communities. Continue to support and promote existing associations. Develop local laws for use in the upstream villages. Data gathering on social cohesion, repeating 2014 surveys. Continue and expand agricultural activities, including promotion of alternative food crops and cash crops. Data gathering on 'lean season'. Publish National Wetland Guidance and share with managers at selected sites.

	20% in target villages by year 3 in comparison to identified reference villages for the same period. 4. Populations of ecological indicator species at Lake Sofia stabilized at current levels and no net loss of wetland habitat or deterioration in condition in year 3 in comparison to year 1. 5. Guidance on the sustainable management of wetlands in Madagascar is supported by government and being used at (or agreed plans in place to use at) wetlands across the country.	4. Baselines established for invertebrate (chironomidae) and avian species. No loss of wetland habitat observed between 2014 and now. 5. Draft wetland guidance is complete. The final guidance document is expected to be complete during year 3, with roll-out plans.	
Output 1. Fully representative community management structures surrounding Lake Sofia re-established and strengthened, with new community management structures established for the wider catchment of the lake	1. Management transfer agreements in place for the three local associations surrounding Lake Sofia (Sofia Mandroso, Fikambana Fitantanana Matsabory Sofia, and Sandatra Sofia) by November 2015 and for a further three upstream communities (Antilongo, Lohanisofia, and Andranovaky) by 2018. 2. Annual workplans and 3-year action plans (covering institutional development activities as well as conservation and community development work) are in place (agreed by general assembly) and being implemented in 3 communities by 2016 and 6 communities by 2018. 3. The membership of local association management structures (executive committee, advisory board, and general assembly) are fully representative of the local community, including at least	1. Management transfer agreements for the three existing local associations were completed in November 2016. These associations are larger with membership open to all residents of the entire project area, and consequently extra lakeside associations will not be required. Management transfer agreement being investigated for upstream communities to manage fragmented forest. 2. Workplans for all 3 associations were agreed upon by association members during the last quarter of Year 2. 3. At the end of Year 2, total membership of the 3 local associations was 323 men (34%) and 635 women (66%). This is approximately 15% of the adult (aged 16 or above) population of the total project area. The executive committees total 20 men and 13 women (39%). Data on social stratification will be collected during year 3.	

	50% women and with representative social stratification, by 2017. 4. Watershed management group established and holds inaugural meeting by 2018.	4. Watershed management group not yet established.
Activity 1.1 . Develop and agree initial 3-year management transfer agreements for Sofia Mandroso, Fikambana Fitantanana Matsabory Sofia, and Sandatra Sofia.		Completed in November 2016
Activity 1.2, Develop agreements to transfer the management of natural resources to local-constituted community associations across the upstream catchment of Lake Sofia.		Will be investigated during Year 3, but consultations in the upstream villages suggest this process may be slow. The simplest form of agreement 'Dina' is preferred to help groups work together to protect the forest areas key for vanilla cultivation.
Activity 1.3. Revise and update the management transfer agreements for Sofia Mandroso, Fikambana Fitantanana Matsabory Sofia, and Sandatra Sofia based on information gathered by the project.		This will occur 3 years after the signing of the management transfer agreements, in November 2019 – this activity will not happen during this 3 year funding period.
Activity 1.4. Constitute membership of executive committees, advisory boards, and general assemblies of local associations		Completed for the three existing associations.
Activity 1.5. Hold annual workplan development and review meetings with general assemblies		The first annual workplans were completed and agreed on during the first months of 2017 for all 3 local associations.
Activity 1.6. Hold community fora 3 times per year in each community to ensure wider accountability		Three community for a held during Year 2.
Activity 1.7. Produce semi-annual and annual progress reports on each local association		The first semi-annual progress report will be due in May 2017.
Activity 1.8. Provide technical support to the local community to understand and support delivery of the management transfer agreements		No technical training yet delivered.
Activity 1.9. Deliver training on laws and rights for members of the local associations		Training delivered to all 3 local associations since Nov 2016, and posters distributed in all villages.
Activity 1.10. Establish watershed management group for Lake Sofia Catchment, bringing together local associations across the catchment, local government and other stakeholders.		Scheduled for year 3.
Activity 1.11. Hold annual watershed management group meeting		Scheduled for year 3.
Activity 1.12. Seek to support/reinforce catchment-level work through national/international site/landscape designation compatible with community management objectives (e.g. Protected Harmonious Landscape, Ramsar Site).		Lake Sofia is scheduled to be declared a Ramsar Site in May 2017.
Output 2. Approaches to enhance existing local livelihoods and establish additional livelihood options developed, demonstrated at key sites and being	5. At least 60% and 90% of domesticated bird owners in the three communities surrounding the lake are participating in vaccination	5. The vaccination programme for domestic birds have been abandoned due the need for repeat vaccinations every 3 months to make an impact on the identified local diseases. This indicator will be changed to percentage of owners participating in animal husbandry training (current level of 14% to be increased dramatically in Y3).

implemented across the wider catchment	programmes of the project by 2016 and 2017 respectively. 6. Reporting of disease as a major problem with chickens/ducks/geese, reduced to 30%/20%/20% in vaccinated area and 70%/40%/40% in wider landscape by 2017 (against 2014 baseline of 90%/55%/55%). 7. At least 90% of fisherfolk are using recommended fishing equipment and respecting local fishing regulations by 2016 8. 15 farmers (from three communities) signed up to and have started working on the rice farming pilot projects by 2016. 9. Rice yields increased by an average of at least 150%, water use reduced by 20% and chemical inputs reduced by 90% on pilot rice fields by 2017 (in comparison with 2015 baseline of pilot sites and control sites) 10. At least 30 additional rice farmers (beyond pilot sites) applying the new techniques to their rice fields by 2017 11. Lake Sofia wet Arabica coffee and sustainable vanilla production business plans developed by 2016 with local infrastructure (nurseries, storage and collection networks) in place by 2017 and pilot phase production underway in 2018.	6. Data to be collected in Oct/Nov 2017. 7. 70% of fishermen (53 out of an estimated 75), who fish using boats and nets, are currently using recommended equipment. This is expected to increase to 100% during Year 3. The total number of fisherfolk, who fish using lines from the lake shore, is difficult to estimate. So far no fisher has been caught using non-regulation equipment, so the estimated rate of compliance is 100%. 8. 42 farmers (from nine communities) participated in the rice farming pilot projects during Year 1. This has increased to 100 farmers from 9 communities participating during Year 2. 9. The 2nd rice growing season of the project is still underway, and has been delayed by late rains in 2017, so results are not yet available. For the first year of the project, yields on pilot plots were up to 300% higher than traditional methods. Water use could not be measured. Chemical inputs declined from a baseline of 83% to 12.5%. 10. 58 additional farmers are applying new rice farming techniques during the 2017 growing season. 11. Coffee and vanilla have been replaced by cloves and Artemisia as cash crops. Pilot phase production of Artemisia took place in 2016 (180 farmers cultivating total of 3.5 ha and producing 1500 kg of dried leaf powder). Clove bushes were distributed to farmers during 2016 but these take 5 years to mature so no production will occur before 2021. No business plan yet. Storage and collection is currently being arranged ad-hoc, and this will be improved during Year 3.
Activity 2.1. Vaccinate domestic birds against disease in the villages surrounding Lake Sofia using authorised vaccinators		No vaccinations were given in Year 2, and the vaccination programme has been abandoned as logistically and financially too difficult to administer.
Activity 2.2. Train members of local communities in vaccination techniques by working alongside authorised vaccinators to enable them to take over this work		See 2.1.

