



Darwin Initiative Main Project Annual Report

To be completed with reference to the “Writing a Darwin Report” guidance: (<http://www.darwininitiative.org.uk/resources-for-projects/reporting-forms>). It is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

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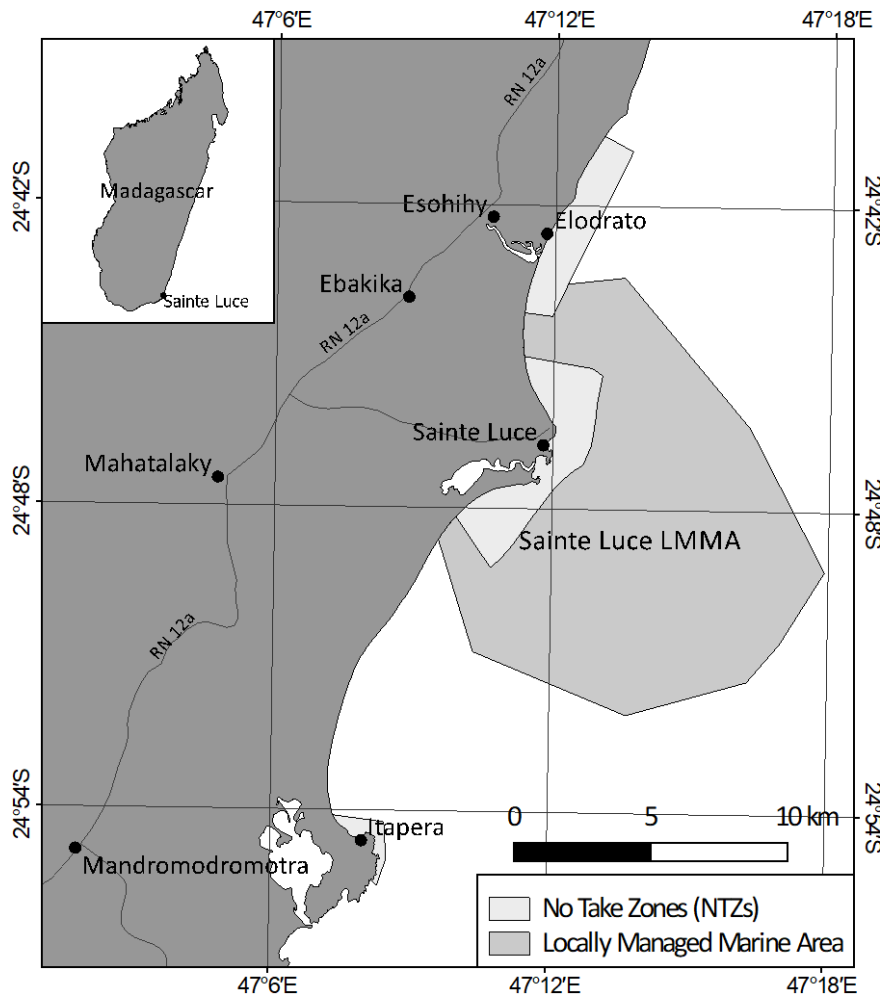
Darwin Project Information

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| Project reference | 25-016 |
| Project title | Promoting community-based management for secure fisheries, biodiversity and livelihoods. |
| Host country/ies | Madagascar |
| Contract holder institution | SEED Madagascar |
| Partner institution(s) | University College London (Department of Geography); Blue Ventures; MIHARI; Les Directions Régionales des Ressources Halieutiques et de la Pêche (DRRH); Unité de Recherche Langoustière (URL); Madapeche; Le Martin Pecheur; L'Arrivage; University of Tulear IST. |
| Darwin grant value | £284,719 |
| Start/end dates of project | July 1 st 2018 – March 31 st 2021 |
| Reporting period (e.g., Apr 2017 – Mar 2018) and number (e.g., Annual Report 1, 2, 3) | July 1 st 2018 – March 31 st 2019, Annual Report 1 |
| Project Leader name | Lisa Bass |
| Project website/blog/Twitter | https://madagascar.co.uk/projects/sustainable-livelihoods/oratsimba |
| Report author(s) and date | Tom Gammage, Andrew Turner, Annelin Verkade, and Jessica Savage – April 2019 |

1. Project rationale

Madagascar’s south eastern regional lobster fishery, consists of ~40 impoverished artisanal fishing communitiesⁱ, and accounts for the majority of national catch and export, directly employing 15,000 people. Lobsters are a high value commodity, meaning the fishery’s socio-economic value is significant in impoverished rural householdsⁱⁱ.

Available data and local fisher knowledge suggest there have been significant declines in lobster stock over recent decades, **Error! Bookmark not defined.** driven by rapid population growth and export market demand leading to increased fishing effort.



Map showing the lobster fishing communities of Sainte Luce, Itapera and Elodrato in the Anosy region, southeast Madagascar. Sainte Luce is formed of three smaller hamlets (Manafiafy, Ampanastomboky, and Ambandrika), which are not drawn. Elodrato serves as the landing site for fishers from Elodrato, Esohihy, Ebakika and a number of smaller hamlets, which are not drawn. The ~160m² Locally Managed Marine Area (LMMA) of Sainte Luce is shown, including its ~13 km² periodic No Take Zone (NTZ), which has operated since 2014. Also shown are the boundaries of periodic NTZs introduced in Elodrato and Itapera and in 2015 and 2016 respectively. **Error! Bookmark not defined.**

As is typical of Madagascarⁱⁱⁱ, rapid population growth, extreme poverty, and limited state capacity undermine the environmental governance capabilities. National legislation is poorly enforced and compliance is weak. Continued overexploitation, the likely cause for declines in catch^{iv}, threatens livelihoods, food security and biodiversity.

Lobsters are a keystone species in rocky reef ecosystems, as mid-trophic consumers they play a significant role in food-webs and account for a significant proportion of consumer biomass^{iv}. Numerous examples show fishery induced population decreases have cascading ecological effects, including on reef ecosystems^v. Further stock depletion or collapse therefore threatens biodiversity, ecosystem function and ecosystem service provision.

By providing an economic lifeline to impoverished coastal communities with few alternative livelihoods, the fishery protects marine and terrestrial biodiversity. Endangered turtles and elasmobranchs are caught in the wider fishery, however most fishing effort is currently targeted at lobsters. Further depletion of stocks would result in increased targeting of endangered species for which there are existing markets. The target communities are closely tied to remaining southern littoral forests. Madagascar's most threatened ecosystem^{vi}, these forests exhibit exceptional levels of biodiversity^{vii} and are home to numerous endangered macro- and micro-endemic species^{viii ix x xi xii}. Further stock depletions would dramatically increase pressure on the forest habitat through increased charcoal manufacture - a typical coping strategy of last resort^{xiii}.

2. Project partnerships

University College London - (Led by Dr Peter Jones)

University College London's (UCL) Department of Geography collaborated with SEED to undertake a critical and constructive Marine Protected Area Governance (MPAG) analysis^{xiv} at the outset of the project between August and September 2018. This framework enabled empirical analysis of the current governance framework, examining the actors and the relationships between them and the incentives utilised. The report has provided insights into the value chain, critical blockages and incentives needed or in need of strengthening that can be used to directly influence approaches and further target project activities^{xv xvi}.

Blue Ventures - (Led by Alasdair Harris)

Blue Ventures (BV) runs fisheries projects and conservation work around the globe with a significant presence around the coast of Madagascar. BV has worked collaboratively with SEED since 2012, supporting SEED to develop its long-term strategic approach to community-based lobster fishery management and continue to participate in the implementation of this project.

Blue Ventures has provided support in MEL system design over the course of the last nine months in relation to: the communication of data to fishing communities and other stakeholders and the transition of the participatory monitoring programme (See Annex 4.4) to mobile data collection. In February 2019, the Blue Ventures-supported Velondriake LMMA (Locally Managed Marine Area) hosted a group of fishers from Elodrato for a week long fisher learning exchange. The approach of this exchange and the content for activities were designed as a joint exercise between SEED and BV. At the end of April 2019, BV will be sending two of their most experienced community data collectors to Fort Dauphin to participate and assist with the training of data collectors from our three target communities in mobile data collection using free open-source Open Data Kit (ODK) software^{xvii}.