Activity 2.3. Produce vaccination guidance manual	Vaccination training material distributed but scheme ended.
Activity 2.4. Deliver animal husbandry practices training to all villages in the Lake Sofia catchment	Training delivered to all villages during Year 2. Total attendance was 238 people, representing approximately 14% of livestock owning households.
Activity 2.5. Produce information factsheets on common diseases, focussed on prevention and management techniques	In development, should be complete by May 2017.
Activity 2.6. Construct fishing and fish landing platforms at Lake Sofia to improve lake access and safety, enable easier processing and monitoring of fish catches, and reduce disturbance to marsh habitats	First landing platform completed on the eastern shore of the lake in January 2017.
Activity 2.7. Provide replacement fishing equipment in exchange for any fishing gear not permitted for use on Lake Sofia under existing or any revised regulations.	53 fishermen have now exchanged nets, with approximately 20 still to exchange.
Activity 2.8. Design and implement fisheries/fish catch monitoring programme	Ongoing - The fish catch monitoring programme methods were modified in Feb 2017 as the previous methods were being biased by the fishermen towards larger fish.
Activity 2.9. Identify locations for pilot rice farming projects and sign agreements with participants (through local associations where already in place)	100 pilot rice farmers are active in Year 2. Although more farmers than this signed up, 175 in total, late rains in 2017 meant that many farmers have not planted at all this year, hence the reduced number of active farmers. As rice farming activities were started before the local associations were active, it is now impractical to co-ordinate this activity through the associations, but new management association sustainable finance mechanism to help develop links.
Activity 2.10. Conduct pilot projects in three villages to demonstrate the application of more environmentally sensitive rice cultivation practices	As in Year 1, pilot rice farming is being conducted in all 9 villages within the project area.
Activity 2.11. Develop and implement monitoring programme (focussed on yield, water quality and external inputs) for pilot rice farming projects	Data collection took place at the time of harvesting, and is ongoing.
Activity 2.12. Report on findings of pilot projects	Data for Year 1 of the pilot farming project is now available. Yields were increased by 300%, chemical inputs decreased by 20%. As nearly all of the rice is rain fed, measuring water use was not possible.
Activity 2.13. Train agricultural extension training team	Most training is still carried out by project staff as extension team gain confidence to work more independently.
Activity 2.14. Deliver environmentally sensitive rice cultivation (including soil management techniques) training to all villages in the Lake Sofia catchment	Farming groups have been established in all villagers and training has been delivered to all groups. Total membership of the groups is now 444 farmers. Of these, 264 farmers have been given training in environmentally sensitive rice cultivation. A subset of this group, 100 farmers, are the pilot group, who are given weekly guidance on the farming methods.
Activity 2.15. Develop and agree a roll-out programme of rice farming work with local associations and village leadership	The scale of the rice farming project has expanded from Year 1 to Year 2 and is expected to do so again in Year 3. Word of mouth is currently being relied on to spread uptake.
Activity 2.16. Conduct feasibility study for alternative livelihood options (wet-processed Arabica coffee/sustainable vanilla)	A feasibility study for coffee and vanilla was completed in July 2016. The report concluded that neither crop is well suited to the project area due to Sofia' remoteness making access to distribution networks difficult and the need for both crops to be fresh when sold to get the highest price. Other cash crops, particularly

		cloves and Artemisia which can be stored and sold dry, are being promoted instead.
Activity 2.17. Establish local nursery to supply high-quality coffee/vanilla cuttings to local farmers		No nurseries as yet. Artemisia seeds and clove seedlings are supplied to farmers.
Activity 2.18. Identify locations for development of pilot value-added coffee and vanilla projects and sign agreements with participants		During Year 2, 180 farmers trialled growing Artemisia. They cultivated 3.5 hectares in total, producing 1500 kg of dried leaf powder which was bought for malaria medication production for 1.5 million Ariary. Clove seedlings have been supplied to 67 farmers, but these take 5 years to mature. These activities occurred in all 9 villages.
Activity 2.19. Provide training and materials to support sustainable coffee/vanilla farming projects		All training required for Artemisia production and care for the clove plants while they are young has been provided.
Activity 2.20. Produce quarterly updates and annual progress report on all activities		Reports and updates have been delivered each quarter.
Output 3. Conditions (policy, practice and awareness) in place to reduce key threats to wildlife and the environment of Lake Sofia and its catchment, including burning/clearance of marsh, hunting/trapping of threatened wildlife, and draining of wetlands.	12. 65% of households in the Lake Sofia catchment have an increased understanding of the social, environmental and economic importance of sustainable wetland/watershed management by 2017 in comparison to 2015 baseline.	12. Environmental education courses in local primary schools and ongoing awareness events linked to project interventions. Data collection to take place in Sep-Nov 2017.
	13. Environmental education programs developed by the project are integrated into the curriculum of at least two primary schools and one secondary school in the catchment by 2016 and being adopted commune-wide by 2018	13. A week-long environmental education course was trialled at 3 primary schools in October 2016. Further material relating to EE have been submitted to the regional authorities for feedback before being distributed to all local schools.
	14. At least 1.5ha of marginal/aquatic vegetation restored and 5ha of currently bare headland around Lake Sofia reforested (under cover of saplings of diverse native provenance and demonstrating annual survival rates of at least 70%) by 2018	14. Areas agreed but no restoration progress so far. Planned for Year 3.
	15. Density of marsh-breeding bird nests and fledging success rates increased by 20% and 10% respectively in 2017 compared with 2015 baseline (as proxy for reduced disturbance). Indicator will also compare with adjacent control site to	15. Pond Heron, the endangered species proposed for us in this indicator, populations at both Lake Sofia and the control site (Bemanevika) have collapsed – no nesting attempts were recorded in 2017.

	adjust for impacts of external factors (e.g. climate variation). 16. Instances of deliberate burning/drainage of marsh, use of illegal fishing gear, illegal hunting by residents of local communities reduced to zero by year 3, and any instances of such activities by outsiders are effectively prosecuted/redressed in accordance with the rules of the local association.	16. Zero burning of marsh recorded in 2016 or 2017. A marsh-drainage channel was constructed by one of village associations in January 2017 but this was blocked off again following complaints from the other two associations. Hunting of birds in the marsh remains high, particularly by children who are not in school. This will be targeted during Year 3.
Activity 3.1. Develop environmental education programme and supporting materials (lesson plans, ID guides, basic sampling equipment, teaching guides) for use in schools		A five-day environmental education course, including detailed supporting materials, has been developed. Additional materials that can be embedded in general science teaching have also been developed.
Activity 3.2. Run initial demonstration sessions in schools		A trial run of the course was carried out at 3 primary schools in October 2016.
Activity 3.3. Conduct teacher training events		A teacher training workshop was carried out in conjunction with the course trials in Oct 2016.
Activity 3.4. Develop magnification/roll-out plan with local and regional education departments		Materials are currently with the regional education authorities for comments and approval. A roll-out plan will be developed once this is given.
Activity 3.5. Establish catchment-wide network of community information dissemination points		Information points were established in 5 villages during March 2017.
Activity 3.6. Develop simple ecological monitoring framework, linking improvements in ecological health to human health/wellbeing		No community monitoring has yet been carried out. This will be organised through the local associations and has been waiting for the associations to become active.
Activity 3.7. Identify network of local community monitoring focal points and sign agreements with participants		No progress.
Activity 3.8. Run training events and provide simple monitoring materials to focal points to enable them to act as local coordinators of monitoring effort		Not yet started.
Activity 3.9. Produce semi-annual community monitoring reports		Not yet started.
Activity 3.10. Identify and agree locations and plans for reforestation work on bare headlands surrounding lake with local associations		Locations have been identified and agreed as part of the management transfer agreements.
Activity 3.11. Procure supply of suitable seedlings for reforestation work and establish local holding station/nursery		As yet, we been unable to determine what seedlings are suitable. There is a general consensus that exotic trees will be required as pioneer species before natives can be established, but no agreement as to what exotic species might work. This, combined with the general lack of success of reforestation work in

		Madagascar, has meant a delay to this activity whilst we conduct further experts and visit some other reforestation sites.
Activity 3.12. Conduct reforestation events with villages surrounding Lake Sofia		Now proposed to take place in Year 3.
Activity 3.13. Assess extent and quality of aquatic/marginal habitat and identify priority locations for restoration work		Detailed mapping of aquatic vegetation took place in both Years 1 and 2. Sites for restoration have been identified.
Activity 3.14. Undertake restoration of aquatic and marginal vegetation with local community, using cuttings and transplants from other areas of the lake/catchment		Now proposed to take place in Year 3.
Activity 3.15. Undertake habitat extent and condition monitoring using combination of remote sensing and groundtruthing techniques		Habitat monitoring, used an Unmanned Aerial Vehicle, has taken place in Q4 of both Years 1 and 2.
Activity 3.16. Produce quarterly updates and annual progress report on habitat restoration work		Not yet started.
Output 4. National-level sustainable wetland management guidance (informed by the model developed at Lake Sofia) adopted by the Government of Madagascar and being used at wetlands across the country.	17. National-level working group established in 2015 18. Draft guidance developed for consultation by 2016 19. Final guidance (including a case study on Lake Sofia) produced and endorsed by government by the end of 2017 20. Guidance is being applied to at least 3 additional wetland sites in Madagascar by 2018.	17. Completed in October 2016. 18. Draft guidance complete, and consultations with stakeholders took place in March 2017. 19. Final guidance expected to be on time. 20. For Year 3.
Activity 4.1. Constitute national working group to develop the guidance		Completed in Y1.
Activity 4.2. Run study tours to four wetlands (Lake Alaotra, Lake Kinkony, Torotorofotsy and Lake Sofia)		Completed in October 2016.
Activity 4.3. Hold guidance development workshop		Completed.
Activity 4.4. Write up Lake Sofia case study		Now proposed for Year 3.
Activity 4.5. Produce draft guidance and consult with broad range of stakeholders		Draft guidance complete and sent to working group and stakeholders for feedback.

Activity 4.6. Workshops to finalise guidance, chaired by national CBD and Ramsar focal points.	Held in March 2017.
Activity 4.7. Design and publish guidance document in three languages (Malagasy, French and English)	Scheduled for Year 3.
Activity 4.8. Organise national conference for wetland managers and policy makers and use as platform to launch guidance	Scheduled for Year 3.
Activity 4.9. Project partners involved in managing wetlands elsewhere in Madagascar (particularly DWCT and Asity) test the guidance against those sites and apply recommendations.	Scheduled for Year 3.
Activity 4.10. Promote guidelines at national and international conferences and conventions	The guidance was promoted at wetland management conference at the University of Antananarivo in October 2016.
Activity 4.11. Produce quarterly updates and annual progress reports	Not yet done.

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: Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.			
Outcome: Over 10,000 wetland-dependent people have secure access to natural resources and are part of a community-based management regime which improves food security/wellbeing/livelihoods and ecological conditions.	1. Six community associations are active across the entire catchment and are working together to address catchment-scale issues by year 3. 2. By year 3, average community satisfaction and social cohesion perception scores improve by 20% against 2014 baseline (gender and poverty disaggregated data is available, however to give an indication of change, overall scores would move from a current average of 2.16 to 2.60 out of 4). 3. Average duration of the 'lean season' (a widely recognised measure in development work, broadly defined as the difficult	1. Public record (statutes and official signed documentation), project documents, association meeting minutes and participants lists, community forum meetings/feedback, participatory learning reports for target stakeholder/beneficiary groups (resource user groups, marginalised groups, women), social survey/attitudes assessment report, minutes of meetings with commune chief and district/provincial level representatives. 2. Household survey data and reports. 3. Household survey data and participatory learning reports, minutes of community meetings. Comparable data from reference	That, following the recent elections (establishing the first democratically elected government since 2009), the newly established political environment remains relatively stable and conducive to conservation and development work delivered in partnership with external agencies. *[National-level work, particularly activities under output 4 will be used to maintain close working relationships with the government and keep a close eye on the situation and the steering group will be tasked with developing strategies to address any changes]* That powerful individuals and outside influences, which have encroached into many other similar wetland areas (e.g. Lake Antafiandakana), do not seek to or succeed in destabilising the project's progress for their own interests. *[Work to establish*

	period between harvests when resources become scarce and food is more expensive) is reduced by 20% in target villages by year 3 in comparison to identified reference villages for the same period. 4. Populations of ecological indicator species at Lake Sofia stabilized at current levels and no net loss of wetland habitat or deterioration in condition in year 3 in comparison to year 1. 5. Guidance on the sustainable management of wetlands in Madagascar is supported by government and being used at (or agreed plans in place to use at) wetlands across the country.	villages (to capture real change rather than the influence of external factors such as climate) 4. Biodiversity survey and monitoring data (including benthic invertebrate counts, fish catch records and waterbird population counts), satellite imagery and aerial photography 5. National level CBD and Ramsar reporting, guidance referenced in additional	*the legal basis for the association's work will significantly address this issue during the lifetime of the project and national level work with government ministries will help ensure political support is in place to react to any threats]* That the management bodies established are endorsed and empowered by government to control/coordinate the sustainable management of Lake Sofia and its catchment. *[Although using existing frameworks and recognised techniques this is a relatively new approach/model in Madagascar. The involvement of local government (DREEF and DRDR) as project partners will help to ensure this, supported by national level policy work]*
Outputs: **1**. **Fully representative community management structures surrounding Lake Sofia re-established and strengthened, with new community management**	1. Management transfer agreements in place for the three local associations surrounding Lake Sofia (Sofia Mandroso, Fikambana Fitantanana Matsabory Sofia, and Sandatra Sofia) by November 2015 and for a further three upstream communities	1. Public record (official declaration), documents supporting submission, press releases and articles	

structures established for the wider catchment of the lake	(Antilongo, Lohanisofia, and Andranovaky) by 2018. 2. Annual workplans and 3-year action plans (covering institutional development activities as well as conservation and community development work) are in place (agreed by general assembly) and being implemented in 3 communities by 2016 and 6 communities by 2018. 3. The membership of local association management structures (executive committee, advisory board, and general assembly) are fully representative of the local community, including at least 50% women and with representative social stratification, by 2017. 4. Watershed management group established and holds inaugural meeting by 2018.	2. Articles of local associations (annual workplans and 3 year activity plans), reports of annual workplan development/review and semi-annual workplan progress update meetings. Supplemented by feedback/minutes from community meetings and participatory learning reports. 3. Public record (official documents), TORs, management committee membership/participant lists and minutes of meetings, minutes/feedback from community meetings, project documents, household survey data (disaggregated by village, Multi-dimensional Poverty Index score, and gender). 4. Public record, press releases and articles, watershed management group meeting minutes and project reports/photographs.	
2. **Approaches to enhance existing local livelihoods and establish additional livelihood options developed, demonstrated at key sites and being implemented across the wider catchment**	5. At least 60% and 90% of domesticated bird owners in the three communities surrounding the lake are participating in vaccination programmes of the project by 2016 and 2017 respectively	5. Signed agreements with individuals receiving vaccines, receipts and inventories showing volumes of vaccines used	That the evidence gathered and demonstrated through pilot project work will be sufficient to change attitudes and enable training to improve wider uptake (as cultural/spiritual beliefs can create scepticism towards

	6. Reporting of disease as a major problem with chickens/ducks/geese, reduced to 30%/20%/20% in vaccinated area and 70%/40%/40% in wider landscape by 2017 (against 2014 baseline of 90%/55%/55%).	6. Household survey data and reports	technical solutions). *[This is an assumption based on successful work elsewhere in Sofia region, however in Madagascar cultural issues can be very localised (e.g. local 'fadys' which prevent certain activities in certain locations based on spiritual/ancestral beliefs). Staff of the project have the skills to adapt work to this very local context and additional staff recruited from the local community will help with this]*
	7. At least 90% of fisherfolk are using recommended fishing equipment and respecting local fishing regulations by 2016	7.Records/receipts of gear exchange, reports of local associations on infringements of regulations, fisheries monitoring reports	
	8. 15 farmers (from three communities) signed up to and have started working on the rice farming pilot projects by 2016.	8. Signed agreements with local associations/village leadership and individual farmers, project reports	
	9. Rice yields increased by an average of at least 150%, water use reduced by 20% and chemical inputs reduced by 90% on pilot rice fields by 2017 (in comparison with 2015 baseline of pilot sites and control sites).	9. Rice yield, and water monitoring data (quality and quantity) from pilot and control sites, community feedback (meeting minutes, attitudes/awareness surveys), press releases/articles, journal papers	
	10. At least 30 additional rice farmers (beyond pilot sites) applying the new techniques to their rice fields by 2017	10. Agreements with local associations, participants lists and reports from training and follow-up events, community feedback (meeting minutes, attitudes/awareness surveys)	
	11. Lake Sofia wet Arabica coffee and sustainable vanilla production business plans developed by 2016 with local infrastructure (nurseries, storage	11. Feasibility study final report, minutes of community meetings, Lake Sofia community development plans, Strategies/Plans of OSDRM,	

	and collection networks) in place by 2017 and pilot phase production underway in 2018.	Project proposals, Project registers of donors.	
3. **Conditions (policy, practice and awareness) in place to reduce key threats to wildlife and the environment of Lake Sofia and its catchment, including burning/clearance of marsh, hunting/trapping of threatened wildlife, and draining of wetlands.**	12. 65% of households in the Lake Sofia catchment have an increased understanding of the social, environmental and economic importance of sustainable wetland/watershed management by 2017 in comparison to 2015 baseline 13. Environmental education programs developed by the project are integrated into the curriculum of at least two primary schools and one secondary school in the catchment by 2016 and being adopted commune-wide by 2018 14. At least 1.5ha of marginal/aquatic vegetation restored and 5ha of currently bare headland around Lake Sofia reforested (under cover of saplings of diverse native provenance and demonstrating annual survival rates of at least 70%) by 2018 15. Density of marsh-breeding bird nests and fledging success rates increased by 20% and 10% respectively in 2017 compared with 2015 baseline (as proxy for reduced disturbance). Indicator will also	12. Attitudes/awareness survey at beginning and end of project 13. School curricula/syllabus and lesson plans, evaluation report interviews with students and teachers, project reports, minutes of meetings with education departments, commune and district level education department plans 14. Satellite imagery (Landsat images - 30m resolution), photographic evidence, minutes of community meetings, project reports, press/media articles, inventories and receipts of plug plants and saplings. 15. Project reports and monitoring data, biodiversity reports (number of nests/fledging success rates of marsh nesting birds). Control site surveys (Bemanevika lakes)	That there is not a fundamental ecological reason for the relative lack of productivity in Lake Sofia (of benthic invertebrates and fish) and that this is a consequence of poor environmental practices surrounding and upstream of the lake. *[This issue has been explored and fairly detailed investigations conducted to date suggest that this is unlikely to be the case, however it must always be considered and any indications/evidence during the project that this may be the case need to be reported to and considered by project management]*