MIHARI Network - (Led by Vatasoa Rakotondrazafy)

The MIHARI network (*MItantana HArena Ranomasina avy eny Ifotony*, marine resource management at the local level) is exclusively based in Madagascar and involves over 100 individual LMMAs and 20 marine resource and conservation NGOs (Non-Governmental Organisation). Its work brings together coastal communities involved with marine resource management and the organisations that work with them.

Since the beginning of the project in July 2018 the team have taken part in regional MIHARI meetings as well as a national campaign against Madagascar's 'blue economy' agreement as part of a broader mobilisation of civil society organisation. The network has also assisted the project by funding the attendance of community representatives from the Sainte Luce LMMA to attend the 2019 national conference in Antananarivo in April along with SEED staff funded by this grant.

DRRHP - Regional Directorate of Fisheries - (Led by Gio Ramaro)

The DRRHP (*Directions Régionales des Ressources Halieutiques et de la Pêche*) is the regional fisheries ministry in Anosy. Over the course of PY1 they have become increasingly engaged with the actions of the project. DRRHP has collaborated with SEED in developing management measures and the strategy for their regional enforcement as well as providing support during the ongoing process of ratification of the Sainte Luce *dina* into national law. The ministry has also been key in supporting the establishment of an association of registered fishers in Elodrato at the end of 2018 by joining the team on site visits and communicating state support directly to this community.

DRRHP were involved in the development of the baseline survey by providing feedback on the content of questions being asked in target and control communities.

URL- Lobster Research Unit - (Led by Valencia Assanaly)

L'Unité de Recherche Langoustière (URL) Anosy is the region's Lobster Research Unit. URL is funded by and report to DRRHP on all of their activities and operations. URL have been involved at various points during PY1, attending project launch events and regular project meetings to discuss and agree ongoing regional fisheries research efforts and strategies to encourage compliance with national fisheries regulations.

Madapêche - (Led by Alain Ducas)

Madapêche is the Anosy region's largest exporter of lobster. Whilst they still take a leading role in the value chain of spiny lobster centred in Fort Dauphin, they are no longer purchasing lobster in the communities in which the project is working.

During the 2018 season, a Chinese exporter, Santi, began operating in the area, and have since established a very high market share of lobster exports. Despite having some positive impacts on fishers' incomes in the short-term, it has made it increasingly difficult to engage Madapêche with the activities of the project. Whilst the team continue to make efforts to re-engage this partner in the activities of the project, this does constitute a major breach of one of the projects important assumptions (A.18).

Le Martin Pêcheur - (Led by Jean Patrick Rakotoarison)

Le Martin Pêcheur is the Anosy region's second largest exporter of lobster who also expressed interest in making their own practises more complementary to the project's aims during the development of the project. As with Madapêche, they are no longer purchasing lobster in the communities in which the project is working due to the commercial tactics of Santi.

This has also made it very difficult to engage Le Martin Pêcheur with the activities of the project. Whilst the team continue to make efforts to re-engage this partner in the activities of the project, this also constitutes a major breach of the same project assumption (A.18).

L'Arrivage - (Led by Bastien Warnier)

L'Arrivage is a seafood restaurant based in Antananarivo, which also supplies seafood to restaurants throughout the capital. This company had planned to offer fishers higher prices at point of sale for lobster that had been sustainably caught within the LMMA. Unfortunately, again, as a result of the high prices now being offered by Santi, this company has stopped operating in the area where this project's target communities are found, changing now to buying lobster from Majunga in northwest Madagascar. L'Arrivage attended a single stakeholder meeting in November 2018, but was unable to continue in partnership with the project due to much higher sale prices initiated by Santi.

University of Tulear IST - (Led by Daniel Raberinary)

The Institute of Agriculture and Hydrology (IST) at the University of Tulear explores innovation in the areas of agriculture, civic engagement and sustainable development. The IST also works very closely with the University Halieutic and Marine Science Institute (IHSM). Working in collaboration with Assistant Professor Daniel Raberinary throughout November and December 2018, SEED recruited two young researchers who undertook scientific studies investigating the socio-economics of lobster exploitation in Sainte Luce and productivity of tuna and sardines in the waters surrounding target communities. Two further projects planned for May 2019 are currently being designed to explore tuna availability and explore the shark fishing industry further.

There is significant demand for assistance in the provision high quality, applicable research opportunities for young marine science academics in this area of Madagascar. The team have also been working to develop research questions in collaboration with the University - both to enable students to achieve their research goals, and also provide valuable data that will be of benefit to the project, providing further insight into the nature and state of this region's fisheries.

3. Project progress

3.1 Progress in carrying out project Activities

Activities - Output 1

The foundation of this community-based fisheries management model is the management committee. The committee in Sainte Luce has been actively involved since the beginning of the project and attended three training sessions this project year (See Annex 4.1 & 4.2). Progress in this regard has been slower in Itapera and Elodrato where the committees have yet to be selected or attend subsequent training sessions. This puts the team behind slightly on the activity plan in these communities having originally scheduled these trainings to begin by month five.

Similarly, the mapping and marking of NTZs (No-Take-Zones) in Itapera and Elodrato has been delayed and will not begin until after fisheries management committees have been selected with the full agreement of target communities.

SEED has undertaken two community meetings with Itapera and three Elodrato to encourage the formation of fisheries management committees, and different issues have been encountered in each. In Itapera, the community have asked for further time for discussion to address disagreement amongst fishers as to their level of involvement in this project. In Elodrato, the

community requested assistance to first establish a fishers' association (See Annex 4.3), an action originally planned to be completed by month 27.

The participatory fisheries monitoring programme has continued throughout the last project year with data collected across all three communities currently undergoing analysis (See Annex 4.4). Whilst originally planning to recruit and train three new data collectors in this project year, the team decided instead to focus on retraining existing data collectors and looking at moving to mobile data collection technology to improve the efficiency of the programme and the quality of the data.

The MPAG analysis has been conducted, and the resulting manuscript will be submitted for publication to Marine Policy in April 2019. This publication was originally due for completion by month 33 and, as such, represents a significant achievement for the project and its partners. The team worked with UCL to conduct research between August and October 2018, which has been used to produce a technical report, as well as the aforementioned manuscript that provides specific recommendations to the team from a means-tested, empirically replicable governance framework analysis (See Annex 4.5 & 4.6).

Activities - Output 2

Two community education sessions were held in Sainte Luce in October 2018 and March 2019 (See Annex 4.7 & 4.8) and two youth education sessions were conducted across all three target communities (See Annex 4.9, 4.10, 4.11, 4.12 & 4.13). This puts the project behind schedule in terms of community education sessions in Itapera and Elodrato due to the delay in establishing fisheries management committees, but on track for youth education sessions.

Six community meetings have been held in total across the three target communities during PY1. This includes one in Sainte Luce, three in Elodrato and two in Itapera (See Annex 4.14). The team originally planned to conduct meetings bi-annually but these meetings took place more or less regularly in each community depending on community need identified by the project team. In addition to these meetings, a single women-only community meeting/education session was also conducted in each of the target communities (See Annex 4.15). These were originally planned to be undertaken quarterly and, following the first, will be continuing as planned. A mass mobilisation event took place in Sainte Luce in month 4, which was attended by 800 people (See Annex 4.16). These events are yet to take place in Itapera or Elodrato, where they were originally planned to occur annually, as the team decided not to conduct them until the community-led appointment of fisheries management committees.

Radio information broadcasts to disseminate project messages and fisheries management information are also currently being designed in collaboration with URL, the first broadcast of which is planned for April.

A cross visit involving six community members from Elodrato was undertaken in month 8 (See Annex 4.17) in line with plans to conduct this by month 9. Although this event was originally planned to happen once and involve nine fishers (three from each community) the team increased the scope of the exchange to include more community members over two separate trips due for completion by the end of PY2.

There has not been a relevant MIHARI forum in the region in PY1. SEED will be attending the national forum with fisher representative in April 2019, and continue to work with MIHARI in PY2 to establish the first lobster network forum in Anosy.