	compare with adjacent control site to adjust for impacts of external factors (e.g. climate variation) 16. Instances of deliberate burning/drainage of marsh, use of illegal fishing gear, illegal hunting by residents of local communities reduced to zero by year 3, and any instances of such activities by outsiders are effectively prosecuted/redressed in accordance with the rules of the local association.	16. Satellite imagery (Landsat images - 30m resolution), photographic evidence, incidences of burning and clearance reported in minutes of community/association meetings, District and provincial DREEF/DRADR records.	
4. **National-level sustainable wetland management guidance (informed by the model developed at Lake Sofia) adopted by the Government of Madagascar and being used at wetlands across the country.**	17. National-level working group established in 2015 18. Draft guidance developed for consultation by 2016 19. Final guidance (including a case study on Lake Sofia) produced and endorsed by government by the end of 2017 20. Guidance is being applied to at least 3 additional wetland sites in Madagascar by 2018.	17. Working group ToR and commitment of members (MoU/charter), minutes of meetings, project reports. 18. Draft guidance document, minutes of meetings 19. Final guidance document, minutes of meetings, project reports 20. Project reports from other sites (organisations both within and beyond the Lake Sofia project partnership), minutes of meetings and reports of government.	That the increasing political stability of Madagascar attracts additional donors and partners to work/collaborate in the region and build on the foundations established by the project. *[If this assumption does not hold, the project will focus even more effort on developing close relations with specific donors to ensure support continues during political instability. This has been a proven strategy during the past political turmoil. Work to ensure management structures are community-led and maintainable/sustainable without significant external intervention will also help mitigate the impact]*

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)

1.1 Develop and agree initial 3-year management transfer agreements for Sofia Mandroso, Fikambana Fitantanana Matsabory Sofia, and Sandatra Sofia.
1.2 Develop agreements to transfer the management of natural resources to local-constituted community associations across the upstream catchment of Lake Sofia.
1.3 Revise and update the management transfer agreements for Sofia Mandroso, Fikambana Fitantanana Matsabory Sofia, and Sandatra Sofia based on information gathered by the project.
1.4 Constitute membership of executive committees, advisory boards, and general assemblies of local associations
1.5 Hold annual workplan development and review meetings with general assemblies
1.6 Hold community fora 3 times per year in each community to ensure wider accountability
1.7 Produce semi-annual and annual progress reports on each local association
1.8 Provide technical support to the local community to understand and support delivery of the management transfer agreements
1.9 Deliver training on laws and rights for members of the local associations
1.10 Establish watershed management group for Lake Sofia Catchment, bringing together local associations across the catchment, local government and other stakeholders.
1.11 Hold annual watershed management group meeting
1.12 Seek to support/reinforce catchment-level work through national/international site/landscape designation compatible with community management objectives (e.g. Protected Harmonious Landscape, Ramsar Site).
2.1 Vaccinate domestic birds against disease in the villages surrounding Lake Sofia
2.2 Train members of local communities in vaccination techniques
2.3 Produce vaccination guidance manual
2.4 Deliver animal husbandry practices training to all villages in the Lake Sofia catchment
2.5 Produce information factsheets on common diseases, focussed on prevention and management techniques
2.6 Construct fishing and fish landing platforms at Lake Sofia to improve lake access and safety, enable easier processing and monitoring of fish catches, and reduce disturbance to marsh habitats
2.7 Provide replacement fishing equipment in exchange for any fishing gear not permitted for use on Lake Sofia under existing or any revised regulations.
2.8 Design and implement fisheries/fish catch monitoring programme
2.9 Identify locations for pilot rice farming projects and sign agreements with participants (through local associations where already in place)
2.10 Conduct pilot projects in three villages to demonstrate the application of more environmentally sensitive rice cultivation practices
2.11 Develop and implement monitoring programme (focussed on yield, water quality and external inputs) for pilot rice farming projects
2.12 Report on findings of pilot projects
2.13 Train agricultural extension training team
2.14 Deliver environmentally sensitive rice cultivation (including soil management techniques) training to all villages in the Lake Sofia catchment
2.15 Develop and agree a roll-out programme of rice farming work with local association and village leadership
2.16 Conduct feasibility study for alternative livelihood options (wet-processed Arabica coffee/sustainable vanilla)
2.17 Establish local nursery to supply high-quality cuttings to local farmers
2.18 Identify locations for development of pilot value-added coffee and vanilla projects and sign agreements with participants
2.19 Provide training and materials on sustainable coffee/vanilla farming practices
2.20 Produce quarterly updates and annual progress report on all activities

3.1	Develop environmental education programme and supporting materials (lesson plans, ID guides, basic sampling equipment, teaching guides) for use in schools	
3.2	Run initial demonstration sessions in schools	
3.3	Conduct teacher training events	
3.4	Develop magnification/roll-out plan with local and regional education departments	
3.5	Establish catchment-wide network of community information dissemination points	
3.6	Develop simple ecological monitoring framework, linking improvements in ecological health to human health/wellbeing	
3.7	Identify network of local community monitoring focal points and sign agreements with participants	
3.8	Run training events and provide simple monitoring materials to focal points to enable them to act as local coordinators of monitoring effort	
3.9	Produce semi-annual community monitoring reports	
3.10	Identify and agree locations and plans for reforestation work on bare headlands surrounding lake with local associations	
3.11	Procure supply of suitable seedlings for reforestation work and establish local holding station/nursery	
3.12	Conduct reforestation events with villages surrounding Lake Sofia	
3.13	Assess extent and quality of aquatic/marginal habitat and identify priority locations for restoration work	
3.14	Undertake restoration of aquatic and marginal vegetation with local community, using cuttings and transplants from healthier areas of the lake/catchment	7
3.15	Undertake habitat extent and condition monitoring using combination of remote sensing and groundtruthing techniques	3
3.16	Produce quarterly updates and annual progress report on habitat restoration work	2
4.1	Constitute national working group to develop the guidance	
4.2	Run study tours to four wetlands (Lake Alaotra, Lake Kinkony, Torotorofotsy and Lake Sofia)	
4.3	Hold guidance development workshop	
4.4	Write up Lake Sofia case study	
4.5	Produce draft guidance and consult with broad range of stakeholders	
4.6	Workshops to finalise guidance, chaired by national CBD and Ramsar focal points.	
4.7	Design and publish guidance document in three languages (Malagasy, French and English)	
4.8	Organise national conference for wetland managers and policy makers and use as platform to launch guidance	
4.9	Project partners involved in managing wetlands elsewhere in Madagascar (particularly DWCT and Asity) test the guidance against those sites and apply recommendations.	
4.10	Promote guidelines at national and international conferences and conventions	
4.11	Produce quarterly updates and annual progress reports	

Annex 3: Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Gender of people (if relevant)	Nationality of people (if relevant)	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
6A	Training to be delivered for sustainable farming partnerships.	Male and Female	Malagasy	320	405		725	1000
6A	Management and administration training for VOIs (community association).	Male and Female	Malagasy	73			0	20
6A	Training delivered to local fishers.	Male and Female		20	33		53	50
6A	Schools Environmental Education programme	Boys and girls	Malagasy	0	476		476	2000
7	Schools Environmental Education course. National Wetland Guidance Manual. Project Information Posters.			0	3		3	3
9	Lake management transfer agreements			0	3		3	2
10	Waterbird / marsh plant ID guides for community monitoring			0	0		0	2
11A	Papers published			0	0		0	1
11B	Papers submitted			0	0		0	2
14A	Conference held on National			0	0		0	1

	Wetland Guidance							
20	Agricultural equipment and fishing platforms and equipment			£5,000	£4,780		£9,780	£10,000

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 4. Picture of PMG Meeting in Antsohihi

Annex 5. Sample Partner Quarterly Report

14.1 LAKE SOFIA PROJECT

14.2 OUTPUT-LEVEL UPDATE (QUARTERLY 4)

Asity Madagascar achievement

Reporting Period:	3rd quarterly 2016
Name (writer(s) of this report):	Rivo Rabarisoa
Position/ Title:	Wetland Project Coordinator
Organization:	Asity Madagascar
Date:	January 2017

Output: 1	Output 1: Fully representative community management structures surrounding Lake Sofia are re-established and strengthened with new community management structures established for the wider catchment of the lake

Activity 1.9. Deliver training on laws and rights for members of the local associations

Asity Madagascar organizes capacity building on management transfer to local community at the respective fokontany: Marofamara, Marotolana, and Andampy. The training was conduct by Jean Charles, a management transfer specialist of Asity Madagascar at each fokontany from October 24th – 29th 2016 with the following subjects:

a. The management transfer contract with responsibilities of each entities both the VOI members and the Forestry Department
b. The status and internal rules (status et règlement interne), of VOI members
c. The structure of the management transfer,
d. The management plan, and
e. The terms of referees (cahier des charges)

	Number of participants	Date
Marofamara	8	October 28-29th
Marotolana	39	October 24-25th
Andampy	26	October 26-27th

Participants was composed by: the president of fokontany, the Tangalamena (stakeholders) and VOI members

Output 3 :	National-level sustainable wetland management guidance (informed by the model developed at lake Sofia)adopted by the Government of Madagascar and being used at wetlands across the country

Activities 3.1-3.4 Develop environmental education program in schools / demonstration events / teacher training / develop roll-out plan

Organizing and giving support to the test of the environmental education conducted by WWT

Tina, Asity based at Marotolana participate into the organization and conduct of the environmental education program conducted by WWT at Antsohihy, Bealanana and Marotolana in collaboration with the DREN CISCO Antsohihy and ZAP Marotolana.

- *Test on using the environmental education tools developed by WWT and Asity at three primary school*

- *Organization of the field visit for kids to show the wetland biodiversity and its importance*

- *School environmental education : Settlement of trees nursery at school*

Two primary school were concerned during this reporting period: Lohanisofia, and Marotolana with 3000 plants seeds each. The objective is to give a basic biology of plants development to kids. The activity contains the following steps:

  - Theoretical training on vegetal production in class at school
  - Preparation of the trees nursery
  - Preparation of the tree pots (substrate,, filling the pot,…)

Participants: Kids to all class (9ème, 8ème, 7ème) at each school

- *Organization of a series of information and sensitization on the importance of wetlands*

Information and sensitization program on the importance was conducted at 2 villages Antilongo and Lohanisakoa inside the fokontany Mahatsinjo.

Subjects:

  - sustainable use of wetland at Sofia lake
  - importance of wetland based of Sofia lake natural resources

Number of participants: Antilongo: 26 people

Lohanisofia: 24 people

Posters describing the “importance of wetlands for people & biodiversity” were used to share the information (see photo bellow)

Activity 3.5 3.6 Establish catchment-wide network of community info dissemination points / Develop ecological monitoring framework

Five panels of information dissemination were settled at the 5 fokontany: Marofamara, Marotolana, Andampy, Lohanisofia, and Antilongo. These panels will be used to share information about Sofia lake management and also for other important purposes such as fokontany and VOI news…

Planning of the use of these panels was made by the project lead by Asity Madagascar Marotolana

Activity 3.13- 3.15 Assess extent and quality of aquatic/marginal habitat and identify priority locations / Undertake restoration of aquatic and marginal vegetation / Undertake habitat extent and condition monitoring

Three activities are planned concerning the aquatic plant restoration:

- restoration and/or regeneration of degraded of aquatic vegetation at some place of the marsh area of lac Sofia
- restoration of plant and aquatic weeds at the edge of Sofia lake, and
- plantation of

The feasibility is discussed and analyzed according to both the developed site management plan (Transfer de gestion des 3 VOI) and the result of the aquatic plant monitoring/evaluation.

Conduct scientific monitoring on biodiversity including establishing baselines

The second scientific monitoring was conducted on October – November 2016 at lac Sofia and concerned two taxa, the aquatic plants and the avifauna biodiversity monitoring

- Birds monitoring: 35 species of birds belonging to 10 families were recorded. 5 species as includes as indicator species to the Sofia lake as the *Anas melleri, Ardeola idea, Gallinago macrodactyla, Rallus madagascariensis* and *Tachybaptus pelzelnii*. Details are described inside the monitoring report and data base is settled on Excel sheet.
- The main threats are the swamp fire and the collect or waterbird hunting (see photo bellow) conducted by kids from the surrounding villages using trap.

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1) **Progress on Activities and related financial issues.** A brief overview of progress on activities,

Problems and Constraints. Highlight any failures, problems or constraints that have affected progress, and describe the measures taken to respond to them. List any key changes to the external environment in which the project is operating (especially where these relate to risks identified in project plan).

- Late start of the project activities according to the late settlement of the management transfer (VOI)
- One of the main problems is low capacity of people (most of them are illiterate) and their occupancy to their daily life which limit the project implementation. For example, to keep them more than two days is very difficult according to their occupancy.

- Hunting activities conducted by kids need more attention: During the bird monitoring 2016, a minimum of 10 individuals waterbird per days were caught inside the aquatic vegetation (especially rails, ducks and heron). Strong sensitization in this aspect need to be conducted as soon as possible

2) **Unexpected effects.** Describe any unexpected (positive or negative) consequences that have occurred as a result of the project and/ or any new opportunities.

   No unexpected effects which affect project well-being was seen at the moment

3) **Learning and Sharing.** Describe key lessons learned. They may relate to successes, strategies adopted, challenges faced, surprise results, management processes, or technical understanding.

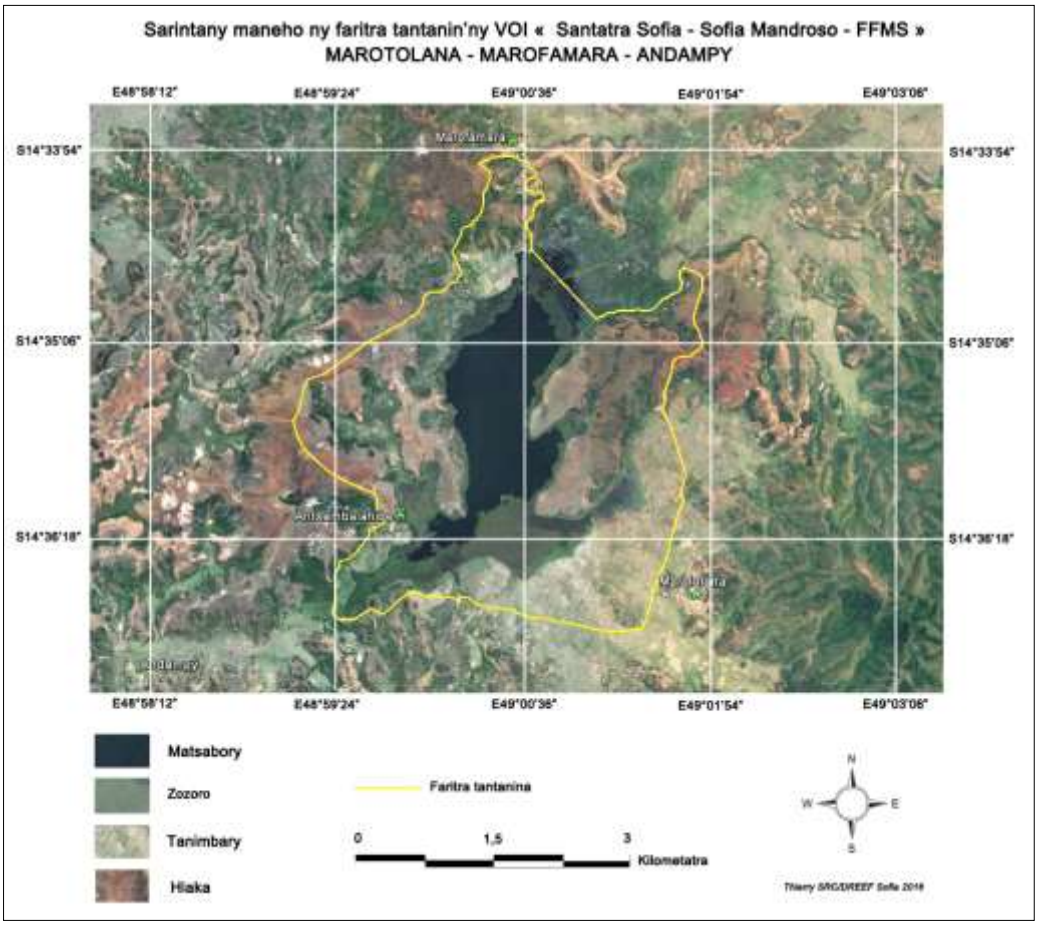
   - During the practice of the educational program, school leaders and teachers show their enthusiast in participation of the test. This is a new program for them and according to all of them, these support are very important for teachers to facilitate the lesson explanation to kids – attract easily kids attentions
   - The pupils are motivated to all activities related to environment conservation as the preparation and maintenance of the school garden (see previous report) and also to the preparation of the plant nurseries at school. They give more attention into all aspect of the activities.
   - During the capacity building on Management Transfer, the result of the short evaluation before starting the course show that some of people didn't understand the real importance of this structure but at the end, participants shown their interest though a series of question and planned to apply it as far as possible with the support from the project (Asity & Durrell).