To date, the team have been engaging with key URL staff members by providing English language training to allow them to better engage with the project. They have attended three community meetings in each of the target communities to discuss data collection and dissemination, and will be attending the fishery opening in Sainte Luce on 1st April. SEED is building trust with this stakeholder for the purpose of eventually sharing data, and improving the way in which we collaboratively disseminate it with communities.

Two research students from the University of Tulear were hosted in Sainte Luce during November and December 2018. These students conducted research into topics related to the socio-economics of the lobster fishery as well as broader fisheries management topics relevant to the lives of local people (See Annex 4.18).

An NTZ openings poster has been designed for use in target communities over the course of the project and beyond (See Annex 4.19).

Activities - Output 3

Progress towards completion of activities contributing towards output 3 has been delayed across the three target communities.

Enforcement committee selection, training and patrolling were scheduled to be underway by month 6. This has not been possible in Itapera or Elodrato where the selection of the fisheries management committee is a vital prerequisite to undertaking this activity. The establishment of an enforcement committee in Sainte Luce is ongoing, with the project team and Riaky Committee still deciding the best way to initiate one whilst ensuring fair and transparent reporting and sanctioning between closely related kin groups.

Workshops with DRRHP have taken place, with the ministry attending a site visit to Sainte Luce in February 2019 to meet with the fisheries management committee.

Skills sharing workshops between relevant private sector actors were not possible after it became apparent in month 3 of the project that there had been a dramatic change in the nature of the local lobster market, with existing commercial buyers no longer purchasing lobster in any of the target communities. Efforts to engage with Santi, who have quickly established a very high market share in all three target communities, have been met with so far limited success. The project team will continue to try and engage this new commercial operator throughout PY2.

Activities - Output 4

Annual visits to target communities involving private sector stakeholders have not yet occurred this year. This is due to the changes in local lobster market activity as described previously. Interest amongst private sector representatives has diminished due to the fact that those previously engaged in the project are no longer commercially active within the target communities.

Financial management training sessions have not been completed and will start in target communities in May 2019. Originally planned for month 7, the team decided to delay these activities until June 2019 to allow more time to plan these sessions extensively to ensure their effect is maximised.

3.2 Progress towards project Outputs

Output 1

The baseline condition at the start of this project was that the only community with a fisheries management committee was Sainte Luce (output indicator 1.1). To date this still remains the case, although this committee has been strengthened after three training sessions (output indicator 1.2, see Annex 4.2). There were no fishers' associations present in any of the communities at the start of this project. However, in March 2019 a fishers' association was officially established in Elodrato in cooperation with the project and currently has 49 members, approximately 6.81% of active fishers within that community (output indicator 1.6, see Annex 4.3). With regards to NTZs, Sainte Luce is still the only community with an active NTZ (output indicator 1.4). The community agreed in October 2018 to define the closure dates up until the end of December 2019 (See Annex 4.14), with demarcation now planned for PY2. The reason NTZ are not currently functional in other target communities is that the presence of active, community-supported committees are a vital precondition for them to function effectively.

Beyond the presence of active community structures, achievement against this output is also assessed by measuring how effective these institutions are as part of a combined community-based fisheries management model. In order to do this, the team have data from the 2018 lobster season that is currently undergoing analysis. This will form the baseline for measuring changes arising in part due to progress made following the establishment of the LMMA (output indicator 1.5).

The team have also been establishing baselines for women's attendance at community meetings (11.7%) and perception of involvement in decision making in Sainte Luce (output indicator 1.3). During the baseline survey, the team attempted to ascertain this degree of involvement through two targeted questions administered to all 102 households in Sainte Luce. At baseline, 51% of women surveyed in Sainte Luce identified as involved in decision making compared to 83% of men. Despite representing a useful quantitative measure for evaluating gender representation in community-based management, this survey provided insufficient qualitative data with which to address this indicator. Moreover, due to the patriarchal nature of local society, it is suspected that some women were not truthful in responses due to the presence of male spouses. To address this

issue, an in-depth gender and decision-making survey administered individually in July in the form of semi-structured key informant interviews (n=40) that also address output indicator 4.5.

A major achievement of the project this year was the successful completion of the MPAG analysis at such an early point. This has proved vital in providing evidence-based recommendations for ensuring management measures will be effective in the communities for the long term and that community structures are regulated and supported in the most appropriate way (output indicator 1.8, see Annex 4.5).

It has been important to ensure decisions that are made and actions that are taken are done so with the full backing of different communities. This caused delays in setting up fisheries management committees and NTZs but, as the MPAG report has shown, getting this right will likely have profound effects on the success of the project in the long term and increase the likelihood of the successful achievement of this output.

Output 2

Establishing a robust baseline has been one of the key focuses for the team during the first project year. One of the most important pieces of data derived from the baseline survey was related to understanding regarding *Dina* management measures in Sainte Luce (output indicator 2.1). Levels of knowledge were found to be worryingly variable, especially in a community where fisheries management has been undertaken for at least five years. 88.24% of fishing and non-fishing participants said that they could fish in the next NTZ closure, however 97.6% of people correctly identified that fishing with mask and snorkel is illegal throughout the Sainte Luce LMMA.

The project has recently started to run a number of activities aimed at equipping communities with the skills and knowledge to address this and achieve this indicator. This included six youth education sessions, two community education sessions, women only meetings and education sessions and a mass mobilisation event (see section 3.1).

Other indicators for this output are either yet to have had baseline measurements because the related activities have yet to begin or, where activities have begun, are not yet due for measurement (i.e. output indicators 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8 & 2.9). With the majority of activities yet to begin (including MIHARI forums, *rabbateur* education sessions and URL data dissemination visits), progress to achieve this output will be more significant over the coming project year.

As mentioned, a lack of information and understanding of fisheries management amongst target communities has become apparent from the early result of the baseline survey and initial outcomes of educational activities. There is recognition that achieving this output is a complex process that requires feedback loops of adaptive learning in order to be successful. However, the team is applying this understanding by continuing to build on the success of education activities through targeted and interactive workshops (see section 3.1) to gradually work towards achieving this output.

Output 3

There are three main elements to this output to consider: the creation of community enforcement committees, increased collaboration with state and private sector stakeholders and the effective use of *Dina* - all of which are required to ensure compliance with fisheries management measures.

In relation to the initiation of enforcement committees, progress towards achieving this has been slower than anticipated. These have yet to be established in any of the three target communities despite originally being planned for completion by month 6 (output indicator 3.1). As a result, training sessions for these committees are also yet to begin (output indicator 3.2). Allowing these committees to develop more naturally will, however, yield longer term results than artificially accelerating this process. The project team are expecting for this to be completed in the first half of PY2 in Sainte Luce, and the second half of PY2 for Elodrato and Itapera.

Ratification of fishing gear restrictions and NTZ closures into local *Dina* has not yet been achieved in Itapera or Elodrato (output indicator 3.7), although is likely to be achieved in the coming project year - especially in Elodrato. However, the formal ratification of the *Dina* in Sainte Luce at the Fort Dauphin tribunal is underway and will be re-submitted for approval in April 2019 (output indicator 3.8, see Annex 4.20).

Overall, the indicators measuring the combined contribution of each of these actions towards behaviour change are those looking at NTZ infractions (output indicator 3.3 - not due for

measurement until month 22) and levels of compliance with national legislation (output indicator 3.4). During the baseline survey, the latter was measured across target and control communities with results showing low levels of self-reported compliance (88.24% saying they could fish in the next NTZ closure). Following the analysis of this year's participatory fisheries data, we will also have a data set of observed compliance with national and local regulations for comparison against self-reported compliance from all three target communities. Results of this comparative analysis will be completed by July.

Output 4

Wealth indicators related to this output have all had baselines established during the last project year. Pirogue ownership amongst fisher households was measured in the baseline survey, and stands at 44.71% in Sainte Luce, 19.23% in Elodrato and 36.07% in Itapera (output indicator 4.2). This is likely to be an overestimation, as some people might communally own pirogues or reported owning pirogues that are on loan from collectors. The team still believes pirogue ownership is still a valid indicator of household wealth. This is because 79.93% of respondents reported that this was a basic necessity, and because the team added a clarification question while implementing the baseline survey to maximise the validity of data, this will be replicated in the same way for the endline. Also connected to wealth are indicators relating to changes in fishers incomes (output indicators 4.3 & 4.4) for which baseline data has been collected through the participatory data collection programme during the 2018 lobster fishing season. Analysis of this data will likely be completed in July.