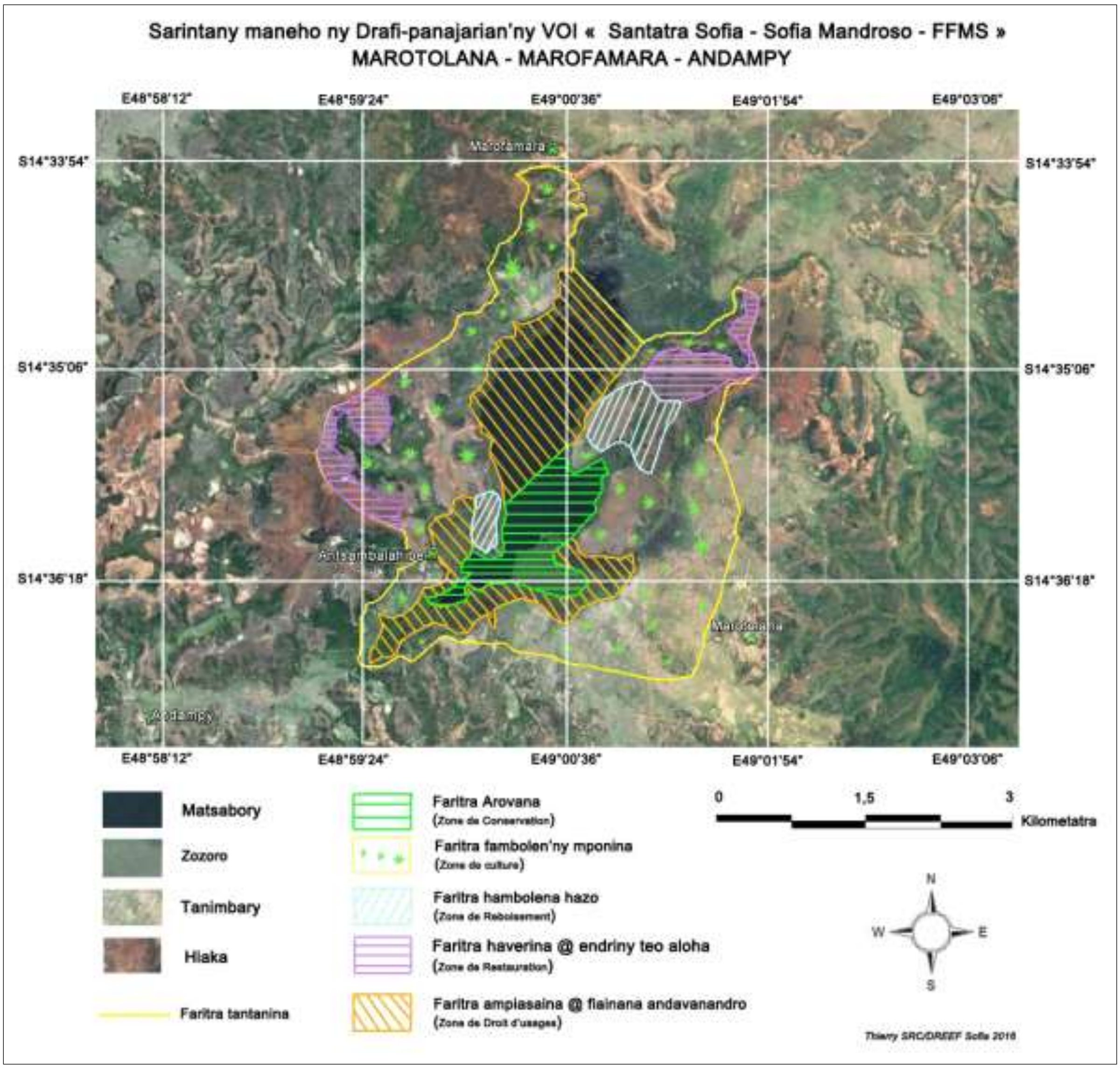
4) **Adaptive Management.** Which project outputs and activities have been changed, or may need to be changed?

There are no change on project output and activities.

Annex 6. Content Page and Maps from the Maratolana Management Transfer Agreement (in Malagasy)

FIZAHAN-TAKELAKA





Sarintany maneho ny Drafi-panajarian'ny VOI « Santatra Sofia - Sofia Mandroso - FFMS »
MAROTOLANA - MAROFAMARA - ANDAMPY
E48°58'12"
E48°59'24"
E49°00'36"
E49°01'54"
E49°03'06"
S14°33'54"
S14°35'06"
S14°36'18"
Marofamara
Antsambalahibe
Marotolana
Andampy
Matsabory
Zozoro
Tanimbary
Hiaka
Faritra tantanina
Faritra Arovana
(Zone de Conservation)
Faritra fambolen'ny mponina
(Zone de culture)
Faritra hambolena hazo
(Zone de Reboisement)
Faritra haverina @ endriny teo aloha
(Zone de Restauration)
Faritra ampiasaina @ fiainana andavanandro
(Zone de Droit d'usages)
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Annex 7. Marafomara Community Association Annual Work plan

VOI FIKAMBANANA FITANTANANA MATSABORY SOFIA
FOKONTANY : MAROFAMARA DRAFITR'ASA 2017 (Plan de Travail Opérationnel)
KAOMININA : MAROTOLANA
DISTRICT : BEALANANA

Asa/zanak'asa	Tondro handrefesana (indicateur)	Isa	Tompin'andraikitra mivantana	Mpiaramiombon' antoka	Fandaham-potoana												Vola ilaina (Ar)	Fitaovana	Fanamarihana
					J	F	M	A	M	J	J	A	S	O	N	D			
Fambolen-kazo (reboisement)	Velarantany	2ha	VOI	DURRELL, WWT		×	×										2 000 000,00	Angady,borizi ny,famaky	Miankina aminy zanakazo
Asa sosialy : Lalàna	Halavany		VOI	Commune, fokontany, DURRELL, WWT				×					×				1800 000,00	Ciment,fer,vat oAngady,labo rety,planches, madriers	Miankina @ mpiara-miombonanto ka
Fanentanana olona hiditra ho mpikambana	Isan'olona vaovao	100	VOI	DURRELL, WWT		×	×	×	×										
Fivoriambe ara-potoana, fanaovana tatitra ny asa sy vola	Isany tatitra	3	VOI	DURRELL, WWT													120 000,00	Filana@ birao	
Fanarahamaso faritra tantanina	Isany fisafoana	2 isa m-bola na	VOI	DURRELL, WWT	×	×	×	×	×	×	×	×	×	×	×	×	9 00 000,00	Fakantsary,G PS,bottes,kira ro, carnets,stylo	
Fanaovany mambra birao fisafoana faobe	Isany fisafoana	3	Mambra birao rehetra	DURRELL													500 000,00	Fakantsary,G PS,bottes,kira ro, carnets,stylo	Fiantohana sakafo atoandro

Fiofanany birao sy mpikambana	Isany fiofanana	3	DURRELL/WWT							x		x		x				Filana @ birao	Miankina @mpiaramiombonantoka
Fifanakalozana traikefa	Isany fifanakalozana	1	DURRELL/ WWT																Miankina @ mpiara-miombonantoka
Fanentanana olona hiaro tontolo iainana	Isany fanentanana	2	VOI	DURRELL/ WWT/ASITY									x				300 000,00	Miankina @Fialany birao	
Fanaovana aro afo	2km	2	VOI	DURRELL/ WWT									x				1 400 000, 00	Angady	Sakafo mandritrany asa
Fitadiavam-bola ny fikambanana	Isany hetsika	1	VOI	DURRELL/WWT/ Asity/Aga-Khan										x			600 000,00	Moteur,zava-maneno	
Fanampiana amin'ny fotodrafitr'asa ataony kaominina sy fokontany	Fandraisana anjara	1	VOI	DURRELL/WWT													900 000,00	Miankina @ fotodrafitr'asa ataony kaominina sy fokontany	
Fanaovana jery todika sy faminavinana ny ho avy	Isany	1	VOI	DURRELL/WWT												x	150 000,00	Filana @ birao	
Fanaovana teti-bola sy tetik'asa 2018	Isany	1	VOI	DURRELL/WWT												x	150 000,00	Miankina @ filany birao	
TOTAL																	8 820 000, 00		

Annex 8. Opening Page of Lake Sofia Vaccination Programme Review

RAPPORT DE MISSION

Itinéraires : Antsohihy-Marotolana

Nombre de villages dans la commune rurale de Marotolana : 9

Type de formation : Formation sur l'aviculture traditionnelle améliorée

Objectifs : Améliorer la production d'élevage de volaille des communautés locales

Missionnaires :

- Mr RANDRIANAMPIANA Modeste
- Mr LEBIZAZAVAO Velonjafy Nabab
- Dr ANDRIANASANDRATRA Harimamy Zo Haingotiana
- Mme ANDRIAMAHAY Judicaëlle

Date de mission : 27 Février 2017 au 31 Mars 2017

Durée de la mission : 33 jours

Lieu : District de Bealanana, Commune rurale de Marotolana, Fokontany : Marotolana, Antilongo, Lohan'i Sofia, Andranovaky, Ambondrona, Andampy, Marofamara, Andilantsara, Mahatsinjo

Contexte :

En vue d'améliorer les techniques d'élevage de volailles dans les 9 fokontany autour du bassin versant du lac sofia, Durell a convenu avec la Direction Régionale de l'Agriculture et de l'Elevage SOFIA l'assurance du renforcement de capacité des éleveurs dans lesdits fokontany et l'évaluation du programme de campagne de vaccination mené avec les communautés.