In relation to measuring the development of value chain opportunities to transfer greater benefits to fishers, there are two main elements: whether or not related activities were completed with the desired effect and whether or not related benefits for fishers of varied forms have been achieved.

With regards to progress in completing successful workshops and training sessions, the two relevant indicators are not due to be assessed until later in the project, at which point formalised plans are due to be developed to demonstrate the effectiveness of these interventions (output indicator 4.1 & 4.5). Financial management workshops are due to start in May, with baseline data collected and analysed by July. The private sector landscape has changed significantly over this project year, but will still likely be possible to engage new actors in the project and meet this indicator target by month 27. The nature of these indicators, with consideration for measures of quality, still represents a stronger measure of progress towards achieving output aims than simply activity completion alone.

As the project is still early in the process of establishing baselines and undertaking planned activities, in terms of working towards achieving this output, it is difficult to measure progress made so far. The team will need to react carefully to the challenges posed by early delays in the implementation of certain key project activities in Elodrato and Itapera, as well as changes to the private sector landscape to ensure this output is achieved as planned.

3.3 Progress towards the project Outcome

The first nine months of this project have been focussed on engaging with stakeholders and project partners, procuring project personnel and equipment whilst also establishing well defined baselines for indicators. The project team have established robust baselines across three of the four main indicators with which to measure project success (outcome indicators 0.1, 0.2 & 0.3), however progress towards achieving the overarching project outcome is, at this stage, too early to measure reliably.

Household poverty levels (outcome indicator 0.1) have been established using the basic necessities methodology as part of the baseline survey (control communities - 0.62; Elodrato 0.63; Sainte Luce - 0.67; Itapera - 0.62; see section 6, Annex 4.21 and Annex 4.25). This is still believed to be the most appropriate measure of household wealth and will provide useful insights into how this means of verification changes over the course of the project.

Using data from the basic necessities survey, levels of zebu ownership (outcome indicator 0.2) have also been established at 1.23 (n=198) on average per target community lobster fishing household. Original plans to measure this using community records proved difficult due to inconsistencies in record keeping across communities along with confusion over the difference between ownership and stewardship of zebu as defined by those records. As such, the project team recorded zebu ownership directly with participants of the baseline survey, using household

rather than on an individual ownership as this more accurately reflects the local cultural context whilst allowing data to be disaggregated by the gender of household heads.

A baseline for levels of unsustainable livelihood practices (outcome indicator 0.3) including those resulting in degradation of forests (hunting for bushmeat: 4.43% and 3.55%, logging for building materials: 5.90% and 17.38%, firewood: 25.46% and 24.82% and charcoal: 4.43% and 5.32%), rivers (mosquito net fishing: 35.06% and 29.79%), and marine environments (destructive fishing techniques such as targeting elasmobranchs: 48.71% and 56.03%) have been established across the three target and three control communities involved in the project. The indicator is broad and is being further monitored through observational surveys as part of an expanded participatory monitoring programme that will be implemented during the 2019 lobster fishing season. This will help to uncover changes in unsustainable practices during NTZ openings/closures. The range of means of verification being employed to monitor outcome indicator 0.3 provide a greater depth of understanding for the team with regards to this complex issue. Outcome indicator 0.4 refers to part of the project beginning in month 15 (September 2019). As such, the baseline has not yet been taken.

With regards to modular outputs, the project team are providing a platform for community-based institutions to establish, yet are reluctant to push anything through without full community support. Although taking longer initially, this will lead to more sustainable results in the long term. With Elodrato now fully committed to the project, the challenge will be to continue engaging Itapera to build consensus among fishers to elect a committee and initiate the process of LMMA development.

Education-based activities are the foundation of facilitating the skills and knowledge exchange necessary for the success of this outcome. So far, they have achieved engagement and traction within target communities, with average attendance of Sainte Luce management committee training sessions at 13.6/15, and average attendance from youth education sessions at 99 children per session. As these activities continue and new ones begin, the team will have to remain reflexive to the needs of communities and stakeholders, and with a longer-term vision to build this learning into project design to ensure activities are effective. Administrative processes in Madagascar are extremely slow, and so the lack of a ratified *Dina* in Sainte Luce is not reflective of its lack of community-level respect and authority. As was the case in Sainte Luce, once management committees are established in Itapera and Elodrato, the development of a *Dina* will be likely to happen fairly quickly, even if it isn't officially ratified until much later in the project.

One of the greatest challenges for the team moving forward will be the change the private sector landscape. With Santi now dominating the vast majority of lobster purchases, it will be absolutely crucial for the team to fully engage this stakeholder if assumption 18 (linked to output 3.6) is not to be breached. This will be vital in order to achieve this outcome by projects end.

It is extremely likely that the project will strengthen local and regional capacity to implement adaptive, sustainable fishery management based on the team having already seen improvements in cooperation and community-level organisation, evidenced throughout this report. With regards to economic empowerment and poverty alleviation, it is difficult to assert whether a significant change is guaranteed at this stage. However, to date, there have been no indications or major changes that suggest this will not be possible by the project's end. In terms of protecting marine biodiversity around target communities, this will be furthered through building support for NTZs and permanent marine reserves, as well as through developing monitoring programmes that enable communities to track changes in natural resources and better inform their decision making processes.

3.4 Monitoring of assumptions

Assumption 1 (Linked to Outcome 0.1): BNS (Basic Necessities Survey)^{xviii} is the most appropriate measure of poverty, changes in poverty levels are directly affected by income generated through livelihood activities and external factors (infrastructure, access) remain constant.

Comments: This is still believed to be the most contextually appropriate method for measuring levels of poverty due to its ability to create a locally defined poverty index (See Annex 4.25) quickly, reliably and effectively. The European Union (EU) is now funding some road repairs along parts of the road to Fort Dauphin as part of Madagascar's External Investment Plan (EIP), although this not due to be completed until the end of 2021 and so outside the timeframe of this project.

Assumption 2 (Linked to Outcome 0.2): Zebu purchase continues to serve as a mechanism for financial saving/investment in rural communities without access to formal banking systems.

Comments: This assumption is based on hundreds of years of cultural tradition, and still holds true. It was supported during BNS surveys, whereby 76.59% of households reported *Zebu* as a basic necessity, and anecdotal evidence has strongly suggested that people are still using them as financial saving mechanisms.

Assumption 3 (Linked to Outcome 0.3): Increased income from No Take Zone (NTZ) opening periods reduces frequency of damaging livelihood activities in line with pilot project.

Comments: As stands, this assumption holds true. Once the participatory monitoring data for the 2018 season and baseline survey data has been analysed in its entirety, the team will be able to address this assumption in detail.

Assumption 4 (Linked to Outcome 0.4): Community and fisher interest in sustainable fisheries management remains high in Sainte Luce, with significant benefits from temporary NTZ closures perceived and providing enough motivation for the community to engage in consultation for a permanent marine reserve.

Comments: In August 2018, interest in participating in temporary NTZs was 80% for Sainte Luce (n=20).^{xix} Since this survey was administered, there has been no indication that this majority has decreased or community-level motivation for NTZs has dropped in Sainte Luce.

Assumption 5 (Linked to Outputs 1.1, 1.4, 2.1, 3.4 & 4.5): Community and fisher interest in sustainable fisheries management and capacity building remains high in target communities.

Comments: Community-level support for temporary NTZs was 87% for Elodrato in August 2018, indicating a very high majority of fishers in support of the initiative. Since the community established a fishers' association in March 2019, it is fair to assume they are still engaged. Itapera exhibited lower levels of community-level support for NTZs in 2018 (28%), and, based on recent community meetings, seem now to be split down the middle. The team are working to re-engage the fishers in Itapera that are most against the notion of NTZs and community based management.

Assumption 6 (Linked to Output 1.2, 2.2 & 2.3): Transport between the regional capital, Fort Dauphin, and target communities remains possible, and is not affected by poor road conditions or extreme weather.

Comments: The national road (RN12) between Fort Dauphin and the project target communities remains open and passable by 4x4 and motorbike. Although extreme weather has caused this road to be unsafe at points during PY1, the team adapt by re-scheduling project activity plans accordingly.

Assumption 7 (Linked to Output 1.3): Women from fisher households are motivated to engage with the project.

Comments: This holds true. In each hamlet of the three target communities, two women have been identified as project leaders (a total of 12 women).

Assumption 8 (Linked to Output 1.5 & 4.4): NTZ induced changes in spatio-temporal distribution of effort replicates previously documented impacts on CPUE.

Comments: As stands, this assumption holds true. Once the participatory monitoring data for the 2018 season has been analysed in its entirety, the team will be able to address this assumption in detail.

Assumption 9 (Linked to Output 1.6): Fishers are motivated to join registered associations of fishers to secure access rights and protect against incoming users.

Comments: In Elodrato there has been proven interest in joining a registered fishers association, with 49 members now participating. During baseline survey focus groups there was anecdotal evidence that many fishers in Itapera and Sainte Luce also understand the benefits and opportunities of membership to a fishers' association. Fishers in Sainte Luce are primarily concerned about establishing an enforcement committee first before an association is founded.

Assumption 10 (Linked to Output 1.8): Data is sufficient to produce a peer-reviewed article.

Comments: Investigation produced sufficient data of sufficient quality to produce a paper which will be submitted for publication at the beginning of April 2019 to the journal 'Marine Policy'.

Assumption 11 (Linked to Output 2.3 & 2.6): Regional and national LMMA networks remain active.

Comments: In November 2018 the project team met with the southern regional representative of MIHARI, Pascal Mahata. Contacts in other LMMA's also remain active including with Blue

Ventures directly as a project partner and through the MIHARI network and its events, one of which will be attended in Antananarivo by project staff and fisher representatives in April 2019.

Assumption 12 (Linked to Output 2.4): *Rabbateurs* (buyers at the first point of sale) are engaged and actively participate in project activities.

Comments: This assumption has yet to be tested as activities to engage and run sessions with *rabbateurs* are not planned to begin until PY2.

Assumption 13 (Linked with Output 2.5): Cooperation and sustained interest from educational authorities and teachers continues and engagement is unaffected by national standardised tests.

Comments: ToRs (terms of reference) with regional authorities and head teachers in each of the three target communities were signed during PY1 both to give permission for and endorse the education sessions being run as part of this project (See Annex 4.28).

Assumption 14 (Linked to Output 2.8): URL representatives are engaged and actively participate in project activities.

Comments: URL signed an MoU with SEED in October 2018 to formally commit to their responsibilities as part of this project; since then they have repeatedly taken part in project activities that are explained in section 3 (See Annex 4.22 & 4.24).

Assumption 15 (Linked to Output 2.9): National research in the wide variety of topics related to marine livelihoods and LMMAs remains high, remoteness of site and high costs of travel to Anosy do not inhibit international research interest.

Comments: During the last project year, both international and national-research institutes (UCL and IST) have continued to conduct research in these subjects within the Anosy region without major restrictions related to cost or travel conditions.

Assumption 16 (Linked to Output 3.2 & 3.5): DRRHP and *Gendarmerie* (military police) remain supportive of project activities, including reinforcement of patrols.

Comments: DRRHP signed an MoU with SEED in October 2018 establishing their commitment to supporting and taking part in project activities (See Annex 4.23 & 4.24). Activities with *Gendarmerie* are not due to begin until PY2; as such, this aspect of assumption 16 has yet to be tested.

Assumption 17 (Linked to Output 3.3): Enforcement bodies consistently and accurately complete records of infractions and prosecutions.

Comments: Enforcement of LMMA regulations is currently only taking place in Sainte Luce where the fisheries management committee are currently maintaining these records. Once an enforcement body has been established in Elodrato and Itapera on official terms, the team will be able to test this assumption more thoroughly.

Assumption 18 (Linked to Output 3.6): Private sector remains active in Anosy region and engaged with project activities.

Comments: Although the private sector has remained active in the region, the dynamic has changed meaning that actors previously engaged with the project have moved away from buying spiny lobster. The project has attempted to engage with the Chinese-owned buyer now dominating the market, so far with limited success. The project team is continuing to contact these actors to attempt to engage them with project activities.

Assumption 19 (Linked to Output 3.1): Communities maintain motivation to implement management measures.

Comments: See comments for assumption 5.

Assumption 20 (Linked to Output 3.8): Labour disruptions or other administrative delays do not prevent regular operation of the Provincial Court of Appeals' Fort Dauphin Tribunal, inhibiting the *Dina* ratification process.

Comments: No such disruptions have occurred during the past project year.

Assumption 21 (Linked to Output 4.1): Continued stakeholder understanding of their crucial role in increasing project longevity, sustainability of effective fisheries management, and logistical arrangements for making stakeholder meetings possible, including dates and locations at which all stakeholder are available to attend.

Comments: The consistently responsive and accommodating nature of ministerial stakeholders such as IST, DRRHP and URL, as well as partner organisations such as Blue Ventures and MIHARI has strongly indicated that these key stakeholders are still fully engaged in the project.

Although commercial stakeholders Madapêche and Martin Pêcheur have all but left the regional market (Section 2), there is no evidence to suggest this is due to a breach of this assumption.

Assumption 22 (Linked to Output 4.2): Boat ownership continues to serve as a mechanism for financial saving/investment in fishing communities without access to formal banking systems.

Comments: This assumption has proved inaccurate as boat ownership acts as an investment mechanism in target communities but not strictly as a way of saving. This is, in fact, done largely through the purchase of zebu. Despite this misunderstanding, the use of boat ownership as a measure of wealth and independence from middlemen remains an important indicator, and as such will still be re-administered during the endline survey.

Assumption 23 (Linked to Output 4.3 & 4.4): Continued demand on global markets for lobster from export industry in Fort Dauphin.

Comments: Lobster export continues to be a major industry within Fort Dauphin although the profile of private sector actors has changed. See section 3 for more detail.

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

Further lobster stock depletions would dramatically endanger the integrity and productivity of coastal resources. Moreover, such depletions would further endanger Madagascar's most threatened ecosystem - the Southern Littoral Forest - through an increase in unsustainable livelihood activities as people over-exploit their environment to meet their immediate needs.

Lobsters are keystone species in rocky reef ecosystems such as those found in the project's target communities. As mid-trophic consumers, they play a significant role in food-webs and account for a significant proportion of consumer biomass^{xx}. Numerous examples show fishery induced population decreases have cascading ecological effects, including on reef ecosystems^{xxi}. Further stock depletion or collapse therefore threatens biodiversity, ecosystem function and ecosystem service provision.

The efforts being made as part of the project to protect lobster stock long term should preserve an economic lifeline to impoverished coastal communities with few alternative livelihoods. The health of this fishery also protects wider local marine and terrestrial biodiversity. Endangered turtles and elasmobranchs are caught alongside lobster by fishers in this region, and further declines in lobster fisheries would only exert more pressure on these species. The ecological significance of turtles is well established^{xxii xxiii}, as is the role of apex- and meso-predators such as sharks that provide a vital regulatory role in marine ecosystems^{xxiv}.

Despite most fishing effort targeting lobster, during the baseline survey in early 2019 it became clear that fishing for sharks, skates and rays is practiced in the three target communities and control communities to a greater degree than previously thought, with 61.62% of lobster fishing households (n=198) reporting selling shark meat. Elasmobranch catch surveys undertaken to evidence progress towards outcome 0.3 have also revealed endangered species such as the Scalloped Hammerhead *Sphyrna lewini* being caught by fishers in Sainte Luce^{xxv}. Further depletion of lobster stocks would likely result in increased targeting of endangered species for which the project team has found established existing markets. Most worryingly, the baseline survey also revealed an active shark finning trade at work across all three target communities with 37.88% of lobster fishing households (n=198) reporting having sold shark fins in the past year. This is most likely an underestimation, as interviewed family members of fishers do not always know what is fished for. Collapses in shark populations frequently result in trophic cascades that significantly impact the productivity of marine ecosystems^{xxvi} and threaten the livelihoods with which they are inextricably linked.