Annex 9. Sample sections of vaccination and animal husbandry material

SAMPANDRAHARAHA MISAHANA NY FAMBOLENA SY FIOMPIANA ETO SOFIA

TORO-LALANA FANAOVAM-BAKSINY NY AKOHO AMAM-BORONA

1. **Aretina mpahazo ny akoho amam borona:**
   - Ny **BARIKA** (Choléra aviaire): mitsangam-bolo, mangana ny sangany, mivalana fotsy
   - Ny **PESTA AKOHO** na **RAMOLETAKA AKOHO** (Maladie de Newcastle) : malemy tsy mahatonga ny vatany, ny elany, ny lohany, mangana ny sangany, mivalana maitso mandranoka
   - Ny **KESA** na **TETY** (Variole aviaire) : bokaboka amin'ny lohany, masony, anaty vavany.

2. **Fomba fanaovana vaksiny**

   Alohan'ny hanaovana vaksiny dia tsy maintsy hajaina ireto fepetra ireto:
   - Fantarina ny fisian'ny aretina eto amin'ny toerana misy anao sy ny manodidina
   - Tsy azo atao ny manao vaksiny ny akoho amam-borona efa marary
   - Raha hampiditra akoho vahiny dia atokana toerana ary andrasana 15 – 21 andro vao azo atao vaksiny sy aharo amin'ny namany.

	BARIKA	PESTA	KESA
Fanombohan'ny fanaovam-baksiny	21 andro	21 andro	5 andro
Famerenana	3 volana	6 volana	Tsy averina
Fatrany	AVICHOL® 1 dose = 1 ml	PESTAVIA® : 1 dose = 1ml ITA-NEW na VIRSIN : 1 dose = 0,5 ml	VARAVIA® : 1 dose = 0,2 ml
**Ho an'ny Vaksiny hafa avy any ivelany dia araho ny toro marika voasoratra*			
Fomba fanindronana	An-tsosokoditra	An-tsosokoditra	An-tsosokoditra
Toerana fanindronana	eo ambanin' ny elany na eo amin'ny hatoka	eo ambanin' ny elany na eo amin'ny hatoka	eo ambanin' ny hatoka

Fanamarihana:

- Tehirizina amin'ny toerana mangatsiaka ny vaksiny: +4°C - +8°C
- Fitaovana madio no ampiasaina
- Tsy azo atao azon'ny masoandro ny vaksiny

Mpampiofana: Teknisiana DRAE Sofia **Taona :** 2017

I. Filazana ankapobeny :

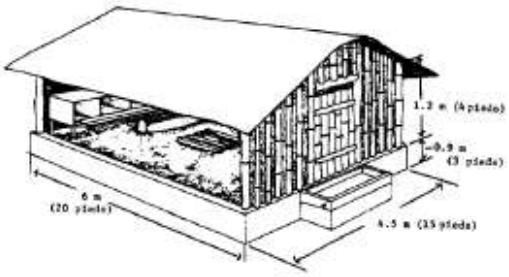
0 andro – 4 herinandro	5 – 8 herinandro	9 herinandro no mihoatra
Zanak'akoho	Vantotr'akoho	Akoho lehibe

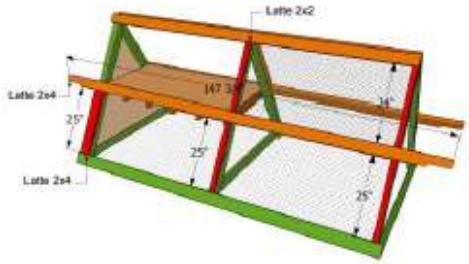
II. Fiompiana Akoho

- Tombotsoa :
  - vola malaky raha sendra misy fandaniana madinidinika
  - hatao sakafo (atody, hena) – hatao « boatin-drakitra ».
- vato misakana
  - aretina
  - vorona sy bibidia hafa (kary, fosa, biby lava, voalavo) – halatra –
  - tsy fifehezana tanteraka ny fiompiana akoho
- Vahaolana

Mba hampihenana ireo vato misakana sy ho fanatsarana ny fiompiana akoho gasy dia tokony hatsaraina : ny tranony, ny sakafony sy ny fahasalamany ary ny fitantanana ankapobeny.

1. Tranony





Annex 10. Fish landing platform

Annex 11. Membership list of a pilot farming group.

Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04901	RAKOTONDRASOA Etienne	1983	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04902	RADMOND Felix	1975	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04903	NORINE	1966	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04904	BARITHELEMY Rene	1979	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04905	RANDRIAMIZAKA Abele	1973	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04906	RAKOTOMANANA Franclin	1982	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04907	RANDRIASALAMA Pamphile	1981	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04908	FULGENCE Emercien	1990	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04909	HONORE	1985	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04910	JUSTINE	1976	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04911	NOMENJANAHARY Evy Stany	1978	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04912	NASOAVINA	1985	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04913	RASOLOFOHERY Gerard	1966	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04914	JAOTODY Georges	1959	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04915	JAVOHAVY	1966	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04916	RASOANARIZARA Fulzette	1990	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04917	RAZAFINDRAKOTO Berthe Jeannette	1991	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04918	NJAKASOLO Bernard	1970	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04919	RAOZIARISOA Elanie Francine	1983	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04920	DONIQUE	1982	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04921	MARTINE	1960	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04922	RANDRIAMAROZAFY	1984	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04923	RAZOMANANA Edrien	1993	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04924	RANDRIANARIVELO Frederic	1994	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04925	GEORGES Orance	1994	Homme

Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04926	RAVELONAINA Jarison	1975	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04927	FLOZIANINA	1992	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04928	RADANIEL Benal	1976	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04929	RAFALIMANANA Joseph	1983	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04930	RAHAVANARIVO Jeannot	1978	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04931	RASOAMALALA Viviane	1996	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04932	RAFIDSON Flobert	1979	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04933	RATOLAZA	1966	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04934	RADEGOLY Evelin	1981	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04935	EROCELIENCE	1994	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04936	CELINE	1976	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04937	ZARALISY Bernette	1976	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04938	MISIZARA	1971	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04939	RASOALAINE	1976	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04940	RAMINOARISOA Bergile	1980	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04941	HANTA	1976	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04942	RANDRIANASOLO	1962	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04943	RASOARINETTE Faraline	1988	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04944	TIANJAFY Armel	1978	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04945	RASOANANIVO	1978	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04946	LALAOTIANA Hortence	1990	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04947	RASOAHANTACelestine	1988	Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04948	RABIATIANKAJA Jean albert	1993	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04949	RAZILY	1981	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04950	MICHEL TOTO Fred	1978	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04951	BONAVANTURE RABENATREHINA	1956	Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04952	BEAVY AUGUSTE		Homme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04953	VOLADINA		Femme
Marotolana	Andranovaky	SOAMAITSO	RAKOTONDRASOA Etienne	S04954	RABESON		Homme

Annex 12. Coffee and Vanilla Suitability Report – Contents Page

Annex 13. Contents page and sightings data from Bird report

SUIVI DE LA FAUNE AVIAIRE

DU LAC SOFIA ET DE SON BASSIN VERSANT

Du 22 Octobre 2016 – 16 Novembre 2016

Étiquettes de lignes	M1	M10	M11	M12	M2	M3	M4	M5	M6	M7	M8	M9	Total général
Porphyrula alleni								1					1
Acrocephalus newtoni	15	22	38	18	29		20	8	33	31	15	24	253
Actitis hypoleucos	1												1
Anas erythrorhyncha	17				3	249						12	281
Anas hottentota	30		1		6	668		6	2	7	17	50	787
Anas melleri						9							9
Ardea purpurea	2		1		6			2	2	4	3	1	21
Ardeola idae	1	1		3	2		1			2			10
Ardeola ralloides	4		7	15	13		2	6	4		37	22	110
Bubulcus ibis	28	2	10	28							2	1	71
Butorides striatus	3	3	2		1				3	5	1	2	20
Charadrius pecuarius	7			29									36
Charadrius tricollaris	2	2		5									9
Corythornis vintsioides	2	2		1	2		4	11	10	11	2	6	51
Dendrocygna bicolor	18				69	287					16	45	435
Dendrocygna viduata					10	165				11			186
Dryolimnas cuvieri		2	1										3
Egretta alba	5	2	1	13	28					1	17		67
Egretta ardesiaca	1				7				22		25	56	111
Egretta dimorpha	1			3	2						1		7
Gallinago macrodactyla	2		7	1			7	3	1	56		5	82
Gallinula chloropus		2					1	2	1				6
Gallinula chloropus									2				2
Ixobrychus minutus							1		1				2
Nettapus auritus						4		3					7
Nycticorax nycticorax	20		2		4							2	28