Moreover, the severely threatened Southern Littoral Forests exhibit exceptional levels of biodiversity and endemism^{xxvii}, and are home to numerous endangered macro- and micro-endemic species. Results from the baseline survey showed that self-reported levels of charcoal manufacture (target communities: 4.43%, control communities: 5.32%), as well as exploitation of forests for firewood (target communities: 25.46%, control communities: 24.82%), building materials (target communities: 5.90%, control communities: 17.38%) and bushmeat target communities: 4.43%, control communities: 3.55%) are low at present, yet this would likely increase if lobster stocks were to deplete further.

Within target communities, peoples' wellbeing is directly correlated to the health of their local environment.^{xix} As such, the impact of effectively conserving natural capital has a secondary

influence of alleviating poverty through maintaining the social safety net afforded by the provisioning of exploitable resources through healthy and productive natural systems (see section 6).

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

In PY1, the Sainte Luce fisheries management committee was trained in subjects relating to lobster biology, facilitation skills, and resource management (output indicator 1.2), and education sessions for the wider community (output indicators 2.1 & 2.5) are working to equip beneficiaries with the necessary skills to manage their marine resources. State actors, such as DRRHP, are engaged in the project to support the community (output indicator 3.5) and attempts at engaging commercial exporter Santi are ongoing (output indicator 3.6). As such, the project directly addresses SDG 14 (conserve and sustainably use the oceans, seas and marine resources for sustainable development). With attempts to scale up an established LMMA model, local communities will be empowered to manage their marine resources, supported by the state and industry (SDG 14.2).

With women being key actors in the value chain and project beneficiaries at the household level, their contribution to decision making has been actively sought as part of the baseline survey (SDG 5.5). Six women-only meetings were held in PY1 to support women in gaining the confidence and knowledge to actively participate in this project (output indicators 1.1 & 1.3).

Combining the participatory fisheries monitoring data collected during PY1 (output indicators 1.5, 4.3 & 4.4) with data from the lobster research unit (URL) will enable evidence-based stock management (SDG 14.4). Provision of equipment and training during PY1, combined with mobile data collection and professional skills training in PY2 will help to build the knowledge and research capacity of URL (output indicator 2.8), overall improving Madagascar's ability to manage sustainable production (SDG 14.a, SDG 12.2).

Impacts on the value chain, such as the increases in price that fishers have received during PY1 (output indicator 4.3), will address SDG 1.

5. Project support to the Conventions, Treaties or Agreements

The project has spent PY1 supporting three communities to implement measures to sustainably manage depleted lobster stocks, contributing to Aichi Target 6 and CBD Article 10(d). By working to extend the LMMA model, piloted in Sainte Luce, to two further communities the marine area conserved through effective, area-based conservation measures will increase by $\approx 320\text{km}^2$, contributing to Aichi Target 11 and CBD Article 8(a).

Management measures implemented in Sainte Luce and promoted in Elodrato and Itapera will have helped safeguard provisioning services of the fishery, which plays a major role in coastal livelihoods. During the pilot, the project's key management tool - a periodic NTZ - resulted in increased prices paid to fishers and increases in CPUE with economic benefits felt at the household level including reports of diet improvements during opening periods. Replicating these effects (output indicator 1.5) will safeguard ecosystem service provision and alleviate poverty, contributing to Aichi Target 14 and Article 8 of the Elaborated Programme of Work on Marine and Coastal Biological Diversity (Decision VII/5). By using the economic and social benefits of the NTZ to incentivise sustainable practices, it fulfils CBD Article 11.

Due to the participatory approach to data collection and results dissemination, community-based fishery managers will be supported to develop and implement their own management measures. This ensures local knowledge, innovations and practices are respected and fully integrated, contributing to Aichi Target 18 and CBD Article 8(j).

Lobsters in the regional fishery are an important resource for the conservation of biodiversity due to their economic value and role as keystone species. **Error! Bookmark not defined.** Fishery collapse would result in increased pressure on endangered marine megafauna and terrestrial resources, specifically threatened littoral forests that exhibit exceptional biodiversity and endemism (outcome indicator 0.3).^{vii} Managing this resource therefore fulfils CBD Article 8(c).

Links have been fostered between target communities through cross-visits and meetings (output indicators 1.1 & 2.2), and with Madagascar's national LMMA network (MIHARI) (output indicator 2.6). By ensuring LMMAs are well connected, the project is further contributing to Aichi Target 11.

Improved cooperation between communities, the state and the private sector (output indicators 2.2 & 2.7) has been facilitated through stakeholder meetings, establishing communication processes, fulfilling CBD Article 10(e) and Article 6 of the Elaborated Programme (Decision VII/5).

To increase compliance with national law, the project team has been working to build the enforcement capacity of the fisheries' management committee in Sainte Luce and state actors URL and DRRHP, contributing to Aichi Target 6 (output indicator 3.4). This has included providing fuel on a temporary basis for the Government-funded patrol boat, and training committee members on national regulations and record-keeping (see Annex 4.31).

The project fulfils Article 7 of the Elaborated Programme (Decision VII/5) having helped to establish a fishers' association in Elodrato in November 2018 (output indicator 1.6) to protect against incoming users.

The project's participatory programme monitoring landings, catch composition and CPUE continues to improve knowledge on the effects of management measures on biodiversity (output indicator 1.8). Results for the 2018 season are currently being analysed and will soon be shared with state, private sector and NGO actors. All useful data and analyses are being periodically shared with stakeholders to support evidence-based decision making. Data is also being added to an existing open access participatory monitoring database. **Error! Bookmark not defined.** Ensuring the broader knowledge and science base is improved, widely shared and applied, contributes directly to Aichi Target 19.

Madagascar committed to triple the coverage of MPAs within 10 years as a signatory of the Sydney Promise at the 2014 IUCN World Parks Conference. The national Biodiversity Action Plan (2015-2025) commits to Aichi targets and sets the goal of adequately conserving 15% of marine areas by 2025. LMMA's like the one in Sainte Luce and those planned for Elodrato and Itapera will contribute to these obligations (outcome indicator 0.4).

In July 2018 the project contacted the following CBD national focal points from Madagascar to inform them of the projects aims and activities over PY1. They were further contacted in November 2018 with copies of the project's PY1 half year reports:

- Mrs Rantonirina Rakotoaridera - Primary CBD national focal point and Director of the Madagascar protected areas system.
- Mrs Fara Mihanta Andriambelo - National CBD focal point for marine and coastal biodiversity.
- Mr Sahoby Yvy Randriamahaleo - National CBD focal point for protected areas.

6. Project support to poverty alleviation

In project year 1, a baseline household poverty level survey was conducted in 553 fishing and non-fishing households in three target and three control communities using a modification of the BNS, which defines poverty as a lack of basic necessities. A poverty index common to all six communities was created where a score of 0 represents extreme poverty and 1 represents at or above the locally defined poverty level. 100% of surveyed households in target and control communities (n=553) are below the locally defined poverty level: the mean poverty index for target communities is 0.64 (n=271) and control communities is 0.62 (n=282) (See Annex 4.25). For target communities, the poverty index score is highest in Sainte Luce (0.67), which is the community that has been involved in the process of LMMA development the longest and has the highest levels of community support compared to Elodrato (0.63) and Itapera (0.62) whose communities have been less engaged in the previous interventions of this project (See Annex 4.26). The mean poverty index score in target communities is higher for lobster fishing households, 0.66 (n=198), compared to non-lobster fishing households, 0.59 (n=73).

In a region where 85.4% of the population live under the international poverty line of \$1.90 per day^{xxviii}, and target community members who are, without exception, below the locally defined poverty index, the increase in equity at the bottom of the value chain following temporary NTZ closures has represented a supplementary income. As outlined in SEED's published research on

the short-term impacts of periodic NTZ openings, the model predicts the delivery of catch yields increases of approximately one third following closures. **Error! Bookmark not defined.** The resulting boost in fisher incomes will be further increased by higher unit prices from buyers following closures as they compete for stock. Moreover, financial literacy training will strengthen the economic resilience of communities at the household level, encouraging investment in context appropriate assets including boats and cattle. Lobster fishing households have been and will continue to be the expected beneficiaries, with impacts of resource conservation reverberating into the wider community.

7. Project support to gender equality issues

Within target communities, the act of lobster fishing is exclusively carried out by men. The role of women in the lobster fishery is undervalued and seen as an extension of household tasks, as they are not directly involved in the harvesting stage. However, women play a pivotal role in pre- and post-harvesting activities and therefore are central to the community-based management model^{xxxix}. Of women surveyed in Sainte Luce, 51% identified as involved in decision making compared to 83% of men.

Deeply entrenched socio-cultural traditions in community structures and decision-making systems undermine women's engagement with natural resource management. Aside from ethical concerns, failure to include women weakens decision making^{xxx}, reduces community ownership^{xxxi} and undermines compliance with management measures. Therefore, this project has adopted recommendations drawn from the Velondriake LMMA in southwest Madagascar and uses SEED's experience of promoting gender equality and equity locally to mitigate against these factors in a culturally sensitive and contextually appropriate manner.

One of the most important steps in addressing the gender imbalance in community-based fisheries management is to ensure that the project team themselves realise the importance of gender equality in a traditionally patriarchal society. A gender and fisheries workshop will be carried out in April 2019 that explores the role of women in the lobster fishery and the importance of gender equality in fisheries management (as outlined in the UN's Small-Scale Fisheries Guidelines^{xxxii}). This presentation is incorporating results from the baseline survey and case studies of specific women to highlight the lack of gender equality in the current LMMA process. It is hoped that this will lead to a mutual understanding by all project staff and will inform the design of future activities.

In support of output 1, this project aims to increase women's representation in community-based management bodies (output indicators 1.1 & 1.3) by conducting gender equality workshops, holding community meetings at times of day that are accessible to women as well as men, and ensuring all community education activities are targeted at all genders. Separate community meetings exclusively for women have been tied in with women-only education sessions to enable their voices to be heard directly and presented at community-wide meetings (See Annex 4.15). So far, one women-only meeting has been conducted in each of the six hamlets that make up the three target communities, with two 'women leaders' having been identified per hamlet. It is hoped that these women will gain the confidence and knowledge to act as representatives in community meetings and in the fisheries management committee. For PY2 these women-only meetings are planned quarterly.

In support of output 2, women are assisted in gaining the skills and knowledge to sustainably manage their lobster fisheries through education activities that include, or are specifically targeted at, women and girls (output indicators 2.4 & 2.5). Moreover, women are planned to be represented during fisheries exchange visits (output indicator 2.2).

In support of output 3, four financial management workshops with both women and men will be conducted in each target community (output indicator 4.5). The opening of the NTZ in the previous project phases saw multiple benefits to women in fisher households; directly through increased household income and indirectly through increased demand for goods sold by women. **Error! Bookmark not defined.** Women reported diversifying their livelihood activities and selling goods more frequently and at higher prices. Furthermore, women reported increased household spending on nutritious foods, household assets and cattle, which is used as an informal banking system. **Error! Bookmark not defined.** Through financial management training, the project aims to maximise equitable household expenditure and investment in productive assets.

The lack of women's satisfaction with engagement in project activities has been tracked in project year 1 through the baseline survey. This will enable SEED to adapt or modify project activities to reduce inequality and maximise equitable benefit sharing following the gender and fisheries workshop.

8. Monitoring and evaluation

A baseline socio-economic survey of 553 households in three target and three control communities was undertaken between January and March 2019 designed to assess household poverty levels (outcome indicator 0.1), cattle ownership (outcome indicator 0.2), involvement in unsustainable livelihood activities (outcome indicator 0.3), adherence to local (output indicator 2.1) and national (output indicator 3.4) fisheries regulations, pirogue ownership (output indicator 4.2), and women's involvement in decision making (output indicator 4.5). This was an effective methodology for gathering baseline data from a large number of households with limited resources; however, measurement of the following indicators requires improvement:

- **Outcome indicator 0.2 - cattle ownership.** There was discrepancies in how the question was answered, with some participants claiming ownership of cattle that they are stewards for but do not own. As such, SEED recorded cattle ownership by household rather than individual level. This methodology will be followed up during the endline survey to allow for comparative analysis.
- **Outcome indicator 0.3 - pirogue ownership.** Some participants claimed to own pirogues that were part-owned by a collection of fishers or owned by collectors despite clarification given in the question. This has possibly over-inflated the established baseline and this will be verified by direct observations on landings beaches.
- **Output indicator 4.5 - women's involvement in decision-making.** The baseline established a good basic level of understanding, however it has become apparent that there was bias in responses due to the presence of male spouses. In PY2, an in-depth gender and decision-making survey will be conducted as outlined in the Baker-Médard's methodology^{xxxiii}.

Empirically measuring baseline household poverty levels will enable the team to determine whether the project has had a positive impact on poverty and unsustainable livelihood practices following the end of project activities. This will help to provide evidence in support of the regional replication of the LMMA model.

For monitoring and evaluating educational activities, two approaches are being used. Firstly, increases in knowledge and behaviour change will be measured through analysing baseline data from before the first activity with a stakeholder group in relation to midline data in project year two and endline data in project year 3 following the completion of project activities. Secondly, any change in knowledge before and after each activity is empirically measured, which allows the project team to gauge the effectiveness of individual activities and adapt subsequent activities if necessary. For youth education, for example, children were asked a series of short questions, and the team measured correct responses (hands up with eyes closed). For the first approach, these are questions related to the overarching concepts on which education activities are based; for approach two, these are questions related specifically to the precise content of an individual lesson.

There has been an anecdotal increase in shark fishing in target communities during project year 1. Participatory shark fishery monitoring has been designed to verify if this is likely to impede on the achievement of outcome indicator 0.3. This is at the beginning of implementation in communities. In May 2019, technical support to train data collectors in the use of mobile data collection will be provided by the project partner Blue Ventures.

Once there is consistent and reliable use of mobile data collection, the lobster fishery participatory monitoring programme will be also be transferred to mobile data collection. This is predicted for mid-project year two; however, this process will require time-intensive training in order to protect the quality of the long-term lobster monitoring data set.

9. Lessons learnt

Stakeholder engagement

Engagement of DRRHP and URL in project activities is speeding up the process of getting the *Dina* officially ratified and thus legally-enforceable. With these relations in much better stead, it will also be easier to actively call on the sanctioning capacity of the *Gendarmes* when community-level *Dina* violations occur. In order to better engage with these stakeholders, the team will be sure to take regional and local authorities on fisheries exchange visits to the Velondriake LMMA following recommendations from project partners Blue Ventures.

This year, the team did not take an active role in supporting MIHARI to initiate the first regional lobster forum held in Sainte Luce, which resulted in the conference not taking place. In the future, the team will be playing a more active role in supporting MIHARI to initiate this forum, as well as organise and support a regional fisheries forum while using this platform to engage with new stakeholders. This will be easier to action after the acceptance of the submitted change request to the Darwin Initiative on 22nd March to increase our staff capacity.

Mobile data collection

The team made effective use of mobile data collection using ODK software for the baseline survey, which enabled effective and reliable monitoring of household poverty across a large number of households. Paper data collection would have yielded lower quality data and been relatively more resource and labour intensive to implement. SEED would strongly recommend similar projects to make this transition as soon as is feasibly possible, while also considering the significant initial time required for transferring paper data collection to mobile data collection.

Mobile data collection efficiency was further enhanced through the use of visual aids. Picture cards increased the speed of questions (e.g. lobster minimum landing size compliance) and decreased participant fatigue in communities where surveys are frequent. The use of picture cards was well received, and increased participation in a survey that had the possibility to be long and monotonous. SEED would also recommend similar projects to consider survey design and think of different and interesting ways to ask questions - particularly in areas of low literacy.

Conducting the baseline survey required external translators to be hired due to limited staff capacity. Training community data collectors to conduct the survey rather than SEED staff would be a solution for this. Seeing the advantages of mobile data collection, the team are now training our local data collectors in mobile data collection and using it in our participatory fisheries monitoring programme. Other projects could also benefit from bringing on the staff responsible for the implementation of mobile data collection ahead of time and training local data collectors in a structured needs-based programme.