Porphyrula alleni											1		1
Porzana pusilla	11	2	1	1	13				2	2	9	10	51
Rallus madagascariensis		3	9	5	2		3	4	10	9		4	49
Rostratula benghalensis	7	1		5	3								16
Sarothrura insularis		1		1			15	3	3	15		5	43
Tachybaptus pelzelnii						1	1						2
Tachybaptus ruficollis						4	2						6
Tringa nebularia				2									2
Total général	**177**	**45**	**80**	**130**	**200**	**1387**	**57**	**49**	**96**	**154**	**146**	**245**	**2766**

M1 Marais d'Antsirabe - Nosy

M10 Marais d'Andrafeta

M11 Marais d'Andrafeta

M12 Marais d'Agnavambe

M2 Marais Antsakay

M3 Lac Sofia

M4 Marais Antohontenany-Amolovoko

M5 Marais Antohontenany-Antsakay (du côté du lac)

M6 Marais d'Antsakay - Amagnibe - Ambendrambe

M7 Marais Amendimamy-Agnavabe

M8 Marais Amagnibe-Antendrontsiraka

M9 Marais Ambendrambe-Antanimavohely

Annex 14. Cover page, contents, and conclusions of Vegetation Assessment at Lake Sofia

SUIVI DES PLANTES AQUATIQUES DU LAC SOFIA

Du 22 Octobre 2016 – 16 Novembre 2016

Table des matières

V.CONCLUSION ET RECOMMANDATIONS

Les résultats de cette évaluation écologique des habitats aquatiques du lac Sofia nous a permis de connaitre tous les changements concernant l'aspect global, la composition floristique, l'état de conservation de la formation végétale aquatique et le rivage, puis de déterminer les menaces et les indicateurs de suivi- écologique concernant ces plantes aquatiques et enfin de conclure que la dégradation des habitats aquatiques ne s'aggrave pas cette année même si on observe quelques délits inopinés sur quelques parties du lac et du bassin versant. Néanmoins, il faut mettre en garde sur les différentes pressions et menaces cités en haut.

Des recommandations sont jugées nécessaires pour réduire les menaces, entre autres :

-Renforcement de capacité de la population locale sur l'importance de biodiversité par un programme de sensibilisation, d'information et éducation environnementale.

-Donner aux autorités locales et aux associations existantes les connaissances et les informations sur la loi en vigueur sur l'environnement à Madagascar et leur donner le droit de l'appliquer.

-Redynamiser le système de gestion existant pour limiter la dégradation du lac.

-Etablir un programme de restauration des espèces autochtones avec les populations riveraines, telle que *Cyperus papyrus subsp madagascariensis* dans les Zones à restaurer. La mise en œuvre de ce programme nécessite la Consultation Publique surtout les paysans propriétaires des rizières abandonnées pour éviter toutes sortes de conflits.

On peut planter des espèces comme *Phragmites mauritianus* pour délimiter le marais et Sisal pour freiner l'envasement et l'ensablement du lac et les rizières environnantes. La plantation des Raphia est aussi intéressante pour renforcer le maintien de l'eau.

-Etablir un programme de reboisement des essences à croissances rapides sur les bassins versants pour limiter l'érosion et satisfaire les besoins quotidiennes en bois de chauffe et de construction de la population locale.

-Former les paysans sur l'application des techniques appropriées à l'agriculture.

-Mettre en place une stratégie de lutte contre la propagation de l'espèce envahissante *Eichhornia crassipes*.

-Aménager des terrains de pâturage pour gérer les divagations des bétails.

-Encourager et aider la population locale à créer des activités génératrices de revenu.

Nous proposons aussi les espèces suivantes comme cible de suivi des plantes aquatiques : *Cyperus papyrus subsp madagascariensis* (Zozoro), *Cyclosorus gongylodes* (Fitro), *Arthropteris orientalis* (Ampanga), *Cyperus prolifer* (Fofoka), *Scleria aff boivini* (Folelatra), *Pycreus nigricans* (Ahidritsy b), *Paspalum sp* (Folelamena). Ces espèces sont rencontrées régulièrement dans la composition floristique de base de chaque groupe. En effet, les éventuels changements de chacune de ces espèces signifieront le changement des propriétés du lac.

Annex 15. Drone picture of Northern section of the Lake Sofia

Annex 16. Wetland Management Guidance Study tour report. Cover, contents and sample pages.

Madagascar Wetland Study Tour Report

- November 2016 -

Mahavavy-Kinkony Wetland Complex

The Marshes of Torotorofotsy

Lake Alaotra

Prepared by:
Dr Grace Blackham
Wildfowl & Wetlands Trust

Contents

2. Mahavavy-Kinkony Wetland Complex

2.1. Meetings

- Regional Director of Fishing Resources and Fish
- Deputy Chief of Mitsinjo District
- Agricultural Service for Mitsinjo District
- Asity and members of the new protected area management platform Marambitsy Miahy ny Zavaboahary (MMZ).

2.2. Main Activities

- Visit to Benetsy to see raffia forest, irrigation dam and associated rice farming. Met with a local community association to discuss management of the raffia forest and agriculture.
- Visit to Lake Kinkony. Met with a local community association. Discussed how the local communities managed the lake and its resources. Undertook ecotourism activities including a canoe trip on the lake to see wildlife and phragmites restoration activities.
- Visit to Antongomena Bevary to see fish ponds and rice fields with integrated fish refuges.
- Visit to Ankamahama to see a satellite lake and fish cages. Met with a fishing association and discussed their activities.
- Visit to Ampitsopitsoka. Travelled by boat down the Mahavavy River to the Mahavay Delta to view mangrove forests. Met with the local community and discussed income generation through the alternative livelihood of goat farming and how they manage and restore the mangrove forest.

2.3. Summary

The Mahavavy-Kinkony Wetlands Complex is located in Mitsinjo District, Boeny Region in Western Madagascar. It contains a number of different wetland ecosystems including estuaries, marshes, raffia forests, mangroves, lakes and rivers. The wetlands host all of the threatened waterbird species found in Western Madagascar and the lakes are home to three endangered Madagascan fish species. The complex is also highly important for the people living in the region who depend upon the natural resources of the site for agriculture, fishing, hunting and harvesting of forest and non-forest products. In the past, many of the activities and use of natural resources were damaging and unsustainable.

In 2007, the Mahavavy-Kinkony Wetlands Complex was granted temporary protection status by the Government of Madagascar and a management plan was put into action. The overall management approach is to empower local people in the management of natural resources through a legal management transfer process (GELOSE or GCF) or by developing local regulations (Dina). Local communities are directly responsible for the monitoring, control and sustainable use of natural resources. The site is co-managed by an NGO, Asity Madagascar, and the local communities through an umbrella body (or 'platform') of local community associations. Local community associations are known as Vondron'Olona Ifotony in Malagasy, or VOIs. In 2015 the site was granted permanent protected area status.

Annex 17. Page 1 of Attendance List for National Wetland Guidance Draft Review Workshop

Date : 15 Mars 2017.

Lieu : OLEP Ambohitsaina [illegible]

Objet : Atelier sur les Directives Nationales sur les Zones Humides

N	Noms & Prénoms	Institutions	Contact & E-mail	Signatures
01	RAHANITRINIAINA Volatiana	SCB/DGAP.	034 72 [illegible] 025	
02	RAKOTOJAONA Haritra	DURRELL	034 05 158 74 032 09 357 50	
03	RAKOTOARIJAONA Manny	MNP/DOP	0334940101	
04	VELOSOA Juliette	Durrell	0324056927	
05	RASOAMANANJARA Hantanirina	DGPDD/MRHP	034 05 56223	
06	JONAH-FANDRO Faratiana Ange Lindo	DSAP ISCB (collab)	034 84 65004 faratiana.dsap@mef.gov.mg	
07	RAHAJARIVONY Andriantsoa	DSAP (collab)	034 05 621 70 rahajarivony2015@gmail.com	
08	RABE-FINIAVANA Mahery	DSAP (stagiaire)	034 53 677 04 mrfiniavana@gmail.com	
09	RANIVOARISOA Pascaline Marie Christ	DVRF / SGff	034.05.625.30 pascaline.dvrn@mef.gov.mg	
10	RAZAFIMAHONSY Niso	FBC A NAP Antrema	nisoaly@hotmail.com rogeredmond [illegible] @yahoo.fr	
11	RABARISOA Rivo	ASITY Mada	rivo.rabarisoa@birdlife-mada.org	
12	ANDRIANARO Luciano	CI	landriamaro@conservation.org	
13	RAMANDRARISOA Vony	ASITY	vony@birdlife-mada.org	
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