Fisheries cross-visit

An initial scoping visit to Elodrato in November 2018 laid the foundations for a fishers' association to be developed, however community-level motivation was not yet sufficient for it to be officially established. Following a fisheries cross-visit for six fisher representatives from Elodrato to the Velondriake LMMA in February (See Annex 4.17), the community is notably more engaged with the project than before. An association management committee was elected and the association was officially launched under the name FIMO (*Fikambanana Miaro ny Oratsimba*; Lobster Protection Association) in the presence of DRRHP (See Annex 4.3).

Where the team also succeeded is through using the best-practice guidance document on fisheries learning exchanges composed by the Food and Agriculture Organisation's (FAO) guidance on fisheries learning exchanges^{xxxiv} to organise the cross visit. Consulting and incorporating the learning of world-leading industry professionals (for example by selecting participants wisely and clearly defining objectives) was a significant contributor to the success of this cross visit.

Conversely, after originally planning the cross-visit for the end of March, the team were left with little time to organise it due to the availability of the host organisation, Blue Ventures, who requested for it to be held in early February. Moreover, Blue Ventures also requested that the number of attendees be kept to a minimum, which ran contrary to the team's plan of taking at least five fishers from each target community. This made it challenging to organise the exchange with little time and an altered scope composed of a smaller number of attendees and target community representatives than was originally envisaged.

The team learnt that leaving several months' worth of time to plan fisheries cross-visits allows expectations to be managed, objectives to be aligned and logistics organised in partnership with the host organisation/institute. In the future, SEED will be taking this approach with all future cross-visits and would advise other organisations to follow a similar approach.

Project team planning

In order to better manage the project, a notice board was set up in the office in January on which activities for the next two weeks and following three months are mapped out. Moreover, Google Calendar is now used to keep track of each member's activities and location (in the office or in the target communities). These tools are combined with structured weekly meetings to drive the direction of the project and encourage universal involvement. This approach has allowed the team to visualise upcoming events and activities, and has noticeably improved the teams' capacity to plan, build necessary content and coordinate activities.

One main issue was identified that could have helped strengthen the team from the start of the project: the lack of a dedicated Fisheries Specialist, which has meant that the Project Coordinator has been overwhelmed and the team at under-capacity. Upon reflection, a Fisheries Specialist should have originally been allocated for in order to satisfy the operational requirements of the project.

A recommendation to other projects is to map out detailed work plans prior to the start of the project at the weekly level, to ensure that team capacity will be sufficient for the scope of work (whilst building in contingency).

The project team will be using a RACI analysis to clarify role requirements and develop future work plans. This will allow the team to plan upcoming activities with the appropriate level of detail.

Document storage and translation

Some key documents, such as the MEL Framework, were only available in English, which led to a lack of understanding of requirements and importance. Other documents, such as the *Sainte Luce Dina*, were only available in Malagasy and should have been translated to English. Key documents are now in the process of being translated into all three languages to ensure accessibility for all a project staff. In the future, SEED will ensure that all project documents are translated into the necessary languages and available in a central location before the project begins to ensure these problems are not revisited.

Key documents were also not stored in one place accessible to all project staff; different versions of the same document were used or some documents were not used at all by some members of staff. A Google Drive folder with the latest version of key project documents was created and a document storage procedure drawn up. We would highly recommend similar projects to consider translating key project documents into all necessary languages before the project begins, and ensuring all are accessible in a common location to avoid aliases of the same documents.

Itapera

Not having ascertained a full enough understanding of the degree of mixed attitudes in Itapera towards engagement in the project has been a significant challenge in the past project year. Key concerns of many community members include a lack of understanding as to why temporary NTZs are worthwhile in the longer-term, and a distinct lack of alternative livelihoods opportunities during closures.

Moving forward, the project team plan to improve the partnership with the Major of Mandromondromotra (the commune in which Itapera is located) to assist in engaging the few fishers who are most strongly against the concept of community-based management. Moreover, the project will continue to partner with other stakeholders in order to improve access to alternative livelihood opportunities during lobster closed seasons.

Our recommendations for similar projects would be to take local authorities to communities at the very earliest stage of the project to engage with each other on direct terms. Having authorities and notable people from the community directly involved in process-planning collectively at an earlier stage would have likely helped to solidify people's support for project.

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

At this stage, no recommendations have been received as the project is still in the first year of implementation.

11. Other comments on progress not covered elsewhere

Another risk currently facing the project comes as a result of an agreement signed in Beijing on the 5th of September 2018 between the Agence Malagasy de Développement Économique et de Promotion d'Entreprises (AMDP) and a little known private Chinese consortium aimed at promoting the company's 'blue economy' (See Annex 4.30). There is limited information around what the deal will involve although it is known to constitute a considerable investment of \$2.7 billion directed at the building of 330 industrial fishing vessels. Over a ten-year period, these vessels will be given unprecedented access to Madagascar's coastal resources whilst on land infrastructure for processing of fisheries products will also be a focus. This deal was signed without consulting communities, the fisheries ministry, the natural environment office, or civil society groups. Neither an environmental impact assessment nor a public consultation was carried out prior to the deal being signed. It is of great concern to the project team as the initiative could disrupt the already fragile local fisheries economy and stands to seriously undermine the fundamental assumptions of the project.

12. Sustainability and legacy

The organisation works with a range of stakeholders on regional, national and international level to advocate for Project Oratsimba. Engaging with MIHARI, Madagascar's network of Locally Managed Marine Areas, enables the project team to learn from other LMMAs and promote SEED's work across Madagascar. Moreover, the project team has worked to build new relations with other development organisations in the Anosy Region such as GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) who have assisted on the project by providing life jackets to fishers in an effort to minimise unnecessary deaths at sea.

To increase awareness of the project among the general public in Madagascar, a short documentary will be broadcast on national television on April 7th 2019. The nine-minute segment will showcase project activities for the opening of the national closed season in Sainte Luce and will include interviews with the Chef Fokontany, the fisheries management committee, community members and SEED's Head of Environment. Moreover, the successful cross visit to the Velondriake LMMA on the southwest coast has been a significant step towards promoting the project in-country and drafting experience-based assistance from partner organisation Blue Ventures.

Private sector buy-in was a part of this exit strategy in order to increase both compliance with management measures and economic benefits for fishers. The private sector stakeholders present at the time of the application to the Darwin Initiative are no longer active in our target communities (See Section 2), and despite efforts to engage new commercial operators, have not yet been successful in this regard. Despite being optimistic about engaging the new commercial exporter, Santi, into the project, the Oratsimba team are continuing with project activities to ensure all outputs are delivered regardless of their direct involvement.

Lastly, the MPAG being co-published between SEED and UCL **Error! Bookmark not defined.** (see Annex 4.5) will be made publicly available through the journal Marine Policy.

The project still works as planned towards its predefined planned exit strategy: improving the regional governance framework in order to establish a self-sustaining management model, reducing and ultimately eliminating reliance on external funding. The project maximises sustainability in preparation for exit through building the institutional frameworks, local management infrastructure and wider community support networks, strengthening enforcement capacity, conducting research, and maximising economic benefits.

13. Darwin identity

Multiple efforts have been made to promote the Darwin Initiative in this project.

The Darwin logo has been used on signboards that show the management measures included in the *Dina* (See Annex 4.27), T-shirts that identify the fishery management committee and project staff at events and is included in the design for posters that announce the NTZ closure (See Annex 4.1). These efforts are largely focused on raising awareness of the Darwin Initiative within our target communities.

SEED Madagascar prides itself on its informative and engaging social media content. We link the Darwin Initiative on our monthly newsletter, highlighting the expansion of Project Oratsimba as a direct result of Darwin funding. Going forward, SEED will be using the social media platforms Instagram, Twitter and Facebook to link back to the Darwin Initiative in our posts relating to this project.

14. Project expenditure

Table 1: Project expenditure during the reporting period (1 April 2017 – 31 March 2018)

| Project spend (indicative since last annual report | 2018/19 Grant (£) | 2018/19 Total Darwin Costs (£) | Variance % | Comments (please explain significant variances) |
|---|--------------------------|---------------------------------------|-------------------|--|
| Staff costs (see below) | | | | |
| Consultancy costs | | | | |
| Overhead costs | | | | |
| Travel and subsistence | | | | |
| Operating Costs | | | | |
| Capital items (see below) | | | | |
| Others (see below) | | | | |
| TOTAL | | | | |

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